P50E.pdf
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CERAFIL®
(Filters / Traps / Discriminators) for Audio / Visual Equipment

muRata Innovator in Electronics

Murata Manufacturing Co., Ltd.

Cat.No.P50E-5

EU RoHS Compliant

・All the products in this catalog comply with EU RoHS.
・EU RoHS is "the European Directive 2002/95/EC on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment."
・For more details, please refer to our website 'Murata's Approach for EU RoHS' (http://www.murata.com/info/rohs.html).

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● Part Numbering

CERAFIL® for FM

(Part Number) **SF** ❶ **E** ❷ **LF** ❸ **10M7** ❹ **F** ❺ **A** ❻ **A0** ❼ **-B0** ❽

❶Product ID

Product ID	
SF	Ceramic Filters

❷Oscillation/Number of Elements

Code	Oscillation/Number of Elements
E	2 Elements Thickness Expander mode
T	3 Elements Thickness Expander mode
V	2 Elements Thickness Expander mode (2nd Harmonic)
K	2 Elements Thickness Expander mode (3rd Over Tone)

❸Structure/Size

Code	Structure/Size
L□	Lead Type
C□	Chip Type

□ is expressed "**A**" or subsequent code, which indicates the structure/size.

❹Nominal Center Frequency

Expressed by four-digit alphanumerics. The unit is in hertz (Hz). Decimal point is expressed by capital letter "**M**" in case of MHz.

❺3dB Bandwidth

Code	3dB Bandwidth
C	450kHz min
D	350kHz min
E	330kHz
F	280kHz
G	230kHz
H	180kHz
J	150kHz
K	110kHz
L	80kHz
M	50kHz
N	35kHz

❻Center Frequency/Tolerance

Code	Center Frequency	Tolerance
A	Center Frequency mentioned by specification	±30kHz
B	-30kHz shifted from center frequency of code "A"	±30kHz
C	+30kHz shifted from center frequency of code "A"	±30kHz
D	-60kHz shifted from center frequency of code "A"	±30kHz
E	+60kHz shifted from center frequency of code "A"	±30kHz
H	Center Frequency mentioned by specification	±25kHz
V	-50kHz shifted from center frequency of code "H"	±25kHz
W	+50kHz shifted from center frequency of code "H"	±25kHz
K	Center Frequency mentioned by specification	±20kHz
Z	Combination of A, B, C, D, E	—
M	Combination of A, B, C	—
F	Nominal Center Frequency	—

3dB bandwidth of "**F**" signifies the frequency difference (both + and -) from reference frequency which is nominal center frequency.

❼Series

Code	Series
A0	Two-digit alphanumerics express series

❽Packaging

Code	Packaging
-B0	Bulk
-R0	Embossed Taping ø180mm
-R1	Embossed Taping ø330mm
-A0	1500pcs. /Radial Taping H_0=18mm
-A1	1000pcs. /Radial Taping H_0=18mm

Radial taping is applied to lead type and embossed taping to chip type. With non-standard products, two-digit alphanumerics indicating "Individual Specification" are added between "❼Series" and "❽Packaging".

CERAFIL®

(Part Number) **SF** ❶ **S** ❷ **KA** ❸ **4M50** ❹ **CF** ❺ **00** ❻ **-R1** ❼

❶Product ID

Product ID	
SF	Ceramic Filters

❷Oscillation/Numbers of Element

Code	Oscillation/Numbers of Element
S	2 Elements Thickness Shear mode

❸Structure/Size

Code	Structure/Size
K□	Chip Type

□ is expressed "**A**" or subsequent code, which indicates the structure/size.

❹Nominal Center Frequency

Expressed by four-digit alphanumerics. The unit is in hertz (Hz). Decimal point is expressed by capital letter "**M**" in case of MHz.

❺Product Specification Code (1)

Code	Product Specification Code (1)
BF	Tight Bandwidth Type
CF	Standard Bandwidth Type
DF	Broad Bandwidth Type
EF	Ultra-broad Bandwidth Type

❻Product Specification Code (2)

Code	Product Specification Code (2)
00	Standard Type

❼Packaging

Code	Packaging
-B0	Bulk
-R1	Embossed Taping ø=330mm

With non-standard products, two-digit alphanumerics indicating "Individual Specification" is added between "❻Product Specification Code (2)" and "❼Packaging".

CERAFIL® for AM

(Part Number) **SF** ❶ **P** ❷ **KA** ❸ **455K** ❹ **D4A** ❺ **-B0** ❻

❶Product ID

Product ID	
SF	Ceramic Filters
CF	Ceramic Filters

❷Oscillation/Numbers of Element

Code	Oscillation/Numbers of Element
P	4 Elements Area Expansion mode

❸Structure/Size

Code	Structure/Size
L□	Lead Type
C□/K□	Chip Type

□ is "**A**" or subsequent code, which indicates the structure/size. It varies depending on vibration mode and number of elements.

❹Nominal Center Frequency

Expressed by four-digit alphanumerics. The unit is in hertz (Hz). Capital letter "**K**" following three figures expresses the unit of "kHz".

❺Product Specification

Code	Product Specification
D4A	Three-digit alphanumerics indicate product specification of 3dB or 6dB frequency tolerance.

□□**A** indicates standard type.

❻Packaging

Code	Packaging
-B0	Bulk
-R0	Embossed Taping (ø180mm)
-R1	Embossed Taping (ø330mm)
-M0	Magazine Cassette

Radial taping is applied to lead type and embossed taping to chip type. With non-standard products, three-digit alphanumerics indicating "Individual Specification" is added between "❺Product Specification" and "❻Packaging".

Ceramic Traps

(Part Number) **TP** ❶ **S** ❷ **KA** ❸ **4M00** ❹ **B** ❺ **00** ❻ **-R0** ❼

❶Product ID

Product ID	
TP	Ceramic Traps

❷Function

Code	Function
S	Single Traps

❸Structure/Size

Code	Structure/Size
K□	Chip Type

□ is expressed "**A**" or subsequent code, which indicates the structure/size.

❹Nominal Center Frequency

Expressed by four-digit alphanumerics. The unit is in hertz (Hz). Decimal point is expressed by capital letter "**M**" in case of MHz.

❺Product Specification Code (1)

Code	Product Specification (1)
B	Broad-bandwidth Type
C	Low-capacitance Type

❻Product Specification Code (2)

Code	Product Specification (2)
00	Standard Type

❼Packaging

Code	Packaging
-B0	Bulk
-R1	Embossed Taping ø=330mm

With non-standard products, three-digit alphanumerics indicating "Individual Specification" is added between "❻Product Specification Code (2)" and "❼Packaging".

Discriminators for FM

(Part Number) **CD** ❶ **A** ❷ **LF** ❸ **10M7** ❹ **G** ❺ **A** ❻ **001** ❼ **-B0** ❽

❶Product ID

Product ID	
CD	Discriminators

❷Oscillation

Code	Oscillation
A	Thickness Expander mode
S	Thickness Shear mode

❸Structure/Size

Code	Structure/Size
L□	Lead Type
C□	Chip Type

□ is expressed "**A**" or subsequent code, which indicates the structure/size.

❹Nominal Center Frequency

Expressed by four-digit alphanumerics. The unit is in hertz (Hz). Decimal point is expressed by capital letter "**M**" in case of MHz.

❺Series

Code	Series
G	Two-digit alphanumerics express series

❻Center Frequency/Tolerance

Code	Center Frequency	Tolerance
A	Center Frequency mentioned by specification	±30kHz
B	-30kHz shifted from center frequency of code "A"	±30kHz
C	+30kHz shifted from center frequency of code "A"	±30kHz
D	-60kHz shifted from center frequency of code "A"	±30kHz
E	+60kHz shifted from center frequency of code "A"	±30kHz
H	Center Frequency mentioned by specification	±25kHz
V	-50kHz shifted from center frequency of code "H"	±25kHz
W	+50kHz shifted from center frequency of code "H"	±25kHz
K	Center Frequency mentioned by specification	±20kHz
Z	Combination of A, B, C, D, E	—
M	Combination of A, B, C	—
F	Nominal Center Frequency	—

3dB bandwidth of "**F**" signifies the frequency difference (both + and -) from reference frequency which is nominal center frequency.

❼IC

Code	IC
001	Applicable IC Control Code

❽Packaging

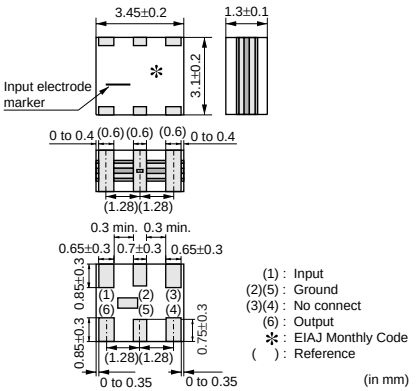
Code	Packaging
-B0	Bulk
-A0	Radial Taping H_0=18mm
-R0	Embossed Taping ø=180mm
-R1	Embossed Taping ø=330mm

Radial taping is applied to lead type and embossed taping to chip type. With non-standard products, an alphanumerics indicating "Individual Specification" is added between "❼IC" and "❽Packaging".

CERAFIL® (CERAFIL® 10.7MHz) for Audio/Visual Equipment

Small Chip Type SFECF Series

SFECF10M7 series for FM receivers are small, high performance and super thin (1.4mm max.) filters. The piezoelectric element is sandwiched by the ceramics substrate.
They have 1.4mm max. thickness and a small mounting area. (3.45x3.1mm)
SFECF series and CDSCB series (MHz Discriminator) enable customers to make VICS/RKE/TPMS set very thin and small.



■ Features

1. The filters are mountable by automatic placers.
2. They are slim, at only 1.4mm max. thickness, and have a small mounting area (3.45x3.1mm) enabling flexible PCB design.
3. Various bandwidths are available. Select a suitable type in accordance with the desired selectivity.
4. Operating Temperature Range:
   -20 to +80 (degrees C)(Standard Type)
   -40 to +85 (degrees C)(High-reliability Type)
   Storage Temperature Range:
   -40 to +85 (degrees C)(Standard Type)
   -55 to +85 (degrees C)(High-reliability Type)

Standard Type

Part Number	Center Frequency (fo) (MHz)	Nominal Center Frequency (fn) (MHz)	3dB Bandwidth (kHz)	Attenuation (kHz)	Insertion Loss (dB)	Ripple (dB)	Spurious Attenuation (1) (dB)	Spurious Attenuation (2) (dB)	Input/Output Impedance (ohm)
SFECF10M7HA00-R0	10.700 ±30kHz	-	180 ±40kHz	470 max.	4.0 ±2.0dB	1.0 max.	30 min. [within 9MHz to fo]	30 min. [within fo to 12MHz]	330
SFECF10M7HF00-R0	-	10.700	fn±25 min.	510 max.	8.0 max. [at fn]	1.0 max.	30 min. [within 9MHz to fn]	25 min. [within fn to 12MHz]	330
SFECF10M7GA00-R0	10.700 ±30kHz	-	230 ±50kHz	510 max.	3.5 ±2.0dB	1.0 max.	30 min. [within 9MHz to fo]	30 min. [within fo to 12MHz]	330
SFECF10M7GF00-R0	-	10.700	fn±45 min.	560 max.	8.0 max. [at fn]	1.0 max.	30 min. [within 9MHz to fn]	25 min. [within fn to 12MHz]	330
SFECF10M7FA00-R0	10.700 ±30kHz	-	280 ±50kHz	590 max.	3.0 ±2.0dB	1.0 max.	30 min. [within 9MHz to fo]	30 min. [within fo to 12MHz]	330
SFECF10M7FF00-R0	-	10.700	fn±65 min.	620 max.	7.0 max. [at fn]	1.0 max.	30 min. [within 9MHz to fn]	25 min. [within fn to 12MHz]	330
SFECF10M7EA00-R0	10.700 ±30kHz	-	330 ±50kHz	700 max.	3.0 ±2.0dB	1.0 max.	30 min. [within 9MHz to fo]	30 min. [within fo to 12MHz]	330
SFECF10M7DA0001-R0	10.700 ±30kHz	-	420 min.	950 max.	3.0 ±2.0dB	3.0 max.	35 min. [within 9MHz to fo]	25 min. [within fo to 12MHz]	330
SFECF10M7DF00-R0	-	10.700	fn±150 min.	990 max.	6.0 max. [at fn]	3.0 max.	20 min. [within 9MHz to fn]	20 min. [within fn to 12MHz]	330

Area of Attenuation: [within 20dB]
Area of Insertion Loss: at minimum loss point Area of Ripple: within 3dB B.W.
Center frequency (fo) defined by the center of 3dB bandwidth.
For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.
The order quantity should be an integral multiple of the "Minimum Quantity" shown in the package page.

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High-reliability Type

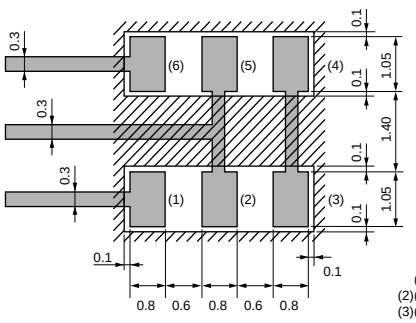
Part Number	Center Frequency (fo) (MHz)	Nominal Center Frequency (fn) (MHz)	3dB Bandwidth (kHz)	Attenuation (kHz)	Insertion Loss (dB)	Ripple (dB)	Spurious Attenuation (1) (dB)	Spurious Attenuation (2) (dB)	Input/Output Impedance (ohm)
SFECF10M7HA00S0-R0	10.700 ±30kHz	-	180 ±40kHz	470 max.	4.0 ±2.0dB	1.0 max.	30 min. [within 9MHz to fo]	30 min. [within fo to 12MHz]	330
SFECF10M7HF00S0-R0	-	10.700	fn±25 min.	510 max.	8.0 max. [at fn]	1.0 max.	30 min. [within 9MHz to fn]	25 min. [within fn to 12MHz]	330
SFECF10M7GA00S0-R0	10.700 ±30kHz	-	230 ±50kHz	510 max.	3.5 ±2.0dB	1.0 max.	30 min. [within 9MHz to fo]	30 min. [within fo to 12MHz]	330
SFECF10M7GF00S0-R0	-	10.700	fn±45 min.	560 max.	8.0 max. [at fn]	1.0 max.	30 min. [within 9MHz to fn]	25 min. [within fn to 12MHz]	330
SFECF10M7FA00S0-R0	10.700 ±30kHz	-	280 ±50kHz	590 max.	3.0 ±2.0dB	1.0 max.	30 min. [within 9MHz to fo]	30 min. [within fo to 12MHz]	330
SFECF10M7FF00S0-R0	-	10.700	fn±65 min.	630 max.	7.0 max. [at fn]	1.0 max.	30 min. [within 9MHz to fn]	25 min. [within fn to 12MHz]	330
SFECF10M7EA00S0-R0	10.700 ±30kHz	-	330 ±50kHz	700 max.	3.0 ±2.0dB	1.0 max.	30 min. [within 9MHz to fo]	30 min. [within fo to 12MHz]	330
SFECF10M7DF00S0-R0	-	10.700	fn±145 min.	990 max.	6.0 max. [at fn]	3.0 max.	20 min. [within 9MHz to fn]	20 min. [within fn to 12MHz]	330

Area of Attenuation: [within 20dB]
Area of Insertion Loss: at minimum loss point Area of Ripple: within 3dB B.W.
Center frequency (fo) defined by the center of 3dB bandwidth.
For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.
The order quantity should be an integral multiple of the "Minimum Quantity" shown in the package page.

■ Standard Center Frequency Rank Code

CODE	30kHz Step	25kHz Step
D	10.64MHz±30kHz	10.650MHz±25kHz
B	10.67MHz±30kHz	10.675MHz±25kHz
A	10.70MHz±30kHz	10.700MHz±25kHz
C	10.73MHz±30kHz	10.725MHz±25kHz
E	10.76MHz±30kHz	10.750MHz±25kHz
Z	Combination A, B, C, D, E	
M	Combination A, B, C	

■ Standard Land Pattern Dimensions



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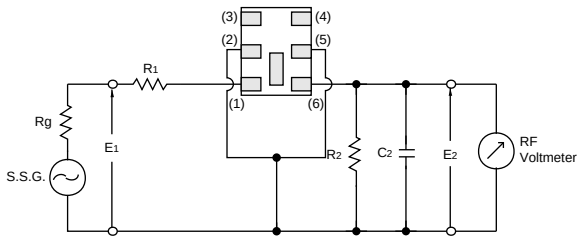

Rg = 50Ω R1 = 280Ω ±5% R2 = 330Ω ±5%
C2 = 10 ± 2 pF (Including stray capacitance and Input capacitance of RF Volt Meter)
E1 : S.S.G. Output Voltage

(1) : Input
(2)(5) : Ground
(3)(4) : No connect
(6) : Output

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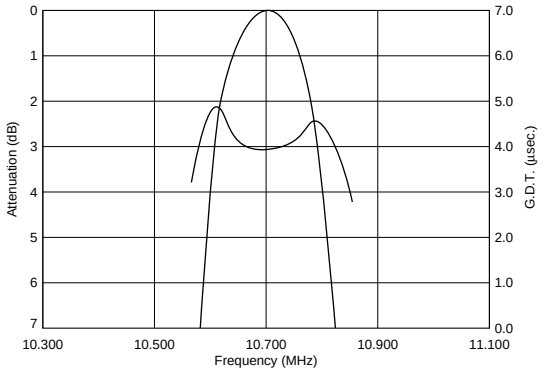
Continued from the preceding page.

■ Frequency Characteristics Standard Type

SFECF10M7HA00-R0/SFECF10M7HF00-R0



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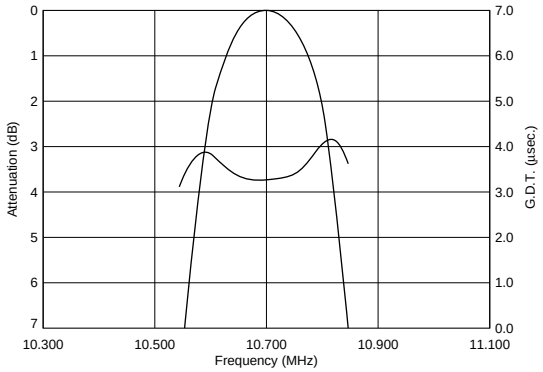

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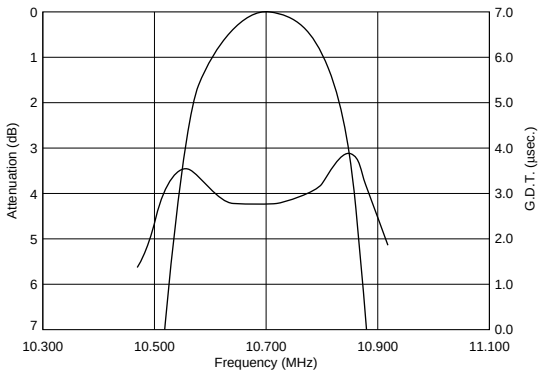

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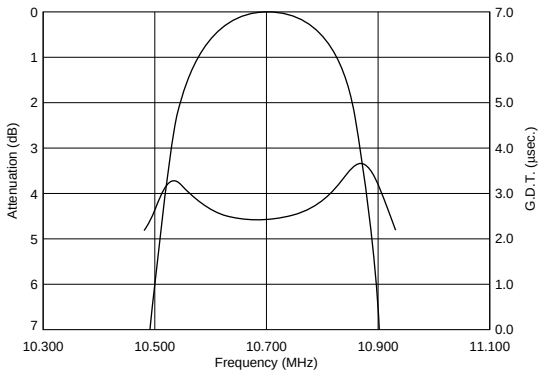

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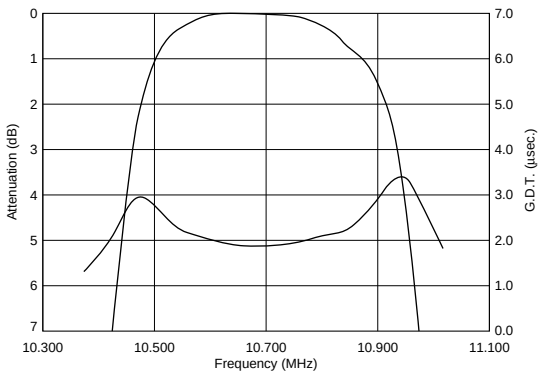

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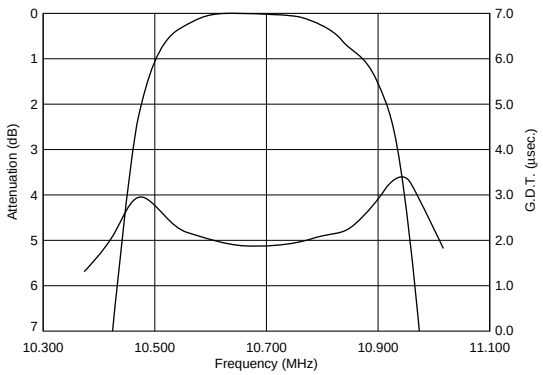

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■ Frequency Characteristics High-reliability Type

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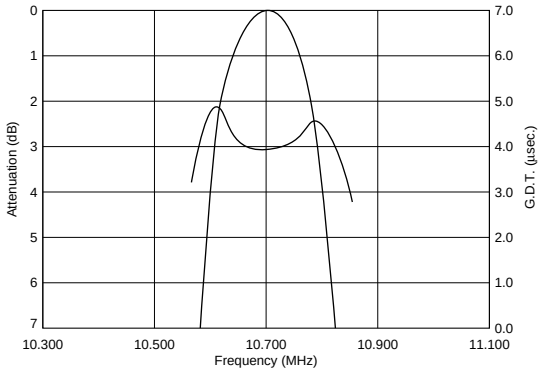

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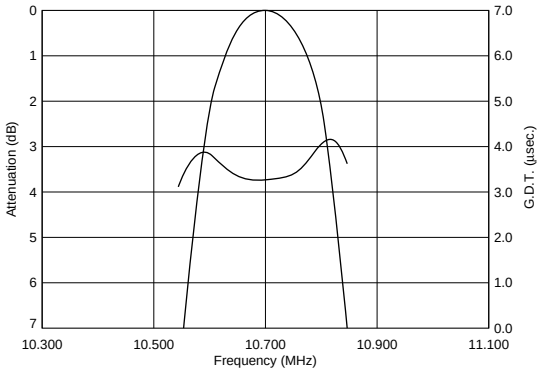

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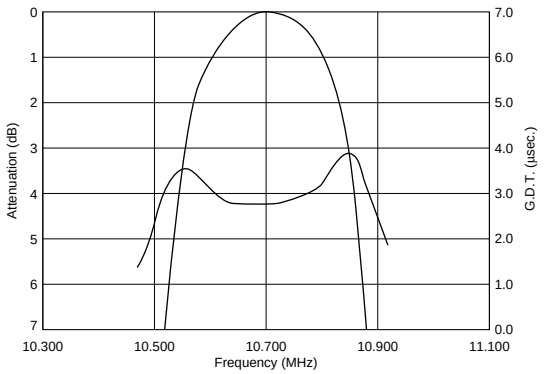

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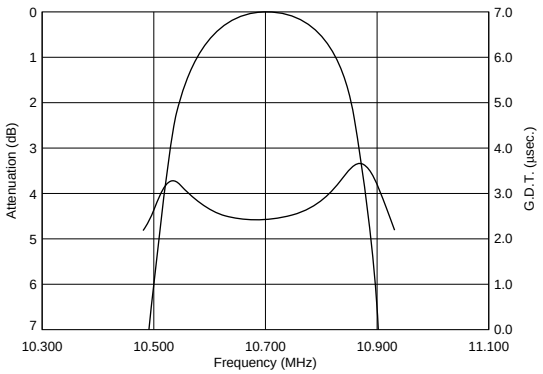

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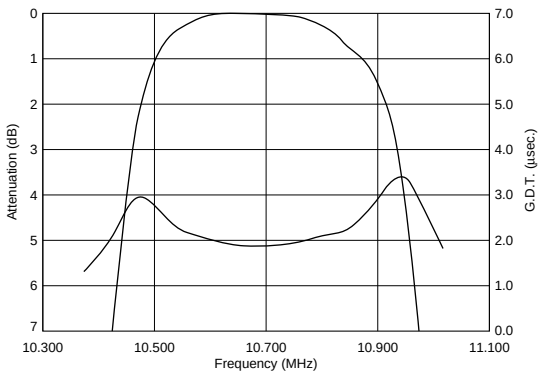

■ Frequency Characteristics (Spurious) Standard Type

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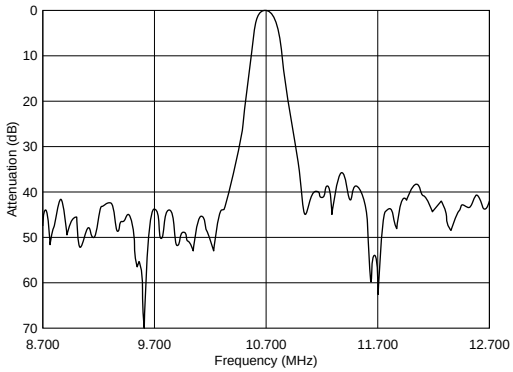

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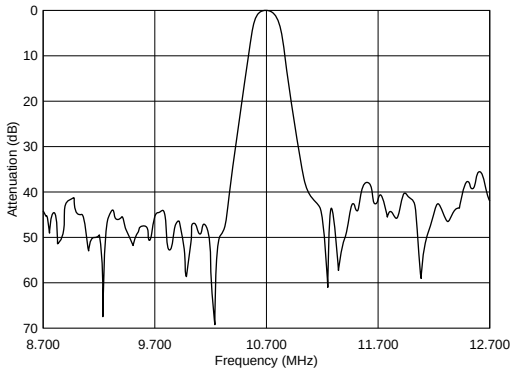

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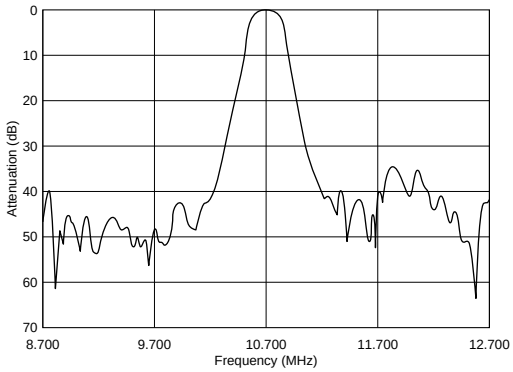

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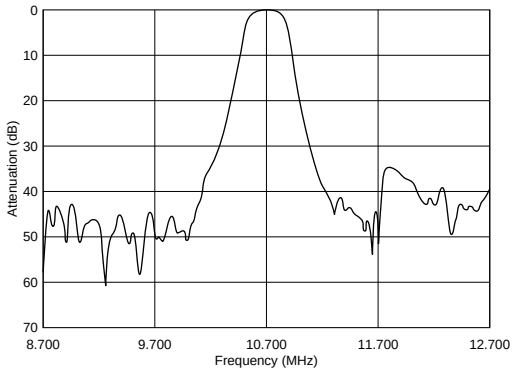

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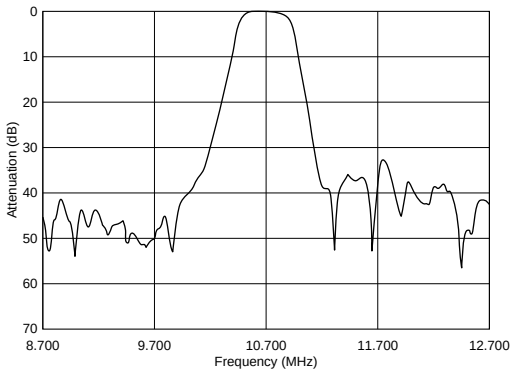

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■ Frequency Characteristics (Spurious) High-reliability Type

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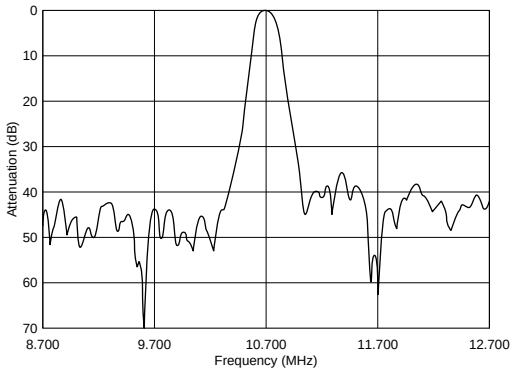
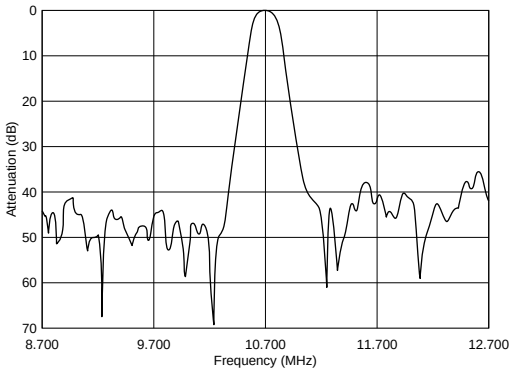


SFECF10M7GA00S0-R0/SFECF10M7GF00S0-R0



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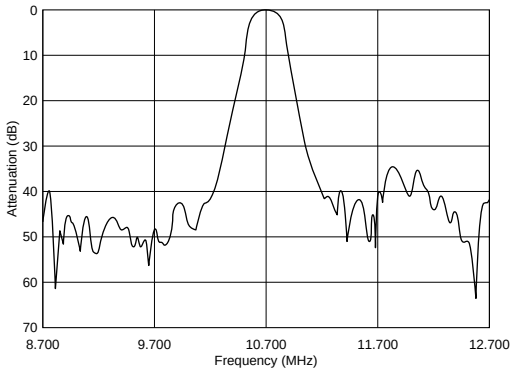

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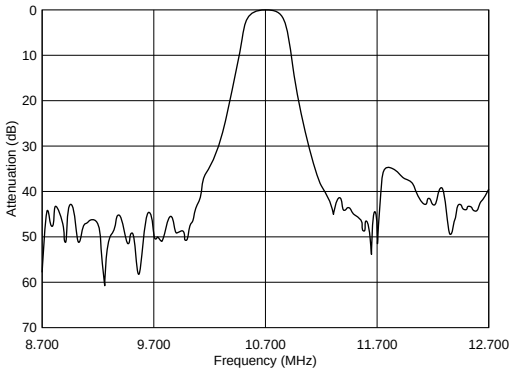

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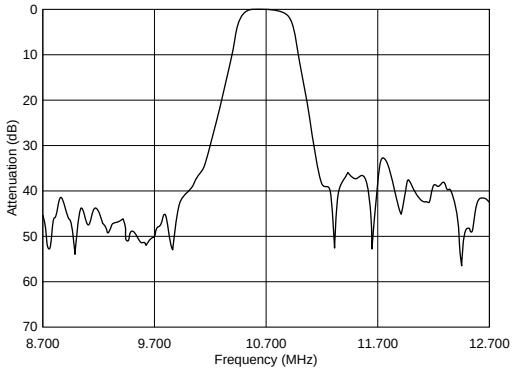
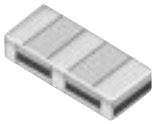
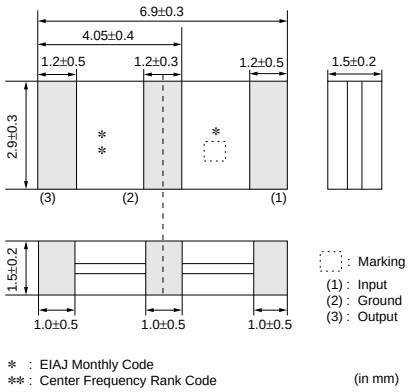


CERAFIL® (CERAFIL® 10.7MHz) for Audio/Visual Equipment

Chip Type SFECV/SFECK Series

SFECV/SFECK10M7 series for FM receivers are monolithic type ceramic filters which utilize the thickness expander mode of piezoelectric ceramics. SFECV series enable customers to make AM/FM set very thin, and it can be of help to the total chip circuit.





■ Features

1. The piezoelectric element is sandwiched by heat resistant substrate, thus it has excellent mechanical strength, and it is suitable for automatic mounting.
2. Various bandwidths are available. Select a suitable type in accordance with the desired selectivity.
3. Operating Temperature Range:
   -20 to +80 (degrees C)(Standard Type)
   -40 to +85 (degrees C)(High-reliability Type)
   Storage Temperature Range:
   -40 to +85 (degrees C)(Standard Type)
   -55 to +85 (degrees C)(High-reliability Type)

■ Applications

1. Small, thin radios
2. Automotive radios
3. Headphone stereos

Standard Type

Part Number	Center Frequency (fo) (MHz)	3dB Bandwidth (kHz)	Attenuation (kHz)	Insertion Loss (dB)	Ripple (dB)	Spurious Attenuation (1) (dB)	Spurious Attenuation (2) (dB)	Input/Output Impedance (ohm)
SFECV15M0EQ0001-R0	15.000 ±50kHz	300 min.	750 max.	7.0 max.	1.0 max.	30 min. [within 14MHz to fo]	30 min. [within fo to 16MHz]	330
SFECV10M7KA00-R0	10.700 ±30kHz	110 ±30kHz	320 max.	6.0 ±2.0dB	1.0 max.	35 min. [within 9MHz to fo]	35 min. [within fo to 12MHz]	330
SFECV10M7JA00-R0	10.700 ±30kHz	150 ±40kHz	380 max.	5.5 ±2.0dB	1.0 max.	35 min. [within 9MHz to fo]	35 min. [within fo to 12MHz]	330

Area of Attenuation: [within 20dB]
Area of Insertion Loss: at minimum loss point
Center frequency (fo) defined by the center of 3dB bandwidth.
For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.
The order quantity should be an integral multiple of the "Minimum Quantity" shown in the package page.

High-reliability Type

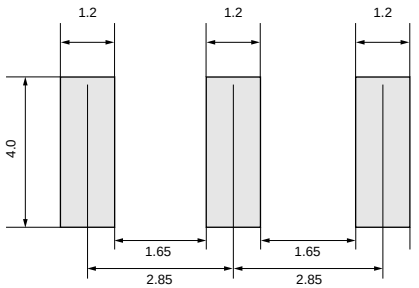
Part Number	Center Frequency (fo) (MHz)	3dB Bandwidth (kHz)	Attenuation (kHz)	Insertion Loss (dB)	Ripple (dB)	Spurious Attenuation (1) (dB)	Spurious Attenuation (2) (dB)	Input/Output Impedance (ohm)
SFECK10M7KA00S0-R0	10.700 ±30kHz	110 ±30kHz	320 max.	6.0 ±2.0dB	1.0 max.	35 min. [within 9MHz to fo]	35 min. [within fo to 12MHz]	330
SFECK10M7JA00S0-R0	10.700 ±30kHz	150 ±40kHz	380 max.	5.5 ±2.0dB	1.0 max.	35 min. [within 9MHz to fo]	35 min. [within fo to 12MHz]	330

Area of Attenuation: [within 20dB]
Area of Insertion Loss: at minimum loss point
Center frequency (fo) defined by the center of 3dB bandwidth.
For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.
The order quantity should be an integral multiple of the "Minimum Quantity" shown in the package page.

