

TENTATIVE

CM100DUS-12F

Pre.	N.Honda	Rev	A	<i>E. Uchida</i>
Apr.	M.Tabata 28-Jan-'99			<i>M. Yamamoto May 6 '02</i>

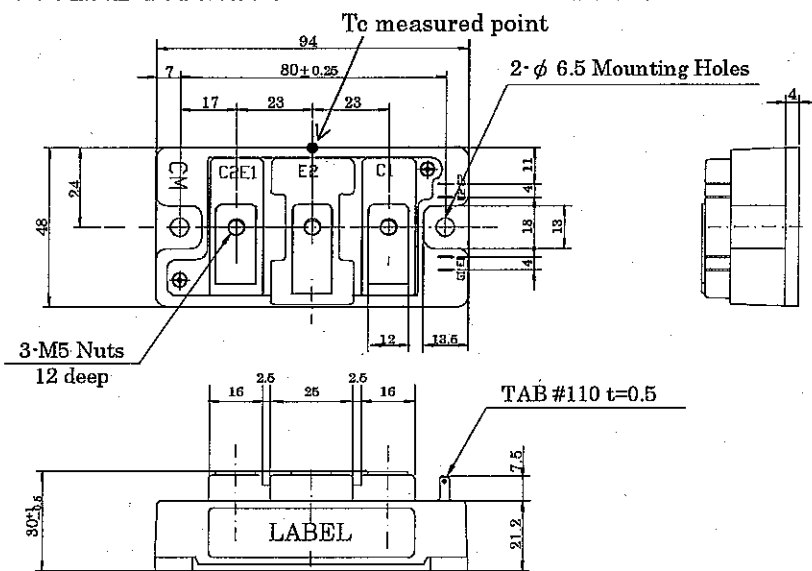
HIGH POWER SWITCHING USE

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

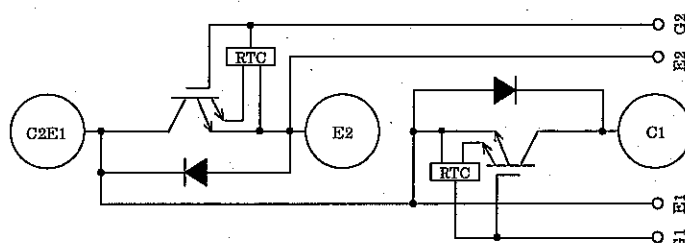
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OUTLINE DRAWING

Dimensions in mm



CIRCUIT DIAGRAM



- I_c 100A
- V_{CES} 600V
- Insulated Type
- 2-elements in a pack

APPLICATION
Welder

ABSOLUTE MAXIMUM RATINGS ($T_i = 25^\circ\text{C}$)

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	$T_c = 25\text{ }^{\circ}\text{C}$	100	A
I_{CM}		Pulse (2)	200	
I_E (1)	Emitter current	$T_c = 25\text{ }^{\circ}\text{C}$	100	A
I_{EM} (1)		Pulse (2)	200	
P_c (3)	Maximum collector dissipation	$T_c = 25\text{ }^{\circ}\text{C}$	350	W
T_j	Junction temperature		$-40 \sim +150$	$^{\circ}\text{C}$
T_{stg}	Storage temperature		$-40 \sim +125$	$^{\circ}\text{C}$
V_{iso}	Isolation voltage	Charged part to base plate, AC 1 min.	2500	V
-	Torque strength	Main Terminals M 5	2.5 ~ 3.5	N·m
		Mounting holes M 6	3.5 ~ 4.5	N·m
-	Weight	Typical value	310	g

ELECTRICAL CHARACTERISTICS ($T_j = 25\text{ }^{\circ}\text{C}$)

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 =10mA, V _{CE} = 10V	5	6	7	V
I _{GES}	Gate leakage current	V _{GE} =V _{CES} , V _{CE} = 0V	-	-	20	μA
V _{CE(sat)}	Collector to emitter saturation voltage	T _J = 25 °C I _C = 100A T _J = 125 °C V _{GE} = 15V	1.7 -	2.0 1.95	2.7 -	V
C _{ies}	Input capacitance	V _{CE} = 10V	-	-	27	nF
C _{oes}	Output capacitance	V _{GE} = 0V	-	-	1.8	
C _{res}	Reverse transfer capacitance		-	-	1	
Q _G	Total gate charge	V _{CC} = 300V, I _C = 100A V _{GE} = 15V	-	620	-	nC
t _{d(on)}	Turn-on delay time	V _{CC} =300V, I _C = 100A	-	-	100	ns
t _r	Turn-on rise time	V _{GE1} =V _{GE2} =15V	-	-	80	
t _{d(off)}	Turn-off delay time	R _G =6.3Ω, Inductive load	-	-	300	
t _f	Turn-off fall time	switching operation	-	-	150	
t _{rr} ①	Reverse recovery time	I _E = 100 A	-	-	150	ns
Q _{rr} ①	Reverse recovery charge		-	1.9	-	μC
V _{EC} ①	Emitter-collector volatge	I _E = 100 A, V _{GE} = 0V	-	-	2.6	V
R _{th(j-c)Q}	Thermal resistance*1	IGBT part(1/2 module)	-	-	0.35	°C/W
R _{th(j-c)R}		FWDi part(1/2 module)	-	-	0.70	
R _{th(c-f)}	Contact thermal resistance	Case to fin, Thermal compound applied*2(1/2 module)	-	0.07	-	
R _{th(j-c')Q}	Thermal resistance	T _c measured point is just under the chips	-	0.23*3	-	

① $I_E, V_{EC}, t_{rr}, Q_{rr}$ & di/dt 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 T_{jmax} 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: T_c 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, $R_{th(f-a)}$ should be measured just under the chips.