



Vishay Optoelectronic products

One of the World's Largest
Manufacturers
of Discrete Semiconductors and Passive Components



www.vishay.com/optoelectronics/



Optocouplers

A global leader with a very broad selection of packages and functions



Solid State Relays

Leader in SSR for Telecommunications industry



Visible LED

Ultra-bright and smallest SMD packaging, available in all colors including white



Infrared Receivers

Global leader in remote control receivers for consumer electronics

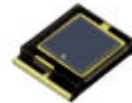


Photo Detectors

Broadest selection of PIN photodiodes and phototransistors for detecting infrared and visible light



Infrared Emitters

High-power emitters with the lowest forward voltages in thru-hole and SMD



Optical Sensors

Reflective and interrupter sensors in thru-hole and surface mount packages



IrDA Transceivers

Industries smallest and fastest transceivers for wireless communication

Opto product lines

Vishay Opto electronic products						
Modules & Visibles			Sensors & IRDC			
IR receiver	Coupler & SSR	LEDs	IrDA transceiver	IR sensors	IR emitter	IR detectors

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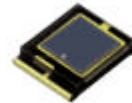


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IrDA Transceivers

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Vishays focus products in infrared

	<p>SMD reflective sensors</p>	<ul style="list-style-type: none"> TCND3000 TCND5000 	
	<p>Transmissive sensors TCUT1300X01 TCPT1300X01</p>	<ul style="list-style-type: none"> AECQ101 qualified Transmissive sensor for automotive and industrial applications 	
	<p>Ambient light sensors</p>	<ul style="list-style-type: none"> TEMT6000X01 / 6000FX01 / 6200FX01 TEMD5510FX01 / TEMD6010FX01 TEPT4400 / 5600 / 5700 	
	<p>High power emitter matching sensitivity of CMOS cameras</p>	<p>SMD VSMF4710 (870nm) VSMG3700 (850nm) VSMG2700 (830nm)</p>	<p>Leaded TSFF5210 (870nm) TSHG6200 (850nm) TSHG8200 (830nm)</p>

Vishays focus in LEDs

	<h2>New SMD line up</h2>	<ul style="list-style-type: none"> 260 °C capable New brightness classif to market standard
	<h2>White LEDs</h2>	<ul style="list-style-type: none"> To come CLCC-6 VLMW61 high brightness up to 23 lm @ 140 mA
	<h2>Low - Cost Blue PLCC2</h2>	<ul style="list-style-type: none"> VLMB41P1Q1 VLMB41P1Q2 VLMB41P2Q2
	<h2>Low - Cost White PLCC2</h2>	<ul style="list-style-type: none"> VLMW41R1T1-5K8L VLMW41R2S2-5K8L VLMW41S1T1-5K8L

Vishays focus IR receiver



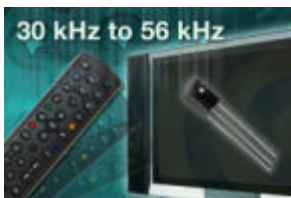
Industry's best performance solution

- TSOP362... (3 V)
- TSOP62... (5 V)
- TSOP361... (3 V)
- TSOP61... (3V)



Low profile SMD solution
 „Bugeye“

- TSOP851...
- TSOP852...
- TSOP854...



New Minicast solutions


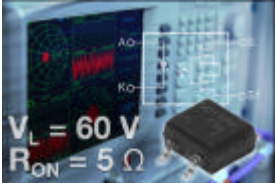






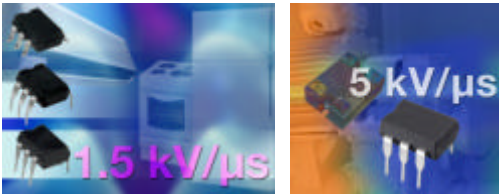
- TSOP38.. / 39...
- TSOP58... / 59...



Filter solutions in small size package (molded)

- TSOP.....F




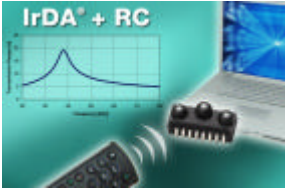
Vishays focus in optocouplers

 <p>10 Mbd</p>	<p>10 Mbd coupler 6N137 VO26 / VO06... series</p>	<ul style="list-style-type: none"> Lower output leakage Driver higher loads faster Operating temp. -40°C to $+100^{\circ}\text{C}$ Reinforced insulation
 <p>$V_L = 60\text{ V}$ $R_{ON} = 5\ \Omega$</p>	 <p>VDE</p>  <p>60V SSR VO1400AEFTR</p>	
 <p>VO1263 $I_{SC} = 42\ \mu\text{A}$ $V_{OC} = 14.6\text{ V}$</p>	<p>MOSFET Driver</p>  <p>VDE</p>  <p>Underwriters Laboratories Inc.®</p>	<ul style="list-style-type: none"> VO1263AB VO1263AAC VO1263AACTR
 <p>1.5 kV/μs</p> <p>5 kV/μs</p>	<p>New phototriacs</p>	<ul style="list-style-type: none"> 1,5 kv / μs Low trigger current of 1.6mA Reinforced insulation rating

Vishays focus in infrared

	<p>Proximity sensor operating with the HALIOS® principle</p>	<ul style="list-style-type: none"> TCND3000 	
<p>TCPT1200 TCUT1200</p>	<p>Transmissive sensor with single and dual output channel and large gap</p>	<ul style="list-style-type: none"> TCUT1200 / TCPT1200 TCUT1300 / TCPT1300* *(coming soon!) 	
	<p>Ambient light sensing with human eye characteristics-V(I)</p>	<ul style="list-style-type: none"> Phototransistors <ul style="list-style-type: none"> •TEMT6000 / 6000F / 6200F Photo Pin Diodes <ul style="list-style-type: none"> •TEMD5510F / TEMD6010F 	
	<p>Infrared illumination for CMOS, CCTV, night vision</p>	<p>SMD VSMF4710 (870nm) VSMG3700 (850nm) VSMG2700 (830nm)</p>	<p>Leaded TSFF5210 (870nm) TSHG6200 (850nm) TSHG8200 (830nm)</p>

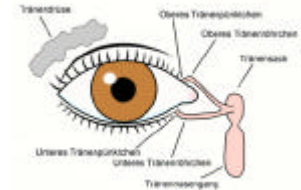
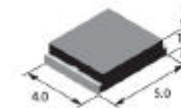
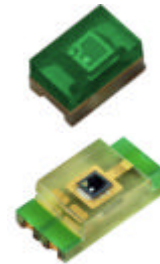
Vishays focus IRDC