■ Standard Center Frequency Rank Code

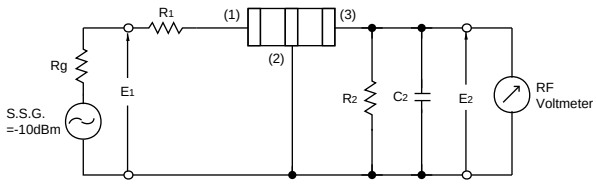
CODE	30kHz Step	25kHz Step
D	10.64MHz±30kHz	10.650MHz±25kHz
B	10.67MHz±30kHz	10.675MHz±25kHz
A	10.70MHz±30kHz	10.700MHz±25kHz
C	10.73MHz±30kHz	10.725MHz±25kHz
E	10.76MHz±30kHz	10.750MHz±25kHz
Z	Combination A, B, C, D, E	
M	Combination A, B, C	

■ Standard Land Pattern Dimensions



(in mm)

■ Test Circuit

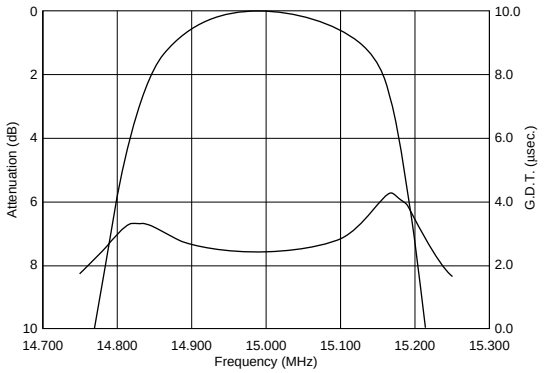


Rg = 50Ω R1 = 280Ω ±5% R2 = 330Ω ±5%
C2 = 10 ± 2 pF (Including stray capacitance and Input capacitance of RF Volt Meter)
E1 : S.S.G. Output Voltage

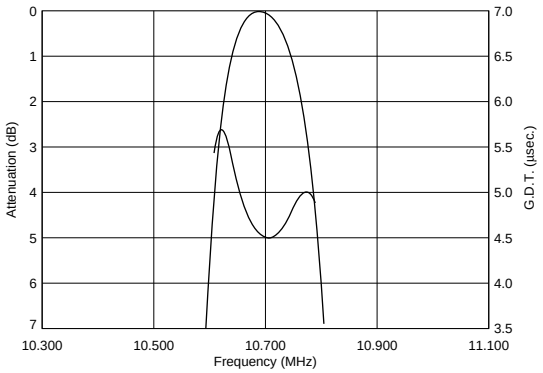
(1) : Input
(2) : Ground
(3) : Output

■ Frequency Characteristics Standard Type

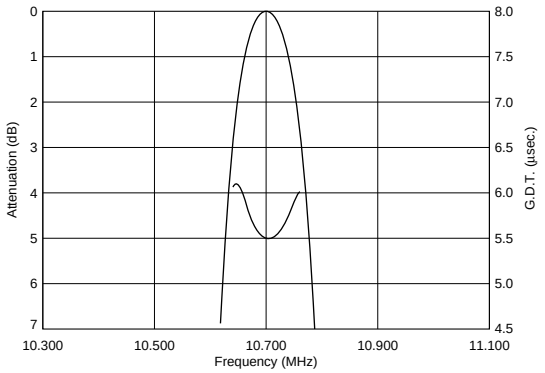
SFECV15M0EQ0001-R0



SFECV10M7KA00-R0

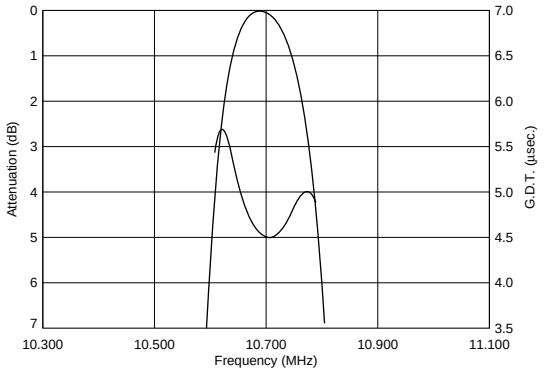


SFECV10M7JA00-R0

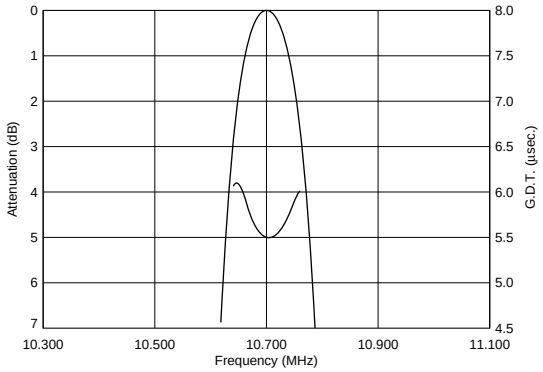


■ Frequency Characteristics High-reliability Type

SFECK10M7KA00S0-R0

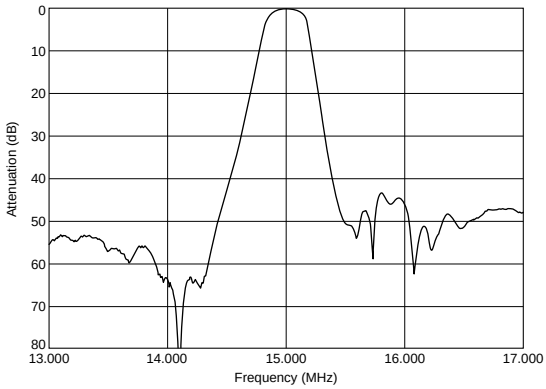


SFECK10M7JA00S0-R0



■ Frequency Characteristics (Spurious) Standard Type

SFECV15M0EQ0001-R0



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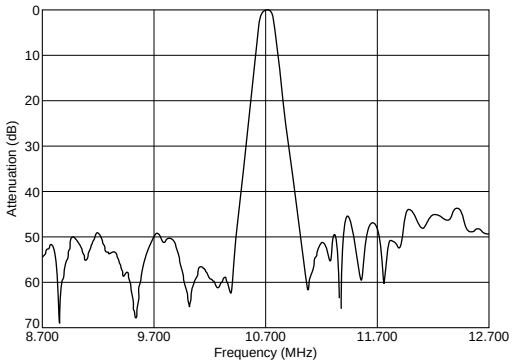

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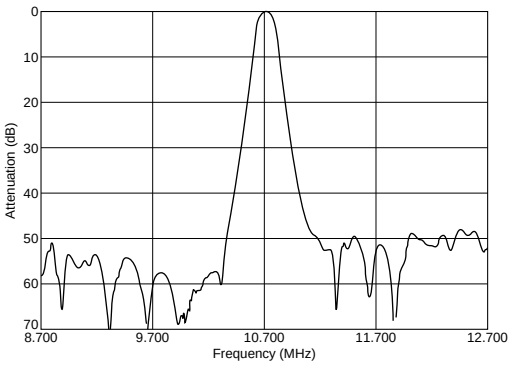
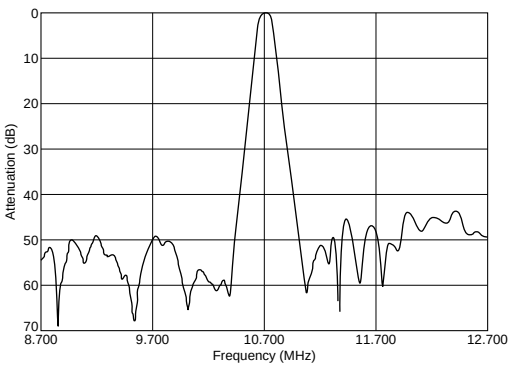
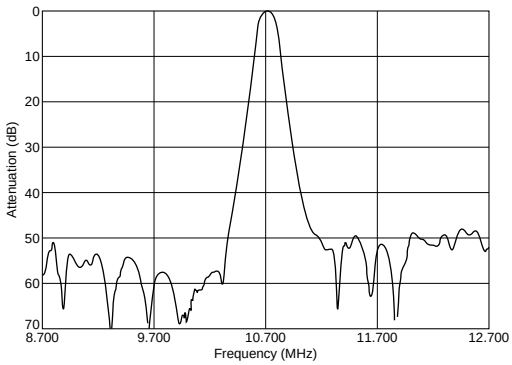


■ Frequency Characteristics (Spurious) High-reliability Type

SFECK10M7KA00S0-R0



SFECK10M7JA00S0-R0



CERAFIL® (CERAFIL® 10.7MHz) for Audio/Visual Equipment

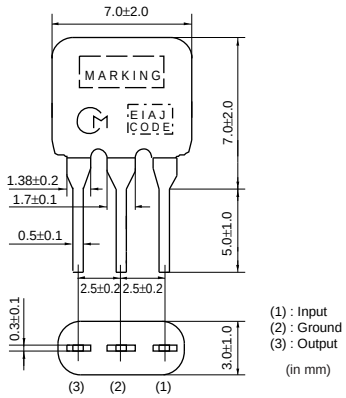
Standard Lead Type SFELF Series

SFELF10M7 series for FM receivers are monolithic type ceramic filters which use the thickness expander mode of the piezoelectric ceramic.
As part of our environmental protection compliance, solder for terminal plating and terminal-element connection inside of the ceramic filter contains no lead (Pb).

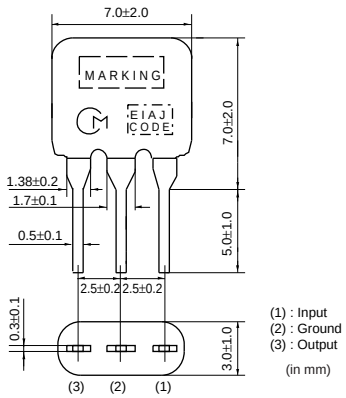
■ Features

1. High mechanical strength
2. Low loss, favorable waveform symmetry, and high selectivity
3. Various bandwidths are available for applications in wide to narrow bands.
4. Small dispersion and stable characteristics
5. Change in center frequency is typically within +-30ppm/(degrees C) at -20 to +80 (degrees C).
6. High reliability

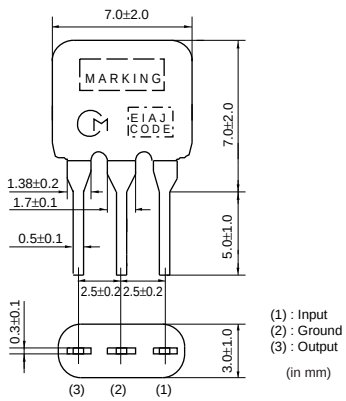
SFELF10M7HA00-B0



SFELF10M7GA00-B0



SFELF10M7FA00-B0



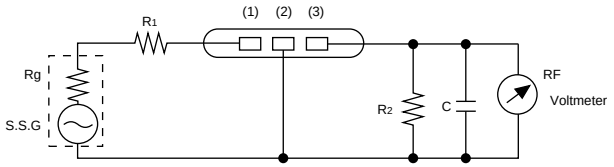
Part Number	Center Frequency (fo) (MHz)	3dB Bandwidth (kHz)	Attenuation (kHz)	Insertion Loss (dB)	Spurious Attenuation (1) (dB)	Spurious Attenuation (2) (dB)	Input/Output Impedance (ohm)
SFELF10M7HA00-B0	10.700 ±30kHz	180 ±40kHz	520 max.	7.0 max.	40 min. [within 9MHz to fo]	40 min. [within fo to 12MHz]	330
SFELF10M7GA00-B0	10.700 ±30kHz	230 ±50kHz	570 max.	4.0 ±2.0dB	40 min. [within 9MHz to fo]	40 min. [within fo to 12MHz]	330
SFELF10M7FA00-B0	10.700 ±30kHz	280 ±50kHz	650 max.	4.0 ±2.0dB	30 min. [within 9MHz to fo]	30 min. [within fo to 12MHz]	330

Area of Attenuation: [within 20dB]
Area of Insertion Loss: at minimum loss point
Center frequency (fo) defined by the center of 3dB bandwidth.
For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.
The order quantity should be an integral multiple of the "Minimum Quantity" shown in the package page.

■ Standard Center Frequency Rank Code

CODE	30kHz Step	25kHz Step	Color Code
D	10.64MHz±30kHz	10.650MHz±25kHz	Black
B	10.67MHz±30kHz	10.675MHz±25kHz	Blue
A	10.70MHz±30kHz	10.700MHz±25kHz	Red
C	10.73MHz±30kHz	10.725MHz±25kHz	Orange
E	10.76MHz±30kHz	10.750MHz±25kHz	White
Z	Combination A, B, C, D, E		
M	Combination A, B, C		

■ Test Circuit

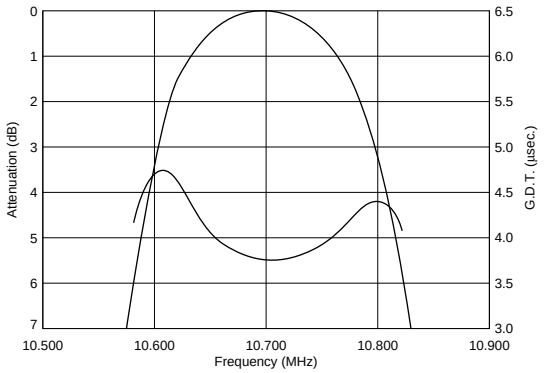


Rg + R1 = R2 = Input and Output Impedance
C = 10pF (Including stray capacitance and input capacitance of RF voltmeter.)

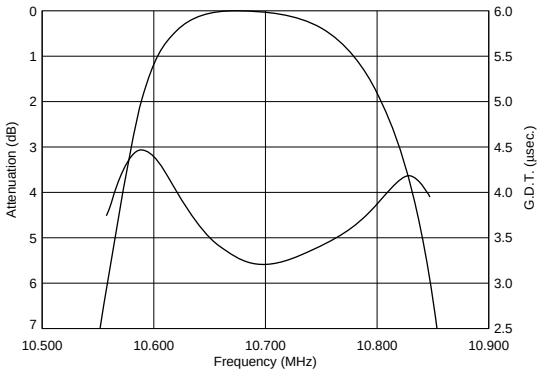
(1) : Input
(2) : Ground
(3) : Output

■ Frequency Characteristics

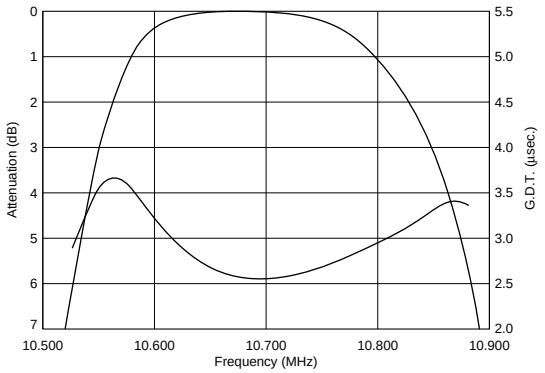
SFELF10M7HA00-B0



SFELF10M7GA00-B0

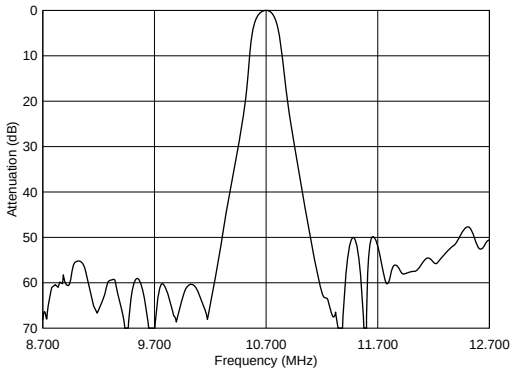


SFELF10M7FA00-B0

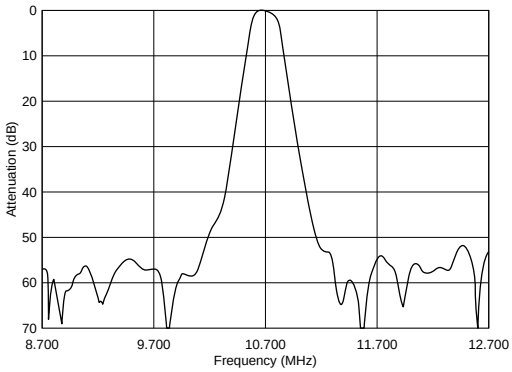


■ Frequency Characteristics (Spurious)

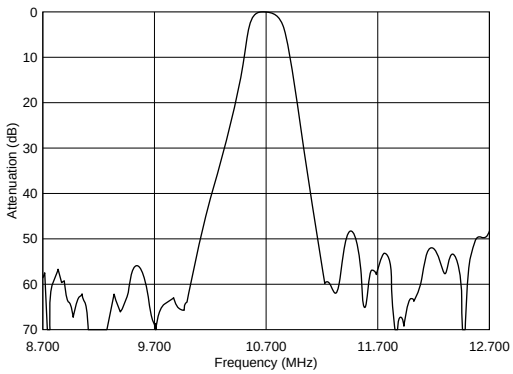
SFELF10M7HA00-B0



SFELF10M7GA00-B0



SFELF10M7FA00-B0



CERAFIL® (CERAFIL® 10.7MHz) for Audio/Visual Equipment

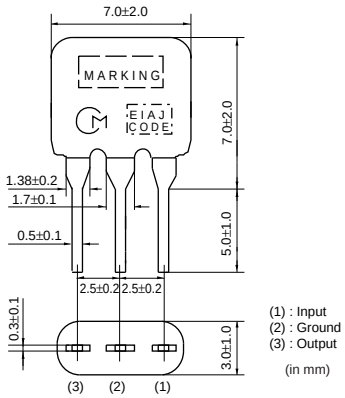
Low Loss Type SFELF Series

SFELF10M7 series for FM receivers are monolithic type ceramic filters which use the thickness expander mode of the piezoelectric ceramic.
As part of the environment protection activity, solder for terminal plating and terminal-element connection inside of ceramic filter contain no lead (Pb).

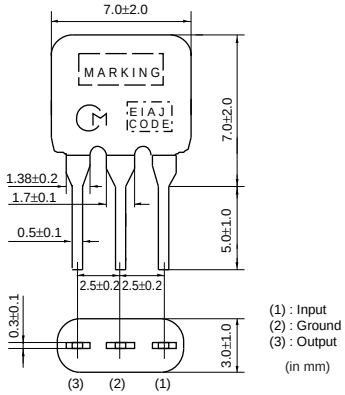
■ Features

1. Insertion loss is 1 to 1.5dB lower than conventional products. These types are useful for elevating the sensitivity of sets.
2. Small dispersion and stable characteristics
3. Excellent shape factor of frequency response
4. Good waveform symmetry

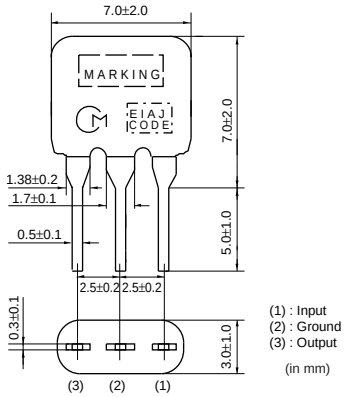
SFELF10M7JAA0-B0



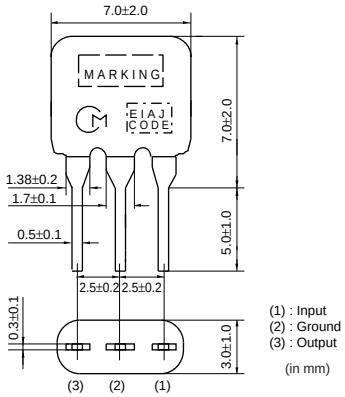
SFELF10M7HAA0-B0



SFELF10M7GAA0-B0



SFELF10M7FAA0-B0



Part Number	Center Frequency (fo) (MHz)	3dB Bandwidth (kHz)	Attenuation (kHz)	Insertion Loss (dB)	Spurious Attenuation (1) (dB)	Spurious Attenuation (2) (dB)	Input/Output Impedance (ohm)
SFELF10M7JAA0-B0	10.700 ±30kHz	150 ±40kHz	360 max.	4.5 ±2.0dB	35 min. [within 9MHz to fo]	35 min. [within fo to 12MHz]	330
SFELF10M7HAA0-B0	10.700 ±30kHz	180 ±40kHz	470 max.	3.5 ±1.5dB	35 min. [within 9MHz to fo]	35 min. [within fo to 12MHz]	330
SFELF10M7GAA0-B0	10.700 ±30kHz	230 ±50kHz	520 max.	3.0 ±2.0dB	35 min. [within 9MHz to fo]	35 min. [within fo to 12MHz]	330
SFELF10M7FAA0-B0	10.700 ±30kHz	280 ±50kHz	590 max.	2.5 ±2.0dB	30 min. [within 9MHz to fo]	30 min. [within fo to 12MHz]	330

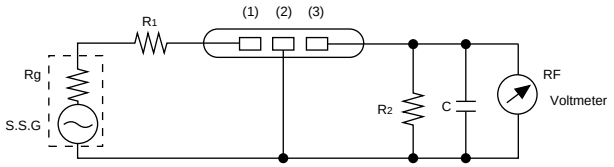
Area of Attenuation: [within 20dB]
Area of Insertion Loss: at minimum loss point
Center frequency (fo) defined by the center of 3dB bandwidth.
For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.
The order quantity should be an integral multiple of the "Minimum Quantity" shown in the package page.

■ Standard Center Frequency Rank Code

CODE	30kHz Step	25kHz Step	Color Code
D	10.64MHz±30kHz	10.650MHz±25kHz	Black
B	10.67MHz±30kHz	10.675MHz±25kHz	Blue
A	10.70MHz±30kHz	10.700MHz±25kHz	Red
C	10.73MHz±30kHz	10.725MHz±25kHz	Orange
E	10.76MHz±30kHz	10.750MHz±25kHz	White
Z	Combination A, B, C, D, E		
M	Combination A, B, C		

4

■ Test Circuit

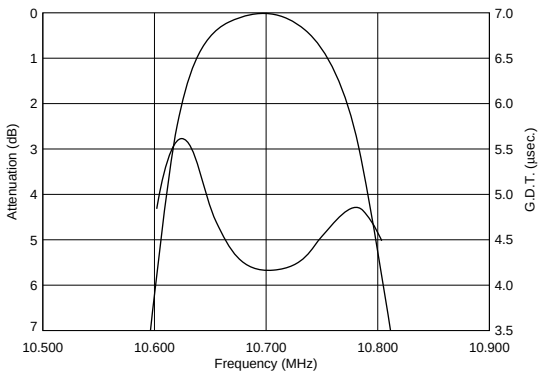


Rg + R1 = R2 = Input and Output Impedance
C = 10pF (Including stray capacitance and input capacitance of RF voltmeter.)

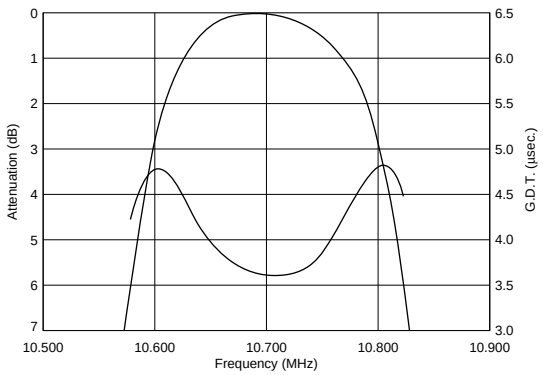
(1) : Input
(2) : Ground
(3) : Output

■ Frequency Characteristics

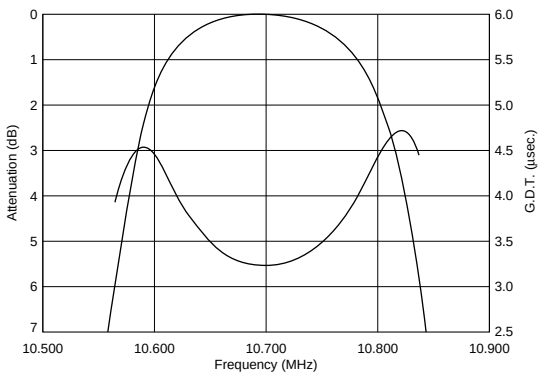
SFELF10M7JAA0-B0



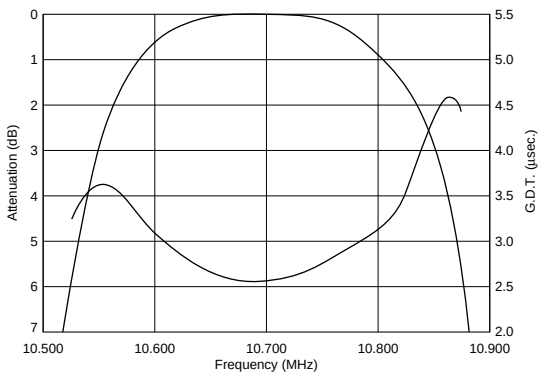
SFELF10M7HAA0-B0



SFELF10M7GAA0-B0

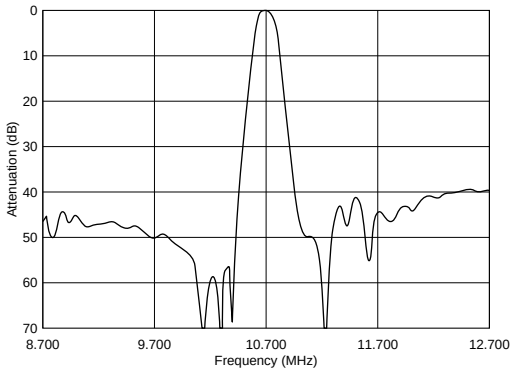


SFELF10M7FAA0-B0



■ Frequency Characteristics (Spurious)

SFELF10M7JAA0-B0



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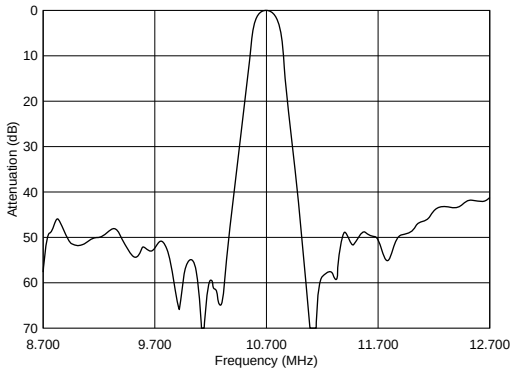
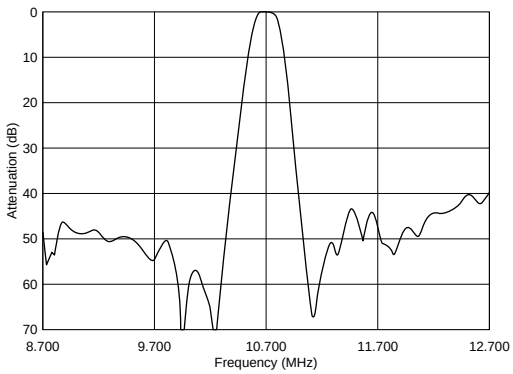
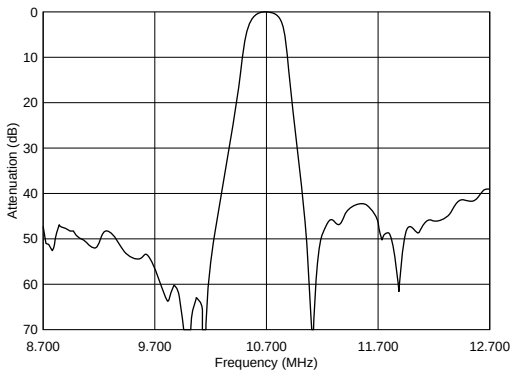


SFELF10M7GAA0-B0



SFELF10M7FAA0-B0



4

CERAFIL® (CERAFIL® 10.7MHz) for Audio/Visual Equipment

Low Profile Type SFELG Series

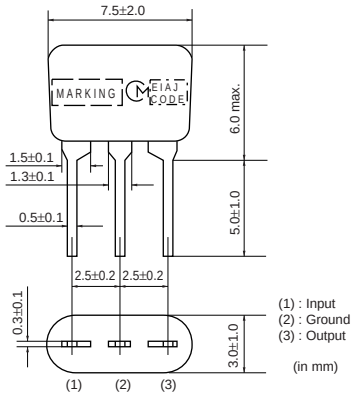
SFELG10M7 series for FM receivers are monolithic type ceramic filters which use the thickness expander mode of the piezoelectric ceramic.
As part of the environment protection activity, solder for terminal plating and terminal-element connection inside of ceramic filter contain no lead (Pb).

5

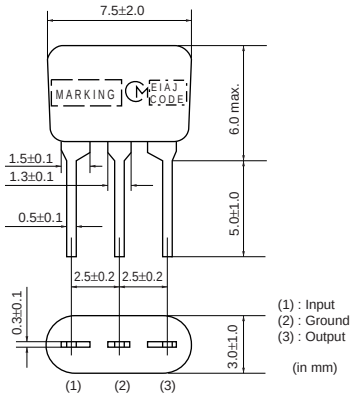
■ Features

1. Installed height is 6.0mm, making it well suited for compact, thin sets.
2. Environmental reliability is the same as those of the ceramic filter SFELF10M7 series.

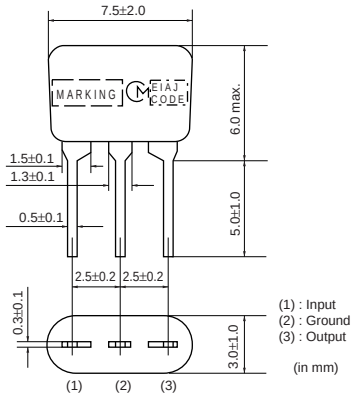
SFELG10M7KA00-B0



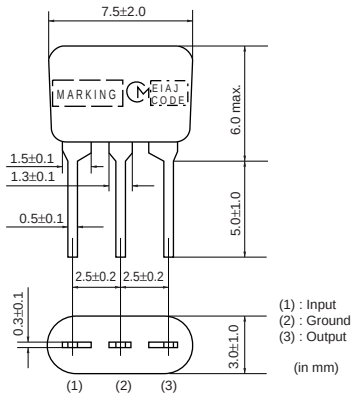
SFELG10M7JA00-B0



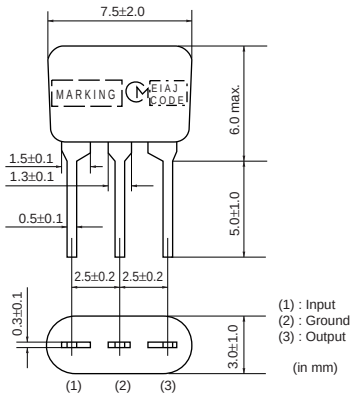
SFELG10M7HA00-B0



SFELG10M7GA00-B0



SFELG10M7FA00-B0



Part Number	Center Frequency (fo) (MHz)	3dB Bandwidth (kHz)	Attenuation (kHz)	Insertion Loss (dB)	Spurious Attenuation (1) (dB)	Spurious Attenuation (2) (dB)	Input/Output Impedance (ohm)
SFELG10M7KA00-B0	10.700 ±30kHz	110 ±30kHz	350 max.	7.0 ±2.0dB	30 min. [within 9MHz to fo]	30 min. [within fo to 12MHz]	330
SFELG10M7JA00-B0	10.700 ±30kHz	150 ±40kHz	360 max.	4.5 ±2.0dB	35 min. [within 9MHz to fo]	35 min. [within fo to 12MHz]	330
SFELG10M7HA00-B0	10.700 ±30kHz	180 ±40kHz	470 max.	3.5 ±2.0dB	35 min. [within 9MHz to fo]	35 min. [within fo to 12MHz]	330
SFELG10M7GA00-B0	10.700 ±30kHz	230 ±50kHz	570 max.	3.0 ±2.0dB	40 min. [within 9MHz to fo]	40 min. [within fo to 12MHz]	330

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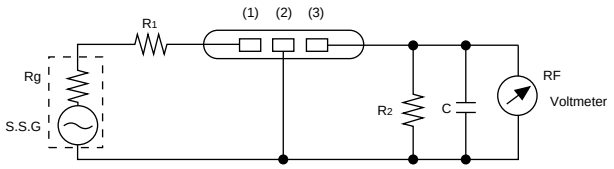
Part Number	Center Frequency (fo) (MHz)	3dB Bandwidth (kHz)	Attenuation (kHz)	Insertion Loss (dB)	Spurious Attenuation (1) (dB)	Spurious Attenuation (2) (dB)	Input/Output Impedance (ohm)
SFELG10M7FA00-B0	10.700 ±30kHz	280 ±50kHz	650 max.	3.0 ±2.0dB	30 min. [within 9MHz to fo]	30 min. [within fo to 12MHz]	330

Area of Attenuation: [within 20dB]
Area of Insertion Loss: at minimum loss point
Center frequency (fo) defined by the center of 3dB bandwidth.
For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.
The order quantity should be an integral multiple of the "Minimum Quantity" shown in the package page.

■ Standard Center Frequency Rank Code

CODE	30kHz Step	25kHz Step	Color Code
D	10.64MHz±30kHz	10.650MHz±25kHz	Black
B	10.67MHz±30kHz	10.675MHz±25kHz	Blue
A	10.70MHz±30kHz	10.700MHz±25kHz	Red
C	10.73MHz±30kHz	10.725MHz±25kHz	Orange
E	10.76MHz±30kHz	10.750MHz±25kHz	White
Z	Combination A, B, C, D, E		
M	Combination A, B, C		

■ Test Circuit

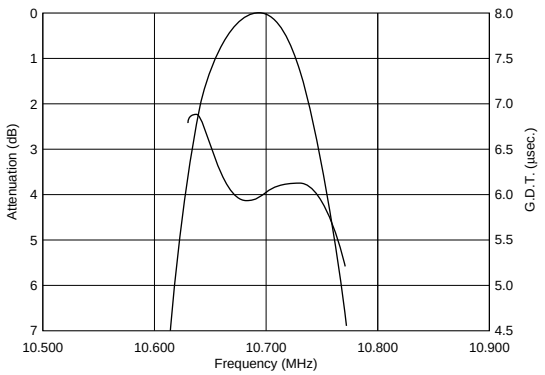


Rg + R1 = R2 = Input and Output Impedance
C = 10pF (Including stray capacitance and input capacitance of RF voltmeter.)

