Pre.	S. Uchida	Rev.	A	S. Uchida
Apr.	M. Tabata 9-Jan.-'02			M. Tabata 7-Aug.-'02

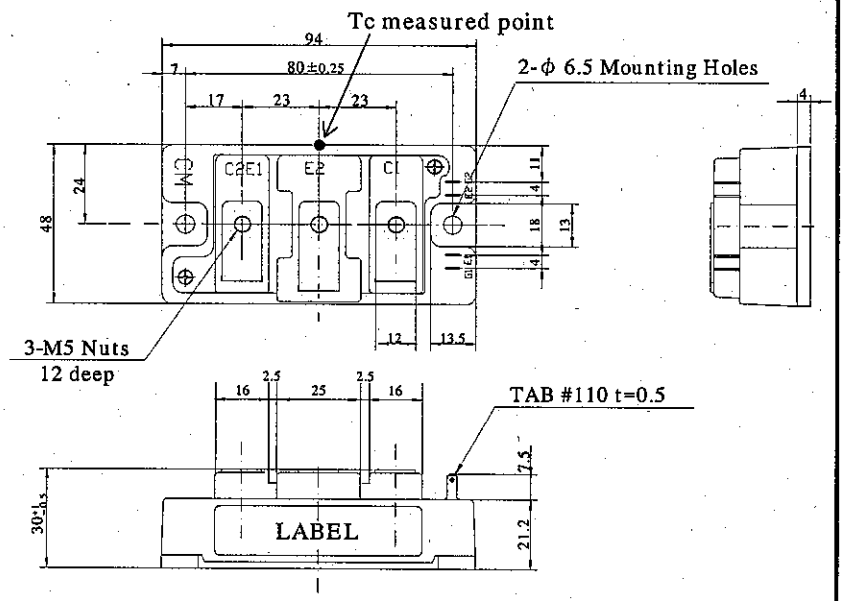
Notice : This is not a final specification. Some parametric limits are subject to change.

CM150DUS-12F

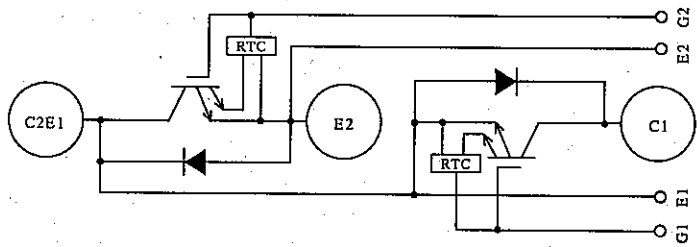
- I_C 150A
- V_{CES}.....600V
- Insulated Type
- 2-elements in a pack

APPLICATION
Welder

OUTLINE DRAWING Dimensions in mm



CIRCUIT DIAGRAM



ABSOLUTE MAXIMUM RATINGS (T_j = 25 °C)

Symbol	Item	Conditions	Ratings	Units
V_{CES}	Collector-emitter voltage	G-E Short	600	V
V_{GES}	Gate-emitter voltage	C-E Short	±20	V
I_C	Collector current	Tc= 25 °C	150	A
I_{CM}		Pulse ②	300	
I_E ①	Emitter current	Tc= 25 °C	150	A
I_{EM} ①		Pulse ②	300	
Pc ③	Maximum collector dissipation	Tc= 25 °C	520	W
Tj	Junction temperature		-40 ~+150	°C
Tstg	Storage temperature		-40 ~+125	°C
Viso	Isolation voltage	Main terminal to base plate,AC 1 min.	2500	V
-	Torque strength	Main Terminal M 5	2.5 ~ 3.5	N·m
		Mounting holes M 6	3.5 ~ 4.5	
-	Weight	Typical value	310	g

ELECTRICAL CHARACTERISTICS (T_j = 25 °C)

Symbol	Item	Conditions	Min.	Typ.	Max.	Units
I_{CES}	Collector cutoff current	V_{CE}=V_{CES},V_{GE}= 0V	-	-	1	mA
$V_{GE(th)}$	Gate-emitter threshold voltage	I_C=15 mA,V_{CE}= 10V	5	6	7	V
I_{GES}	Gate leakage current	V_{GE}=V_{GES} ,V_{CE}= 0V	-	-	20	μA
$V_{CE(sat)}$	Collector to emitter saturation voltage	T_j= 25 °C, I_C= 150A ④	1.7	2.0	2.7	V
		T_j= 125 °C, V_{GE}= 15V	-	1.95	-	
Cies	Input capacitannce	V_{CE}= 10V, V_{GE}= 0V	-	-	41	nF
Coes	Output capacitance		-	-	2.7	
Cres	Reverse transfer capacitance		-	-	1.5	
Q_G	Total gate charge	V_{CC}=300V,Ic= 150A, V_{GE}= 15V	-	930	-	nC
td(on)	Turn-on delay time	V_{CC}=300V,Ic= 150A, V_{GE1}=V_{GE2}=15V, R_G=4.2Ω , Inductive load switching operation	-	-	120	ns
tr	Turn-on rise time		-	-	100	
td(off)	Turn-off delay time		-	-	350	
tf	Turn-off fall time		-	-	150	
trr ①	Reverse recovery time	I_E= 150 A	-	-	150	ns
Qrr ①	Reverse recovery charge		-	2.8	-	μC
V_{EC} ①	Emitter-collector volatge	I_E=150A, V_{GE}=0V	-	-	2.6	V
Rth(j-c)Q	Thermal resistance*1	IGBT part(1/2 module)	-	-	0.24	°C/W
Rth(j-c)R		FWDi part(1/2 module)	-	-	0.47	
Rth(c-f)	Contact thermal resistance	Case to fin,Thermal compound applied(1/2 module)*2	-	0.07	-	
Rth(j-c')Q	Thermal resistance	Tc measured point is just under the chips(IGBT part)	-	-	0.19*3	
RG	External gate resistance		4.2	-	42	Ω

A

① I_E,V_{EC},trr & Qrr represent characteristics of the anti-parallel,emitter to collector free-wheel diode (FWDi).

② Pulse width and repetition rate should be such that the device junction temp.(T_j) dose not exceed Tjmax rating.

③ Junction temperature (T_j) should not increase beyond 150°C.

④ Pulse width and repetition rate should be such as to cause neglible temperature rise.

*1:Tc measured point is shown in page "1-2".
*2:Typical value is measured by using Shin-etsu Silicone "G-746".
*3 :If you use this value , Rth(f-a) should be measured just under the chips.