 <p>9.7 x 4.7 x 4.0</p>	<p>Fastest transceiver in the market place</p>	<ul style="list-style-type: none"> TFDU8108 VFIR 16.000 kbit / s
 <p>4 Mbit/s</p> <p>1.9 mm</p> <p>1.9 x 6.0 x 3.0</p>	<p>IR simple shot™</p> <p>TFDU6300 / TFDU6301</p>	<ul style="list-style-type: none"> 4 mbit / s (FIR) IrDa transmit of 0.7 m Remote control up to 25 m Get picture from the mobile to the PC
 <p>115 kbit/s</p> <p>2.8</p> <p>6.8</p> <p>1.6</p>	<p>TFBS4650 / TFBS4652</p>	<ul style="list-style-type: none"> 115 kbit / s Low profile – 1.6 mm Transmit intensity – 12.5 mW/sr IrDA transmit distance – 50 cm typ. Remote Control distance – 5.5 m
 <p>IrDA® + RC</p>	<p>TFDU7100</p>	<ul style="list-style-type: none"> 115 kbit / s Low profile – 1.6 mm Transmit intensity – 12.5 mW/sr IrDA transmit distance – 50 cm typ. Remote Control distance – 5.5 m

Design in protection programm

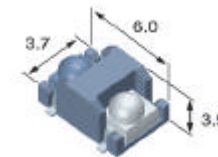
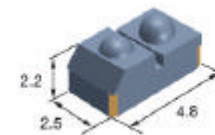
- Ambient light sensing family

- › TEMT6000X01 / 6000FX01 / 6200FX01
- › TEMD6010FX01 / TEMD5510FX01
- › TEPT5600 / 5700 / 4400



- Reflective and proximity sensor

- › TCND3000
- › TCND5000

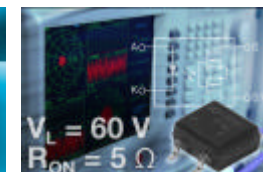


- High power emitter for infrared illumination

- › TSHG6200 / 8200 / TSFF5210
- › VSMG3700 / VSMG2700

- IGBT driver / MOSFET driver

- › VO1263
- › VO1400AEFTR



Design in protection programm

- Low cost white LED in PLCC-2

- › VLMW41...

- Low cost blue LED in PLCC-2

- › VLMB41...

- High brightness CLCC-6 LED

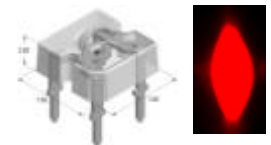
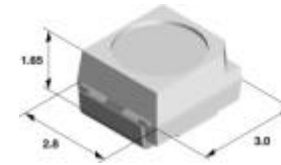
- › VLMK61 up to 15 lm at 140 mA

- › VLMY61 up to 15 lm at 140 mA

- › VLMW61 up to 23 lm at 140 mA

- Oval high brightness Telux™ LEDs

- › TLWR942.. / TLWR952..





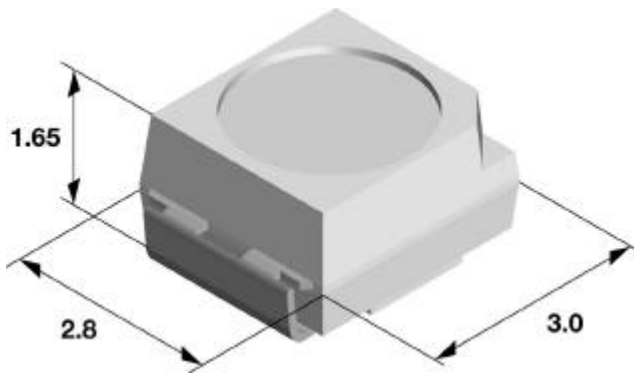
LEDs

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Design-in protection product

Low cost blue PLCC-2 solution



- 462 – 476 nm
- VLMB41P1Q1
- VLMB41P1Q2
- VLMB41P2Q2

Applications

- Dashboard backlighting
- Backlighting for switches, audio systems, office and video equipment
- Backlighting for LCDs and symbols in general

Benefits

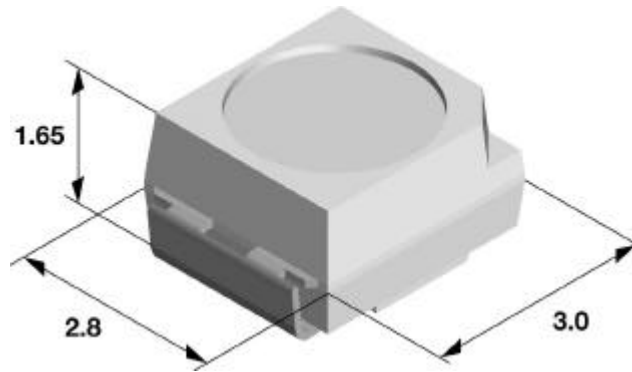
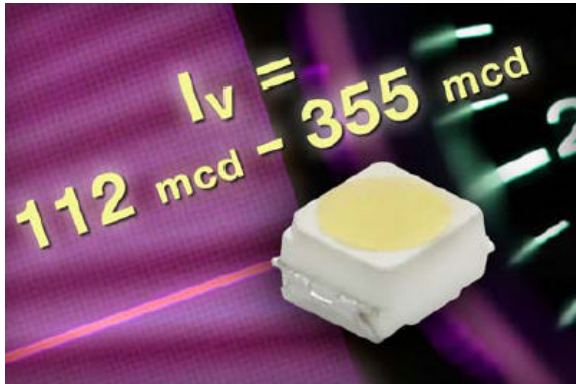
- Low cost
- Higher brightness
- Cost effective replacement of LBT67C blue solutions

Features

- Sapphire based technology
- Implemented ESD protection diode to withstand 2kV
- Leadfree soldering capable
- 45 – 112 mcd @ 10 mA
- 90 – 240 mcd @ 20 mA

Design-in protection product

Low cost white PLCC-2 solution



- VLMW41R1T1-5K8L
- VLMW41R2S2-5K8L
- VLMW41S1T1-5K8L

Applications

- Dashboard backlighting
- Backlighting for switches, audio systems, office and video equipment
- Backlighting for LCDs and symbols in general

Benefits

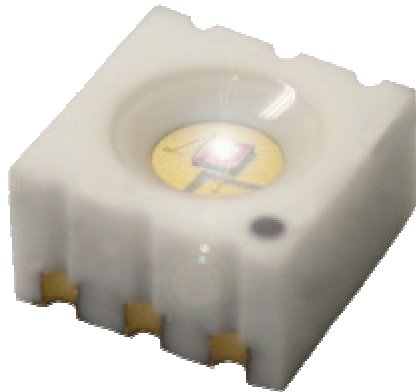
- Low cost
- Higher brightness
- Improved brightness versus standard white solutions LWT673
- Cost effective replacement for LWT67C solutions