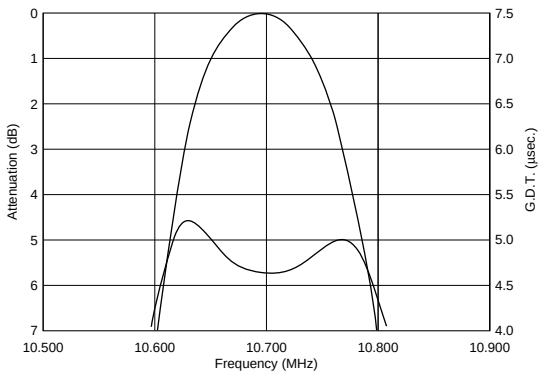
(1) : Input
(2) : Ground
(3) : Output

■ Frequency Characteristics

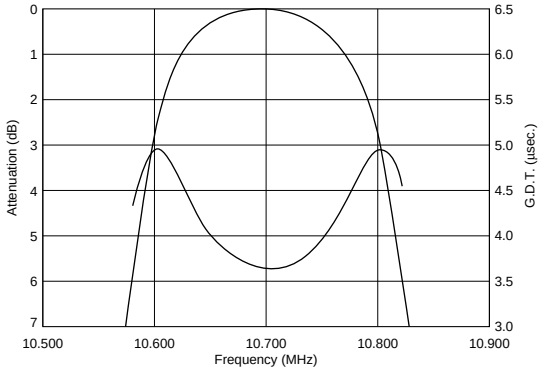
SFELG10M7KA00-B0



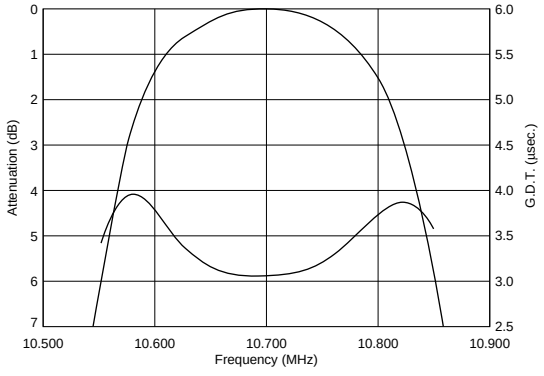
SFELG10M7JA00-B0



SFELG10M7HA00-B0



SFELG10M7GA00-B0



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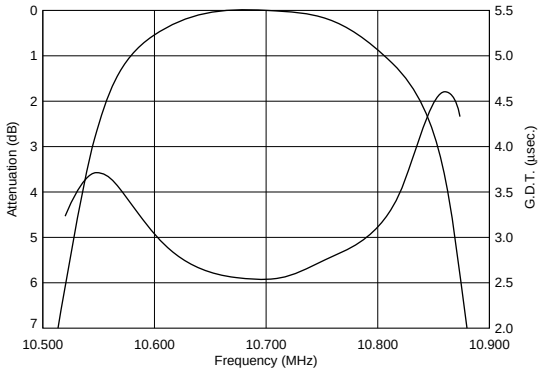
■ Frequency Characteristics

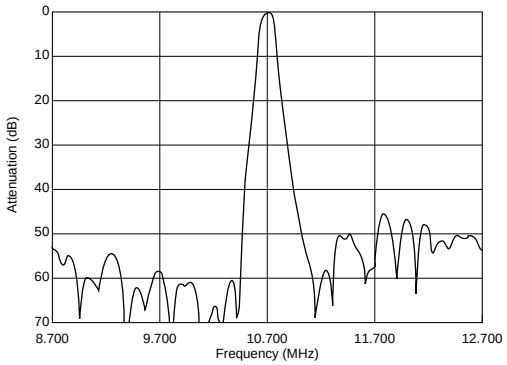
SFELG10M7FA00-B0



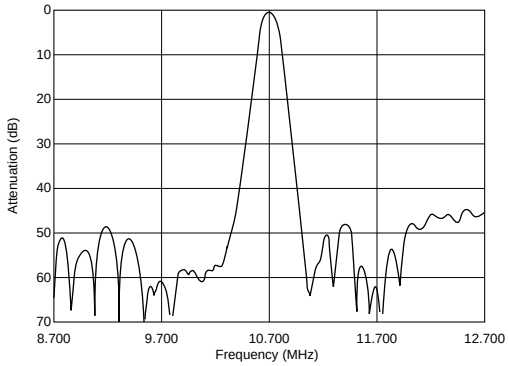
5

■ Frequency Characteristics (Spurious)

SFELG10M7KA00-B0



SFELG10M7JA00-B0



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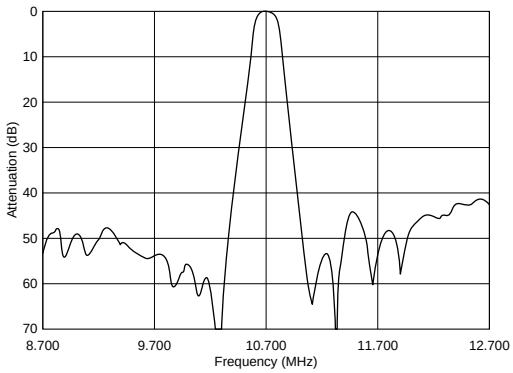
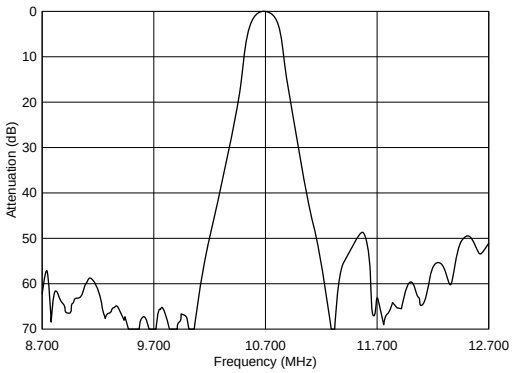
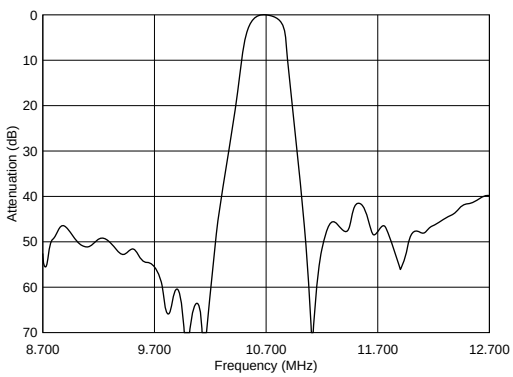


SFELG10M7GA00-B0



SFELG10M7FA00-B0



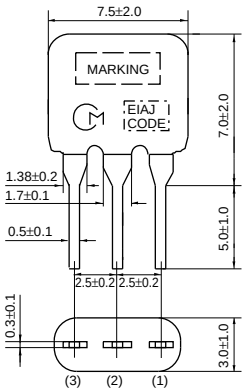
CERAFIL® (CERAFIL® 10.7MHz) for Audio/Visual Equipment

Low Spurious Response Type SFELF Series

SFELF10M7 series for FM receivers are monolithic type ceramic filters which use the thickness expander mode of the piezoelectric ceramic.
As part of the environment protection activity, solder for terminal plating and terminal-element connection inside of ceramic filter contain no lead (Pb).

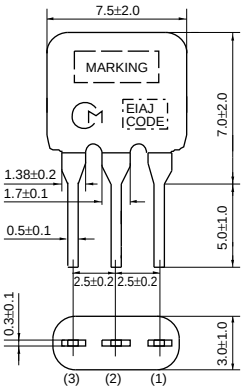
■ Features
These types have lower spurious response compared to the standard filters.

SFELF10M7KAB0-B0



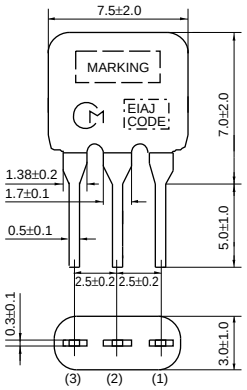
(in mm)

SFELF10M7JAB0-B0



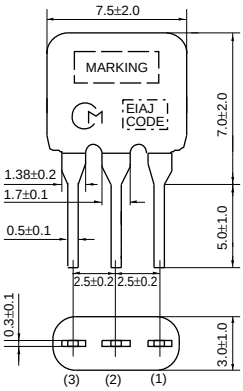
(in mm)

SFELF10M7HAB0-B0



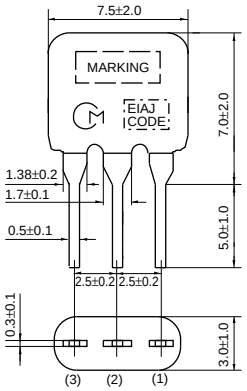
(in mm)

SFELF10M7GAB0-B0



(in mm)

SFELF10M7FAB0-B0



(in mm)

Part Number	Center Frequency (fo) (MHz)	3dB Bandwidth (kHz)	Attenuation (kHz)	Insertion Loss (dB)	Spurious Attenuation (1) (dB)	Spurious Attenuation (2) (dB)	Input/Output Impedance (ohm)
SFELF10M7KAB0-B0	10.700 ±30kHz	110 ±30kHz	350 max.	7.0 ±2.0dB	45/30 min. [within 9MHz to fo]	30 min. [within fo to 12MHz]	330
SFELF10M7JAB0-B0	10.700 ±30kHz	150 ±40kHz	380 max.	5.5 ±2.0dB	45 min. [within 9MHz to fo]	45 min. [within fo to 12MHz]	330
SFELF10M7HAB0-B0	10.700 ±30kHz	180 ±40kHz	520 max.	5.0 ±2.0dB	45 min. [within 9MHz to fo]	45 min. [within fo to 12MHz]	330
SFELF10M7GAB0-B0	10.700 ±30kHz	230 ±50kHz	570 max.	3.0 ±2.0dB	45 min. [within 9MHz to fo]	45 min. [within fo to 12MHz]	330

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Part Number	Center Frequency (fo) (MHz)	3dB Bandwidth (kHz)	Attenuation (kHz)	Insertion Loss (dB)	Spurious Attenuation (1) (dB)	Spurious Attenuation (2) (dB)	Input/Output Impedance (ohm)
SFELF10M7FAB0-B0	10.700 ±30kHz	280 ±50kHz	650 max.	3.0 ±2.0dB	45 min. [within 9MHz to fo]	45 min. [within fo to 12MHz]	330

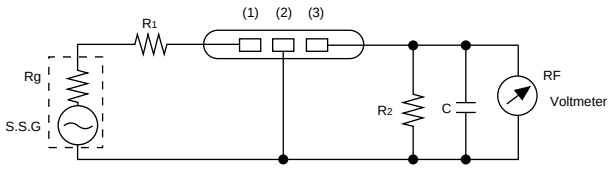
Area of Attenuation: [within 20dB]
Area of Insertion Loss: at minimum loss point
Center frequency (fo) defined by the center of 3dB bandwidth.
For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.
The order quantity should be an integral multiple of the "Minimum Quantity" shown in the package page.

■ Standard Center Frequency Rank Code

CODE	30kHz Step	25kHz Step	Color Code
D	10.64MHz±30kHz	10.650MHz±25kHz	Black
B	10.67MHz±30kHz	10.675MHz±25kHz	Blue
A	10.70MHz±30kHz	10.700MHz±25kHz	Red
C	10.73MHz±30kHz	10.725MHz±25kHz	Orange
E	10.76MHz±30kHz	10.750MHz±25kHz	White
Z	Combination A, B, C, D, E		
M	Combination A, B, C		

6

■ Test Circuit

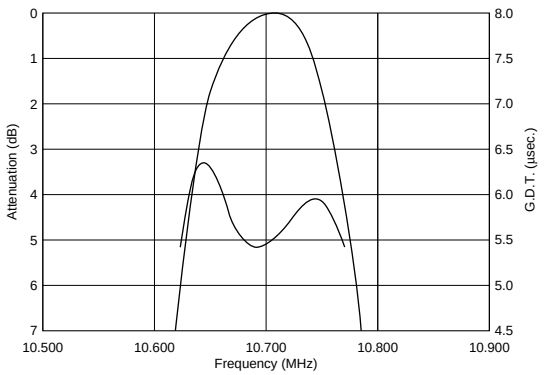


Rg + R1 = R2 = Input and Output Impedance
C = 10pF (Including stray capacitance and input capacitance of RF voltmeter.)

(1) : Input
(2) : Ground
(3) : Output

■ Frequency Characteristics

SFELF10M7KAB0-B0



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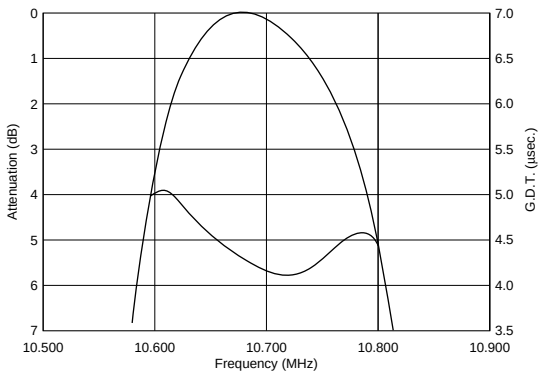
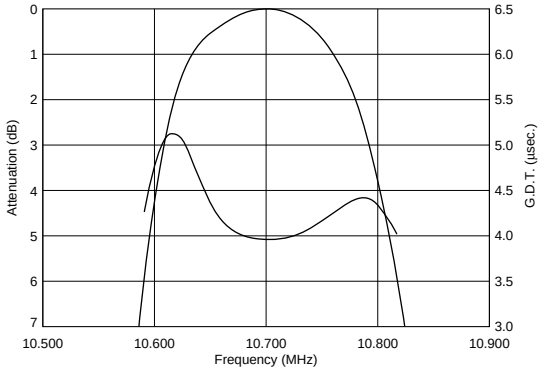
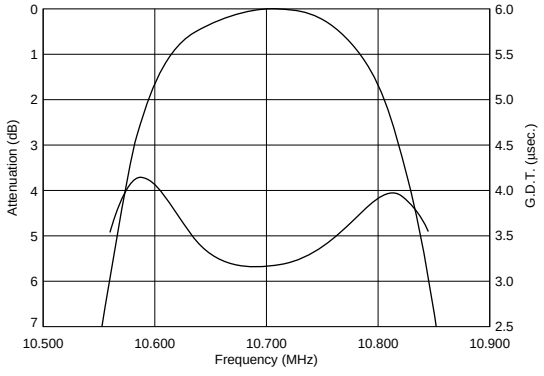


SFELF10M7HAB0-B0



SFELF10M7GAB0-B0



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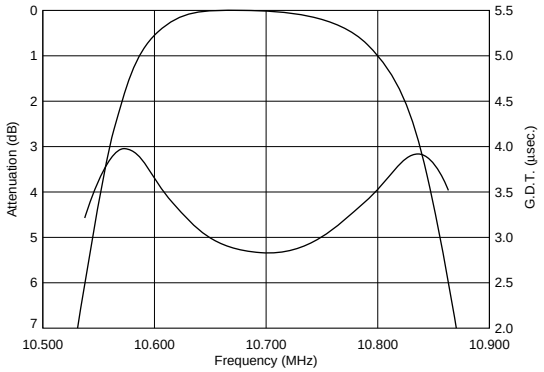
Continued from the preceding page.

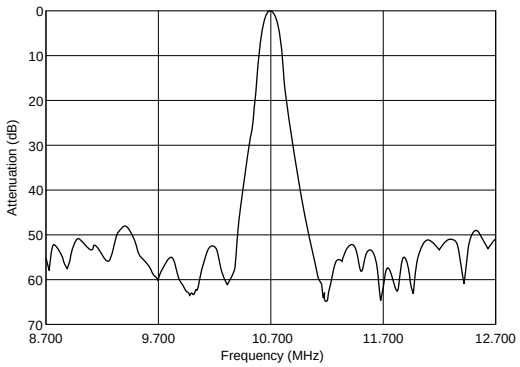
■ Frequency Characteristics

SFELF10M7FAB0-B0

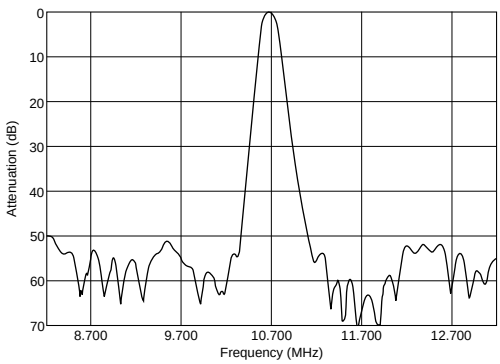


■ Frequency Characteristics (Spurious)

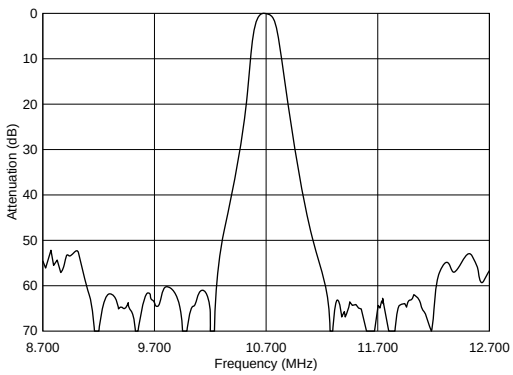
SFELF10M7KAB0-B0



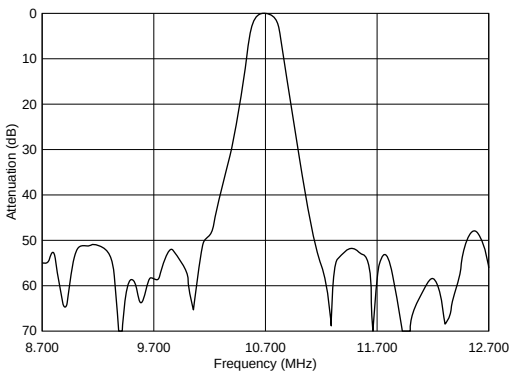
SFELF10M7JAB0-B0



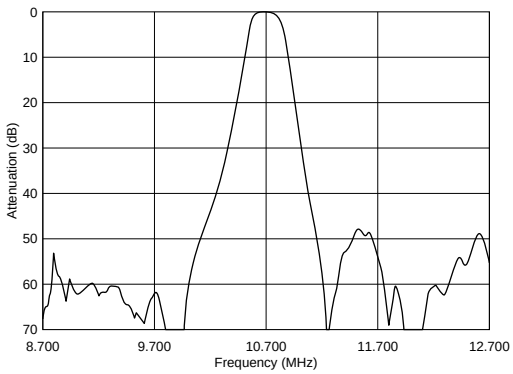
SFELF10M7HAB0-B0



SFELF10M7GAB0-B0



SFELF10M7FAB0-B0



CERAFIL® (CERAFIL® 10.7MHz) for Audio/Visual Equipment

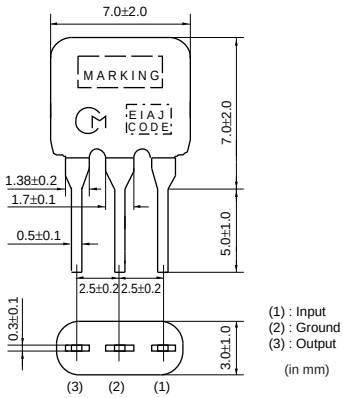
Wide Bandwidth Type SFELF Series

SFELF10M7 series for FM receivers are monolithic type ceramic filters which use the thickness expander mode of the piezoelectric ceramic.
As part of the environment protection activity, solder for terminal plating and terminal-element connection inside of ceramic filter contain no lead (Pb).

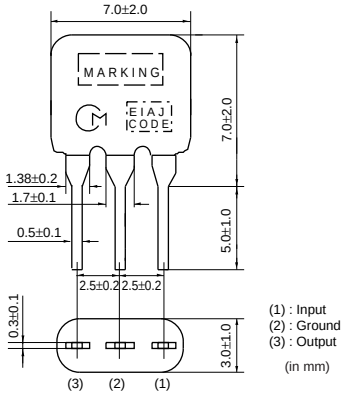
■ Features

Realizes wider band characteristics not obtained by conventional ceramic filters.

SFELF10M7EA00-B0



SFELF10M7DF00-B0



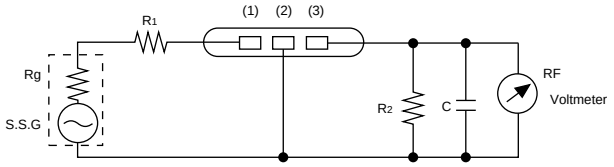
Part Number	Center Frequency (fo) (MHz)	Nominal Center Frequency (fn) (MHz)	3dB Bandwidth (kHz)	Attenuation (kHz)	Insertion Loss (dB)	Spurious Attenuation (1) (dB)	Spurious Attenuation (2) (dB)	Input/Output Impedance (ohm)
SFELF10M7EA00-B0	10.700 ±30kHz	-	330 ±50kHz	680 max.	4.0 ±2.0dB	30 min. [within 9MHz to fo]	30 min. [within fo to 12MHz]	330
SFELF10M7DF00-B0	-	10.700	fn±175 min.	950 max.	3.0 ±2.0dB	20 min. [within 5MHz to fn]	20 min. [within fn to 15MHz]	470

Area of Attenuation: [within 20dB]
Area of Insertion Loss: at minimum loss point
Center frequency (fo) defined by the center of 3dB bandwidth.
For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.
The order quantity should be an integral multiple of the "Minimum Quantity" shown in the package page.

■ Standard Center Frequency Rank Code (SFELF10M7EA00-B0)

CODE	30kHz Step	25kHz Step	Color Code
D	10.64MHz±30kHz	10.650MHz±25kHz	Black
B	10.67MHz±30kHz	10.675MHz±25kHz	Blue
A	10.70MHz±30kHz	10.700MHz±25kHz	Red
C	10.73MHz±30kHz	10.725MHz±25kHz	Orange
E	10.76MHz±30kHz	10.750MHz±25kHz	White
Z	Combination A, B, C, D, E		
M	Combination A, B, C		

■ Test Circuit

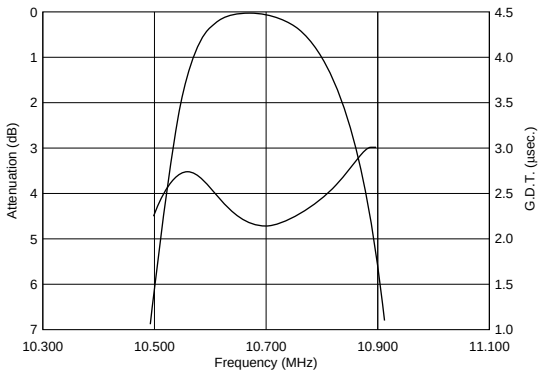


Rg + R1 = R2 = Input and Output Impedance
C = 10pF (Including stray capacitance and input capacitance of RF voltmeter.)

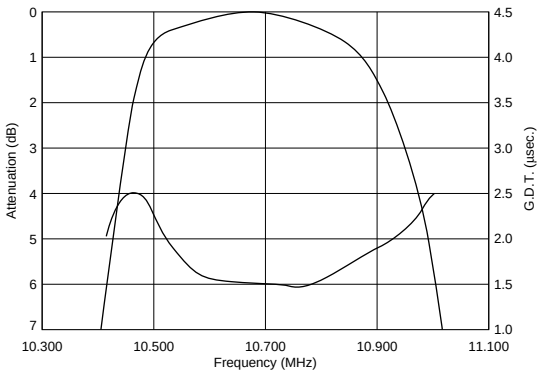
(1) : Input
(2) : Ground
(3) : Output

■ Frequency Characteristics

SFELF10M7EA00-B0

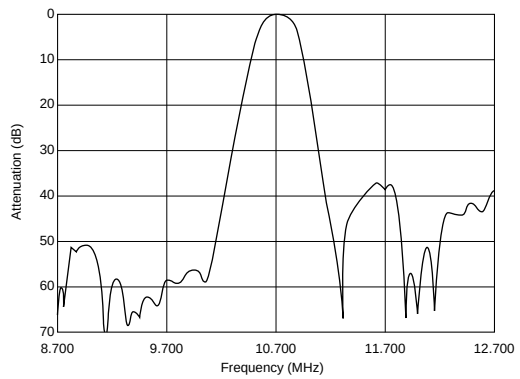


SFELF10M7DF00-B0

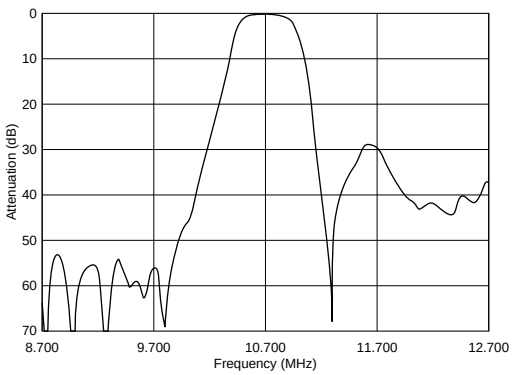


■ Frequency Characteristics (Spurious)

SFELF10M7EA00-B0



SFELF10M7DF00-B0



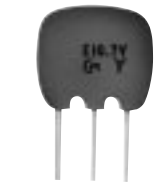
7

CERAFIL® (CERAFIL® 10.7MHz) for Audio/Visual Equipment

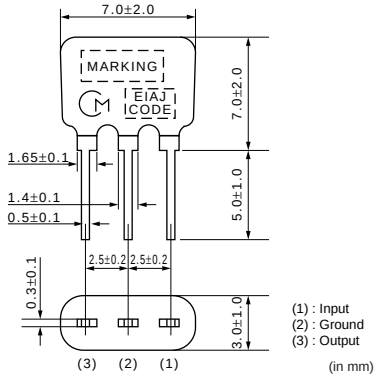
Narrow Bandwidth Type SFVLF/SFKLF/SFELF Series

■ Features

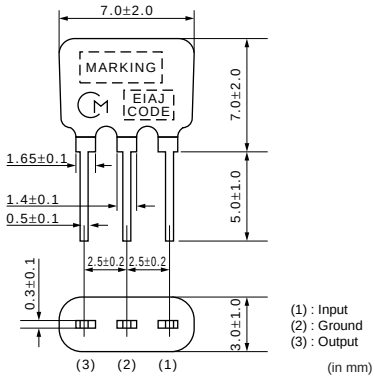
SFELF10M7LFTA/KAH0, SFVLF/SFKLF series realizes narrower band characteristics not obtained by conventional ceramic filters. In addition, low spurious and temperature characteristics are stable. This series is suitable for European car-audio or AM conversion use that needs narrow band characteristics.
As part of the environment protection activity, solder for terminal plating and terminal-element connection inside of ceramic filter contain no lead (Pb).



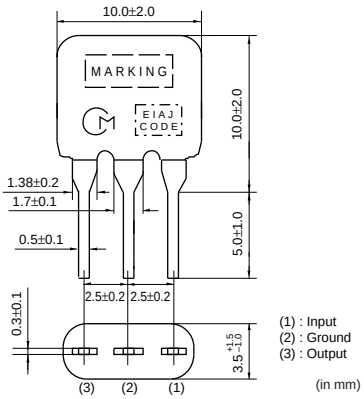
SFVLF10M7MF00-B0



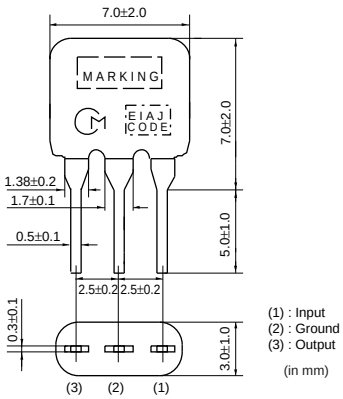
SFVLF10M7LF00-B0



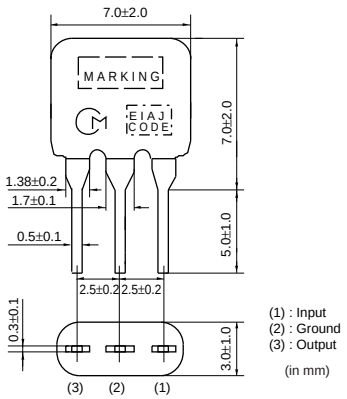
SFKLF10M7NL00-B0



SFELF10M7LFTA-B0



SFELF10M7KAH0-B0



Part Number	Center Frequency (fo) (MHz)	Nominal Center Frequency (fn) (MHz)	3dB Bandwidth (kHz)	Attenuation (kHz)	Insertion Loss (dB)	Spurious Attenuation (1) (dB)	Spurious Attenuation (2) (dB)	Input/Output Impedance (ohm)
SFVLF10M7MF00-B0	-	10.700	fn±13 min.	135 max.	5.0 ±2.0dB	35 min. [within 9MHz to fn]	35 min. [within fn to 12MHz]	330
SFVLF10M7LF00-B0	-	10.700	fn±25 min.	-	5.5 ±2.5dB	30 min. [within 9MHz to fn]	30 min. [within fn to 12MHz]	330
SFKLF10M7NL00-B0	10.700 ±15kHz	-	20 min.	95 max.	6.0 max.	24 min. [within fo-1MHz to fo]	24 min. [within fo to fo+1MHz]	600
SFELF10M7LFTA-B0	-	10.700	fn±25 min.	280 max.	7.0 ±2.0dB	30 min. [within 9MHz to fn]	30 min. [within fn to 12MHz]	330

Continued on the following page.

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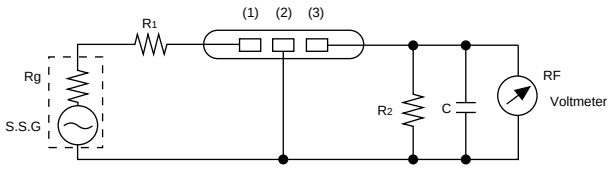
Part Number	Center Frequency (fo) (MHz)	Nominal Center Frequency (fn) (MHz)	3dB Bandwidth (kHz)	Attenuation (kHz)	Insertion Loss (dB)	Spurious Attenuation (1) (dB)	Spurious Attenuation (2) (dB)	Input/Output Impedance (ohm)
SFELF10M7KAH0-B0	10.700 ±30kHz	-	110 ±30kHz	350 max.	7.0 ±2.0dB	30 min. [within 9MHz to fo]	30 min. [within fo to 12MHz]	330

Area of Attenuation: [within 20dB]
Area of Insertion Loss: at minimum loss point
Center frequency (fo) defined by the center of 3dB bandwidth.
For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.
The order quantity should be an integral multiple of the "Minimum Quantity" shown in the package page.

■ Standard Center Frequency Rank Code (SFELF10M7KAH0-B0)

CODE	30kHz Step	25kHz Step	Color Code
D	10.64MHz±30kHz	10.650MHz±25kHz	Black
B	10.67MHz±30kHz	10.675MHz±25kHz	Blue
A	10.70MHz±30kHz	10.700MHz±25kHz	Red
C	10.73MHz±30kHz	10.725MHz±25kHz	Orange
E	10.76MHz±30kHz	10.750MHz±25kHz	White
Z	Combination A, B, C, D, E		
M	Combination A, B, C		

■ Test Circuit

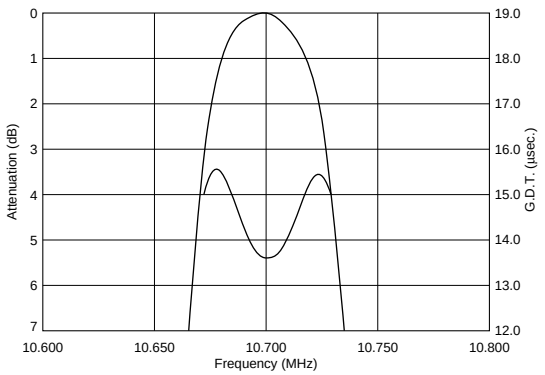


Rg + R1 = R2 = Input and Output Impedance
C = 10pF (Including stray capacitance and input capacitance of RF voltmeter.)

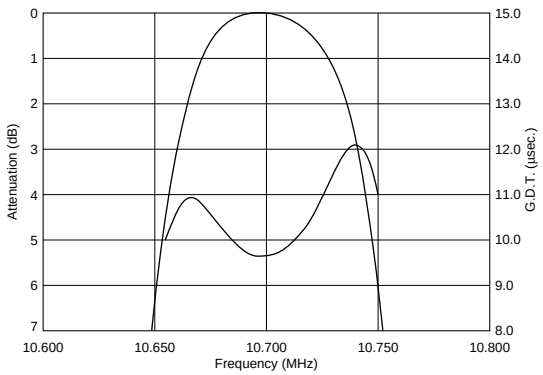
(1) : Input
(2) : Ground
(3) : Output

■ Frequency Characteristics

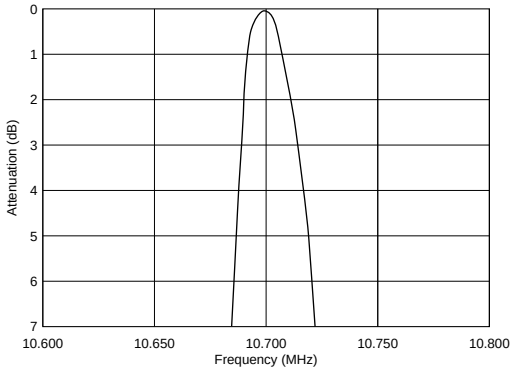
SFVLF10M7MF00-B0



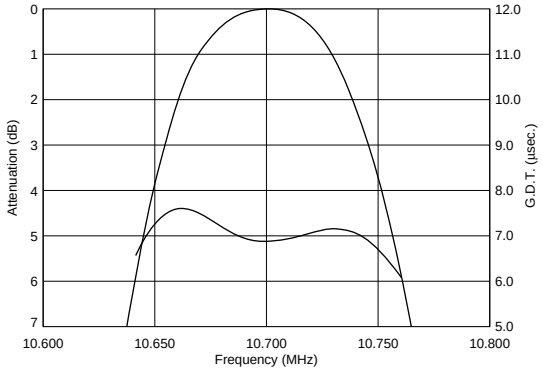
SFVLF10M7LF00-B0



SFKLF10M7NL00-B0



SFELF10M7LFTA-B0



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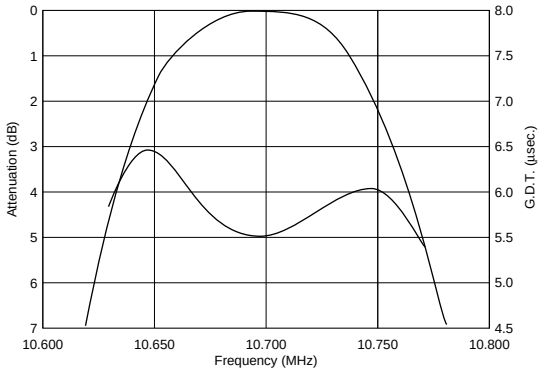
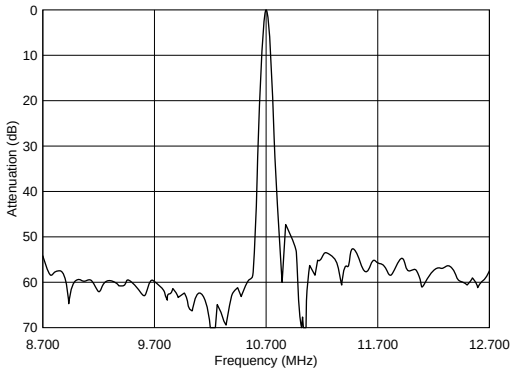
■ Frequency Characteristics

SFELF10M7KAH0-B0

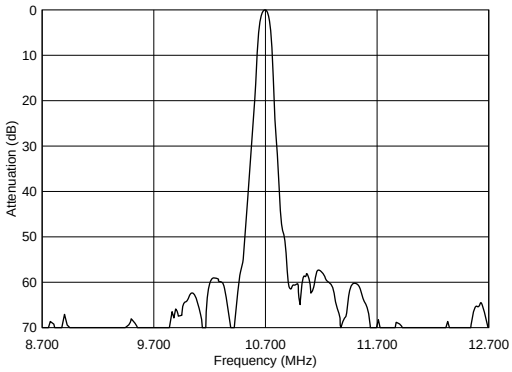


■ Frequency Characteristics (Spurious)

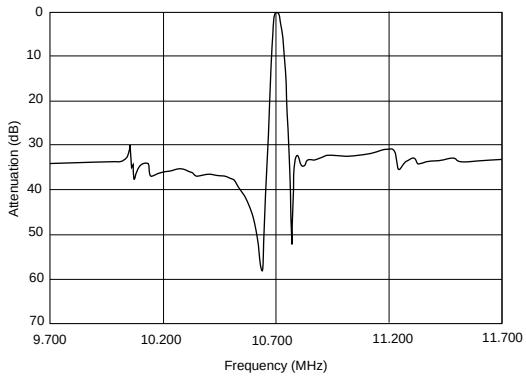
SFVLF10M7MF00-B0



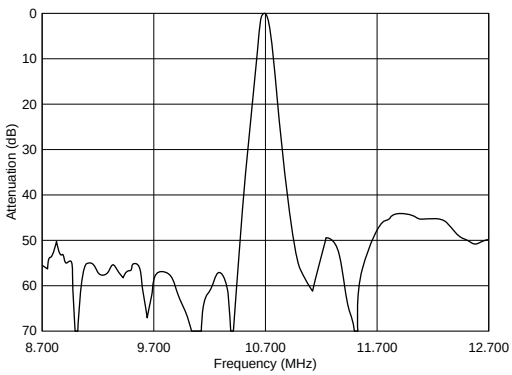
SFVLF10M7LF00-B0



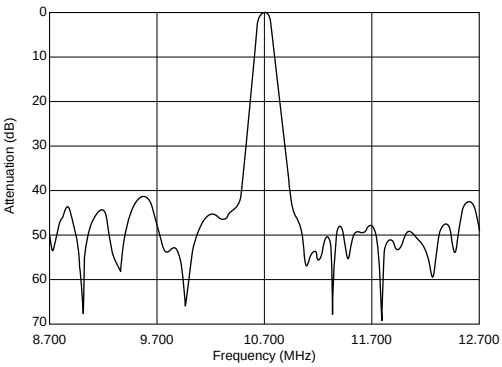
SFKLF10M7NL00-B0



SFELF10M7LFTA-B0



SFELF10M7KAH0-B0



8

CERAFIL® (CERAFIL® 10.7MHz) for Audio/Visual Equipment

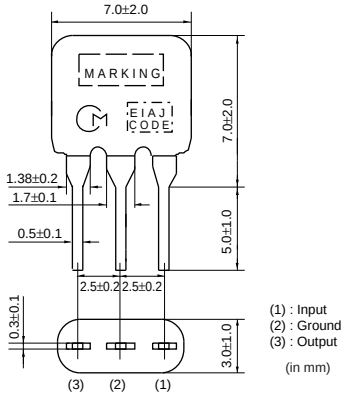
For FM-IF Tuners SFELF Series

SFELF10M7 series for FM receivers are monolithic type ceramic filters which use the thickness expander mode of the piezoelectric ceramic.
As part of the environment protection activity, solder for terminal plating and terminal-element connection inside of ceramic filter contain no lead (Pb).