Features

- Sapphire based technology
- Implemented ESD protection diode to withstand 2kV
- Leadfree soldering capable
- 112 – 355 mcd @ 10 mA
- 224 – 710 mcd @ 20 mA

Design-in protection product

High brightness CLCC-6



- **VLMK61CADA (amber)**
 - 2.8 – 5.6 cd @ $I_F = 140$ mA
 - max 15 lm
- **VLMY61CADA (yellow)**
 - 2.8 – 5.6 cd @ $I_F = 140$ mA
 - max 15 lm
- **VLMW61CADA-3K8L (white)**
 - Product to be released during Q2 07
- **VLMW61DBEA-3K8L (white)**
 - Product to be released during Q2 07

Applications

- Exterior automotive lighting
- Signal and symbol luminaire
- Marker and break lights
- Rear indicator lights
- Commercial ad residential architectural lighting

Benefits

- High brightness
- Improved thermal behaviour compared to PLCC-6 packages
- AECQ101 qualified

Features

- Wide angle of half sensitivity $\phi = \pm 60^\circ$
- Ceramic housing
- Low thermal resistance
- AllInGap technology
- Optical efficiency 35 lm / W

Vishays focus in LEDs

	<h2>New SMD line up</h2>	<ul style="list-style-type: none"> 260 °C capable New brightness classif to market standard
	<h2>White LEDs</h2>	<ul style="list-style-type: none"> To come CLCC-6 VLMW61 high brightness up to 23 lm @ 140 mA
	<h2>Low - Cost Blue PLCC2</h2>	<ul style="list-style-type: none"> VLMB41P1Q1 VLMB41P1Q2 VLMB41P2Q2
	<h2>Low - Cost White PLCC2</h2>	<ul style="list-style-type: none"> VLMW41R1T1-5K8L VLMW41R2S2-5K8L VLMW41S1T1-5K8L



White LEDs



Package	Angle	[I _F] = mA	Part	[I _v] = mcd			[λ _d] = nm			[I _v] = mIm			V _F = V	X-ref
				min	typ	max	min	typ	max	min	typ	max	typ	
0603	160	10	VLMW11R2S2-5K8L	140		280		X 0.33 - Y 0.33					2,9	LWL28G-R2S2-5K8L
Mini LED	120	10	VLMW2100-5K8L	56	80			X 0.33 - Y 0.33					3	LWM673
			VLMW21N2R2-5K8L	35,5		180		X 0.33 - Y 0.33			320		3	LWM673-N2R2-5K8L
			VLMW21P1Q2-5K8L	45		112		X 0.33 - Y 0.33			240		3	LWM673-P1Q2-5K8L
			VLMW21Q1R2-5K8L	71		180		X 0.33 - Y 0.33			380		3	LWM673-Q1R2-5K8L
PLCC-2	120	10	VLMW3100-5K8L	56				X 0.33 - Y 0.33					3,5	LWT673
			VLMW31P1S1-5K8L	45		224		X 0.33 - Y 0.33			380		3,5	LWT673-P1S1-5K8L
			VLMW31P2R1-5K8L	56		140		X 0.33 - Y 0.33			300		3,5	LWT673-P2R1-5K8L
			VLMW31Q2R2-5K8L	90		180		X 0.33 - Y 0.33			400		3,5	LWT673-Q2R2-5K8L
		20	VLMW33S1U1-5K8L	180		560		X 0.33 - Y 0.33			1200		3,7	LWT67C-S2U1 -5K8L
			VLMW33S2V1-5K8L	224		900		X 0.33 - Y 0.33			1550		3,7	LWT67C-S2V1 -5K8L
			VLMW33T2AA-5K8L	355		1400		X 0.33 - Y 0.33					3,7	LWT67C-T2AA -5K8L
			VLMW33T2U2-5K8L	355		710		X 0.33 - Y 0.33			1600		3,7	LWT67C-T2U2 -5K8L
			VLMW33U2AA-5K8L	560		1400		X 0.33 - Y 0.33					3,7	LWT67C-U2AA -5K8L
			10	VLMW41R1T1-5K8L	112		355		X 0.33 - Y 0.33					3,5
VLMW41R2S2-5K8L	140			280		X 0.33 - Y 0.33					3,5	LWT67C		
VLMW41S1T1-5K8L	180			355		X 0.33 - Y 0.33					3,5	LWT67C		
PLCC4	120	30	VLMW3200	320	600			X 0.290 - Y 0.255				3,7	LWE67C	
CLCC-6	120	120	VLMW61CADA-3K8L	2.800		5.600					9.900			New released
			VLMW61DBEA-3K8L	5.600		9.000					23.000			New released
TELUX	60	50	VLWW9600					X 0.33 - Y 0.33		1500	2200		4,3	no cross
			VLWW9601					X 0.33 - Y 0.33		2000		3600	4,3	no cross
			VLWW9900					X 0.33 - Y 0.33		1500	2200		4,3	no cross



Promotion

One of the World's Largest
Manufacturers
of Discrete Semiconductors and Passive Components



Print promotion

Product Line	Material	Family	Products	Order Code
Couper	Product sheet	5.0 kv Triacs	VO415.. / VO425..	VSA-PT0035-0508
	Product sheet	1.5 kv Triacs	VO3062 / VO3063	VSA-PT0034-0508
	Product sheet	110° rated couplers		VSA-SG0022-0312
	Product sheet	High speed coupler		VSA-PT0033-0609
	Product sheet	IGBT / MOSFET Driver	VO3150	VSA-PT0040-0606
	Selection guide	Couplers		VMN-PL2112-0701
	Selection Guide	Photo triacs		VSA-SG2093-0612
	Selection guide	High speed coupler		VSA-SG0030-0506
Solid state relays	Selection guide	Solid State Relays		VMN-SG0027-0604
	Product sheet	Solid State Relays	VO1400AEFTR	VMN-PT9181-0609
	Product sheet	Mosfet driverV01263	V01263	VSA-PT0037-0511
Sensors	Selection guide	Detector / Emitter / Sensor		VSA-SG0041-0512
	Ambient Light	Ambient Light Flyer		VSA-PT0043-0609
Receiver	Product Sheet	Learning Receiver	TSOP98200	VMN-PT0048-0702
IRDC	Selection guide			VSA-SG0016-0508
LED	Selection guide	SMD LEDs	VLM....	VRH-PL2110-0602
	Selection guide	Telux™ LEDs	VLW.... / TLW...	VSA-PL2112-0611

Sample boxes

Product Line	Material	Family	Products	Order Code
Opto	Datatsheet CD	Vishay		VMN-B00030701
Sensors	Demobox	Proximity	TCND3000	
	Demobox	Ambient Light Sensor	TEMT6000	
	Development Kit	Ambient Light Sensor	TEMT6200F	
	Development Kit	Ambient Light Sensor	TEPT5700	
	Development Kit	Ambient Light Sensor	TEPT5600	
	Development Kit	Ambient Light Sensor	TEPT4400	
Receiver	Sample Box			
IRDC				VSA-SG0016-0508
LED	Demobox			

Sensor promotion

VISHAY INTERTECHNOLOGY, INC.

OPTOELECTRONICS

SELECTOR GUIDE

IR EMITTERS, PHOTO DETECTORS AND OPTICAL SENSORS

www.vishay.com

Infrared Emitters

Package	Part Number	Peak Wavelength (nm)	Angle of Half Intensity P _{1/2} (°)	Peak Intensity I _p (mW/cm ²)	Rise and Fall Time t _{r/f} (ns)
Infrared Emitters					
4 mm	TSA10100	940	10	100	600 / 600
	TSA10200	940	20	40	600 / 600
	TSA10100	940	10	40	600 / 600
	TSA10200	940	12	-	-
	TSA10400	940	25	-	-
	TSA10200	940	12	-	-
	TSA12500	940	20	-	-
	TSA10400	940	25	-	-
	TSA10200	940	12	-	-
	TSA12500	870	10	-	-
	TSA12500	870	10	-	-
	TSA12500	870	10	-	-
	TSA12500	870	10	-	-
	TSA12500	870	10	-	-
	TSA12500	870	10	-	-
	TSA12500	870	10	-	-
	TSA12500	870	10	-	-
	1.9 mm	TSM2000 1, 2, 3	875	12	-
TSM4000 1, 2, 3		875	12	-	-
TSM4000 1, 2, 3		875	12	-	-
TSM4000 1, 2, 3		875	12	-	-
TSM4000 1, 2, 3		875	12	-	-
TSM4000 1, 2, 3		875	12	-	-
TSM4000 1, 2, 3		875	12	-	-
TSM4000 1, 2, 3		875	12	-	-
TSM4000 1, 2, 3		875	12	-	-
TSM4000 1, 2, 3		875	12	-	-
TSM4000 1, 2, 3		875	12	-	-
TSM4000 1, 2, 3		875	12	-	-
1.9 mm	TSM1000 1, 2, 3, 4, 5	900	12	-	-
	TSM1000 1, 2, 3, 4, 5	900	12	-	-
	TSM1000 1, 2, 3, 4, 5	900	12	-	-
	TSM1000 1, 2, 3, 4, 5	900	12	-	-
	TSM1000 1, 2, 3, 4, 5	900	12	-	-
	TSM1000 1, 2, 3, 4, 5	900	12	-	-
2.0 mm	TSL15000	900	10	-	-
	TSL15000	900	10	-	-
	TSL15000	900	10	-	-
1.8 mm	TSAW1001	875	20	-	-
	TSAW1001	875	20	-	-
2.0 mm	CS2701H	900	10	-	-
	CS2701H	900	10	-	-
	CS2701H	900	10	-	-
High Performance	TSP2000	900	24 (1.85°)	-	-
	TSP2000	900	30	-	-
TO-18	TSA10000	870	20	-	-
	TSA10000	870	5	-	-
	TSA10000	870	10	-	-
	TSA10000	870	10	-	-
	TSA10000	870	10	-	-
	TSA10000	870	10	-	-
	TSA10000	870	10	-	-
PLCC-8	TSMF4710	870	-	10	15 / 15
	TSMF2700	870	-	10	15 / 15
	TSMF3100	870	-	10	20 / 15
	TSMF3300	870	-	10	20 / 15
	TSMF3500	870	-	10	20 / 15
	TSMF3700	870	-	10	20 / 15

Package	Part Number	Peak Wavelength (nm)	Bandwidth (nm)	Sensitivity I _a (μA) ⁽¹⁾	Angle of Half Sensitivity P _{1/2} (°)	Photo Area (mm ²)	Rise and Fall Time t _{r/f} (ns)
PIN Photodiodes							
5 mm	BPV10	900	570 to 1040	70	20	0.78	2.5 / 2.5
	BPV10NF	940	790 to 1050	60	20	0.78	2.5 / 2.5
1.9 mm	TEMD100, 20, 30, 40	900	840 to 1050	10	15	0.25	4 / 4
	BPW46, L	900	600 to 1050	50	65	7.5	100 / 100
	BPW41N	950	870 to 1050	45	65	7.5	100 / 100
	BPV20F	950	870 to 1050	60	65	7.5	100 / 100
	BPV21F (L)	950	870 to 1050	38	65	5.7	70 / 70
	BPW82, 83	950	790 to 1050	45	65	7.5	100 / 100
High Performance	S188P	950	870 to 1050	45	65	7.5	100 / 100
	BPV22F	950	870 to 1050	80	60	7.5	100 / 100
	BPV22NF	940	790 to 1050	85	60	7.5	100 / 100
	BPV23F	950	870 to 1050	63	60	5.7	70 / 70
	BPV23NF	940	790 to 1050	65	60	5.7	70 / 70
TO-18	TESP5700	870	790 to 980	25	60	2	10 / 10
	BPW24R	900	800 to 1050	60	12	0.78	7 / 7
	BPW34, BP104	900	800 to 1050	50	65	7.5	100 / 100
Top View, Surface Mount	TEMD5010	900	400 to 1100	55	65	7.5	100 / 100
	TEMD5020	900	400 to 1100	35	65	4.4	100 / 100
	TEMD5110	940	790 to 950	55	65	7.5	100 / 100
	TEMD5120	940	790 to 950	35	65	4.4	100 / 100

Notes: (1) Speed: RL = 1 kΩ, λ = 820 nm, V = 10 V
(2) Sensitivity: V_{bi} = 5 V, E₀ = 1 mW/cm², λ = 950 nm



Ambient light sensing

AMBIENT LIGHT SENSORS

and Development Kit

OPTOELECTRONICS
PRODUCT SHEET

Broad Portfolio of Ambient Light Sensors in Surface-mount and Leaded Packages

SENSOR FEATURES AND BENEFITS

- 5-mm and 3-mm leaded, 0805 and 1206 surface-mount packages
- Filtering epoxy option virtually eliminates infrared influence
- Photo transistor output with simple, two-pin connection
- Big power savings in mobile devices by measuring the ambient light and controlling the:
 - Intensity of the LCD backlight
 - Keypad backlight, on or off
- Kit features I²C and RS-232 connectivity and Windows® based software
- Meet RoHS requirements by replacing cadmium sulfide photo resistors with lead-free photo sensors