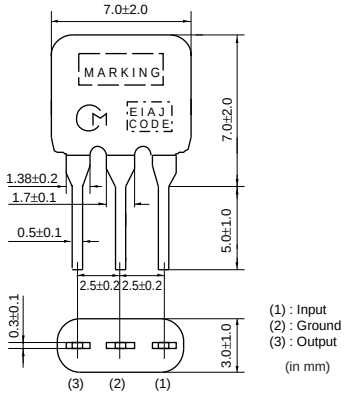
■ Features

1. Little dispersion of amplitude characteristics and phase characteristics (GDT characteristics)
2. The SFELF_G series is based on SFELF_FA00/GA00/HA00, and it obtains high selectivity with low loss.
   There is little dispersion of amplitude and GDT characteristics, and low distortion rate can be obtained.
3. The flatness of GDT is inspected for all products.

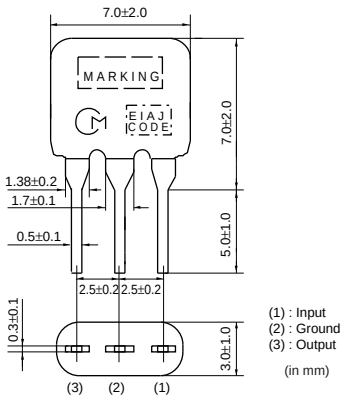
SFELF10M7HA0G-B0



SFELF10M7GA0G-B0



SFELF10M7FA0G-B0



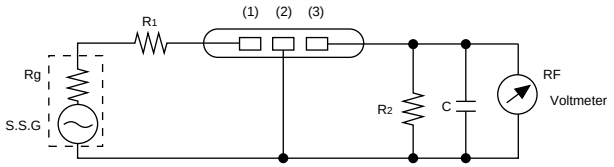
Part Number	Center Frequency (fo) (MHz)	3dB Bandwidth (kHz)	Attenuation (kHz)	Insertion Loss (dB)	Spurious Attenuation (1) (dB)	Spurious Attenuation (2) (dB)	GDT Bandwidth (kHz)	Input/Output Impedance (ohm)
SFELF10M7HA0G-B0	10.700 ±30kHz	180 ±40kHz	520 max.	7.0 max.	40 min. [within 9MHz to fo]	40 min. [within fo to 12MHz]	fo±45 min. [within 0.5µsec.]	330
SFELF10M7GA0G-B0	10.700 ±30kHz	230 ±50kHz	600 max.	7.0 max.	40 min. [within 9MHz to fo]	40 min. [within fo to 12MHz]	fo±60 min. [within 0.5µsec.]	330
SFELF10M7FA0G-B0	10.700 ±30kHz	280 ±50kHz	650 max.	4.0 ±2.0dB	30 min. [within 9MHz to fo]	30 min. [within fo to 12MHz]	fo±85 min. [within 0.5µsec.]	330

Area of Attenuation: [within 20dB]
Area of Insertion Loss: at minimum loss point
Center frequency (fo) defined by the center of 3dB bandwidth.
For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.
The order quantity should be an integral multiple of the "Minimum Quantity" shown in the package page.

■ Standard Center Frequency Rank Code

CODE	30kHz Step	25kHz Step	Color Code
D	10.64MHz±30kHz	10.650MHz±25kHz	Black
B	10.67MHz±30kHz	10.675MHz±25kHz	Blue
A	10.70MHz±30kHz	10.700MHz±25kHz	Red
C	10.73MHz±30kHz	10.725MHz±25kHz	Orange
E	10.76MHz±30kHz	10.750MHz±25kHz	White
Z	Combination A, B, C, D, E		
M	Combination A, B, C		

■ Test Circuit

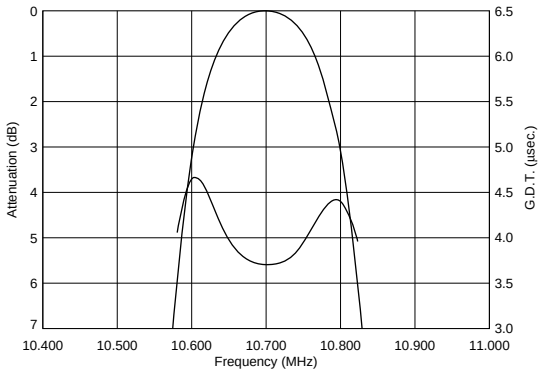


Rg + R1 = R2 = Input and Output Impedance
C = 10pF (Including stray capacitance and input capacitance of RF voltmeter.)

(1) : Input
(2) : Ground
(3) : Output

■ Frequency Characteristics

SFELF10M7HA0G-B0



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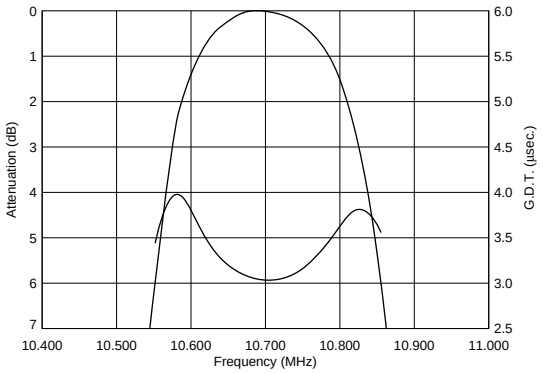
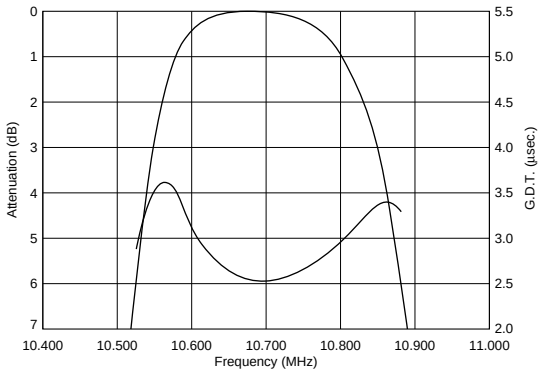
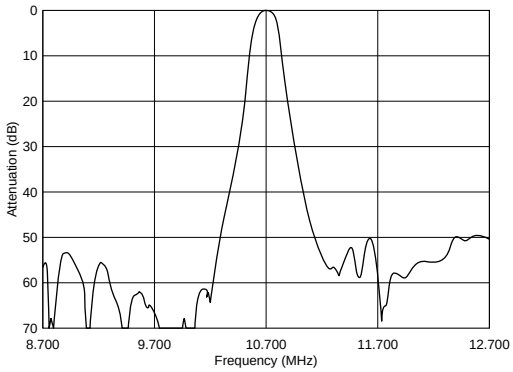


SFELF10M7FA0G-B0

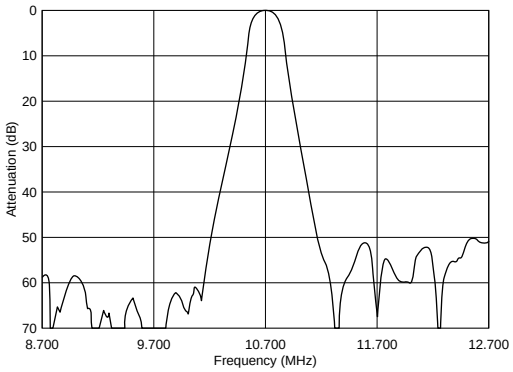


■ Frequency Characteristics (Spurious)

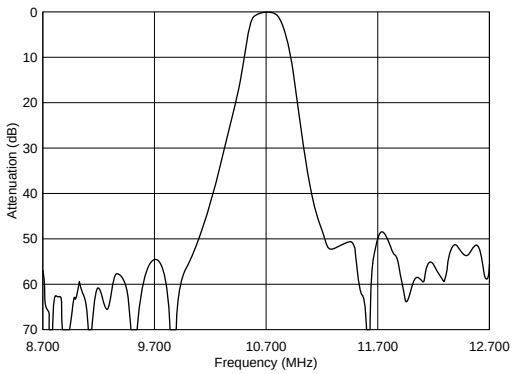
SFELF10M7HA0G-B0



SFELF10M7GA0G-B0



SFELF10M7FA0G-B0

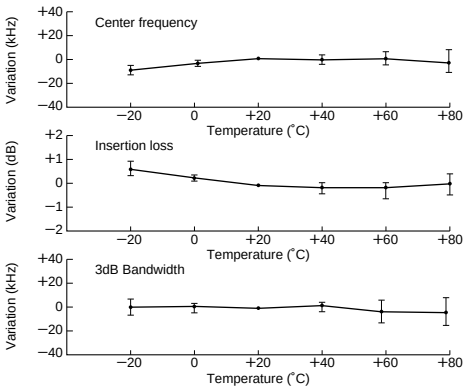


9

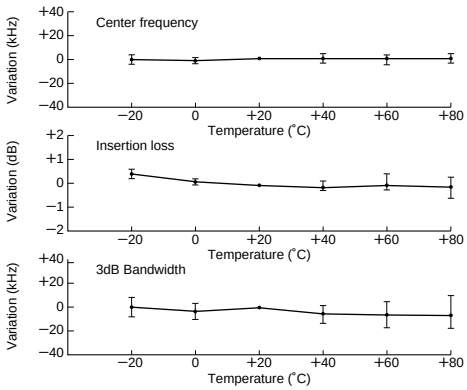
CERAFIL® 10.7MHz Related Data on Lead Type

■ Temperature Characteristics

SFELF10M7GA00-B0



SFELF10M7HA00-B0



■ Matching Conditions

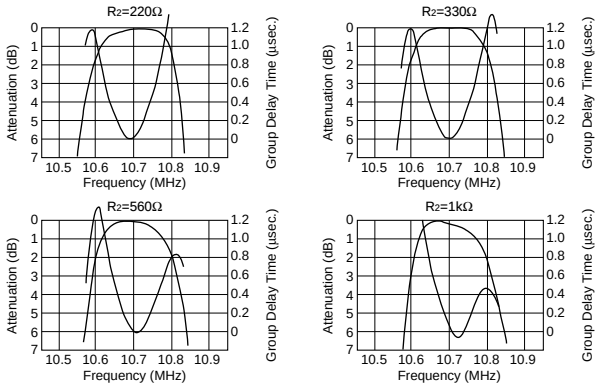
•When using ceramic filters, it is most important to match the input/output load to impedance 330 ohm (SFELF10M7DF00-B0 is 470 ohm and SFKLF10M7NL00-B0 is 600 ohm matching). Waveform symmetry is damaged when reactance is added to the input/output load.

•Two ceramic filters directly connected can be used for high selectivity. For reducing waveform variation, it is recommended to input a buffer AMP between ceramic filters.

•The SFELF10M7 series are of input/output symmetric structure so that in theory there is no input/output directionality. Actual circuits may use different input/output loading conditions (for example, mismatched impedance) or capacitance load. In such cases, the waveform will be a little changed by the direction of the input/output of the ceramic filters.

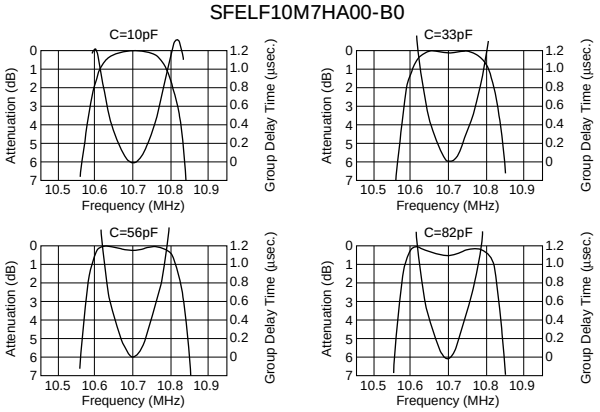
■ Loaded Resistance and Waveform (Rg+R1=330 ohm)

SFELF10M7GA00-B0



■ Loaded Capacitance and Waveform (Rg+R1=R2=330 ohm)

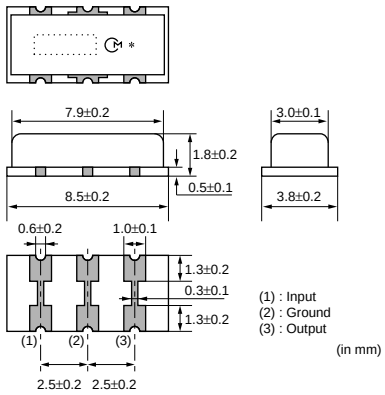
SFELF10M7HA00-B0



CERAFIL® (CERAFIL® 2.3-6.5MHz) for Audio / Visual Equipment

4.5-6.5MHz Chip Type SFSKA Series

SMD ceramic filter SFSKA_CF is a small and thin SMD filter sealed with a metal cap.
Recommended for LCD-TVs, and small and thin tuners.



■ Features

1. High attenuation outside bandwidth
2. Small and thin package
3. Reflow-solderable

Part Number	Nominal Center Frequency (fn) (MHz)	3dB Bandwidth (kHz)	20dB Bandwidth (kHz)	Insertion Loss (dB)	Spurious Attenuation(1) (dB)	Spurious Attenuation(2) (dB)	Input/Output Impedance (ohm)
SFSKA4M50CF00-R3	4.500	fn±60 min.	600 max.	6.0 max.	20 min. [within 0 to fn]	15 min. [within fn to 7.0MHz]	1000
SFSKA5M50CF00-R3	5.500	fn±60 min.	600 max.	6.0 max.	25 min. [within 0 to fn]	15 min. [within fn to 7.0MHz]	600
SFSKA6M00CF00-R3	6.000	fn±60 min.	600 max.	6.0 max.	25 min. [within 0 to fn]	15 min. [within fn to 7.5MHz]	470
SFSKA6M50CF00-R3	6.500	fn±60 min.	600 max.	6.0 max.	25 min. [within 0 to fn]	15 min. [within fn to 8.5MHz]	470

Area of Insertion Loss: at minimum loss point
For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.
The order quantity should be an integral multiple of the "Minimum Quantity" shown in the package page.

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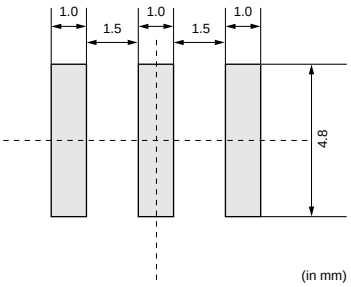
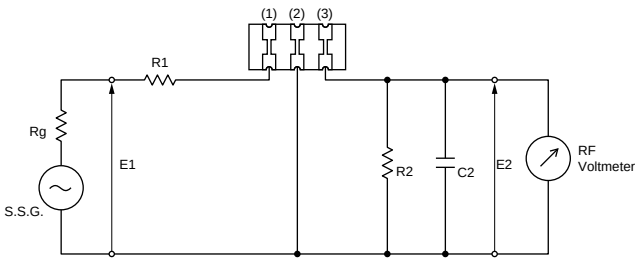
■ Standard Land Pattern Dimensions



■ Test Circuit

SFSKA4M50CF00-R3



R1+Rg=R2=1000Ω ±5%, Rg=50Ω
C2=10pF (Including stray capacitance and Input capacitance of RF Voltmeter)
E1:S.S.G. Output voltage

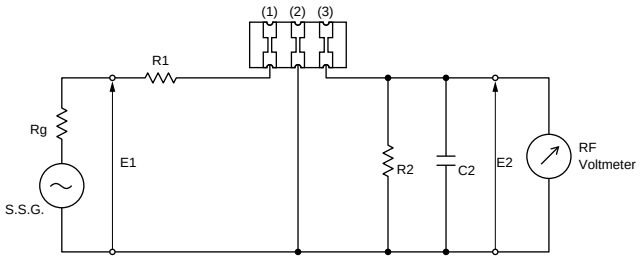
(1) : Input
(2) : Ground
(3) : Output

Continued on the following page.

Continued from the preceding page.

■ Test Circuit

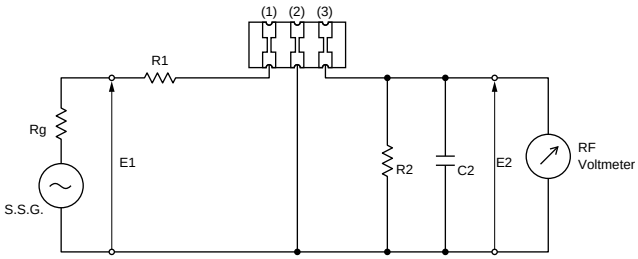
SFSKA5M50CF00-R3



R1+Rg=R2=600Ω ±5%, Rg=50Ω
C2=10pF (Including stray capacitance and Input capacitance of RF Voltmeter)
E1: S.S.G. Output voltage

(1) : Input
(2) : Ground
(3) : Output

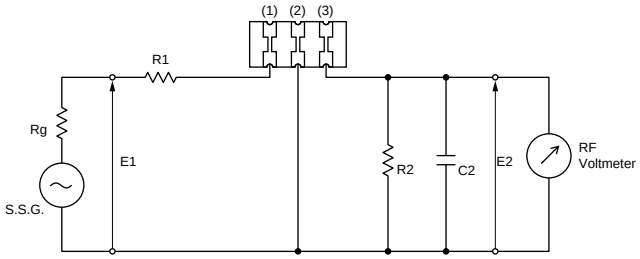
SFSKA6M00CF00-R3



R1+Rg=R2=470Ω ±5%, Rg=50Ω
C2=10pF (Including stray capacitance and Input capacitance of RF Voltmeter)
E1: S.S.G. Output voltage

(1) : Input
(2) : Ground
(3) : Output

SFSKA6M50CF00-R3



R1+Rg=R2=470Ω ±5%, Rg=50Ω
C2=10pF (Including stray capacitance and Input capacitance of RF Voltmeter)
E1: S.S.G. Output voltage

(1) : Input
(2) : Ground
(3) : Output

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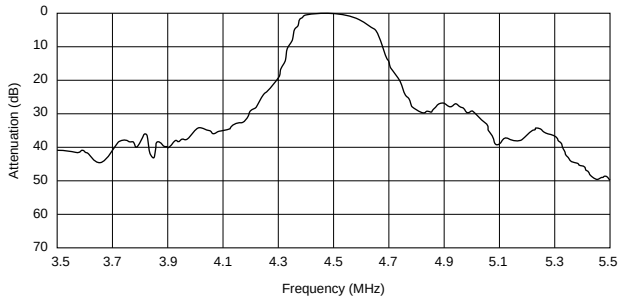
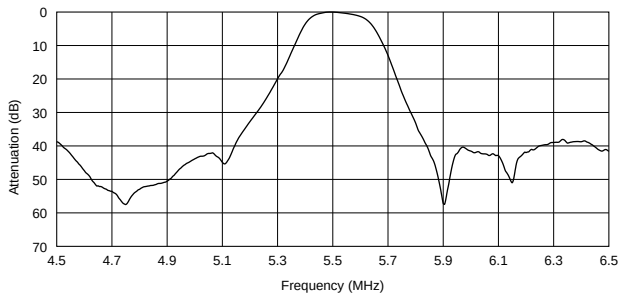
■ Frequency Characteristics

SFSKA4M50CF00-R3



SFSKA5M50CF00-R3



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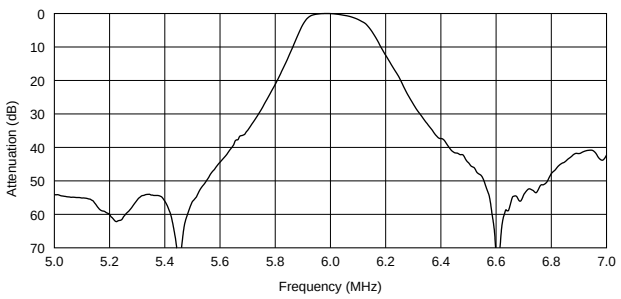
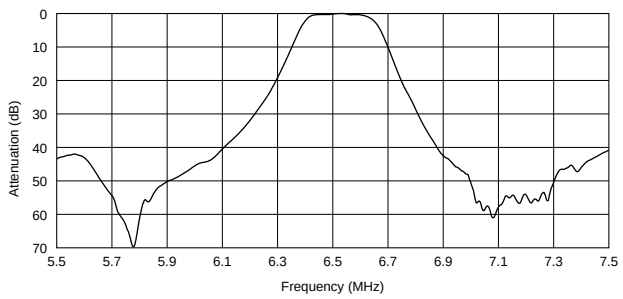
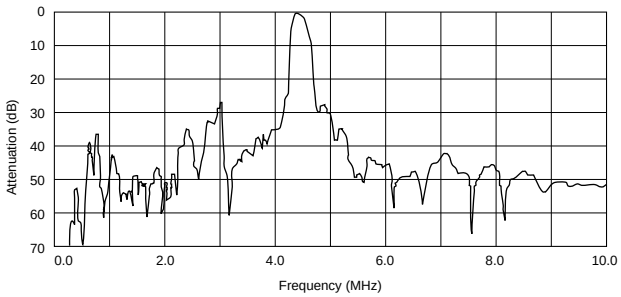


SFSKA6M50CF00-R3

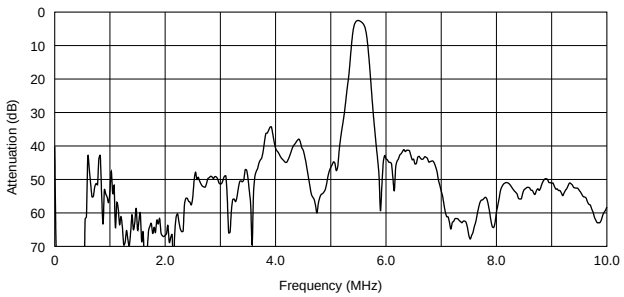


■ Frequency Characteristics (Spurious)

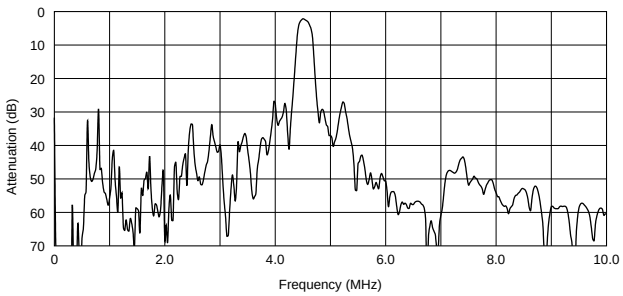
SFSKA4M50CF00-R3



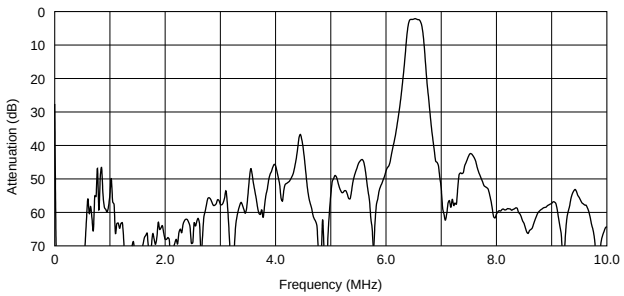
SFSKA5M50CF00-R3



SFSKA6M00CF00-R3

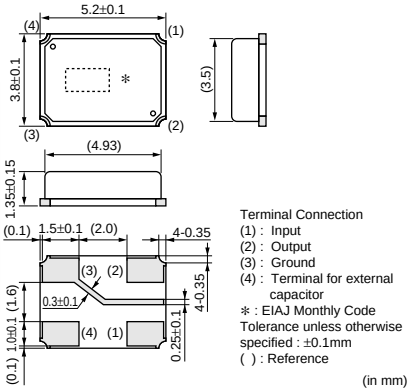


SFSKA6M50CF00-R3



CERAFIL® (CERAFIL® 2.3-6.5MHz) for Audio / Visual Equipment

2.3-5.7MHz Chip Type SFSKB Series



The SFSKB series are SMD ceramic filters which are suitable for IR headphone applications.
Center frequencies of 2.3, 2.8, 3.2, 3.8, 4.3, 4.8, 5.2, 5.7MHz are available.
Realized Small, thin and lightweight package, compared with conventional LC filters.
It helps to compose multi channel circuit on one PCB.
No frequency adjustment is required on PCB and it contributes reduction of production cost.

■ Features

1. SMD package in plastic emboss tape, available for automatic placing.
2. They are slim, at only 1.5mm max. thickness, and have a small mounting area (5.2x3.8mm) enabling flexible PCB design.
3. Available for lead (Pb) free re-flow soldering process.
4. Operating temperature range: 0 to +70 (degrees C)
   Storage temperature range: -55 to +85 (degrees C)
5. No frequency adjustment is required in production process.
6. Small, thin and lightweight package compared with conventional LC filters

■ Applications

1. IR headphone
2. Set Top Box for satellite broadcasting

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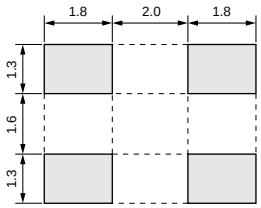
Part Number	Nominal Center Frequency (fn) (MHz)	3dB Bandwidth (kHz)	20dB Bandwidth (kHz)	Insertion Loss (dB)	Spurious Attenuation(1) (dB)	Spurious Attenuation(2) (dB)	Input/Output Impedance (ohm)
SFSKB2M30GF00-R1	2.300	fn±75 min.	650 max.	6.0 max.	25 min. [within 1.3 to 1.8MHz]	23 min. [within 2.8 to 3.3MHz]	1000
SFSKB2M80GF00-R1	2.800	fn±75 min.	650 max.	6.0 max.	25 min. [within 1.8 to 2.3MHz]	25 min. [within 3.3 to 3.8MHz]	1000
SFSKB3M20FF00-R1	3.200	fn±75 min.	650 max.	6.0 max.	30 min. [within 2.2 to 2.8MHz]	30 min. [within 3.8 to 4.2MHz]	1000
SFSKB3M80GF00-R1	3.800	fn±75 min.	650 max.	6.0 max.	30 min. [within 2.8 to 3.2MHz]	30 min. [within 4.3 to 4.8MHz]	1000
SFSKB4M30GF00-R1	4.300	fn±75 min.	650 max.	6.0 max.	30 min. [within 3.3 to 3.8MHz]	30 min. [within 4.8 to 5.3MHz]	1000
SFSKB4M80GF00-R1	4.800	fn±75 min.	650 max.	6.0 max.	30 min. [within 3.8 to 4.3MHz]	30 min. [within 5.2 to 5.8MHz]	1000
SFSKB5M20GF00-R1	5.200	fn±75 min.	650 max.	6.0 max.	30 min. [within 4.2 to 4.8MHz]	30 min. [within 5.7 to 6.2MHz]	1000
SFSKB5M70GF00-R1	5.700	fn±75 min.	650 max.	6.0 max.	30 min. [within 4.7 to 5.2MHz]	30 min. [within 6.2 to 6.7MHz]	1000

For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.
The order quantity should be an integral multiple of the "Minimum Quantity" shown in the package page.

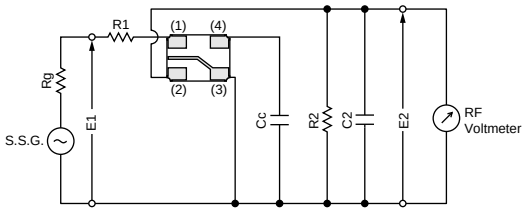
■ Standard Land Pattern Dimensions



(in mm)

■ Test Circuit

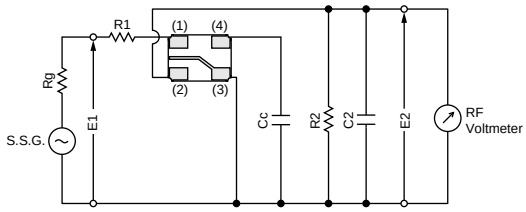
SFSKB2M30GF00-R1/SFSKB3MZ0GF00-R1



R1+Rg=R2=1.0kΩ
Cc=22pF±5%
C2=10pF (Including stray capacitance and Input capacitance of RF Voltmeter)
E1 : S.S.G. Output Voltage

(1) : Input
(2) : Output
(3) : Ground
(4) : Terminal for external capacitor

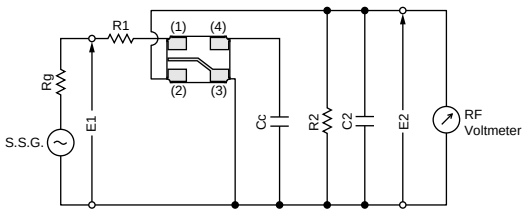
SFSKB2M80GF00-R1/SFSKB3M20FF00-R1



R1+Rg=R2=1.0kΩ
Cc=39pF±5%
C2=10pF (Including stray capacitance and Input capacitance of RF Voltmeter)
E1 : S.S.G. Output Voltage

(1) : Input
(2) : Output
(3) : Ground
(4) : Terminal for external capacitor

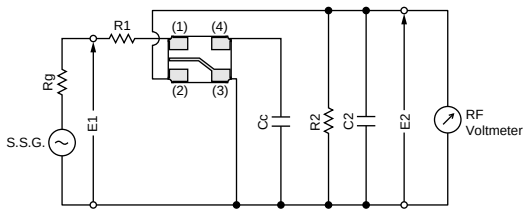
SFSKB4M30GF00-R1/SFSKB5M70GF00-R1



R1+Rg=R2=1.0kΩ
Cc=33pF±5%
C2=10pF (Including stray capacitance and Input capacitance of RF Voltmeter)
E1 : S.S.G. Output Voltage

(1) : Input
(2) : Output
(3) : Ground
(4) : Terminal for external capacitor

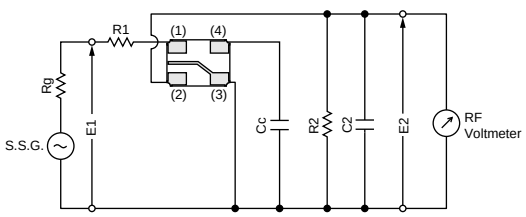
SFSKB4M80GF00-R1



R1+Rg=R2=1.0kΩ
Cc=15pF±5%
C2=10pF (Including stray capacitance and Input capacitance of RF Voltmeter)
E1 : S.S.G. Output Voltage

(1) : Input
(2) : Output
(3) : Ground
(4) : Terminal for external capacitor

SFSKB5M20GF00-R1

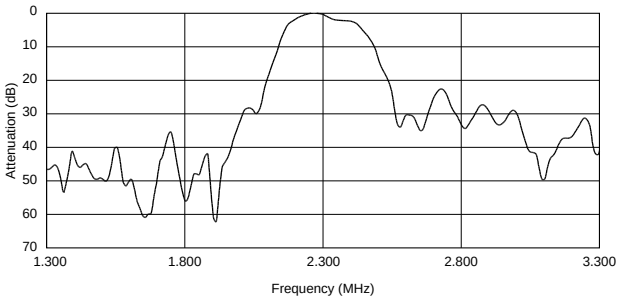


R1+Rg=R2=1.0kΩ
Cc=27pF±5%
C2=10pF (Including stray capacitance and Input capacitance of RF Voltmeter)
E1 : S.S.G. Output Voltage

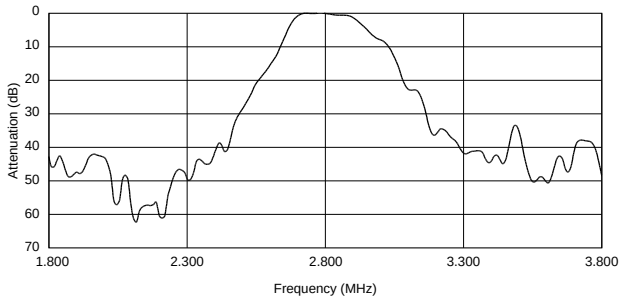
(1) : Input
(2) : Output
(3) : Ground
(4) : Terminal for external capacitor

■ Frequency Characteristics

SFSKB2M30GF00-R1



SFSKB2M80GF00-R1



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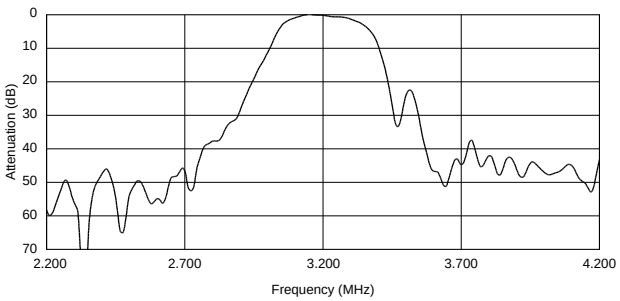
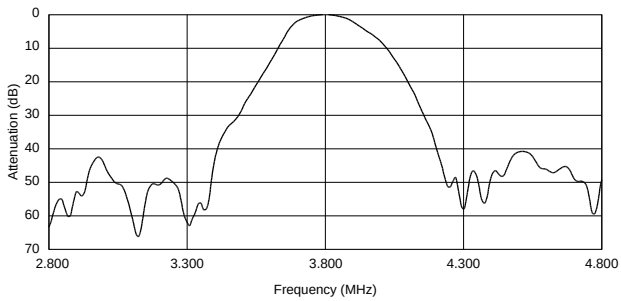