Datasheets are available on our web site at www.vishay.com
 TEM1600D - <http://www.vishay.com/doc/781579>
 TEM16200F - <http://www.vishay.com/doc/781579>
 TEPT5700 - <http://www.vishay.com/doc/784788>
 TEPT5700 - <http://www.vishay.com/doc/781321>
 TEPT4400 - <http://www.vishay.com/doc/781341>
 Ambient Light Sensor Evaluation Kit - <http://www.vishay.com/doc/781308>

www.vishay.com



Ambient Light Sensors and Development Kit

Vishay Semiconductors

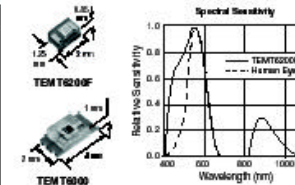
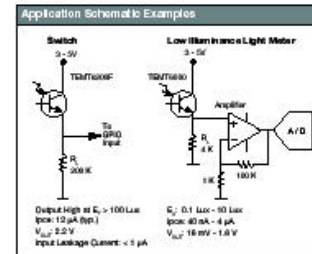
Ambient Light Sensors

As one of the world's leading suppliers of photo detectors, Vishay offers a broad portfolio of ambient light sensors. These sensors enable electronic products like LCD displays, streetlights and automotive instruments to sense and respond to light in ways similar to the human eye. With a unique epoxy formulation (F), the effects of infrared light are virtually eliminated. With simple two-pin connectors, these phototransistor based sensors do not require an external amplifier. The portfolio includes surface-mount and leaded packages to meet the demands of every application.

Performance Characteristics							
Part Number	Mounting	Package	Peak Wavelength (nm)	Bandwidth (nm)	Angle of Half Sensitivity (°)	Light Current Standard A (µA)	Light Current Fluorescent (µA)
TEM1600D	SMD	1206	570	430 - 800	60	50	21
TEM16200F	SMD	0805	550	450 - 650	60	12	7
TEPT5700	Leaded	5 mm, flat top	570	430 - 800	50	75	31
TEPT5600	Leaded	5 mm	570	430 - 800	20	350	145
TEPT4400	Leaded	3 mm	570	430 - 800	30	200	83

I_E = 100 lux, V_{CE} = 5 V, I_{CE} standard A light source, typical

I_E = 100 lux, V_{CE} = 5 V, fluorescent light color code 955



AMBIENT LIGHT SENSOR DEVELOPMENT KIT

Simplifies development and programming of products using Vishay's ambient light sensors. Kit includes:

- Sensor board with customer selected sensor, analog-to-digital converter, and I²C bus interface
- Adapter board converts I²C to RS-232 for easy connection to a PC
- Windows-based software
 - Programmable sampling rate and gain
 - Displays illumination in Lux, µA, voltage, decimal and hexadecimal
- Ordering information: TEM1600DwKIT, TEM16200FwKIT, TEPT4400DevKIT, TEPT5700wKIT, and TEPT5600DevKIT




NOTICE: Specifications of the products described herein are subject to change without notice. Vishay Intertechnology, Inc., or anyone else, assumes no responsibility in liability for any errors or omissions. Information contained herein is intended to provide a product description only. The buyer assumes all responsibility for the application of the product. Vishay Intertechnology, Inc. does not warrant any application or implied warranty, including the suitability of any product, including liability or warranty, relating to the use of a particular product, except as specifically stated in the product data sheet. Customers using any of our products for any application should consult our sales and marketing departments and agree to hold Vishay Intertechnology, Inc. harmless regarding their use of our products.

For technical questions, contact ambient.light@vishay.com




New Telux flyer



VISHAY INTERTECHNOLOGY, INC.

OPTOELECTRONICS

TELUX™ LEDs
 For Automotive and Outdoor Applications



PRODUCT OVERVIEW

www.vishay.com



TELUX™ LEDs For Automotive and Outdoor Applications

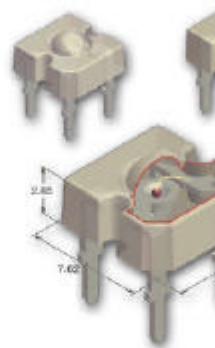
High performance Vishay TELUX™ LEDs feature a full color range of devices with a wide viewing angle and high luminous flux.

TELUX LEDs are especially designed for rough applications that require a high luminous intensity. These include outdoor applications such as brake lights, tail lights, and turn signals as well as outdoor applications such as traffic signals, message panels, and warning lights.

TELUX LEDs are offered in red, yellow, true green, blue-green, blue, and white versions, and with a choice of 90° or 45° angles of half intensity.

With their excellent luminous flux performance and extended operating temperature range from -40 °C to +101 °C, TELUX LEDs are the premier solution for all exterior automotive and outdoor LED applications.

For further technical information, please contact:
leds@vishay.com or visit our website: www.vishay.com



CHARACTERISTICS							
Type	Color (wavelength) (nm)	F _v (cd/m²)		L (mW)	V _f (V)	I _f (mA)	
		Mk	Typ.				
TLVF0900	Red (619)	1900	2100	70	2.2 (< 2.65)	70	± 30
TLVF0900	Red (619)	1900	2100	70	2.2 (< 2.65)	70	± 45
TLVF0900	Red (619)	3000	3000	70	2.2 (< 2.65)	70	± 30
TLVF0900	Red (619)	3000	3000	70	2.2 (< 2.65)	70	± 45
TLVF0900	Red (619)	3000	3000	70	2.2 (< 2.65)	70	± 85
TLVF0920	Red (619)	3000	3700	70	2.5 (< 3.08)	70	25 × 68
TLVF0921	Red (619)	3000	4300	70	2.5 (< 3.08)	70	25 × 68
TLVF0922	Red (619)	4000	6000	70	2.5 (< 3.08)	70	26 × 68
TLVF0920	Red (619)	3000	3700	70	2.5 (< 3.08)	70	40 × 80
TLVF0921	Red (619)	3000	4300	70	2.5 (< 3.08)	70	40 × 80
TLVF0922	Red (619)	4000	6000	70	2.5 (< 3.08)	70	40 × 80
TLVF0930	Red (619)	3000	3000	70	2.3 (< 2.7)	70	± 30
TLVF0930	Red (619)	3000	3700	70	2.5 (< 3.08)	70	± 30
TLVF0931	Red (619)	3000	4300	70	2.5 (< 3.08)	70	± 30
TLVF0932	Red (619)	4000	6000	70	2.5 (< 3.08)	70	± 30
TLVF0900	Red (619)	3000	3000	70	2.3 (< 2.7)	70	± 45
TLVF0920	Red (619)	3000	3700	70	2.5 (< 3.08)	70	± 45
TLVF0921	Red (619)	3000	4300	70	2.5 (< 3.08)	70	± 45
TLVF0922	Red (619)	4000	6000	70	2.5 (< 3.08)	70	± 45
TLVF0930	Red (619)	3000	3000	70	2.3 (< 2.7)	70	± 45
TLVF0930	Soft Orange (605)	1900	2100	70	2.2 (< 2.65)	70	± 30
TLVF0900	Soft Orange (605)	1900	2100	70	2.2 (< 2.65)	70	± 45
TLVF0900	Yellow (588)	3000	1400	70	2.3 (< 2.65)	70	± 30
TLVF0900	Yellow (588)	3000	1400	70	2.3 (< 2.65)	70	± 45
TLVF0900	Yellow (588)	3000	3000	70	2.2 (< 2.65)	70	± 30
TLVF0900	Yellow (588)	3000	3000	70	2.2 (< 2.65)	70	± 45
TLVF0920	Yellow (588)	3000	3700	70	2.5 (< 3.08)	70	± 30
TLVF0921	Yellow (588)	3000	4300	70	2.5 (< 3.08)	70	± 30
TLVF0922	Yellow (588)	4000	6000	70	2.5 (< 3.08)	70	± 30
TLVF0920	Yellow (588)	3000	3700	70	2.5 (< 3.08)	70	± 45
TLVF0921	Yellow (588)	3000	4300	70	2.5 (< 3.08)	70	± 45
TLVF0922	Yellow (588)	4000	6000	70	2.5 (< 3.08)	70	± 45
VLWV09000	True Green (523)	2000	2500	50	3.1 (< 4.7)	50	± 30
VLWV09000	True Green (523)	2000	2500	60	3.1 (< 4.7)	60	± 45
VLWV09000	White	1900	2300	60	4.1 (< 6.2)	60	± 30
VLWV09000	White	1900	2300	50	4.1 (< 6.2)	50	± 45
VLVB0900	Blue (471)	800	1200	60	3.1 (< 4.7)	60	± 30
VLVB0900	Blue (471)	800	1200	60	3.1 (< 4.7)	50	± 45

NOTES: 1. Characteristics are for individual devices. 2. See table for viewing angle. 3. See notes on the label regarding the relationship of half-intensity to maximum intensity. 4. Maximum intensity and viewing angle are defined by the manufacturer's test method. 5. Luminous flux is defined by the manufacturer's test method. 6. Luminous flux is defined by the manufacturer's test method. 7. Luminous flux is defined by the manufacturer's test method. 8. Luminous flux is defined by the manufacturer's test method. 9. Luminous flux is defined by the manufacturer's test method. 10. Luminous flux is defined by the manufacturer's test method.

New 10 mbd coupler flyer

OPTOCOUPLEDERS
10 MBd High-Speed

PRODUCT SHEET

RoHS
WARRANTY

23

Pb

A New Family of 10 MBd High-Speed Optocouplers

FEATURES AND BENEFITS

- 10 MBd high-speed data rate in DIP-8 and SOIC-8 packages
- Ambient operating temperature from -40 °C to +100 °C
- Reinforced insulation per IECs 9922-10.6.1
- Utilizes open-drain NMOS transistor output for lower output leakage
- Certified by key international safety regulatory agencies such as UL, CUL, and VDE
- CMR ratings of 100 V/ps, 5 kV/ps, and 10 kV/ps
- 400-nA and surface-mount options for DIP-8 packages available
- IEC60747-2 (VDE0884) available with option 1
- Pure tin leads
- Single and dual channels

More information is available on our web site at www.vishay.com/optocouplers. For DIP-8 datasheet, visit <http://www.vishay.com/docs/52544/40934.pdf>. For SOIC-8 datasheet, visit <http://www.vishay.com/docs/53077/40937.pdf>.

www.vishay.com

High-Speed Optocouplers

Vishay Semiconductors

- APPLICATIONS**
- Digital linkbus isolation (Profibus, CANbus, etc)
 - Signal and pulse transformer replacement
 - Digital control power supply
 - Plasma display panel scan driver interface
 - High-speed D/A and A/D converters
 - PLC, ATE high-output isolation
 - Computer peripheral interfaces

Vishay's 10 MBd optocouplers utilize a highly efficient input LED coupled to a photosensitive IC detector.

The detector features an integrated photodiode and amplifier that convert light signals from the LED into a voltage signal. A voltage comparator then digitizes the voltage signal. An open-drain NMOS transistor drives the output of the detector. The internal shield provides an industry-high common-mode reject immunity.

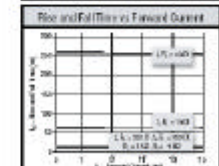
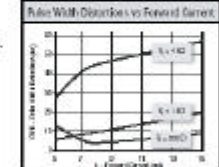
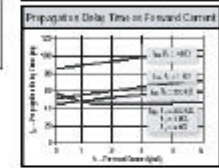
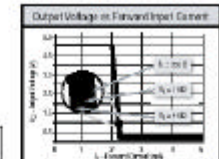
For the single-channel devices, an snubber function on pin 7 allows the detector to be stacked. The use of a 0.1-pF bypass capacitor connected between pins 5 and 8 is recommended.

All packages have multiple options that can be added from a variety of different lead forms to the ESD8001-5-2 (VDE0884) electrical test. For detailed ordering information, please visit the Vishay website at www.vishay.com/optocouplers and look for the options information document.