SFSKB3M80GF00-R1



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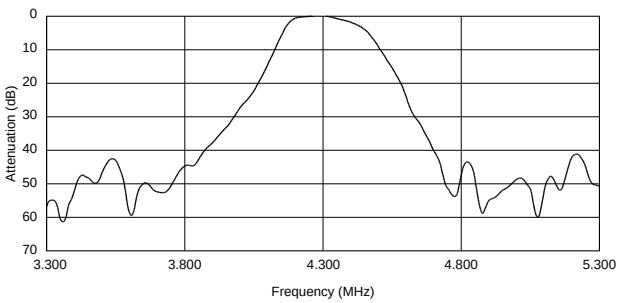

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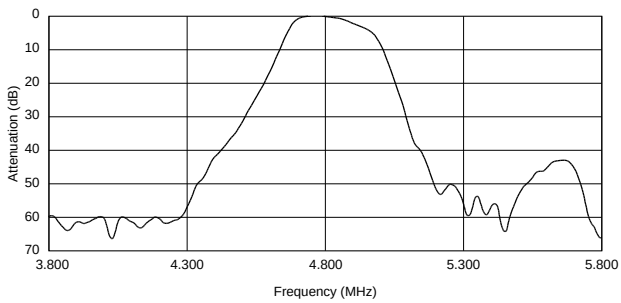

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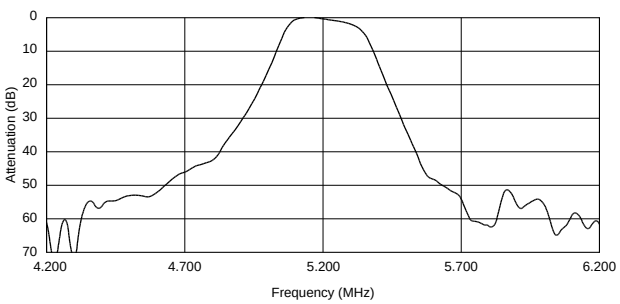

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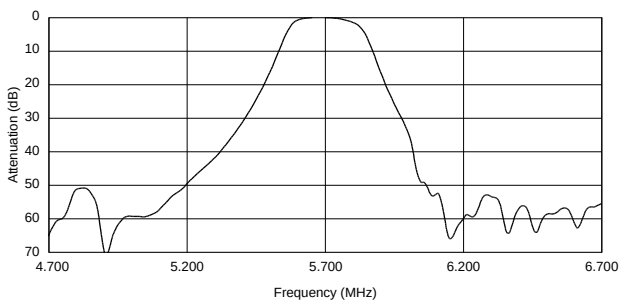
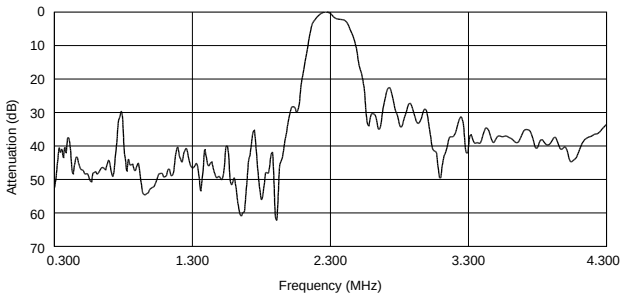


■ Frequency Characteristics (Spurious)

SFSKB2M30GF00-R1



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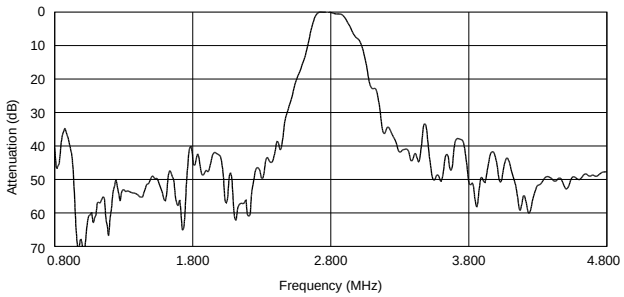

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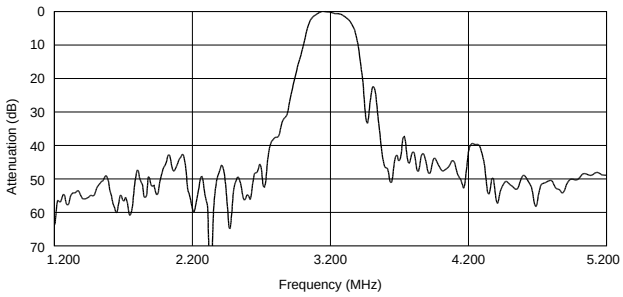

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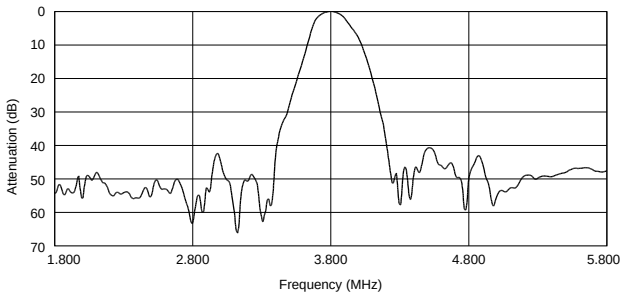

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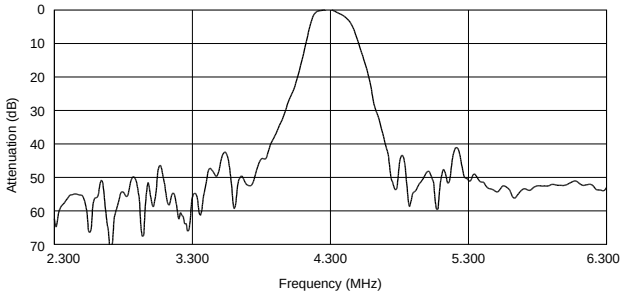

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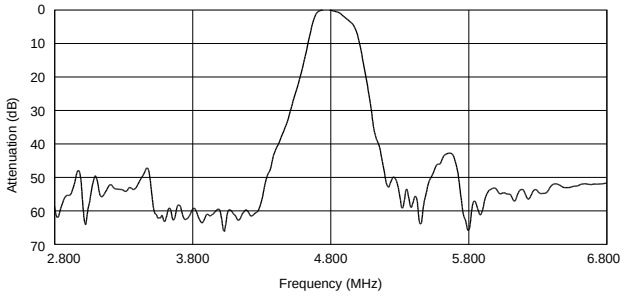

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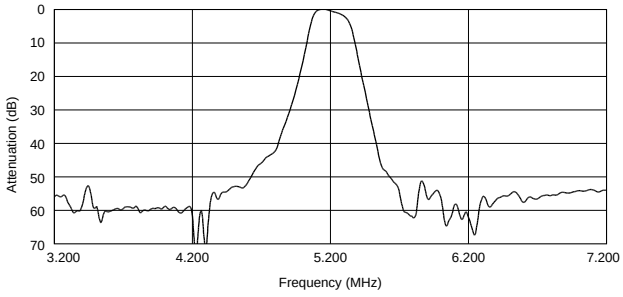

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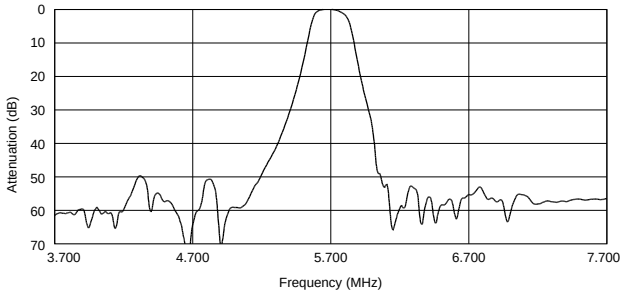
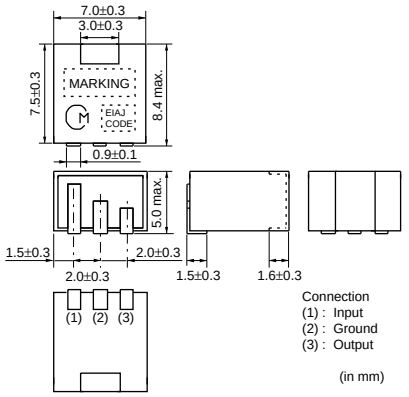


CERAFIL® (CERAFIL® 455kHz) for Audio/Visual Equipment

Chip Type SFPKA Series

SFPKA series for AM use is one of the most recommendable intermediate filters, having such distinctive features as high selectivity, high stability and adjustment-free operation. Additionally, its easy matching with IC helps create an easy circuit design.



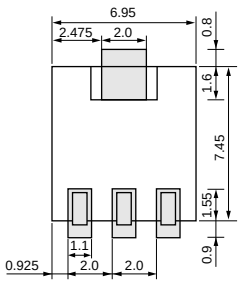
■ Features

1. The filters are mountable by automatic placers and can be reflow soldered and withstand washing.
2. The filters are wide bandwidth and high selectivity, so they are suitable for car radio and multi-band radio.

Part Number	Center Frequency (fo) (kHz)	6dB Bandwidth (kHz)	Selectivity (-) (dB)	Selectivity (+) (dB)	Insertion Loss (dB)	Input/Output Impedance (ohm)	Element
SFPKA450KH1A-R1	450.0 ±1.0kHz	fn±3.0 min.	40 min.[fn-9kHz]	40 min.[fn+9kHz]	6.0 max.	2000	4
SFPKA450KG1A-R1	450.0 ±1.0kHz	fn±4.5 min.	40 min.[fn-10kHz]	40 min.[fn+10kHz]	6.0 max.	1500	4

Area of Insertion Loss: at minimum loss point
Center frequency (fo) is defined by the center of 6dB bandwidth.
(fn) means nominal center frequency (450kHz).
For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.
The order quantity should be an integral multiple of the "Minimum Quantity" shown in the package page.

■ Standard Land Pattern Dimensions



■ Recommended IFT

Item \ Type	SFPKA		
Winding Specification	(1)—(2)	(2)—(3)	(4)—(6)
S(3) (2) (1) (4)S (6) (Bottom view)	60T	125T	28T
No load Qu	40		
Tuning Capacitance	180pF		

• Matching of CERAFIL® SFPKA series with IFT is decided by the Qu of IFT and IFT secondary side impedance, |Z2|. Set the Qu at about 40 because a Qu value which is too high (e.g.,90) may produce ripple in the waveform. It is recommended to match the impedance of |Z2| with that of the CERAFIL®.

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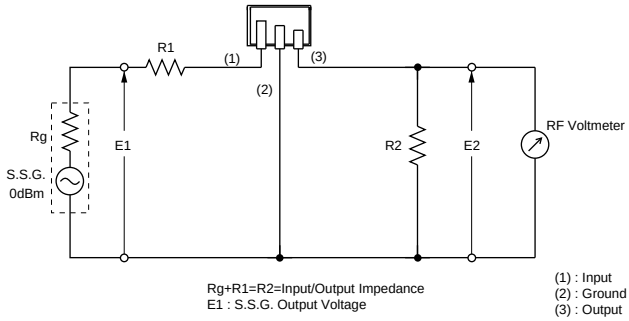
■ Test Circuit

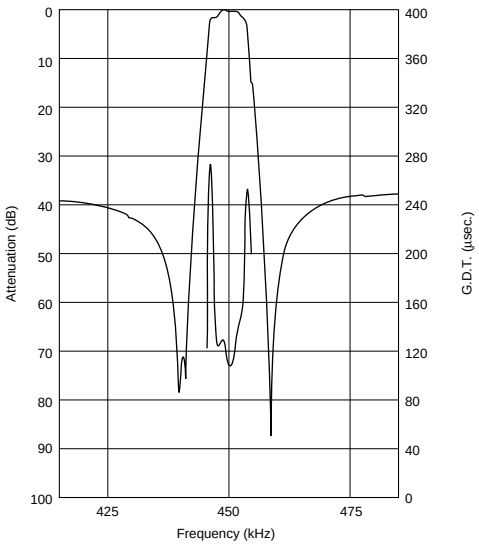


Rg+R1=R2=Input/Output Impedance
E1 : S.S.G. Output Voltage

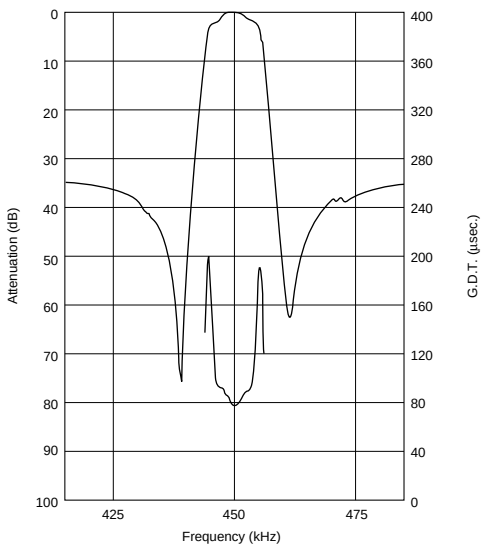
(1) : Input
(2) : Ground
(3) : Output

■ Frequency Characteristics

SFPKA450KH1A-R1



SFPKA450KG1A-R1



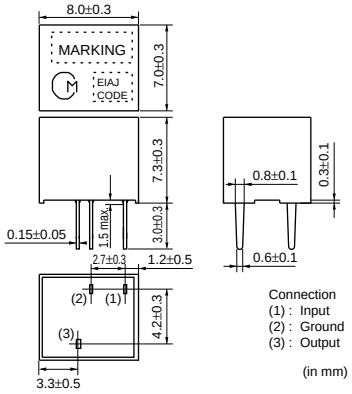
12

CERAFIL® (CERAFIL® 455kHz) for Audio/Visual Equipment

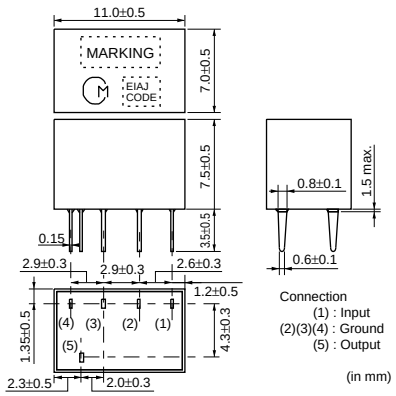
Lead Type SFPLA/CFWLA Series

SFPLA/CFWLA series for AM use is one of the most suitable intermediate filters, having such distinctive features as high selectivity, high stability, high attenuation, and adjustment-free operation. Additionally, its easy matching with IC helps create an easy circuit design.
This is the most suitable for car-stereo and all band radio with high attenuation.

SFPLA Series



CFWLA Series

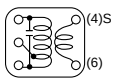


Part Number	Center Frequency (fo) (kHz)	6dB Bandwidth (kHz)	Selectivity (-) (dB)	Selectivity (+) (dB)	Insertion Loss (dB)	Input/Output Impedance (ohm)	Element
SFPLA450KJ1A-B0	450.0 ±1.0kHz	fn±2.0 min.	40 min.[fn-7.5kHz]	40 min.[fn+7.5kHz]	6.0 max.	2000	4
SFPLA450KH1A-B0	450.0 ±1.0kHz	fn±3.0 min.	40 min.[fn-9kHz]	40 min.[fn+9kHz]	6.0 max.	2000	4
CFWLA450KJFA-B0	450.0 (fn)	fn±2.0 min.	50 min.[fn-7.5kHz]	50 min.[fn+7.5kHz]	7.0 max.	2000	6
CFWLA450KHFA-B0	450.0 (fn)	fn±3.0 min.	50 min.[fn-9kHz]	50 min.[fn+9kHz]	6.0 max.	2000	6

Area of Insertion Loss: at minimum loss point
Center frequency (fo) is defined by the center of 6dB bandwidth.
(fn) means nominal center frequency (450kHz).
For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.
The order quantity should be an integral multiple of the "Minimum Quantity" shown in the package page.

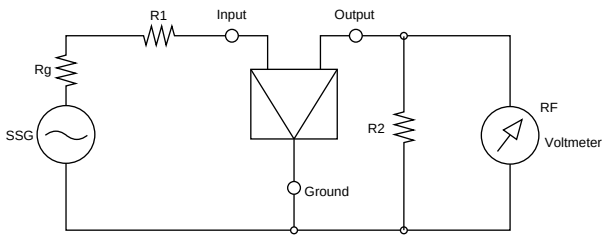
13

■ Recommended IFT

Item \ Type	SFPLA/CFWLA		
	7×7mm IFT		
Winding Specification	(1)—(2)	(2)—(3)	(4)—(6)
 (Bottom view)	60T	125T	28T
No load Qu	40		
Tuning Capacitance	180pF		

• Matching of CERAFIL® SFPLA/CFWLA series with IFT is decided by the Qu of IFT and IFT secondary side impedance, |Z2|. Set the Qu at about 40 because a Qu value which is too high (e.g.,90) may produce ripple in the waveform. It is recommended to match the impedance of |Z2| with that of the CERAFIL®.

■ Test Circuit



Rg+R1 =R2 : Input/Output Impedance

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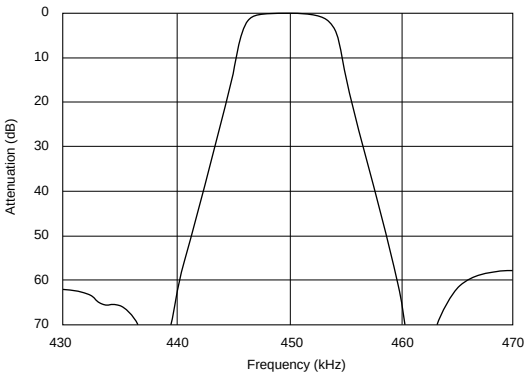
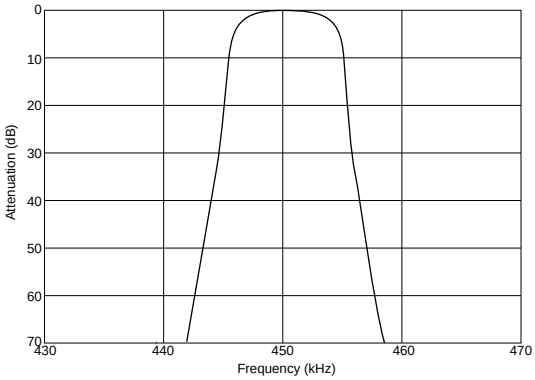
■ Frequency Characteristics

IFT+SFPLA450KH1A-B0

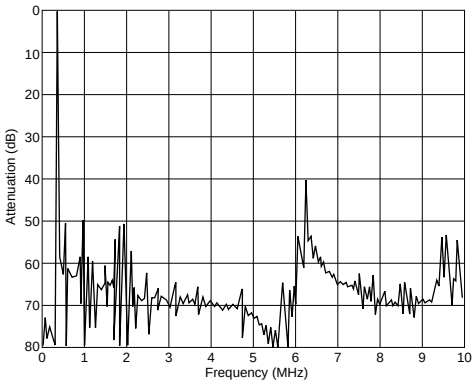


IFT+CFWLA450KHFA-B0

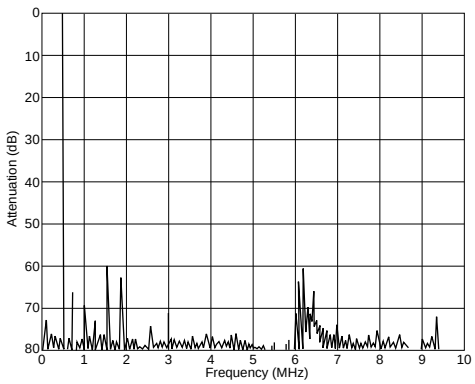


■ Frequency Characteristics (Spurious)

IFT+SFPLA450KH1A-B0



IFT+CFWLA450KHFA-B0



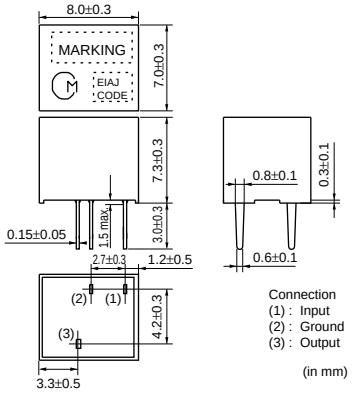
13

CERAFIL® (CERAFIL® 455kHz) for Audio / Visual Equipment

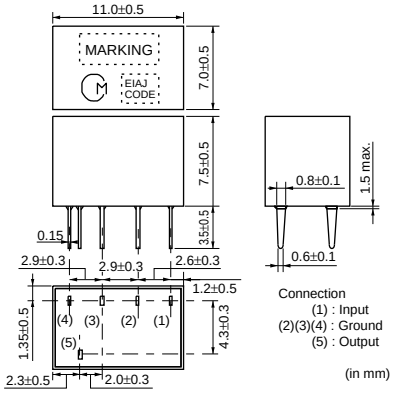
For AM Stereo Wide Bandwidth Type SFPLA/CFWLA/CFULA Series

SFPLA/CFULA/CFWLA series for AM use is one of the most suitable intermediate filters, having such distinctive features as high selectivity, high stability, high attenuation, and adjustment-free operation. Additionally, its easy matching with IC helps create an easy circuit design.
Especially, CFULA/CFWLA_Y series is the frequency fidelity in the high sound area of an AM stereo will be improved with wide band, flat group delay time characteristics.

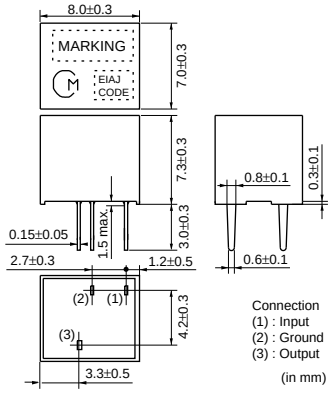
SFPLA Series



CFWLA Series



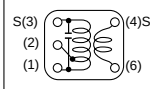
CFULA Series



Part Number	Center Frequency (fo) (kHz)	6dB Bandwidth (kHz)	Selectivity (-) (dB)	Selectivity (+) (dB)	Insertion Loss (dB)	GDT 20μsec. Bandwidth (kHz)	Input/Output Impedance (ohm)	Element
SFPLA450KG1A-B0	450.0 ±1.0kHz	fn±4.5 min.	30 min.[fn-9kHz]	30 min.[fn+9kHz]	6.0 max.	-	2000	4
SFPLA450KF1A-B0	450.0 ±1.0kHz	fn±6.0 min.	40 min.[fn-12.5kHz]	40 min.[fn+12.5kHz]	6.0 max.	-	2000	4
SFPLA450KE1A-B0	450.0 ±1.0kHz	fn±7.5 min.	40 min.[fn-15kHz]	40 min.[fn+15kHz]	6.0 max.	-	1500	4
SFPLA450KD1A-B0	450.0 ±1.0kHz	fn±10.0 min.	40 min.[fn-20kHz]	40 min.[fn+20kHz]	4.0 max.	-	1500	4
CFULA450KG1Y-B0	450.0 ±1.0kHz	fn±4.5 min.	40 min.[fn-15kHz]	40 min.[fn+15kHz]	10.0 max.	fn±3	2000	4
CFULA450KF1Y-B0	450.0 ±1.0kHz	fn±6.0 min.	40 min.[fn-17.5kHz]	40 min.[fn+17.5kHz]	9.0 max.	fn±4	2000	4
CFULA450KD1Y-B0	450.0 ±1.0kHz	fn±10.0 min.	40 min.[fn-25kHz]	40 min.[fn+25kHz]	7.0 max.	fn±7	1500	4
CFWLA450KG1Y-B0	450.0 ±1.0kHz	fn±4.5 min.	50 min.[fn-15kHz]	50 min.[fn+15kHz]	11.0 max.	fn±4	2000	6
CFWLA450KF1Y-B0	450.0 ±1.0kHz	fn±6.0 min.	50 min.[fn-17.5kHz]	50 min.[fn+17.5kHz]	10.0 max.	fn±5	2000	6
CFWLA450KD1Y-B0	450.0 ±1.0kHz	fn±10.0 min.	50 min.[fn-25kHz]	50 min.[fn+25kHz]	8.0 max.	fn±8	1500	6
CFWLA450KGFA-B0	450.0 (fn)	fn±4.5 min.	50 min.[fn-10kHz]	50 min.[fn+10kHz]	6.0 max.	-	2000	6
CFWLA450KFFA-B0	450.0 (fn)	fn±6.0 min.	50 min.[fn-12.5kHz]	50 min.[fn+12.5kHz]	6.0 max.	-	2000	6
CFWLA450KEFA-B0	450.0 (fn)	fn±7.5 min.	50 min.[fn-15kHz]	50 min.[fn+15kHz]	6.0 max.	-	1500	6
CFWLA450KDFA-B0	450.0 (fn)	fn±10.0 min.	50 min.[fn-20kHz]	50 min.[fn+20kHz]	4.0 max.	-	1500	6

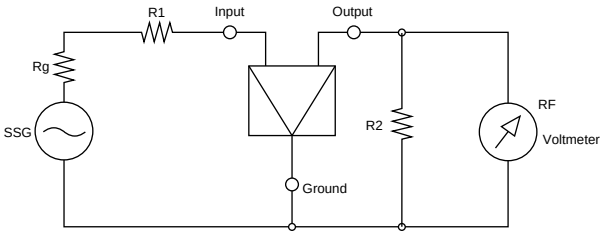
Area of Insertion Loss: at minimum loss point
Center frequency (fo) is defined by the center of 6dB bandwidth.
(fn) means nominal center frequency (450kHz).
For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.
The order quantity should be an integral multiple of the "Minimum Quantity" shown in the package page.

■ Recommended IFT

Item \ Type	SFPLA/CFULA/CFWLA 7×7mm IFT		
Winding Specification	(1)—(2)	(2)—(3)	(4)—(6)
 (Bottom view)	60T	125T	28T
No load Qu	40		
Tuning Capacitance	180pF		

• Matching of CERAFIL® SFPLA/CFULA/CFWLA series with IFT is decided by the Qu of IFT and IFT secondary side impedance, |Z2|. Set the Qu at about 40 because a Qu value which is too high (e.g.,90) may produce ripple in the waveform. It is recommended to match the impedance of |Z2| with that of the CERAFIL®.

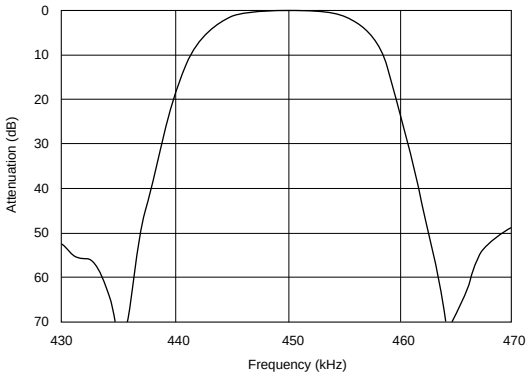
■ Test Circuit



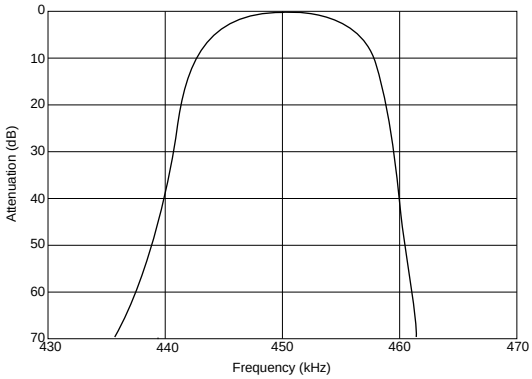
Rg+R1 =R2 : Input/Output Impedance

■ Frequency Characteristics

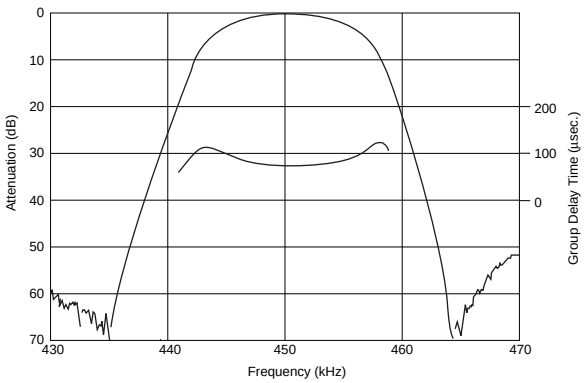
IFT+SFPLA450KF1A-B0



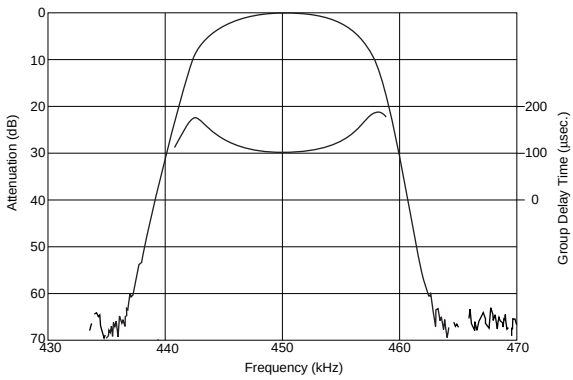
IFT+CFWLA450KFFA-B0



IFT+CFULA450KF1Y-B0

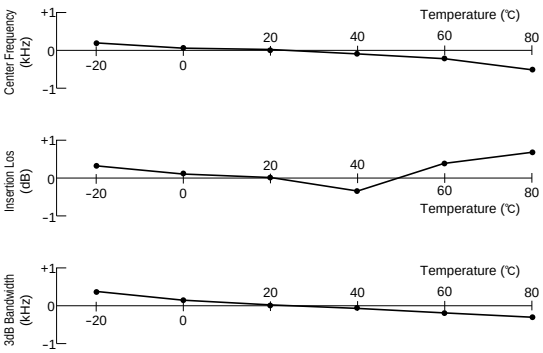


IFT+CFWLA450KF1Y-B0

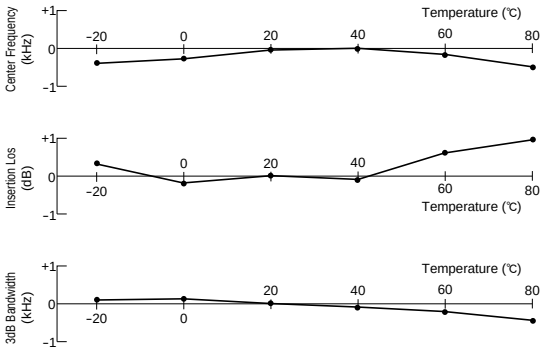


CERAFIL® 455kHz SF□ Series Temperature Characteristics

■ SFZLA455KS2A-B0



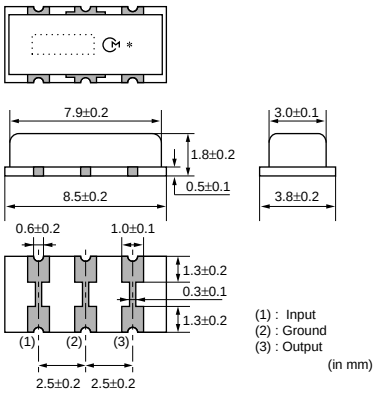
■ SFPLA450KH1A-B0



CERAFIL® (Ceramic Trap) for Audio/Visual Equipment

4.5-6.5MHz Chip Type TPSKA Series

SMD ceramic trap TPSKA_B is a small and thin SMD trap sealed with a metal cap. Recommended for LCD-TVs, and small and thin tuners.



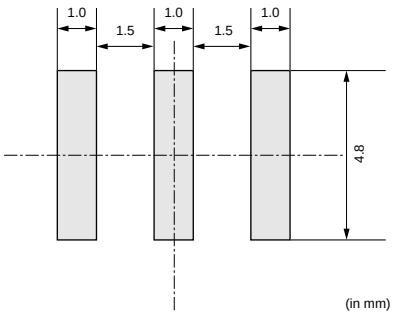
■ Features

1. High attenuation and high performance group delay time
2. Small and thin package
3. Reflow-solderable

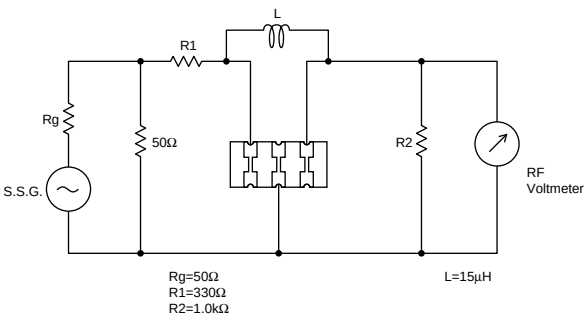
Part Number	Nominal Center Frequency (fn1) (MHz)	Attenuation (at fn1) (dB)	30dB Attenuation BW (fn1) (kHz)
TPSKA4M50B00-R3	4.500	35 min.	50 min.
TPSKA5M50B00-R3	5.500	35 min.	70 min.
TPSKA6M00B00-R3	6.000	35 min.	70 min.
TPSKA6M50B00-R3	6.500	35 min.	70 min.

For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.
The order quantity should be an integral multiple of the "Minimum Quantity" shown in the package page.

■ Standard Land Pattern Dimensions

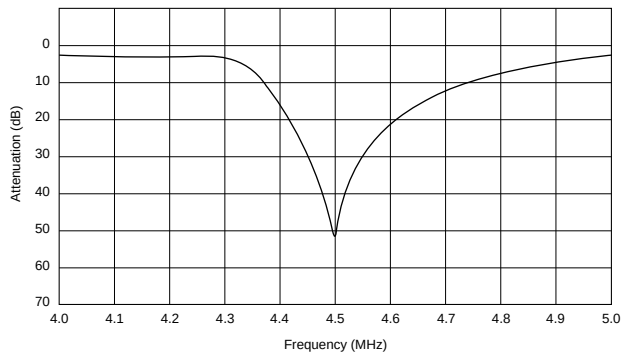


■ Test Circuit

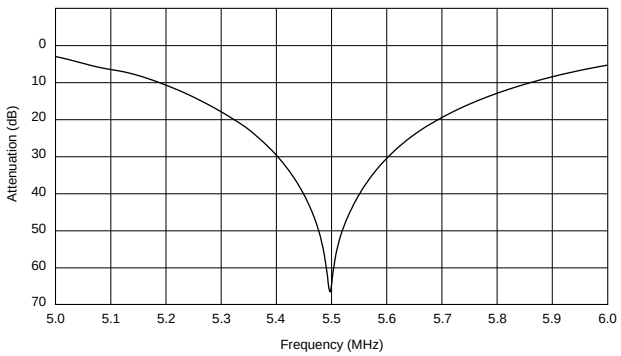


■ Frequency Characteristics

TPSKA4M50B00-R3



TPSKA5M50B00-R3



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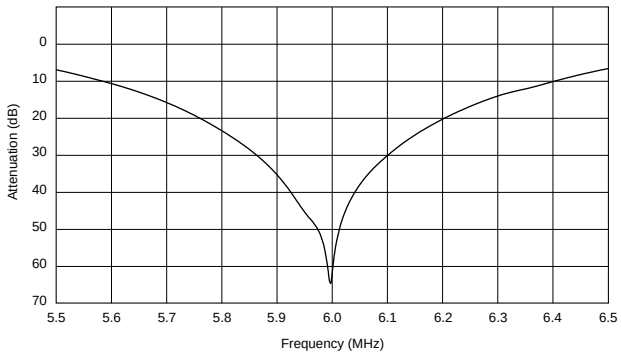
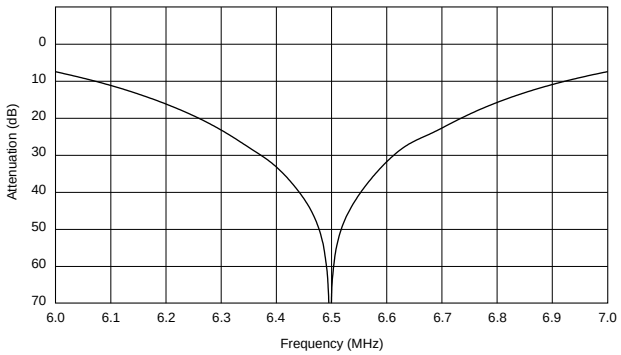
■ Frequency Characteristics

TPSKA6M00B00-R3

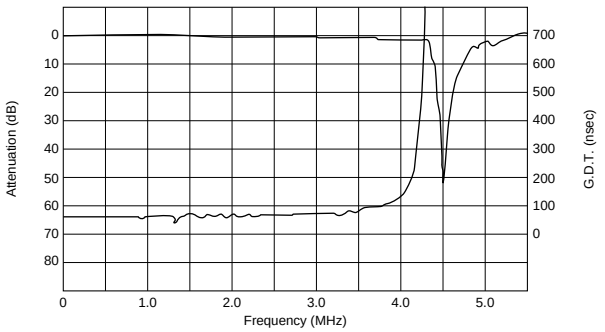


TPSKA6M50B00-R3

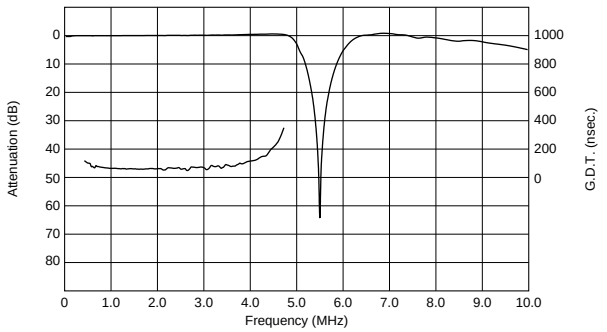


■ Frequency Characteristics (Spurious)

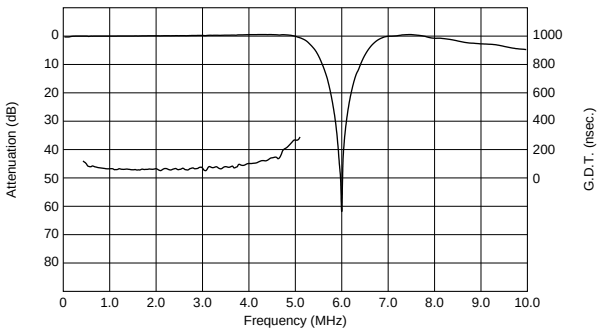
TPSKA4M50B00-R3



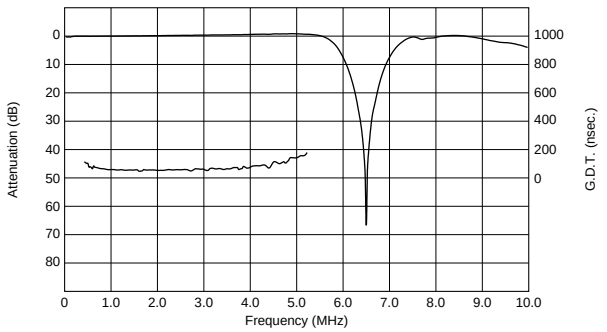
TPSKA5M50B00-R3



TPSKA6M00B00-R3



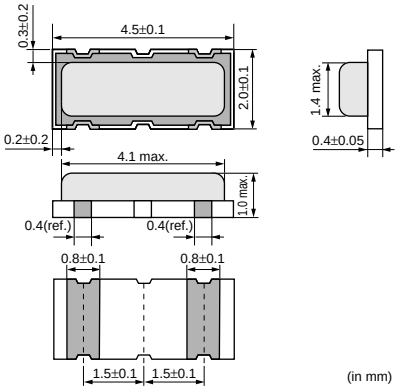
TPSKA6M50B00-R3



CERAFIL® (Ceramic Discriminator) for Audio/Visual Equipment

10.7MHz Ultra Thin Chip Type CDSCB Series

CDSCB10M7 series forms a resonator on a piezoelectric ceramic substrate. In combination with ICs, this type obtains stable demodulation characteristics in a wide bandwidth.
They have 1.0mm max. thickness and small mounting area (4.5x2.0mm).



■ Features

1. Compact and high reliability and recommended for automotive applications.
2. Can be combined with various ICs. The IC is determined by the last number in the part number.
3. Stable demodulation characteristics can be obtained without adjustment.
4. Stable temperature characteristics
5. Available lead (Pb) free solder reflow.

Part Number	Center Frequency (fo) (MHz)	Recovered Audio 3dB BW (kHz)	Recovered Audio Output (mV)	Distortion (%)	S Curve (mV)	IC
CDSCB10M7GA105A-R0	10.700 ±30kHz	220 min.	110 min.	1.5 max.	-	TEA5757HL
CDSCB10M7GA113-R0	10.700 ±30kHz	300 min.	110 min.	1.0 max.	-	TA2154FN
CDSCB10M7GA119-R0	10.700 ±30kHz	500 min.	75 min.	1.0 max.	-	TRF6901
CDSCB10M7GA121-R0	10.700 ±30kHz	390 min.	80 min.	1.0 max.	-	LV23100V
CDSCB10M7GA135-R0	10.700 ±30kHz	155 min.	75 min.	-	-	TH71101
CDSCB10M7GA136-R0	10.700 ±30kHz	140 min.	120 min.	-	-	TH7122
CDSCB10M7GF072-R0	10.700 (fn)	fn±150 min.	130 min.	2.0 max.	-	TA31161
CDSCB10M7GF107S-R0	10.700 (fn)	fn±80 min.	52 min.	3.0 max.	-	TA31272FN
CDSCB10M7GF109-R0	10.700 (fn)	fn±100 min.	170 min.	3.0 max.	-	TK14588V
CDSCB10M7GF123-R0	10.700 (fn)	-	-	-	900 min.	TA31275FN
CDSCB10M7GF123S-R0	10.700 (fn)	-	-	-	900 min.	TA31275FN
CDSCB10M7GF126-R0	10.700 (fn)	-	-	-	400 min.	NJM2295AV

(fn) means nominal center frequency (10.700MHz).
For safety purposes, avoid applying a direct current between the terminals.
The order quantity should be an integral multiple of the "Minimum Quantity" shown in the package page.

■ Standard Center Frequency Rank Code

CODE	30kHz Step	25kHz Step
D	10.64MHz±30kHz	10.650MHz±25kHz
B	10.67MHz±30kHz	10.675MHz±25kHz
A	10.70MHz±30kHz	10.700MHz±25kHz
C	10.73MHz±30kHz	10.725MHz±25kHz
E	10.76MHz±30kHz	10.750MHz±25kHz
Z	Combination A, B, C, D, E	
M	Combination A, B, C	

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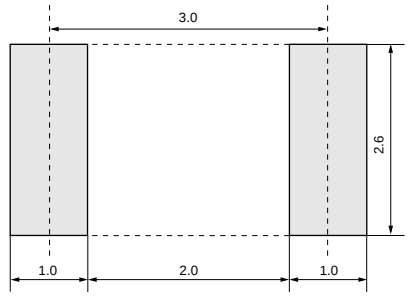
Continued on the following page.

Continued from the preceding page.

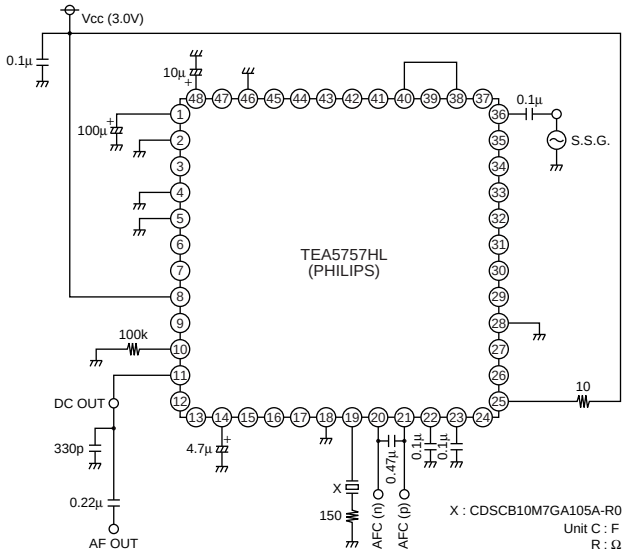
■ Standard Land Pattern Dimensions



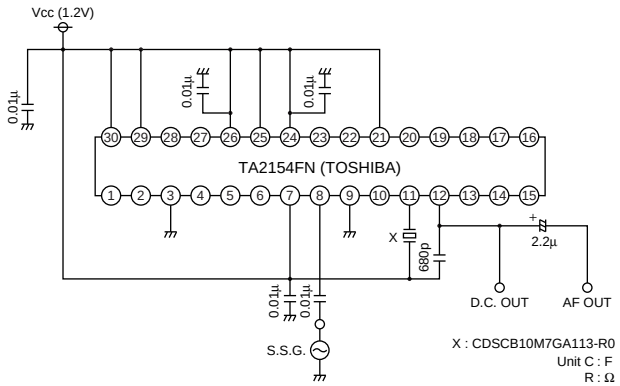
(in mm)

■ Test Circuit

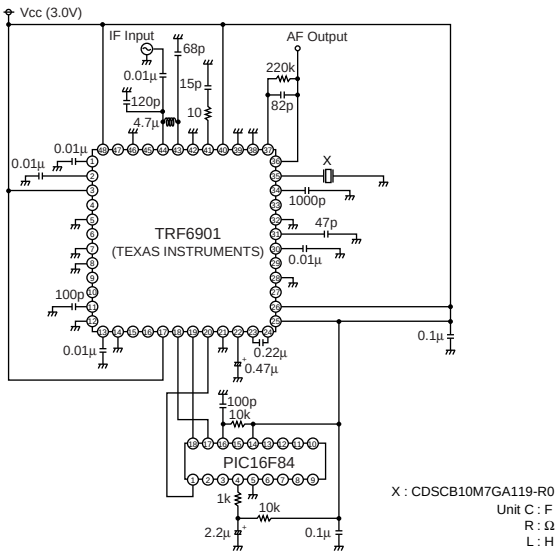
CDSCB10M7GA105A-R0



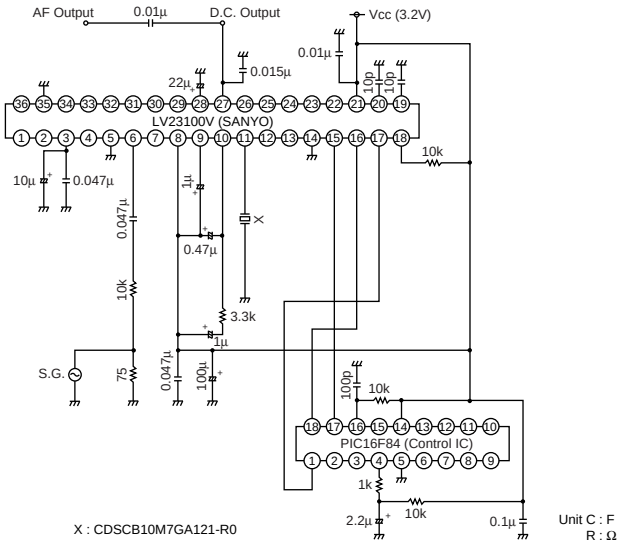
CDSCB10M7GA113-R0



CDSCB10M7GA119-R0



CDSCB10M7GA121-R0



Continued on the following page.

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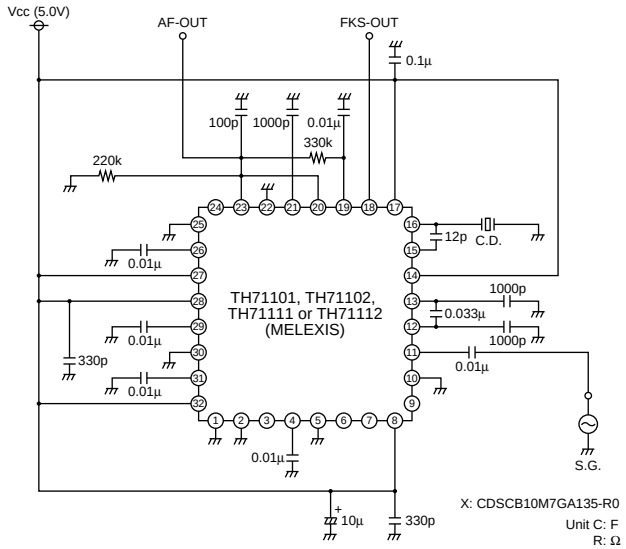
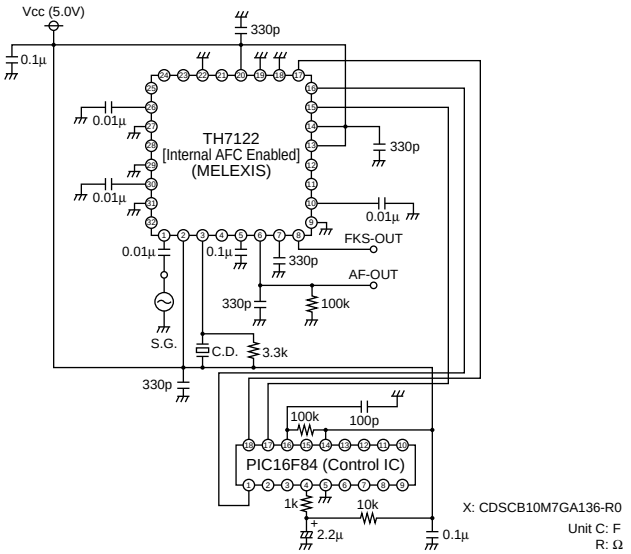
■ Test Circuit

CDSCB10M7GA135-R0



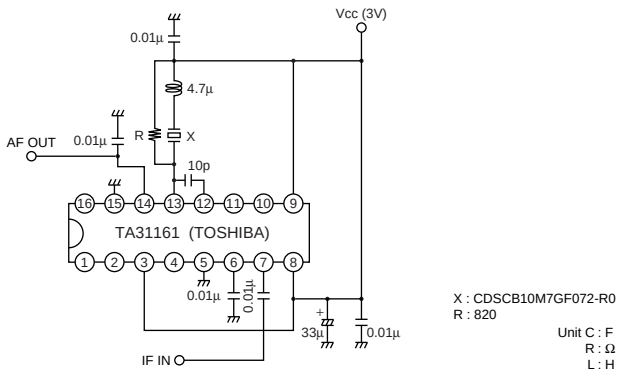
X: CDSCB10M7GA135-R0
Unit C: F
R: Ω

CDSCB10M7GA136-R0



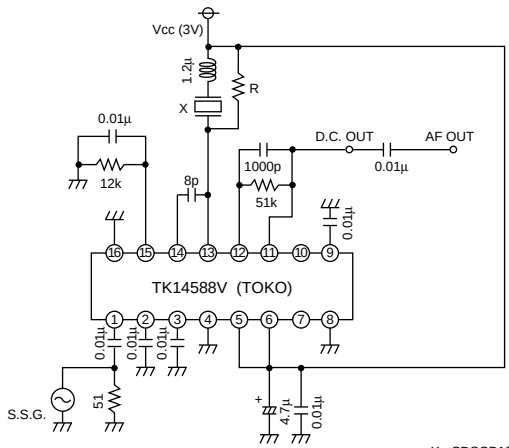
X: CDSCB10M7GA136-R0
Unit C: F
R: Ω

CDSCB10M7GF072-R0



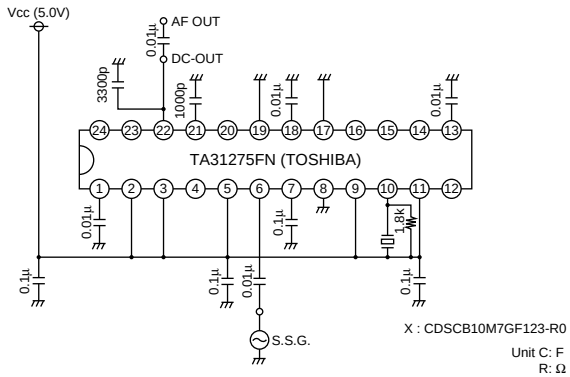
X : CDSCB10M7GF072-R0
R : 820
Unit C : F
R : Ω
L : H

CDSCB10M7GF109-R0



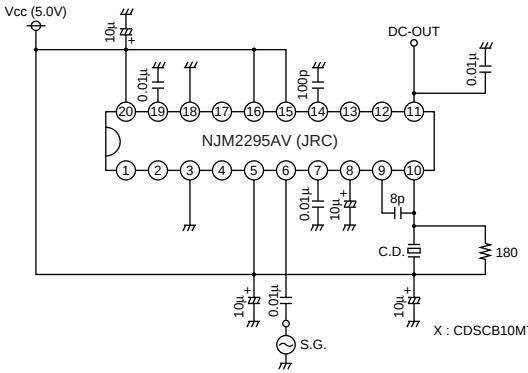
X : CDSCB10M7GF109-R0
R : 820
Unit C : F
R : Ω
L : H

CDSCB10M7GF123-R0



X : CDSCB10M7GF123-R0
Unit C: F
R: Ω

CDSCB10M7GF126-R0



X : CDSCB10M7GF126-R0
Unit C: F
R: Ω

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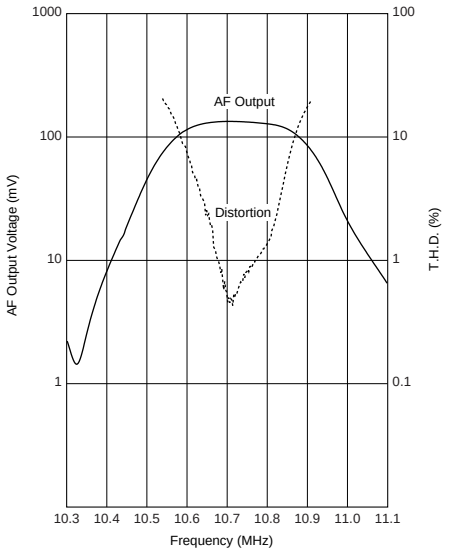
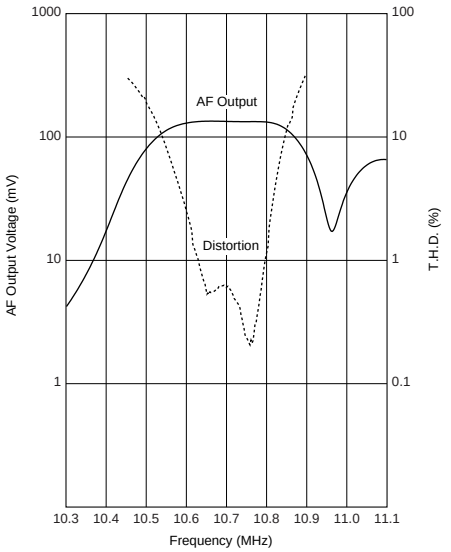
■ Recovered Audio Curve

CDSCB10M7GA105A-R0



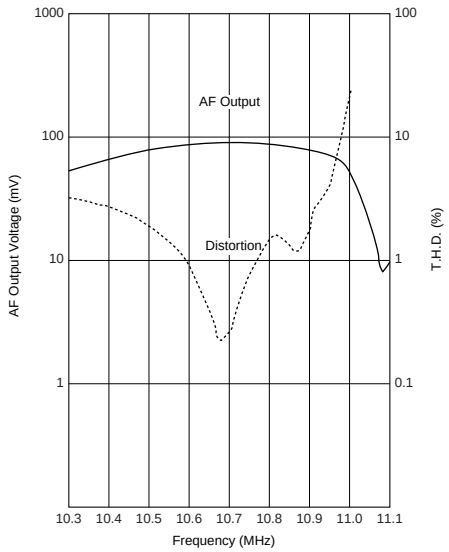
Input = 100dBμ
fdev. = ±75kHz
fmod. = 1kHz
Vcc = 3.0V

CDSCB10M7GA113-R0



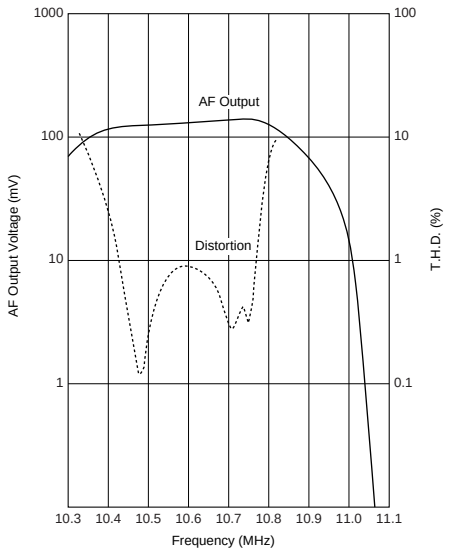
Input = 100dBμ
fdev. = ±75kHz
fmod. = 1kHz
Vcc = 1.2V

CDSCB10M7GA119-R0



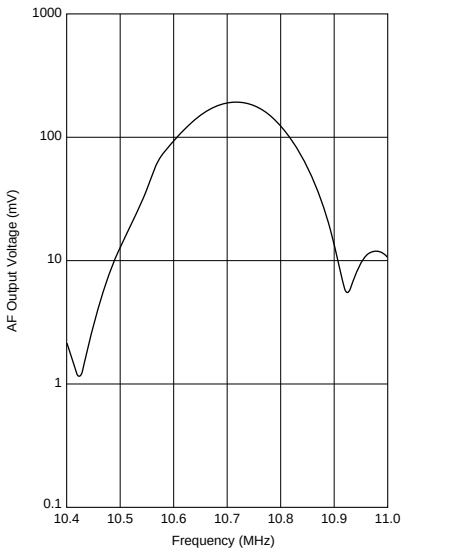
Input = 100dBμ
fdev. = ±60kHz
fmod. = 1kHz
Vcc = 3.0V

CDSCB10M7GA121-R0



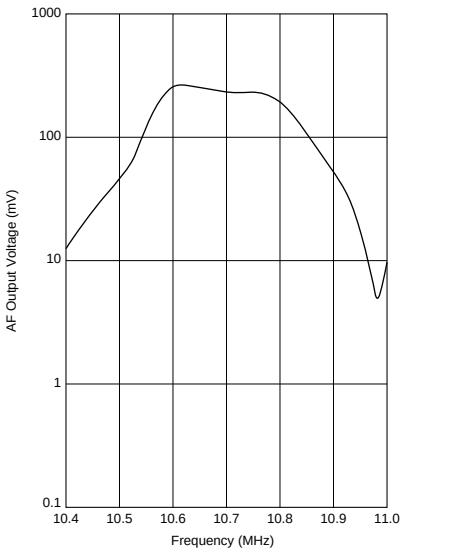
Input = 100dBμ
fdev. = ±75kHz
fmod. = 1kHz
Vcc = 3.2V

CDSCB10M7GA135-R0



Input = 100dBμ
fdev. = ±50kHz
fmod. = 1kHz
Vcc = 5.0V

CDSCB10M7GA136-R0



Input = 100dBμ
fdev. = ±50kHz
fmod. = 1kHz
Vcc = 5.0V

Continued on the following page.

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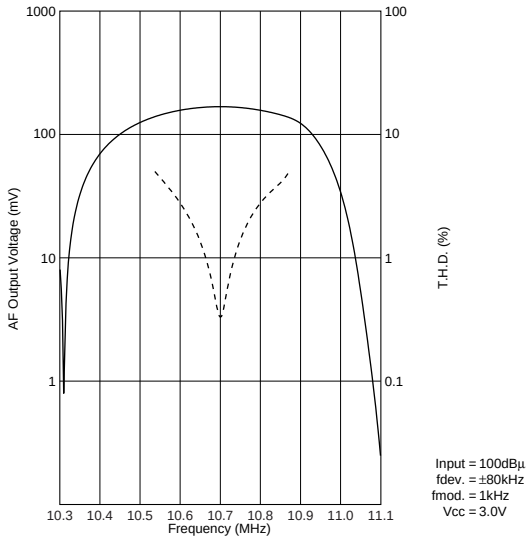
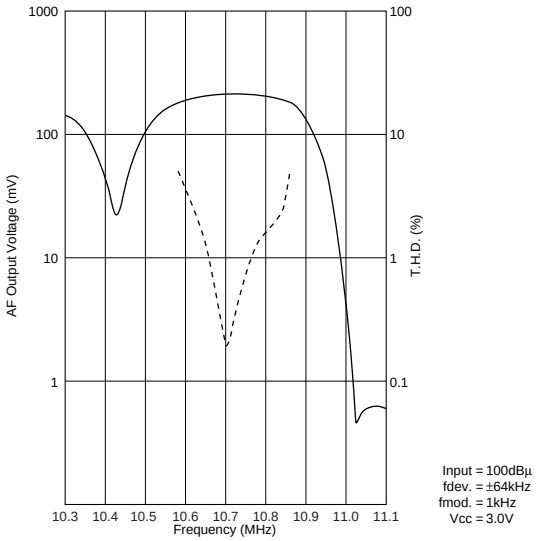
Continued from the preceding page.

■ Recovered Audio Curve

CDSCB10M7GF072-R0

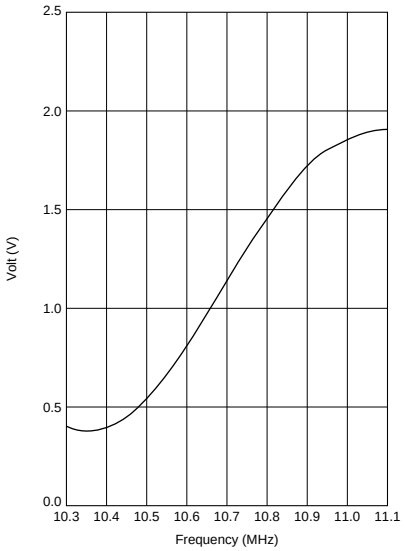


CDSCB10M7GF109-R0

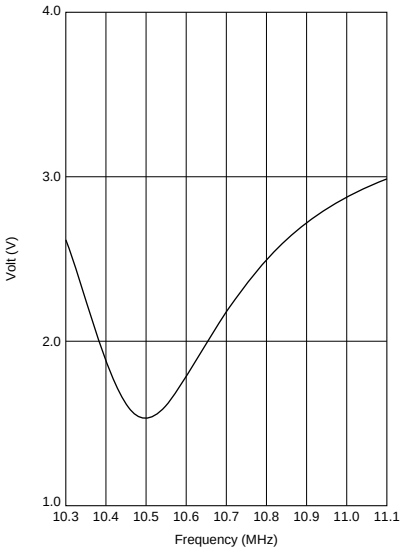


■ S Curve

CDSCB10M7GF123-R0



CDSCB10M7GF126-R0



CERAFIL® (Ceramic Discriminator) for Audio/Visual Equipment

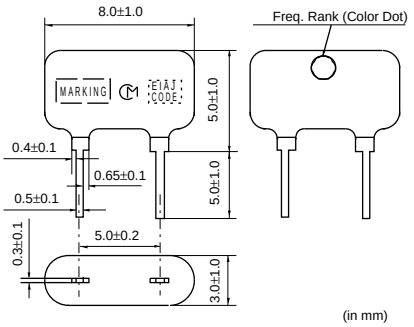
10.7MHz Standard Lead Type CDALF Series

CDALF10M7 series forms a resonator on a piezoelectric ceramic substrate. In combination with ICs, this type obtains stable demodulation characteristics in wide bandwidths.
As part of the environment protection activity, solder for terminal plating and terminal-element connection inside of ceramic filter contain no lead (Pb).

■ Features

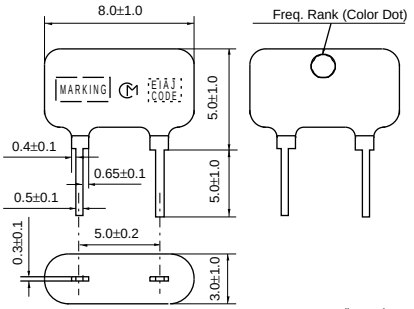
1. Compact and excellent mechanical strength
2. Can be combined with various ICs. The IC is determined by the last number in the part number.
3. Stable demodulation characteristics can be obtained without adjustment.
4. Stable temperature characteristics
5. Recommended combination: ceramic discriminator CDALF10M7 series and CERAFIL® SFELF10M7 series of the same frequency rank.

CDALF10M7G_ Series



(in mm)

CDALF10M7C_ Series



(in mm)

Part Number	Center Frequency (fo) (MHz)	Recovered Audio 3dB BW (kHz)	Recovered Audio Output (mV)	Distortion (%)	IC
CDALF10M7GA016-B0	10.700 ±30kHz	300 min.	within 60 to 90mV	0.9 max.	TA8122F
CDALF10M7GA018-B0	10.700 ±30kHz	300 min.	within 60 to 90mV	0.9 max.	TA8132N
CDALF10M7GA046-B0	10.700 ±30kHz	330 min.	280 min.	1.0 max.	LA1832
CDALF10M7GA048-B0	10.700 ±30kHz	400 min.	700 min.	1.0 max.	LA1835
CDALF10M7GA092-B0	10.700 ±30kHz	300 min.	60 min.	1.0 max.	TA2132P
CDALF10M7CA005A-B0	10.700 ±30kHz	100 min.	600 min.	6.0 max.	LA7770
CDALF10M7CA040-B0	10.700 ±30kHz	130 min.	40 min.	0.7 max.	TEA5710

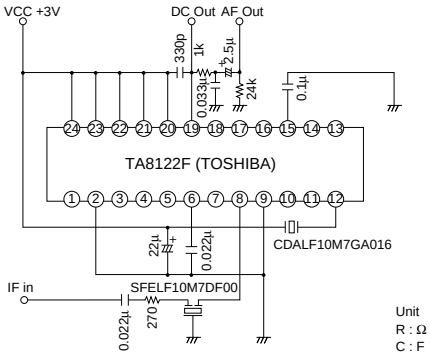
For safety purposes, avoid applying a direct current between the terminals.
The order quantity should be an integral multiple of the "Minimum Quantity" shown in the package page.
CDALF10M7GA018-B0: Color dot is different from standard series.