Part Number	Channels(s)	Package	V _{ce} (typ. V _{CE})	V _{ce} (typ. V _{CE})	CMR _{CMR} (V/ps)	Creepage (mm)
40937	1	DIP-8	30	50	100	> 4
V0981	1	DIP-8	30	50	5,000	> 4
V0981	1	DIP-8	25	50	10,000	> 4
V0680T	1	SOIC-8	30	50	100	> 4
V0680T	1	SOIC-8	30	50	5,000	> 4
V0681T	1	SOIC-8	30	50	10,000	> 4
V0281	2	DIP-8	30	50	100	> 4
V0281	2	DIP-8	30	50	5,000	> 4
V0981	2	DIP-8	30	50	10,000	> 4
V0680T	2	SOIC-8	30	50	100	> 4
V0681T	2	SOIC-8	30	50	5,000	> 4
V0681T	2	SOIC-8	30	50	10,000	> 4
SFH875T	3	SOIC-8	30	50	100	> 5
SFH875T	3	SOIC-8	30	50	5,000	> 5
SFH875T	3	SOIC-8	30	50	10,000	> 5

REMARKS: Specifications on the photosensitive diode include the ability to handle without damage 100% relative humidity (RH) at 40 °C for up to 100 days. Additional information is available on our website. Vishay Semiconductors, Inc. or Vishay Electronics reserves the right to change specifications without notice. Specifications are subject to change without notice. This document is intended for informational purposes only and does not constitute a contract. Vishay Semiconductors, Inc. or Vishay Electronics does not warrant, either expressly or implied, that the information in this document is accurate, complete, or up-to-date. The information in this document is provided for informational purposes only. Do not use this information for safety-critical applications. Vishay Semiconductors, Inc. or Vishay Electronics does not warrant, either expressly or implied, that the information in this document is accurate, complete, or up-to-date. For more information, please visit our website at www.vishay.com.

For technical questions, contact Optocoupler@vishay.com



VISHAY

NEW PRODUCT INTRODUCTION

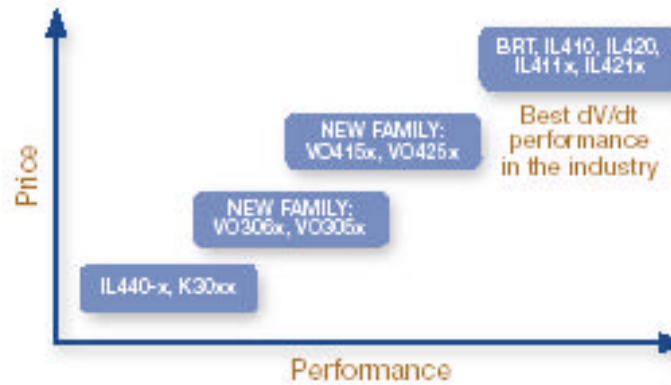
10 MBd High-Speed Optocouplers

Vishay Semiconductors

504-071350-0010

New Triac selection guide

VISHAY INTERTECHNOLOGY, INC.
OPTOELECTRONICS
SELECTOR GUIDE
PHOTOTRIAC
Optoelectronics
www.vishay.com



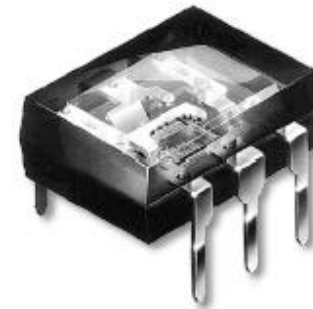
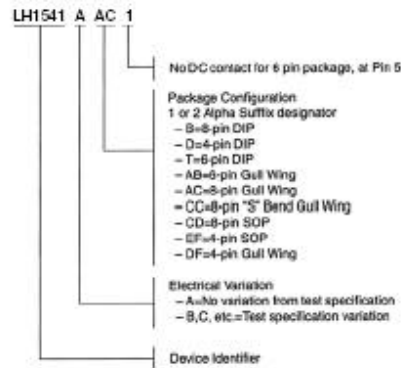
Zero Crossing				
Part Number	Minimum critical rate of rise of off-state voltage Min. dV/dt_{off} (V/μs)	Trigger Current I_T (mA)	Blocking Voltage V_{DRM} (V)	Isolation Test Voltage V_{ISO} (V _{RMS})
BRT21F	10,000	1.2	400	5,300
BRT22F	10,000	1.2	600	5,300
BRT23F	10,000	1.2	800	5,300
IL4116	10,000	1.3	600	5,300
IL4117	10,000	1.3	700	5,300
IL4118	10,000	1.3	800	5,300
BRT21H	10,000	2	400	5,300
BRT22H	10,000	2	600	5,300
BRT23H	10,000	2	800	5,300
IL410	10,000	2	600	5,300
IL4108	10,000	2	800	5,300
BRT21M	10,000	3	400	5,300
BRT22M	10,000	3	600	5,300
BRT23M	10,000	3	800	5,300
VO415xD	5,000	1.6	400	5,300

Non Zero Crossing				
Part Number	Minimum critical rate of rise of off-state voltage Min. dV/dt_{off} (V/μs)	Trigger Current I_T (mA)	Blocking Voltage V_{DRM} (V)	Isolation Test Voltage V_{ISO} (V _{RMS})
BRT11F	10,000	1.2	400	5,300
BRT12F	10,000	1.2	600	5,300
BRT13F	10,000	1.2	800	5,300
IL4216	10,000	1.3	600	5,300
IL4217	10,000	1.3	700	5,300
IL4218	10,000	1.3	800	5,300
BRT11H	10,000	2	400	5,300
BRT12H	10,000	2	600	5,300
BRT13H	10,000	2	800	5,300
IL420	10,000	2	600	5,300
IL4208	10,000	2	800	5,300
BRT11M	10,000	3	400	5,300
BRT12M	10,000	3	600	5,300
BRT13M	10,000	3	800	5,300
VO425xD	5,000	1.6	400	5,300

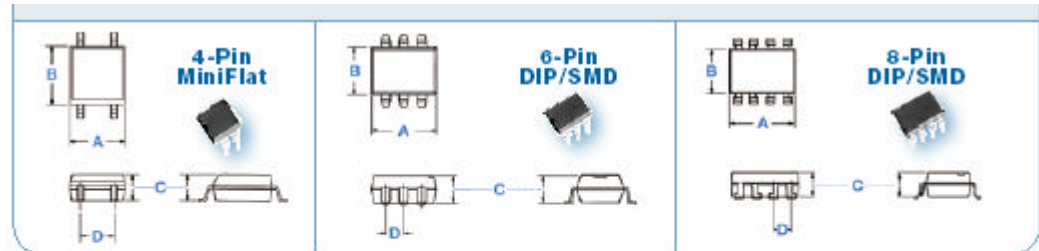
New SSR selection guide



Part Number Coding



www.vishay.com/ref/solid_state_relays



Mini Flat	4-Pin*	8-Pin*
A	0.174 (0.442)	0.374 (9.61)
B	0.190 (4.70)	0.180 (4.70)
C	0.090 (2.03)	0.080 (2.03)
D	0.100 (2.54)	0.100 (2.54)

Typical* dimensions - inches (mm)

SMD/DIP	4-Pin*	6-Pin*	8-Pin*
A	0.261 (6.62)	0.343 (8.60)	0.395 (9.78)
B	0.300 (7.62)	0.300 (7.62)	0.300 (7.62)
C	0.140 (3.35)	0.140 (3.30)	0.140 (3.30)
D	0.100 (2.54)	0.100 (2.54)	0.100 (2.54)

Typical* dimensions - inches (mm)

New coupler selection guide

VISHAY
VISHAY INTERTECHNOLOGY, INC.
OPTOELECTRONICS
SELECTOR GUIDE

OPTOCOUPERS

IGBT Driver

- VC2150

Phototrio

- SRT11418/18
- SRT12102/20
- SL410P20H100P200
- SL411S41130P110
- SL411S42130P210

VC2150

- VC4115A/150
- VC4115A/150
- VC4215A/200
- VC4215A/200

VC2150

- VC2015/200
- VC2015/200

IL485

- K30105-K3000P

Isolation Test Voltage (RMS) Based on Package Type

15.0 kV	
11.8 kV	
5.3 kV	
3.75 kV	
3.0 kV	
1.75 kV	

Optocoupler Options*

Option 1
Optocouplers for extra electrical isolation per IEC 60747-5-2 (VDE 0884)

7.62 mm
Dip type

10.16 mm
Option 6
DIP optocouplers with 10.16 mm (0.4") lead length

9.7 mm
Option 7
Lead bands for SMT (surface mount) optocouplers

>0.1 mm
Option 8
Lead bands for SMT (surface mount) optocouplers

* Not available for all products

www.vishay.com

New SMD LED selection guide

VISHAY INTERTECHNOLOGY, INC.

OPTOELECTRONICS

PRODUCT OVERVIEW

SURFACE-MOUNT LEDs
Lighting the World

www.vishay.com

Classification of Components

Intensity		
Ball Groups	Luminous Intensity	
C	1	0.28-0.36
C	2	0.36-0.45
D	1	0.45-0.56
D	2	0.56-0.71
E	1	0.71-0.90
E	2	0.90-1.12
F	1	1.12-1.40
F	2	1.40-1.80
G	1	1.80-2.24
G	2	2.24-2.80
H	1	2.80-3.55
H	2	3.55-4.50
J	1	4.50-5.60
J	2	5.60-7.10
K	1	7.10-9.00
K	2	9.00-11.20
L	1	11.20-14.00
L	2	14.00-18.00
M	1	18.00-22.40
M	2	22.40-28.00
N	1	28.00-35.50
N	2	35.50-45.00
P	1	45-56
P	2	56-71
Q	1	71-90
Q	2	90-112
R	1	112-140
R	2	140-180
S	1	180-224
S	2	224-280
T	1	280-355
T	2	355-450
U	1	450-560
U	2	560-710
V	1	710-900
V	2	900-1120
AA		1120-1400
AB		1400-1800
BA		1800-2240
BB		2240-2800
CA		2800-3550
CB		3550-4500
CA		4500-5600
CB		5600-7100

For further technical information, please contact: led@vishay.com or visit our web site: www.vishay.com

Color					
Group	Dominant Wavelength (nm)				
	Min.	Yellow	Blue	Green	Max.
0					
1	581	594			
2	581	596			
3	585	596			
4	597	590	594	597	
5	593	592	599	599	
6	591	594	599	571	
7			570	573	
8			572	575	

Soft Orange			Pure Green		
0			595	599	599
1	598	601	598	591	591
2	600	603	590	590	590
3	602	605	592	592	592
4	604	607			
5	607	609			
6	608	611			

Blue		
2	465	464
3	462	468
4	465	472
5	470	476
6	474	480

Bluegreen			Tealgreen		
2	492	498	509	517	
3	492	502	515	523	
4	500	508	521	529	
5	504	510	527	535	
6	508	514	533	541	

Chromaticity Coordinate Groups								
Group	x		y		Group	x		y
	3L	0.266	0.232	0.291		0.268	3R	
	0.258	0.239	0.285	0.279	4L	0.330	0.347	
	0.273	0.261	0.307	0.312		0.347	0.371	
	0.280	0.252	0.310	0.297		0.345	0.352	
	0.273	0.257	0.296	0.299		0.330	0.310	
	0.280	0.232	0.291	0.268		0.330	0.330	
	0.280	0.292	0.310	0.297		0.338	0.342	
	0.280	0.244	0.313	0.294		0.352	0.344	
	0.280	0.252	0.310	0.297		0.345	0.352	
	0.273	0.261	0.307	0.312		0.347	0.371	
	0.285	0.279	0.330	0.347		0.367	0.401	
	0.291	0.268	0.330	0.330		0.364	0.393	
	0.280	0.244	0.313	0.294		0.352	0.344	
	0.280	0.252	0.310	0.297		0.338	0.342	
	0.291	0.268	0.330	0.330		0.364	0.393	
	0.290	0.259	0.330	0.310		0.360	0.357	

Luminous Intensity	PLOC2			
	Part Number	Dominant Wavelength (nm)	I _v Typ. (mcd)	@ I _v (mA)
1-10 mcd	VLM101	612-622	2.5 @ 0.25V	2
	VLM101	581-594	2.5 @ 0.25V	2
	VLM101	468	3.0 @ 4.0	10
11-50 mcd	VLM501	624-636	6 @ 2.5V	2
	VLM501	600-608	10 @ 5.0V	2
	VLM501	581-594	8 @ 4.0V	2
	VLM501	612-622	6.0 @ 2.5V	10
	VLM501	589-611	3.0 @ 2.5V	10
	VLM501	581-594	6.0 @ 2.5V	10
51-100 mcd	VLM101	585-595	4.0 @ 1.0V	10
	VLM501	624-636	7.5 @ 2.5V	10
	VLM501	582-575	9.0 @ 4.0V	10
	VLM501	5800V	140 @ 4.0V	20
101-200 mcd	VLM514	462-478	40 @ 2.5V	20
	VLM514	588-611	30 @ 2.5V	20
	VLM514	581-594	31 @ 2.5V	20
	VLM514	630	11 @ 1.5V	20
201-500 mcd	VLM521	456-514	170 @ 0.6V	20
	VLM521	515-541	180 @ 0.6V	20
	VLM521	611-622	500 @ 2.0V	50
	VLM521	626-636	300 @ 1.0V	50
501-1000 mcd	VLM521	600-611	600 @ 2.0V	50
	VLM521	585-584	450 @ 2.0V	50
	VLM521	588-577	438 @ 2.0V	50
	VLM521	5800V	500 @ 2.0V	20
1001-2000 mcd	VLM521	5800V	500 @ 2.0V	20
	VLM521	5800V	500 @ 2.0V	20
	VLM521	5800V	500 @ 2.0V	20
	VLM521	5800V	500 @ 2.0V	20



Thanks for your attention

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