■ Standard Center Frequency Rank Code

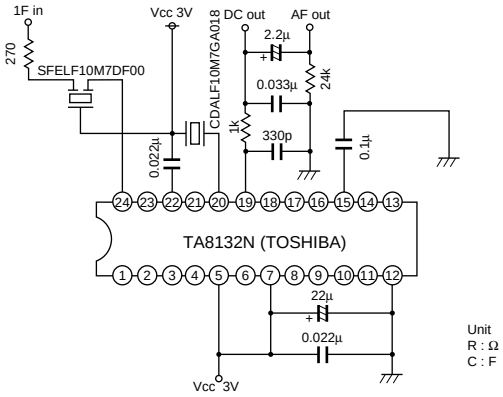
CODE	30kHz Step	25kHz Step	Color Code
D	10.64MHz±30kHz	10.650MHz±25kHz	Black
B	10.67MHz±30kHz	10.675MHz±25kHz	Blue
A	10.70MHz±30kHz	10.700MHz±25kHz	Red
C	10.73MHz±30kHz	10.725MHz±25kHz	Orange
E	10.76MHz±30kHz	10.750MHz±25kHz	White
Z	Combination A, B, C, D, E		
M	Combination A, B, C		

■ Test Circuit

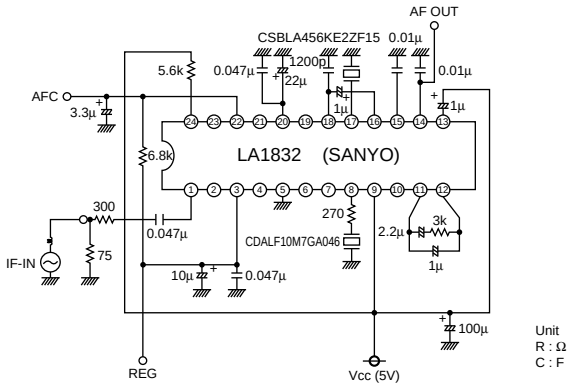
CDALF10M7GA016-B0



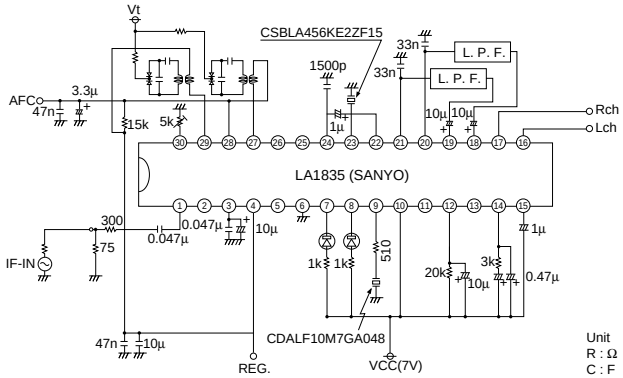
CDALF10M7GA018-B0



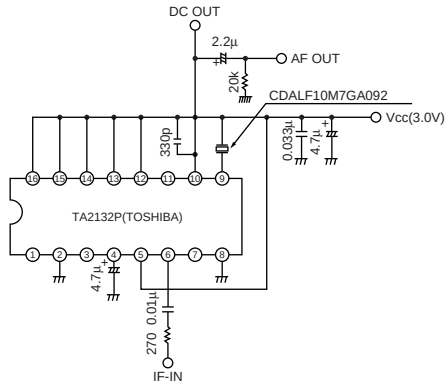
CDALF10M7GA046-B0



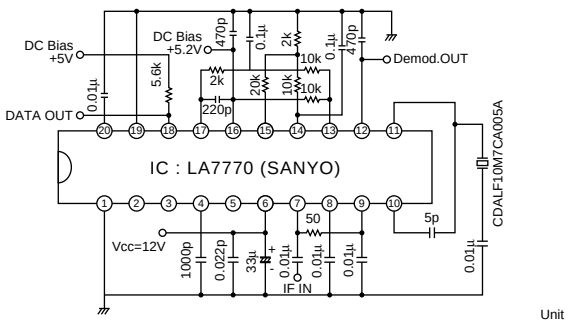
CDALF10M7GA048-B0



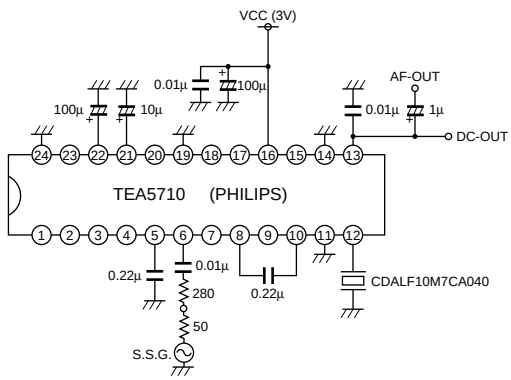
CDALF10M7GA092-B0



CDALF10M7CA005A-B0



CDALF10M7CA040-B0



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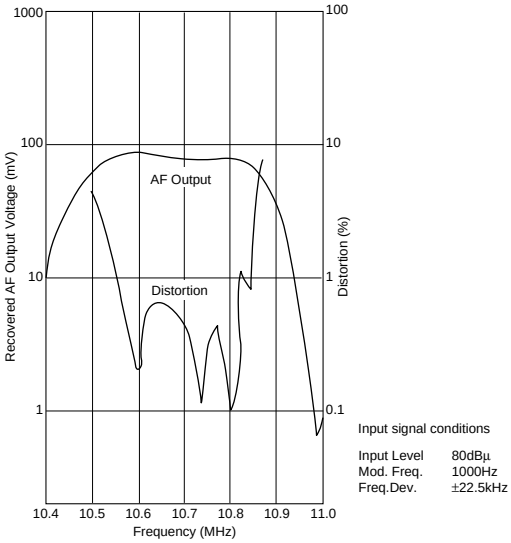
■ Frequency Characteristics

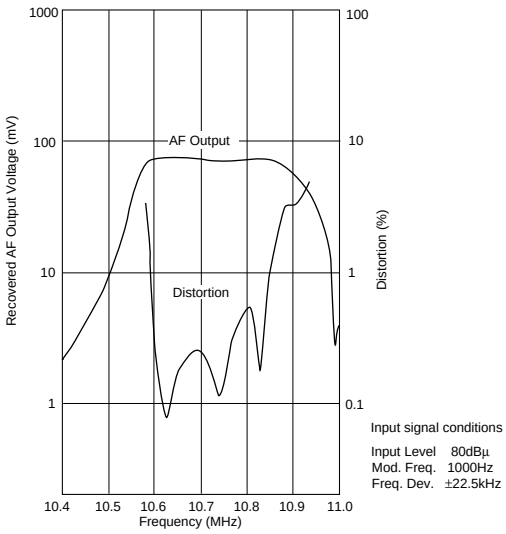
CDALF10M7GA016-B0



Input signal conditions

Input Level	80dBμ
Mod. Freq.	1000Hz
Freq.Dev.	±22.5kHz

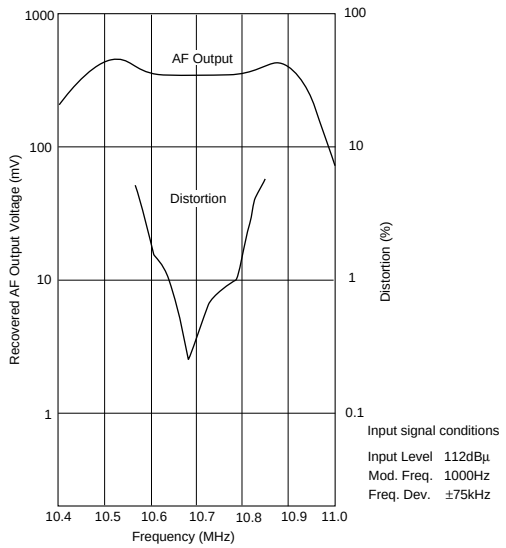
CDALF10M7GA018-B0



Input signal conditions

Input Level	80dBμ
Mod. Freq.	1000Hz
Freq. Dev.	±22.5kHz

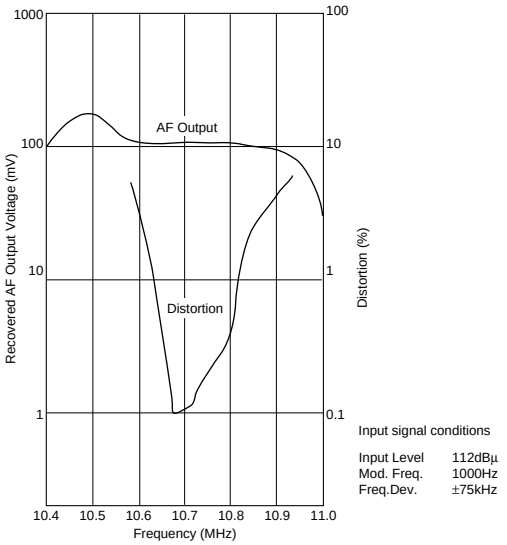
CDALF10M7GA046-B0



Input signal conditions

Input Level	112dBμ
Mod. Freq.	1000Hz
Freq. Dev.	±75kHz

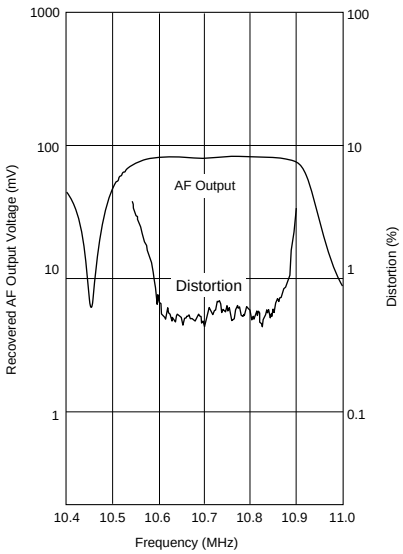
CDALF10M7GA048-B0



Input signal conditions

Input Level	112dBμ
Mod. Freq.	1000Hz
Freq.Dev.	±75kHz

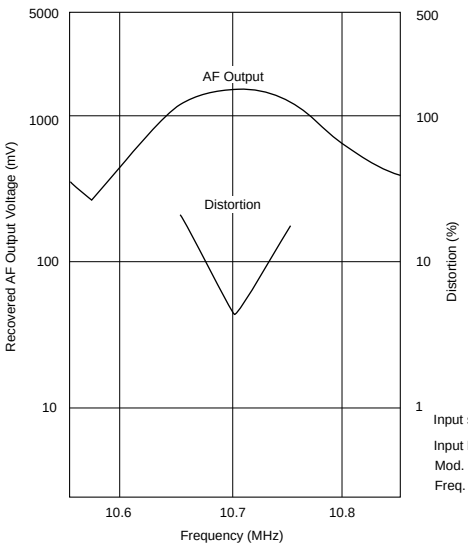
CDALF10M7GA092-B0



Input signal conditions

Input Level	80dBμ
Mod.Freq.	1000Hz
Freq.Dev.	±22.5kHz

CDALF10M7CA005A-B0



Input signal conditions

Input Level	100dBμ
Mod. Freq.	1000Hz
Freq. Dev.	±75kHz

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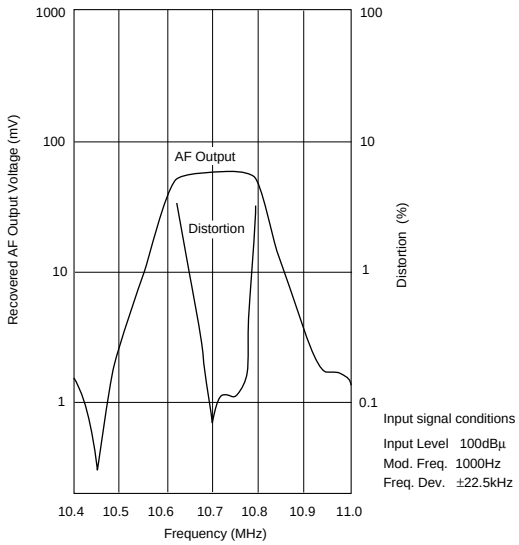
Continued from the preceding page.

■ Frequency Characteristics

CDALF10M7CA040-B0



Ceramic Discriminator 10.7MHz Applied IC Reference Table

Please see the following table to reference applied IC.
If you cannot find the IC part number you are seeking, please contact our sales representative.

ex. : CDALF10M7GA016-B0
Suffix Number

CDSCB10M7GA105A-R0
Suffix Number

IC Manufacturer	IC Part Number	Suffix Number
ATMEL	U4313B	**081**
	U4490B	**034V**
INFINEON	TDA1576T	**051**
	TDA6160X	**038**
Panasonic	AN7004	**011**
	AN7232	**053**
Freescale	MC13156	**049**
	MC13158	**073**
Renesas	μPC1391M	**056**
NXP	NE604	**020**
	SA605	**042**
	SA626	**047**
	SA636DK	**096**
	SA639	**085**
	TDA1596T	**120**
	TEA5710	**040**
	TEA5757HL	**105A**
	TEA5762 / 5757	**061**
	UAA3220TS	**098**
ROHM	BA1448	**060**
	BA4230AF	**005**
	BA4234L	**004**
SAMSUNG	S1A0903	**118A**
SANYO	LA1225M	**108A**
	LA1814M	**115**
	LA1823	**101**
	LA1827M	**083**
	LA1831	**043**
	LA1832 / M	**046**
	LA1833	**086**
	LA1835 / M	**048**
	LA1838 / M	**079**
	LA7770	**023**
	LV23000M	**114**
	LV23100V	**121**
SONY	CX1691M	**078**
	CX-20029	**001**
	CXA1111	**093**
	CXA1238	**027**
	CXA1238N	**027N**
	CX1343M	**032**
	CXA1376AM	**054**
	CXA1538M / N / S	**069**
	CXA1611	**075**
	CX3067M	**076**
T. I.	TRF6901	**119**

IC Manufacturer	IC Part Number	Suffix Number
TOKO	TK14570L	**122**
	TK14583V	**112**
	TK14588V	**109**
TOSHIBA	TA2003	**031**
	TA2007	**033**
	TA2008A / AN	**045**
	TA2022	**050**
	TA2057	**057**
	TA2099N	**082**
	TA2104AFN	**080**
	TA2104F	**080A**
	TA2111N / F / FN	**077**
	TA2132	**092**
	TA2132BP	**092D**
	TA2142FN	**102**
	TA2149AN	**100A**
	TA2149N	**100**
	TA2154FN	**113**
	TA2159F	**116**
	TA31161	**072**
	TA31275FN	**123**
	TA7303P	**008**
	TA7640AP	**006**
	TA8122AN / AF	**016**
	TA8132AN / AF	**018**
	TB2132FN	**128**

Notice

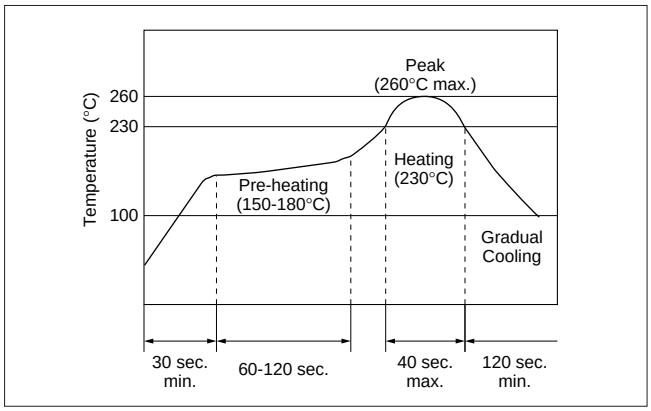
■ CERAFIL® 10.7MHz Chip Type SFECF Series

● Soldering and Mounting

1. Standard Reflow Soldering Conditions

(1) Reflow

Filter is soldered twice within the following temperature conditions.



(2) Soldering Iron

Filter is soldered at +350±5°C for 3.0±0.5 seconds. The soldering iron should not touch the filter while soldering.

(3) Condition for Placement Machines

The component is recommended with placement machines with employ optical placement capabilities. The component might be resulted in damage by excessive mechanical force. Please make sure that you have evaluated by using placement machines before going into mass production. Do not use placement machines which utilize mechanical positioning. Please contact Murata for details beforehand.

(4) Others

(a) The component may be damaged if excess mechanical stress is applied to it mounted on the printed circuit board.

(b) Design layout of components on the PC board to minimize the stress imposed on the warp or flexure of the board.

(c) After installing components, if solder is excessively applied to the circuit board, mechanical stress will cause destruction resistance characteristics to be lower. To prevent this, be extremely careful in determining shape and dimension before designing the circuit board diagram.

(d) When the positioning claws and pick up nozzle are worn, the load is applied to the components while positioning is concentrated to one positioning accuracy, etc. Careful checking and maintenance are necessary to prevent unexpected trouble.

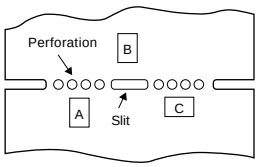
(e) When correcting components with a soldering iron, the tip of the soldering iron should not directly touch the component. Depending on the soldering conditions, the effective area of terminations may be reduced. The use of solder containing Ag should be done to prevent the electrode erosion.

(f) Do not use strong acidity flux, more than 0.2wt% chlorine content, in re-flow soldering.

[Component Direction]

Put the component lateral to the direction in which stress acts.

[Component Layout Close to Board]



Susceptibility to stress is in the order of : A>C>B

Continued on the following page.

Notice

Continued from the preceding page.

2. Wash
Do not clean or wash the component as it is not hermetically sealed.

3. Coating
In case of overcoating the component, conditions such as material of resin, cure temperature, and so on should be evaluated well.

● Strage and Operating Conditions

1. Product Storage Condition
Please store the products in room where the temperature/humidity is stable. And avoid such places where there are large temperature changes. Please store the products under the following conditions:
Temperature: -10 to +40°C
Humidity: 15 to 85% R.H.
2. Expiration Date on Storage
Expire date (Shelf life) of the products is six months after delivery under the conditions of a sealed and an unopened package. Please use the products within six months after delivery. If you store the products for a long time (more than six months), use carefully because the products may be degraded in solderability due to storage under poor conditions.
Please confirm solderability and characteristics for the products regularly.
3. Notice on Product Storage
(1) Please do not store the products in a chemical atmosphere (Acids, Alkali, Bases, Organic gas, Sulfides and so on), because the characteristics may be reduced in quality, may be degraded in solderability due to the storage in a chemical atmosphere.
(2) Please do not put the products directly on the floor without anything under them to avoid damp places and/or dusty places.
(3) Please do not store the products in the places such as: in a damp heated place, in any place exposed to direct sunlight or excessive vibration.
(4) Please use the products immediately after the package is opened, because the characteristics may be reduced in quality, and/or be degraded in the solderability due to storage under the poor condition.
(5) Please do not drop the products to avoid cracking of ceramic element.
4. Others
Please be sure to consult with our sales representative or engineer whenever the products are to be used in conditions not listed above.

● Rating

The component may be damaged if excessive mechanical stress is applied.

● Handling

1. Accurate test circuit values are required to measure electrical characteristics.
It may be a cause of miss-correlation if there is any deviation, especially stray capacitance, from the test circuit in the specification.
2. The components, packed in the moisture proof bag (dry pack), are sensitive to moisture. The following treatment is required before applying re-flow soldering. To avoid reliability degradation caused by thermal stress. When unpacked, store the component in an atmosphere of re-flow 30°C and below 60%R.H., and solder within 1 week.
3. For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.

Notice

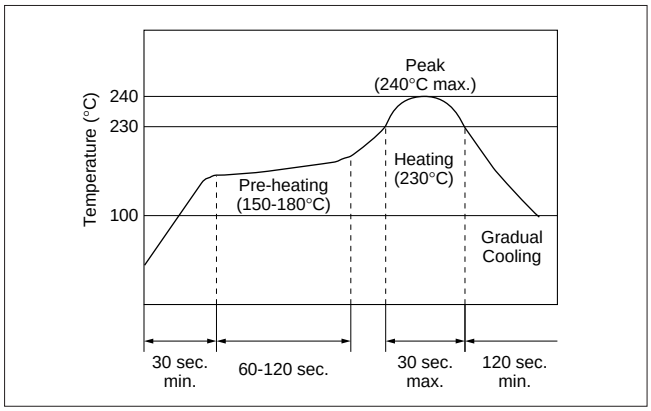
■ CERAFIL® 10.7MHz Chip Type SFECV/SFECK Series

● Soldering and Mounting

1. Standard Reflow Soldering Conditions

(1) Reflow

Filter is soldered twice within the following temperature conditions.



(2) Soldering Iron

Filter is soldered at +350±5°C for 3.0±0.5 seconds. The soldering iron should not touch the filter while soldering.

(3) Condition for Placement Machines

The component is recommended with placement machines with employ optical placement capabilities. The component might be resulted in damage by excessive mechanical force. Please make sure that you have evaluated by using placement machines before going into mass production. Do not use placement machines which utilize mechanical positioning. Please contact Murata for details beforehand.

(4) Others

(a) The component may be damaged if excess mechanical stress is applied to it mounted on the printed circuit board.

(b) Design layout of components on the PC board to minimize the stress imposed on the warp or flexure of the board.

(c) After installing components, if solder is excessively applied to the circuit board, mechanical stress will cause destruction resistance characteristics to be lower. To prevent this, be extremely careful in determining shape and dimension before designing the circuit board diagram.

(d) When the positioning claws and pick up nozzle are worn, the load is applied to the components while positioning is concentrated to one positioning accuracy, etc. Careful checking and maintenance are necessary to prevent unexpected trouble.

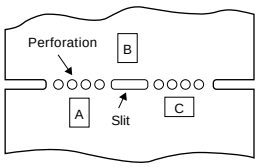
(e) When correcting components with a soldering iron, the tip of the soldering iron should not directly touch the component. Depending on the soldering conditions, the effective area of terminations may be reduced. The use of solder containing Ag should be done to prevent the electrode erosion.

(f) Do not use strong acidity flux, more than 0.2wt% chlorine content, in re-flow soldering.

[Component Direction]

Put the component lateral to the direction in which stress acts.

[Component Layout Close to Board]



Susceptibility to stress is in the order of : A>C>B

Continued on the following page.

Notice

Continued from the preceding page.

2. Wash
Do not clean or wash the component as it is not hermetically sealed.

3. Coating
In case of overcoating the component, conditions such as material of resin, cure temperature, and so on should be evaluated well.

● Strage and Operating Conditions

1. Product Storage Condition
Please store the products in room where the temperature/humidity is stable. And avoid such places where there are large temperature changes. Please store the products under the following conditions:
Temperature: -10 to +40°C
Humidity: 15 to 85% R.H.
2. Expiration Date on Storage
Expire date (Shelf life) of the products is six months after delivery under the conditions of a sealed and an unopened package. Please use the products within six months after delivery. If you store the products for a long time (more than six months), use carefully because the products may be degraded in solderability due to storage under poor conditions.
Please confirm solderability and characteristics for the products regularly.
3. Notice on Product Storage
(1) Please do not store the products in a chemical atmosphere (Acids, Alkali, Bases, Organic gas, Sulfides and so on), because the characteristics may be reduced in quality, may be degraded in solderability due to the storage in a chemical atmosphere.
(2) Please do not put the products directly on the floor without anything under them to avoid damp places and/or dusty places.
(3) Please do not store the products in the places such as: in a damp heated place, in any place exposed to direct sunlight or excessive vibration.
(4) Please use the products immediately after the package is opened, because the characteristics may be reduced in quality, and/or be degraded in the solderability due to storage under the poor condition.
(5) Please do not drop the products to avoid cracking of ceramic element.
4. Others
Please be sure to consult with our sales representative or engineer whenever the products are to be used in conditions not listed above.

● Rating

The component may be damaged if excessive mechanical stress is applied.

● Handling

1. Accurate test circuit values are required to measure electrical characteristics.
It may be a cause of miss-correlation if there is any deviation, especially stray capacitance, from the test circuit in the specification.
2. For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.

Notice

■ CERAFIL® 10.7MHz Lead Type SFELF/SFELG/SFVLF/SFKLF Series

● Soldering and Mounting

The component cannot withstand washing.

● Strage and Operating Conditions

1. Product Storage Condition
   Please store the products in room where the temperature/humidity is stable. And avoid such places where there are large temperature changes. Please store the products under the following conditions:
   Temperature: -10 to +40°C
   Humidity: 15 to 85% R.H.
2. Expiration Date on Storage
   Expire date (Shelf life) of the products is six months after delivery under the conditions of a sealed and an unopened package. Please use the products within six months after delivery. If you store the products for a long time (more than six months), use carefully because the products may be degraded in solderability due to storage under poor conditions.
   Please confirm solderability and characteristics for the products regularly.
3. Notice on Product Storage
   (1) Please do not store the products in a chemical atmosphere (Acids, Alkali, Bases, Organic gas, Sulfides and so on), because the characteristics may be reduced in quality, may be degraded in solderability due to the storage in a chemical atmosphere.
   (2) Please do not put the products directly on the floor without anything under them to avoid damp places and/or dusty places.
   (3) Please do not store the products in the places such as: in a damp heated place, in any place exposed to direct sunlight or excessive vibration.
   (4) Please use the products immediately after the package is opened, because the characteristics may be reduced in quality, and/or be degraded in the solderability due to storage under the poor condition.
   (5) Please do not drop the products to avoid cracking of ceramic element.
4. Others
   Please be sure to consult with our sales representative or engineer whenever the products are to be used in conditions not listed above.

● Rating

The component may be damaged if excessive mechanical stress is applied.

● Handling

1. Do not use this product with bend. The component may be damaged if excess mechanical stress is applied to it mounted on the printed circuit board.
2. All kinds of re-flow soldering must not be applied on the component.
3. Do not clean or wash the component as it is not hermetically sealed.
4. Do not use strong acidity flux, more than 0.2wt% chlorine content, in flow soldering.
5. In case of overcoating the component, conditions such as material of resin, cure temperature, and so on should be evaluated well.
6. Accurate test circuit values are required to measure electrical characteristics. It may be a cause of miscorrelation if there is any deviation, especially stray capacitance, from the test circuit in the specification.
7. For safety purposes, avoid applying a direct current between the terminals.

Notice

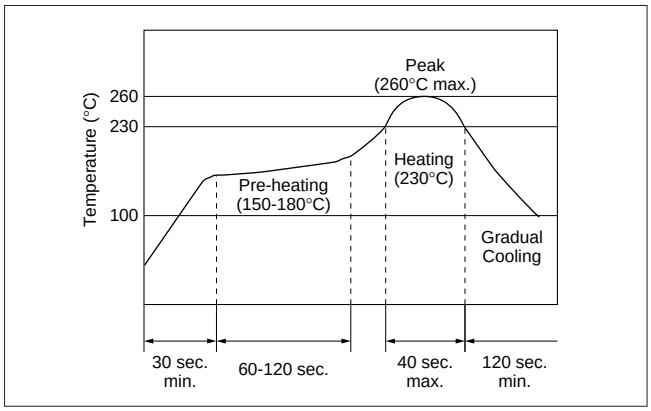
■ CERAFIL® 4.5-6.5MHz Chip Type SFSKA Series

● Soldering and Mounting

1. Standard Reflow Soldering Conditions

(1) Reflow

Filter is soldered twice within the following temperature conditions.



(2) Soldering Iron

Filter is soldered at +350±5°C for 3.0±0.5 seconds. The soldering iron should not touch the filter while soldering.

(3) Condition for Placement Machines

The component is recommended with placement machines with employ optical placement capabilities. The component might be resulted in damage by excessive mechanical force. Please make sure that you have evaluated by using placement machines before going into mass production. Do not use placement machines which utilize mechanical positioning. Please contact Murata for details beforehand.

(4) Others

(a) The component may be damaged if excess mechanical stress is applied to it mounted on the printed circuit board.

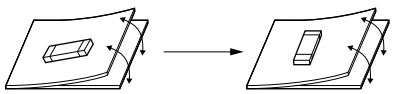
(b) Design layout of components on the PC board to minimize the stress imposed on the warp or flexure of the board.

(c) After installing chips, if solder is excessively applied to the circuit board, mechanical stress will cause destruction resistance characteristics to lower. To prevent this, be extremly careful in determining shape and dimension before designing the circuit board diagram.

(d) When the positioning claws and pick up nozzle are worn, the load is applied to the components while positioning is concentrated to one positioning accuracy, etc. Careful checking and maintenance are necessary to prevent unexpected trouble.

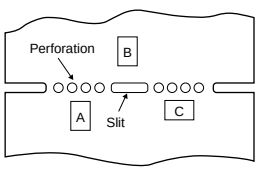
(e) When correcting chips with a soldering iron, the tip of the soldering iron should not directly touch the chip component.

[Component Direction]



Put the component lateral to the direction in which stress acts.

[Component Layout Close to Board]



Susceptibility to stress is in the order of : A>C>B

2. Wash

Do not clean or wash the component as it is not hermetically sealed.

Continued on the following page.

Notice

Continued from the preceding page.

3. Coating
In case of overcoating the component, conditions such as material of resin, cure temperature, and so on should be evaluated well.

● Strage and Operating Conditions

1. Product Storage Condition
Please store the products in room where the temperature/humidity is stable. And avoid such places where there are large temperature changes. Please store the products under the following conditions:
Temperature: -10 to +40°C
Humidity: 15 to 85% R.H.
2. Expiration Date on Storage
Expire date (Shelf life) of the products is six months after delivery under the conditions of a sealed and an unopened package. Please use the products within six months after delivery. If you store the products for a long time (more than six months), use carefully because the products may be degraded in solderability due to storage under poor conditions.
Please confirm solderability and characteristics for the products regularly.
3. Notice on Product Storage
(1) Please do not store the products in a chemical atmosphere (Acids, Alkali, Bases, Organic gas, Sulfides and so on), because the characteristics may be reduced in quality, may be degraded in solderability due to the storage in a chemical atmosphere.
(2) Please do not put the products directly on the floor without anything under them to avoid damp places and/or dusty places.
(3) Please do not store the products in the places such as: in a damp heated place, in any place exposed to direct sunlight or excessive vibration.
(4) Please use the products immediately after the package is opened, because the characteristics may be reduced in quality, and/or be degraded in the solderability due to storage under the poor condition.
(5) Please do not drop the products to avoid cracking of ceramic element.
4. Others
Please be sure to consult with our sales representative or engineer whenever the products are to be used in conditions not listed above.

● Rating

The component may be damaged if excessive mechanical stress is applied.

● Handling

1. Accurate test circuit values are required to measure electrical characteristics. It may be a cause of mis-correlation if there is any deviation, especially stray capacitance, from the test circuit in the specification.
2. For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.

Notice

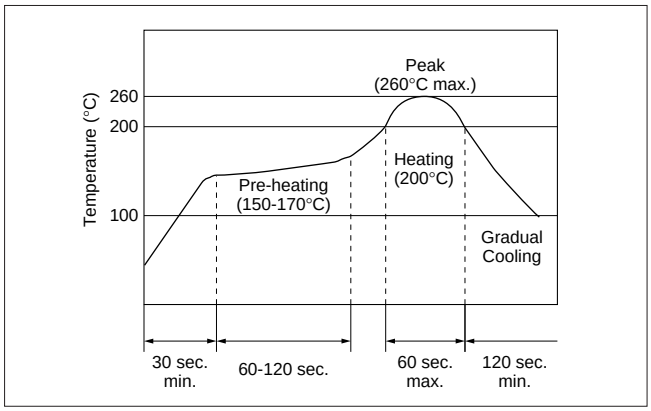
■ CERAFIL® 2.3-5.7MHz Chip Type SFSKB Series

● Soldering and Mounting

1. Standard Reflow Soldering Conditions

(1) Reflow

Filter is soldered twice within the following temperature conditions.



(2) Soldering Iron

Filter is soldered at +350±5°C for 3.0±0.5 seconds. The soldering iron should not touch the filter while soldering.

(3) Condition for Placement Machines

The component is recommended with placement machines with employ optical placement capabilities. The component might be resulted in damage by excessive mechanical force. Please make sure that you have evaluated by using placement machines before going into mass production. Do not use placement machines which utilize mechanical positioning. Please contact Murata for details beforehand.

(4) Others

(a) The component may be damaged if excess mechanical stress is applied to it mounted on the printed circuit board.

(b) Design layout of components on the PC board to minimize the stress imposed on the warp or flexure of the board.

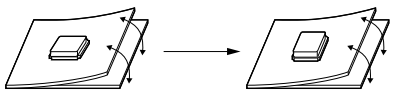
(c) After installing components, if solder is excessively applied to the circuit board, mechanical stress will cause destruction resistance characteristics to be lower. To prevent this, be extremely careful in determining shape and dimension before designing the circuit board diagram.

(d) When the positioning claws and pick up nozzle are worn, the load is applied to the components while positioning is concentrated to one positioning accuracy, etc. Careful checking and maintenance are necessary to prevent unexpected trouble.

(e) When correcting components with a soldering iron, the tip of the soldering iron should not directly touch the component. Depending on the soldering conditions, the effective area of terminations may be reduced. The use of solder containing Ag should be done to prevent the electrode erosion.

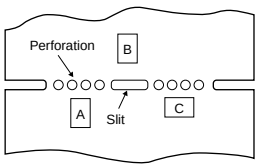
(f) Do not use strong acidity flux, more than 0.2wt% chlorine content, in re-flow soldering.

[Component Direction]



Put the component laterally to the direction in which stress acts.

[Component Layout Close to Board]



Susceptibility to stress is in the order of : A>C>B

Continued on the following page.

Notice

Continued from the preceding page.

2. Wash
Do not clean or wash the component as it is not hermetically sealed.

3. Coating
In case of overcoating the component, conditions such as material of resin, cure temperature, and so on should be evaluated well.

● Strage and Operating Conditions

1. Product Storage Condition
Please store the products in room where the temperature/humidity is stable. And avoid such places where there are large temperature changes. Please store the products under the following conditions:
Temperature: -10 to +40°C
Humidity: 15 to 85% R.H.
2. Expiration Date on Storage
Expire date (Shelf life) of the products is six months after delivery under the conditions of a sealed and an unopened package. Please use the products within six months after delivery. If you store the products for a long time (more than six months), use carefully because the products may be degraded in solderability due to storage under poor conditions.
Please confirm solderability and characteristics for the products regularly.
3. Notice on Product Storage
(1) Please do not store the products in a chemical atmosphere (Acids, Alkali, Bases, Organic gas, Sulfides and so on), because the characteristics may be reduced in quality, may be degraded in solderability due to the storage in a chemical atmosphere.
(2) Please do not put the products directly on the floor without anything under them to avoid damp places and/or dusty places.
(3) Please do not store the products in the places such as: in a damp heated place, in any place exposed to direct sunlight or excessive vibration.
(4) Please use the products immediately after the package is opened, because the characteristics may be reduced in quality, and/or be degraded in the solderability due to storage under the poor condition.
(5) Please do not drop the products to avoid cracking of ceramic element.
4. Others
Please be sure to consult with our sales representative or engineer whenever the products are to be used in conditions not listed above.

● Rating

The component may be damaged if excessive mechanical stress is applied.

● Handling

1. Accurate test circuit values are required to measure electrical characteristics.
It may be a cause of miss-correlation if there is any deviation, especially stray capacitance, from the test circuit in the specification.
2. For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.

Notice

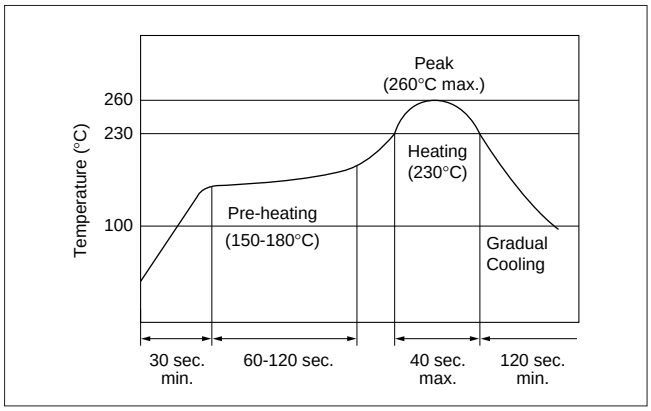
■ CERAFIL® 455kHz Chip Type SFPKA Series

● Soldering and Mounting

1. Standard Reflow Soldering Conditions

(1) Reflow

Filter is soldered twice within the following temperature conditions.



(2) Soldering Iron

Electrode is directly soldered with the tip of soldering iron at +350±5°C for 3.0±0.5 seconds.

(3) Others

Do not use strong acidity flux, more than 0.2wt% chlorine content, in re-flow soldering.

2. Wash

(1) Cleaning Solvent

CFC alternatives (HCFC Series), Isopropyl Alcohol (IPA), Water (Demineralized Water), Cleaning Water Solution (Cleanthrough-750H, Pine Alpha 100S), Silicon (Technocare FRW)

(2) Cleaning Conditions

- Immersion Wash
  2 minutes max. in above solvent at +60°C max.
- Shower or Rinse Wash
  2 minutes max. in above solvent at +60°C max.

(3) Notice

- When components are immersed in solvent, be sure to maintain the temperature of components below the temperature of solvent.
- Please do not use ultrasonic cleaning.
- Total washing time should be within 4 minutes.
- Please ensure the component is thoroughly evaluated in your application circuit.
- Please do not use chlorine, petroleum and alkali cleaning solvent.
- If you plan to use any other types of solvents, please consult with Murata or Murata representative prior to using.

3. Coating

In case of overcoating the component, conditions such as material of resin, cure temperature, and so on should be evaluated well.

Continued on the following page.

Notice

Continued from the preceding page.

● Strage and Operating Conditions

1. Product Storage Condition
   Please store the products in room where the temperature/humidity is stable. And avoid such places where there are large temperature changes. Please store the products under the following conditions:
   Temperature: -10 to +40°C
   Humidity: 15 to 85% R.H.
2. Expiration Date on Storage
   Expire date (Shelf life) of the products is six months after delivery under the conditions of a sealed and an unopened package. Please use the products within six months after delivery. If you store the products for a long time (more than six months), use carefully because the products may be degraded in solderability due to storage under poor conditions.
   Please confirm solderability and characteristics for the products regularly.
3. Notice on Product Storage
   (1) Please do not store the products in a chemical atmosphere (Acids, Alkali, Bases, Organic gas, Sulfides and so on), because the characteristics may be reduced in quality, may be degraded in solderability due to the storage in a chemical atmosphere.
   (2) Please do not put the products directly on the floor without anything under them to avoid damp places and/or dusty places.
   (3) Please do not store the products in the places such as: in a damp heated place, in any place exposed to direct sunlight or excessive vibration.
   (4) Please use the products immediately after the package is opened, because the characteristics may be reduced in quality, and/or be degraded in the solderability due to storage under the poor condition.
   (5) Please do not drop the products to avoid cracking of ceramic element.
4. Others
   Please be sure to consult with our sales representative or engineer whenever the products are to be used in conditions not listed above.

● Rating

The component may be damaged if excessive mechanical stress is applied.

● Handling

1. In the case that the component is cleaned, confirm no reliability degradation is created.
2. The components, packed in the moisture-proof bag (dry pack), are sensitive to moisture. The following treatment is required before applying re-flow soldering, to avoid package cracks or reliability degradation caused by thermal stress. When unpacked, store the component in an atmosphere of below 25°C and below 65%R.H., and solder within 48 hours.
3. For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.

Notice

■ CERAFIL® 455kHz Lead Type SFPLA/CFWLA/CFULA Series

● Soldering and Mounting

The component cannot withstand washing.

● Strage and Operating Conditions

1. Product Storage Condition
   Please store the products in room where the temperature/humidity is stable. And avoid such places where there are large temperature changes. Please store the products under the following conditions:
   Temperature: -10 to +40°C
   Humidity: 15 to 85% R.H.
2. Expiration Date on Storage
   Expire date (Shelf life) of the products is six months after delivery under the conditions of a sealed and an unopened package. Please use the products within six months after delivery. If you store the products for a long time (more than six months), use carefully because the products may be degraded in solderability due to storage under poor conditions.
   Please confirm solderability and characteristics for the products regularly.
3. Notice on Product Storage
   (1) Please do not store the products in a chemical atmosphere (Acids, Alkali, Bases, Organic gas, Sulfides and so on), because the characteristics may be reduced in quality, may be degraded in solderability due to the storage in a chemical atmosphere.
   (2) Please do not put the products directly on the floor without anything under them to avoid damp places and/or dusty places.
   (3) Please do not store the products in the places such as: in a damp heated place, in any place exposed to direct sunlight or excessive vibration.
   (4) Please use the products immediately after the package is opened, because the characteristics may be reduced in quality, and/or be degraded in the solderability due to storage under the poor condition.
   (5) Please do not drop the products to avoid cracking of ceramic element.
4. Others
   Please be sure to consult with our sales representative or engineer whenever the products are to be used in conditions not listed above.

● Rating

The component may be damaged if excessive mechanical stress is applied.

● Handling

1. Do not use this product with bend. The component may be damaged if excessive mechanical stress is applied to it mounted on the printed circuit board.
2. All kinds of re-flow soldering must not be applied on the component.
3. Do not clean or wash the component as it is not hermetically sealed.
4. Do not use strong acidity flux, more than 0.2wt% chlorine content, in flow soldering.
5. Conformal coating of the component is not acceptable due to non sealed construction.
6. Accurate test circuit values are required to measure electrical characteristics. It may be a cause of miscorrelation if there is any deviation, especially stray capacitance, from the test circuit in the specification.
7. For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.

Notice

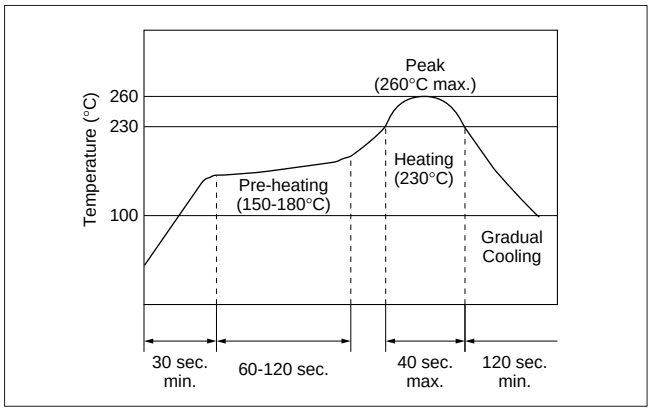
■ Ceramic Trap 4.5-6.5MHz Chip Type TPSKA Series

● Soldering and Mounting

1. Standard Reflow Soldering Conditions

(1) Reflow

Filter is soldered twice within the following temperature conditions.



(2) Soldering Iron

Filter is soldered at +350±5°C for 3.0±0.5 seconds. The soldering iron should not touch the filter while soldering.

(3) Condition for Placement Machines

The component is recommended with placement machines with employ optical placement capabilities. The component might be resulted in damage by excessive mechanical force. Please make sure that you have evaluated by using placement machines before going into mass production. Do not use placement machines which utilize mechanical positioning. Please contact Murata for details beforehand.

(4) Others

(a) The component may be damaged if excess mechanical stress is applied to it mounted on the printed circuit board.

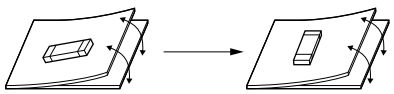
(b) Design layout of components on the PC board to minimize the stress imposed on the warp or flexure of the board.

(c) After installing chips, if solder is excessively applied to the circuit board, mechanical stress will cause destruction resistance characteristics to lower. To prevent this, be extremly careful in determining shape and dimension before designing the circuit board diagram.

(d) When the positioning claws and pick up nozzle are worn, the load is applied to the components while positioning is concentrated to one positioning accuracy, etc. Careful checking and maintenance are necessary to prevent unexpected trouble.

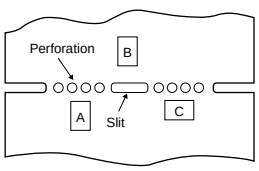
(e) When correcting chips with a soldering iron, the tip of the soldering iron should not directly touch the chip component.

[Component Direction]



Put the component lateral to the direction in which stress acts.

[Component Layout Close to Board]



Susceptibility to stress is in the order of : A>C>B

2. Wash

Do not clean or wash the component as it is not hermetically sealed.

Continued on the following page.

Notice

Continued from the preceding page.

3. Coating
In case of overcoating the component, conditions such as material of resin, cure temperature, and so on should be evaluated well.

● Strage and Operating Conditions

1. Product Storage Condition
Please store the products in room where the temperature/humidity is stable. And avoid such places where there are large temperature changes. Please store the products under the following conditions:
Temperature: -10 to +40°C
Humidity: 15 to 85% R.H.
2. Expiration Date on Storage
Expire date (Shelf life) of the products is six months after delivery under the conditions of a sealed and an unopened package. Please use the products within six months after delivery. If you store the products for a long time (more than six months), use carefully because the products may be degraded in solderability due to storage under poor conditions.
Please confirm solderability and characteristics for the products regularly.
3. Notice on Product Storage
(1) Please do not store the products in a chemical atmosphere (Acids, Alkali, Bases, Organic gas, Sulfides and so on), because the characteristics may be reduced in quality, may be degraded in solderability due to the storage in a chemical atmosphere.
(2) Please do not put the products directly on the floor without anything under them to avoid damp places and/or dusty places.
(3) Please do not store the products in the places such as: in a damp heated place, in any place exposed to direct sunlight or excessive vibration.
(4) Please use the products immediately after the package is opened, because the characteristics may be reduced in quality, and/or be degraded in the solderability due to storage under the poor condition.
(5) Please do not drop the products to avoid cracking of ceramic element.
4. Others
Please be sure to consult with our sales representative or engineer whenever the products are to be used in conditions not listed above.

● Rating

The component may be damaged if excessive mechanical stress is applied.

● Handling

1. Accurate test circuit values are required to measure electrical characteristics. It may be a cause of mis-correlation if there is any deviation, especially stray capacitance, from the test circuit in the specification.
2. For safety purposes, connect the output of filters to the IF amplifier through a D.C. blocking capacitor. Avoid applying a direct current to the output of ceramic filters.

Notice

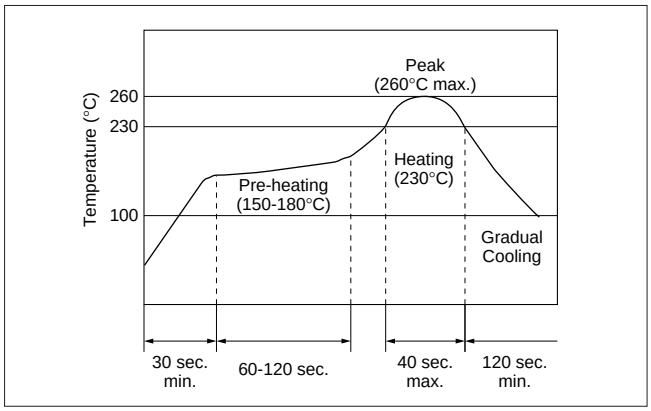
■ Ceramic Discriminator 10.7MHz Chip Type CDSCB Series

● Soldering and Mounting

1. Standard Reflow Soldering Conditions

(1) Reflow

Filter is soldered twice within the following temperature conditions.



(2) Soldering Iron

Filter is soldered at +300±5°C for 3.0±0.5 seconds. The soldering iron should not touch the filter while soldering.

(3) Condition for Placement Machines

The component is recommended with placement machines with employ optical placement capabilities. The component might be resulted in damage by excessive mechanical force. Please make sure that you have evaluated by using placement machines before going into mass production. Do not use placement machines which utilize mechanical positioning. Please contact Murata for details beforehand.

(4) Others

(a) The component may be damaged if excess mechanical stress is applied to it mounted on the printed circuit board.

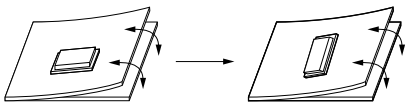
(b) Design layout of components on the PC board to minimize the stress imposed on the warp or flexure of the board.

(c) After installing components, if solder is excessively applied to the circuit board, mechanical stress will cause destruction resistance characteristics to be lower. To prevent this, be extremely careful in determining shape and dimension before designing the circuit board diagram.

(d) When the positioning claws and pick up nozzle are worn, the load is applied to the components while positioning is concentrated to one positioning accuracy, etc. Careful checking and maintenance are necessary to prevent unexpected trouble.

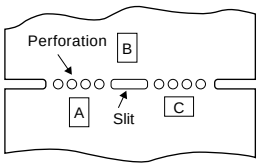
(e) When correcting components with a soldering iron, the tip of the soldering iron should not directly touch the component. Depending on the soldering conditions, the effective area of terminations may be reduced. The use of solder containing Ag should be done to prevent the electrode erosion.

[Component Direction]



Put the component laterally to the direction in which stress acts.

[Component Layout Close to Board]



Susceptibility to stress is in the order of : A>C>B

Continued on the following page.

Notice

Continued from the preceding page.

2. Wash
Do not clean or wash the component as it is not hermetically sealed.

3. Coating
In case of overcoating the component, conditions such as material of resin, cure temperature, and so on should be evaluated well.

● Strage and Operating Conditions

1. Product Storage Condition
Please store the products in room where the temperature/humidity is stable. And avoid such places where there are large temperature changes. Please store the products under the following conditions:
Temperature: -10 to +40°C
Humidity: 15 to 85% R.H.
2. Expiration Date on Storage
Expire date (Shelf life) of the products is six months after delivery under the conditions of a sealed and an unopened package. Please use the products within six months after delivery. If you store the products for a long time (more than six months), use carefully because the products may be degraded in solderability due to storage under poor conditions.
Please confirm solderability and characteristics for the products regularly.
3. Notice on Product Storage
(1) Please do not store the products in a chemical atmosphere (Acids, Alkali, Bases, Organic gas, Sulfides and so on), because the characteristics may be reduced in quality, may be degraded in solderability due to the storage in a chemical atmosphere.
(2) Please do not put the products directly on the floor without anything under them to avoid damp places and/or dusty places.
(3) Please do not store the products in the places such as: in a damp heated place, in any place exposed to direct sunlight or excessive vibration.
(4) Please use the products immediately after the package is opened, because the characteristics may be reduced in quality, and/or be degraded in the solderability due to storage under the poor condition.
(5) Please do not drop the products to avoid cracking of ceramic element.
4. Others
Please be sure to consult with our sales representative or engineer whenever the products are to be used in conditions not listed above.

● Rating

The component may be damaged if excessive mechanical stress is applied.

● Handling

1. Accurate test circuit values are required to measure electrical characteristics.
It may be a cause of miss-correlation if there is any deviation, especially stray capacitance, from the test circuit in the specification.
2. For safety purposes, avoid applying a direct current between the terminals.

Notice

■ Ceramic Discriminator 10.7MHz Lead Type CDALF Series

● Soldering and Mounting

The component cannot withstand washing.

● Strage and Operating Conditions

1. Product Storage Condition
   Please store the products in room where the temperature/humidity is stable. And avoid such places where there are large temperature changes. Please store the products under the following conditions:
   Temperature: -10 to +40°C
   Humidity: 15 to 85% R.H.
2. Expiration Date on Storage
   Expire date (Shelf life) of the products is six months after delivery under the conditions of a sealed and an unopened package. Please use the products within six months after delivery. If you store the products for a long time (more than six months), use carefully because the products may be degraded in solderability due to storage under poor conditions.
   Please confirm solderability and characteristics for the products regularly.
3. Notice on Product Storage
   (1) Please do not store the products in a chemical atmosphere (Acids, Alkali, Bases, Organic gas, Sulfides and so on), because the characteristics may be reduced in quality, may be degraded in solderability due to the storage in a chemical atmosphere.
   (2) Please do not put the products directly on the floor without anything under them to avoid damp places and/or dusty places.
   (3) Please do not store the products in the places such as: in a damp heated place, in any place exposed to direct sunlight or excessive vibration.
   (4) Please use the products immediately after the package is opened, because the characteristics may be reduced in quality, and/or be degraded in the solderability due to storage under the poor condition.
   (5) Please do not drop the products to avoid cracking of ceramic element.
4. Others
   Please be sure to consult with our sales representative or engineer whenever the products are to be used in conditions not listed above.

● Rating

The component may be damaged if excessive mechanical stress is applied.

● Handling

1. Do not use this product with bend. The component may be damaged if excess mechanical stress is applied to it mounted on the printed circuit board.
2. All kinds of re-flow soldering must not be applied on the component.
3. Do not clean or wash the component as it is not hermetically sealed.
4. Do not use strong acidity flux, more than 0.2wt% chlorine content, in flow soldering.
5. In case of overcoating the component, conditions such as material of resin, cure temperature, and so on should be evaluated well.
6. Accurate test circuit values are required to measure electrical characteristics. It may be a cause of miscorrelation if there is any deviation, especially stray capacitance, from the test circuit in the specification.
7. For safety purposes, avoid applying a direct current between the terminals.

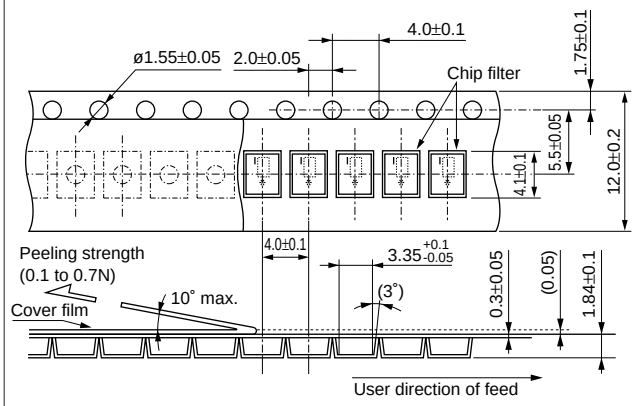
Packaging

■ Minimum Quantity

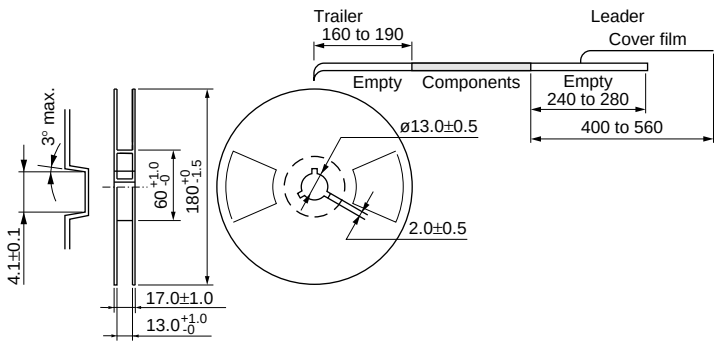
	Taping		Ammo Pack	Bulk	Magazine	Box
	ø330mm	ø180mm				
CERAFIL®<10.7MHz>						
SFECF		2,000				
SFECV/SFECK		2,000				
SFELF			1,500	500		
SFELG			1,500	500		
SFKLF			1,500	500		
SFVLF			1,000	500		
CERAFIL®<2.3-6.5MHz>						
SFSKA	3,000					
SFSKB	3,000					
CERAFIL®<455kHz>						
CFULA						200
CFWLA					50	150
SFPKA	1,000					
SFPLA					50	200
Ceramic Traps<3.5-6.5MHz>						
TPSKA	3,000					
Ceramic Discriminators<10.7MHz>						
CDALF			1,500	500		
CDSCB		2,000				

■ CERAFIL® 10.7MHz Chip Type SFECF Series

Dimensions of Carrier Tape



Dimensions of Reel



• Part number marked side is always facing upside.

( ) : Reference
(in mm)

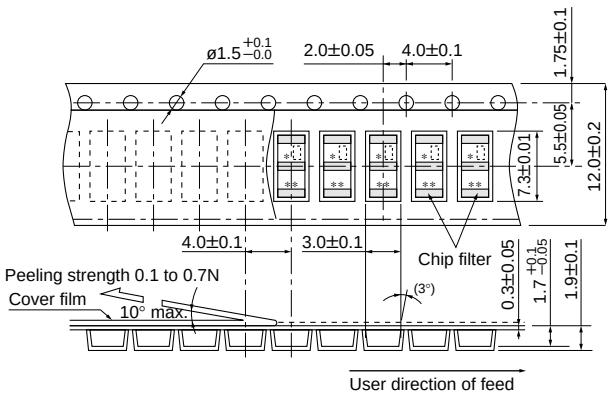
Continued on the following page.

Packaging

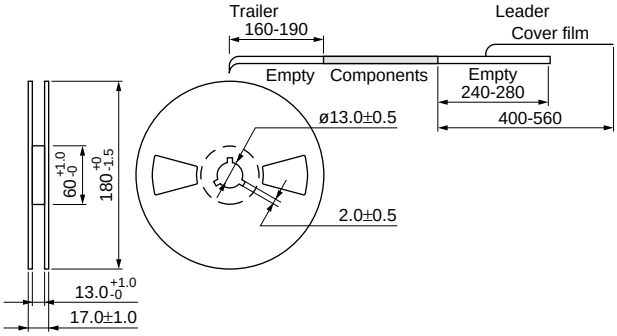
Continued from the preceding page.

■ CERAFIL® 10.7MHz Chip Type SFECV/SFECK Series

Dimensions of carrier tape



Dimension of reel



• Part number marked side is always facing up.

( ) : Reference (in mm)

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Packaging

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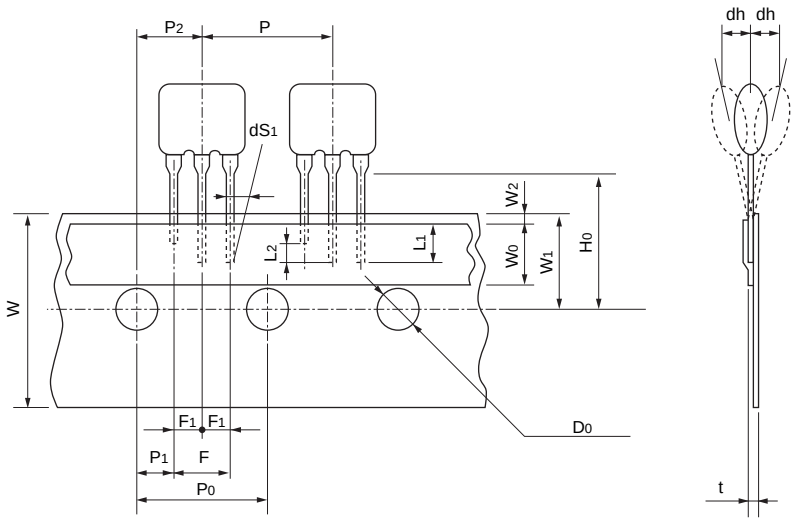
■ CERAFIL® 10.7MHz Lead Type SF_LF Series



Item	Code	Dimensions	Tolerance	Remarks
Lead length under the hold down tape	L_1	3.0 min.	-	
Length of cut off	L_2	2.0 max.	-	To distinguish the direction
Pitch of components	P	12.7	±0.5	
Pitch of sprocket hole (1)	P_0	12.7	±0.2	
Length from hole center to lead	P_1	3.85	±0.5	
Length from hole center to component center	P_2	6.35	±0.5	
Lead spacing (1)	F	5.0	$^{+0.5}_{-0.2}$	
Lead spacing (2)	F_1	2.5	±0.2	
Slant to the forward or backward	dh	0	±1.0	
Slant to the left or right	dS_1	0	±1.0	
Width of carrier tape	W	18.0	±0.5	
Width of hold down tape	W_0	6.0 min.	-	
Position of sprocket hole	W_1	9.0	±0.5	
Gap of hold down tape and carrier tape	W_2	0	$^{+0.5}_{-0}$	Hold down tape doesn't exceed the carrier tape
Distance between the center of sprocket hole and lead stopper	H_0	18.0	±0.5	
Diameter of sprocket hole	D_0	ø4.0	±0.2	
Total tape thickness	t	0.6	±0.2	
Pitch of sprocket hole (2)	P_020	254.0	±1.5	The pitch of 20 sprocket holes

(in mm)

Continued on the following page.

Packaging

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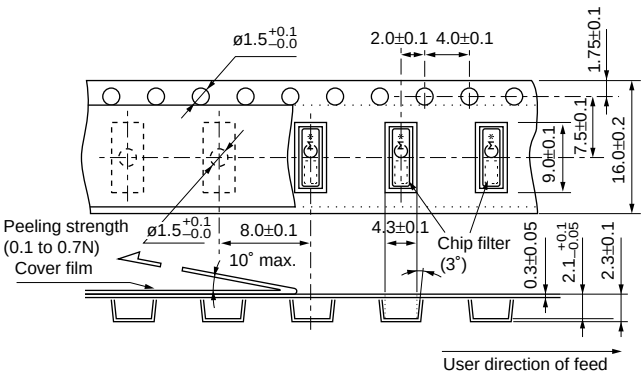
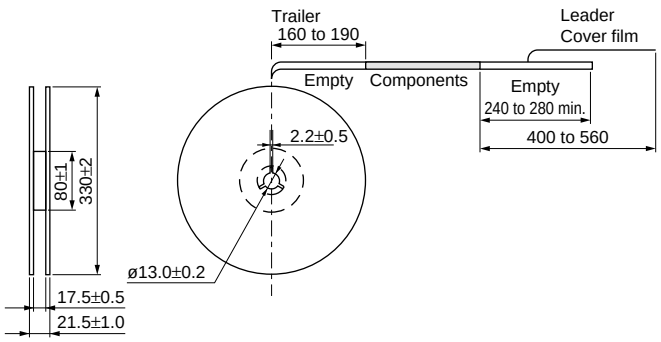
■ CERAFIL® 4.5-6.5MHz Chip Type SFSKA Series

Dimensions of Carrier Tape



Dimensions of Reel

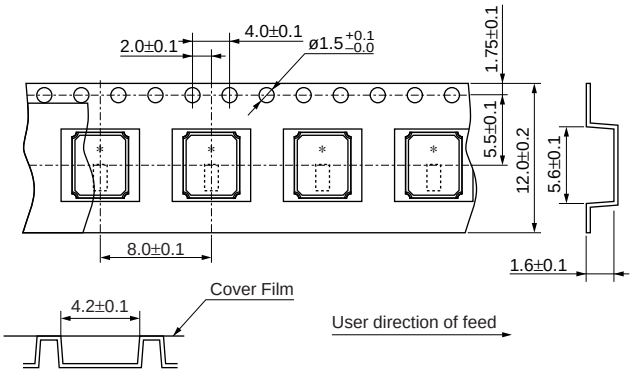


• Part number marked side is always facing upside.

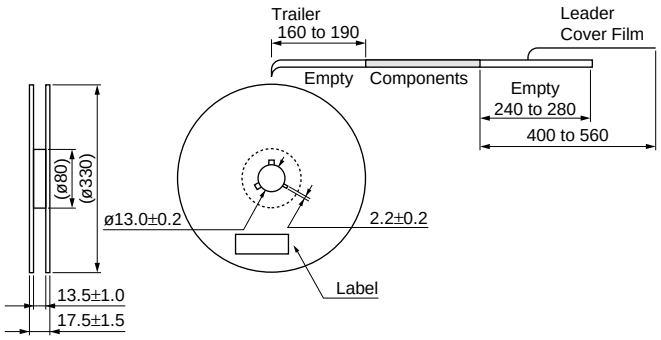
(in mm)

■ CERAFIL® 2.3-5.7MHz Chip Type SFSKB Series

Dimensions of Carrier Tape



Dimensions of Reel

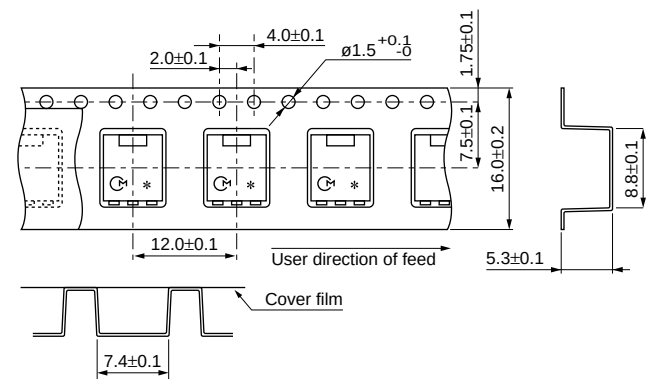


• Part Number marked side is always facing upside.

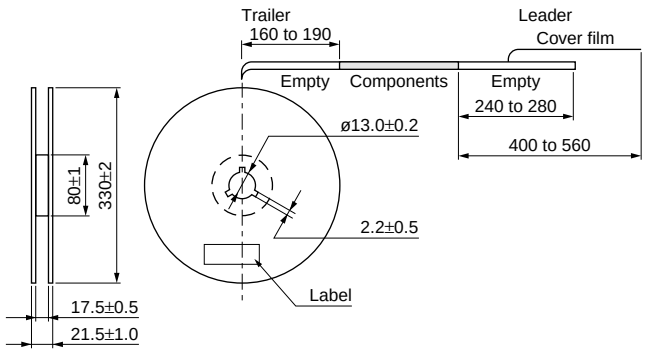
(in mm)

■ CERAFIL® 455kHz Chip Type SFPKA Series

Dimensions of Carrier Tape



Dimensions of Reel



• Part number marked side is always facing upside.

(in mm)

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Packaging

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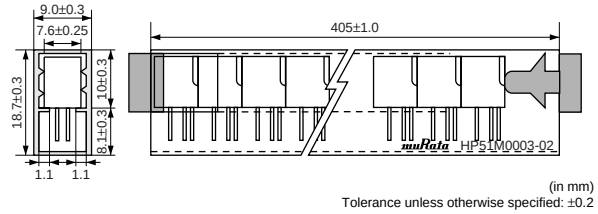
■ CERAFIL® 455kHz Lead Type SFPLA Series

Standard of Magazine Cassette

1. Putting CERAFIL® into Magazine
   A magazine should contain 50pcs of CERAFIL®, with ground terminals all facing toward the "Murata" mark on a magazine, and be closed with exclusive stoppers at both ends. Above should be the minimum packaging unit.

2. Quality of Magazine
(1) Transparent so that input / output direction is visually recognizable.
(2) With an angle of 35° CERAFIL® should slip down smoothly.
(3) Antistatic finish
(4) Recycling
   Note: Magazines should be sent back for recycling. (Therefore, empty magazines should not be damaged.)

3. Dimensions of Magazine Cassette



(in mm)
Tolerance unless otherwise specified: ±0.2

Material: Polycarbonate
Camber of Case: ±1mm max. against entire length (reference)
Twist of Case: ±0.5mm max. (reference)

■ CERAFIL® 455kHz Lead Type CFWLA Series

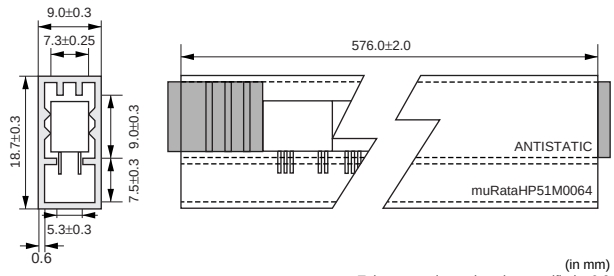
Standard of Magazine Cassette

1. Putting CERAFIL® into Magazine
   A magazine should contain 50pcs of CERAFIL®, with ground terminals all facing toward the "Murata" mark on a magazine, and be closed with exclusive stoppers at both ends. Above should be the minimum packaging unit.

2. Quality of Magazine
(1) Transparent so that input / output direction is visually recognizable.
(2) With an angle of 35° CERAFIL® should slip down smoothly.
(3) Antistatic finish
(4) Recycling
   Note: Magazines should be sent back for recycling. (Therefore, empty magazines should not be damaged.)

3. Magazine should be packaged in a cardboard box.
   MURATA model name, quantity and outgoing inspection number should be indicated on the box.
   Cardboard box may contain maximum 33 magazines (1,650 pieces of filter).

4. Dimensions of Magazine Cassette



(in mm)
Tolerance unless otherwise specified: ±0.2

Material: Polycarbonate
Camber of Case: ±1mm max. against entire length (reference)
Twist of Case: ±0.5mm max. (reference)

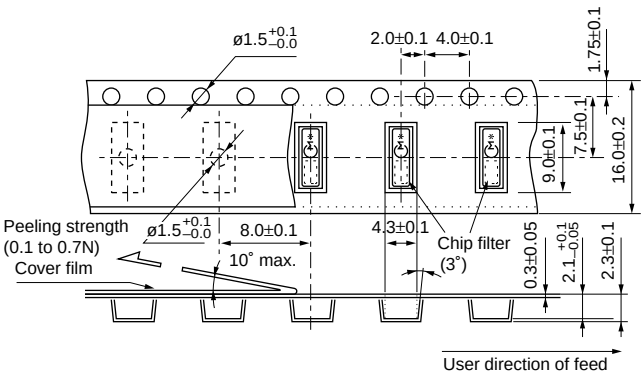
Continued on the following page.

Packaging

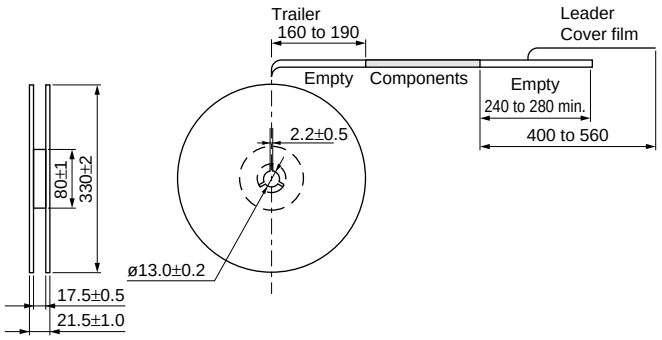
Continued from the preceding page.

■ Ceramic Trap 4.5-6.5MHz Chip Type TPSKA Series

Dimensions of Carrier Tape



Dimensions of Reel

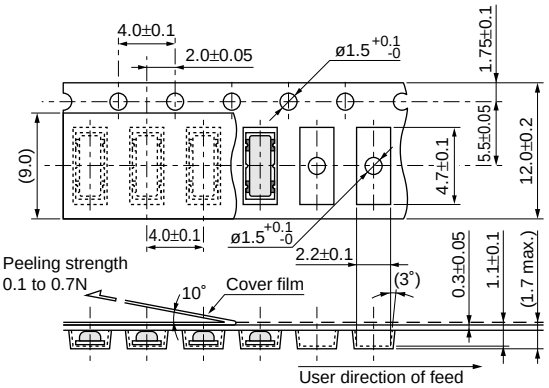


• Part number marked side is always facing upside.

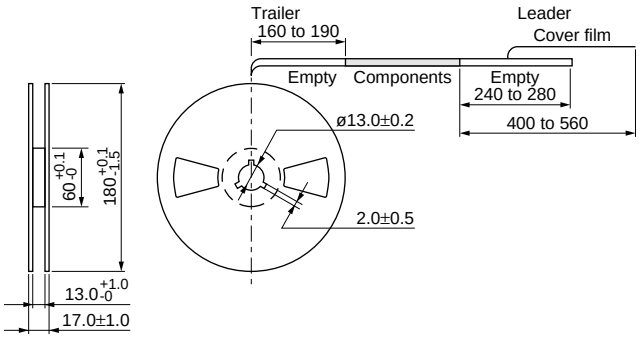
(in mm)

■ Ceramic Discriminator 10.7MHz Chip Type CDSCB Series

Dimensions of Carrier Tape



Dimension of reel



• Part number marked side is always facing upside.

( ) : Reference
(in mm)

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Packaging

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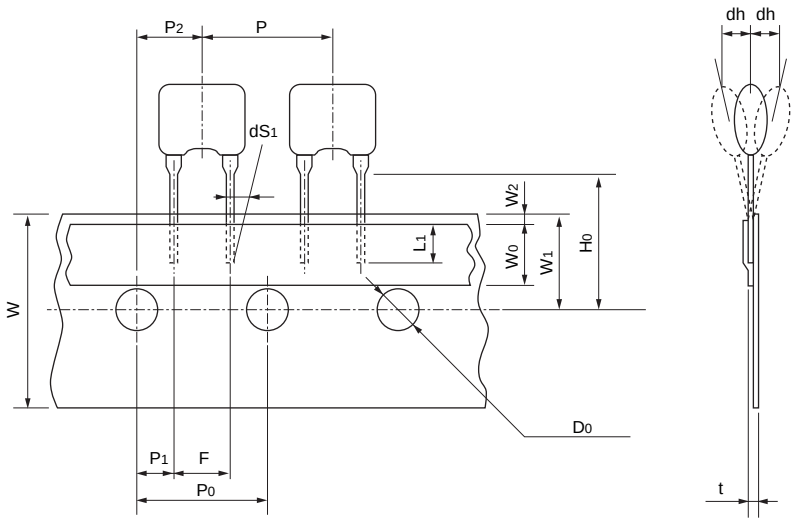
■ Ceramic Discriminator 10.7MHz Lead Type CDALF Series



Item	Code	Dimensions	Tolerance	Remarks
Lead length under the hold down tape	L_1	3.0 min.	-	
Pitch of component	P	12.7	±0.5	
Pitch of sprocket hole (1)	P_0	12.7	±0.2	
Length from hole center to lead	P_1	3.85	±0.5	
Length from hole center to component center	P_2	6.35	±0.5	
Lead spacing	F	5.0	+0.5 -0.2	
Slant to the forward or backward	dh	0	±1.0	
Slant to the left or right	dS_1	0	±1.0	
Width of carrier tape	W	18.0	±0.5	
Width of hold down tape	W_0	6.0 min.	-	
Position of sprocket hole	W_1	9.0	±0.5	
Gap of hold down tape and carrier tape	W_2	0	+0.5 -0.0	Hold down tape doesn't exceed the carrier tape
Distance between the center of sprocket hole and lead stopper	H_0	18.0	±0.5	
Diameter of sprocket hole	D_0	ø4.0	±0.2	
Total tape thickness	t	0.6	±0.2	
Pitch of sprocket hole (2)	Po20	254.0	±1.5	The pitch of 20 sprocket holes

(in mm)

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⚠Note:

1. Export Control
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   No Murata products should be used or sold, through any channels, for use in the design, development, production, utilization, maintenance or operation of, or otherwise contribution to (1) any weapons (Weapons of Mass Destruction [nuclear, chemical or biological weapons or missiles] or conventional weapons) or (2) goods or systems specially designed or intended for military end-use or utilization by military end-users.
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2. Please contact our sales representatives or product engineers before using the products in this catalog for the applications listed below, which require especially high reliability for the prevention of defects which might directly damage a third party's life, body or property, or when one of our products is intended for use in applications other than those specified in this catalog.
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   ③ Undersea equipment ④ Power plant equipment
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   ⑦ Traffic signal equipment ⑧ Disaster prevention / crime prevention equipment
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