TENTATIVE

CM100DC1-24NFM

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Apr.	Y.Nagahara 2-Apr-'08			

HIGH POWER SWITCHING USE

COMPANY PROPRIETARY
NOT TO BE REPRODUCED OR DISCLOSED WITHOUT SPECIFIC WRITTEN PERMISSION OF MITSUBISHI ELECTRIC CORPORATION
(THIS IS A RED INK STAMP)

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

CM100DC1-24NFM

I_C 100A
V_{CES} 1200V
Flatbase Type / Insulated Type / Copper base type
2-elements in a pack
RoHS Directive compliant

Caution: No short circuit capability is designed.

APPLICATION
Welder only.

ABSOLUTE MAXIMUM RATINGS (T_j=25°C, unless otherwise specified)

Symbol	Item	Conditions	Ratings	Units
V_{CES}	Collector-emitter voltage	G-E Short	1200	V
V_{GES}	Gate-emitter voltage	C-E Short	± 20	V
I_C	Collector current	Operation	100	A
I_{CM}		Pulse *4	150	
I_E *3	Emitter current	Operation	75	A
I_{EM} *3		Pulse *4	150	
P_C *5	Maximum collector dissipation	T_C=25°C *1	730	W
T_j	Junction temperature		- 40 ~ +150	°C
T_{stg}	Storage temperature		- 40 ~ +125	°C
V_{iso}	Isolation voltage	Main terminal to base plate, AC 1 min.	2500	V
-	Torque strength	Main terminal M6	3.5 ~ 4.5	N·m
-	Torque strength	Mounting holes M6	3.5 ~ 4.5	N·m
-	Weight	Typical value	310	g

ELECTRICAL CHARACTERISTICS (T_j=25°C, unless otherwise specified)

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	4.5	6.0	7.5	V
I_{GES}	Gate leakage current	±V_{GE}=V_{GES}, V_{CE}=0V	-	-	0.5	μA
$V_{CE(sat)}$	Collector to emitter saturationvoltage	I_C=100A *6, V_{GE}=15V, T_j=25°C	-	3.1	3.8	V
		T_j=125°C	-	3.1	-	
C_{ies}	Input capacitance	V_{GE}=0V, V_{CE}=10V *6	-	-	16	nF
C_{oes}	Output capacitance		-	-	1.3	
C_{res}	Reverse transfer capacitance		-	-	0.3	
Q_G	Total gate charge	V_{CC}=600V, I_C=100A, V_{GE}=15V	-	450	-	nC
$t_{d(on)}$	Turn-on delay time	V_{CC}=600V, I_C=100A	-	-	100	ns
t_r	Turn-on rise time	V_{GE1}=V_{GE2}=15V, R_G=3.1Ω	-	-	50	
$t_{d(off)}$	Turn-off delay time	Inductive load	-	-	250	
t_f	Turn-off fall time	switching operation	-	60	200	
t_{rr} *3	Reverse recovery time	I_E=75A	-	70	300	
Q_{rr} *3	Reverse recovery charge		-	6	—	μC
V_{EC} *3	Emitter-collector voltage	I_E=75A, V_{GE}=0V	-	2.8	3.5	V
$R_{th(j-c)Q}$	Thermal resistance	IGBT part (1/2 module) *1	-	-	0.17	°C/W
$R_{th(j-c)R}$		FWDi part (1/2 module) *1	-	-	0.4	
$R_{th(c-f)}$	Contact thermal resistance	Case to fin, Thermal grease applied (1/2module) *1 *2	-	0.02	-	
R_G	External gate resistance		3.1	-	31	Ω

*1: T_C, T_f measured point is just under the chips. (Refer to the figure of the chip location.)

*2: Typical value is measured by using grease of λ=0.9W/(m·K). {ex Shin-Etsu Chemical Co.,Ltd / Silicone Fluid Compound "G-747"}.

*3: I_E, I_{EM}, V_{EC}, t_{rr} & Q_{rr} represent characteristics of the anti-parallel, emitter to collector free-wheel diode (FWDi).

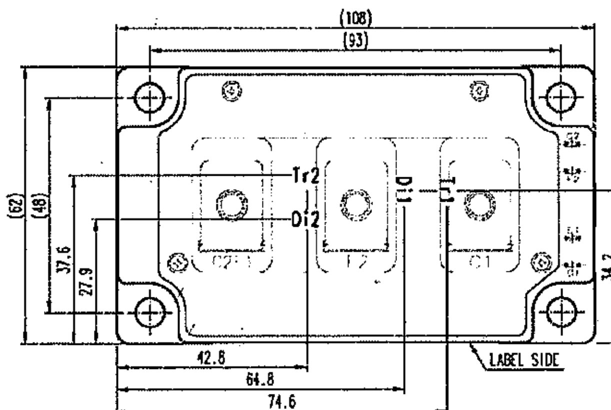
*4: Pulse width and repetition rate should be such that the device junction temperature (T_j) dose not exceed Tjmax rating.

*5: Junction temperature (T_j) should not increase beyond 150°C.

*6: Pulse width and repetition rate should be such as to cause negligible temperature rise.

Chip Location (Top view)

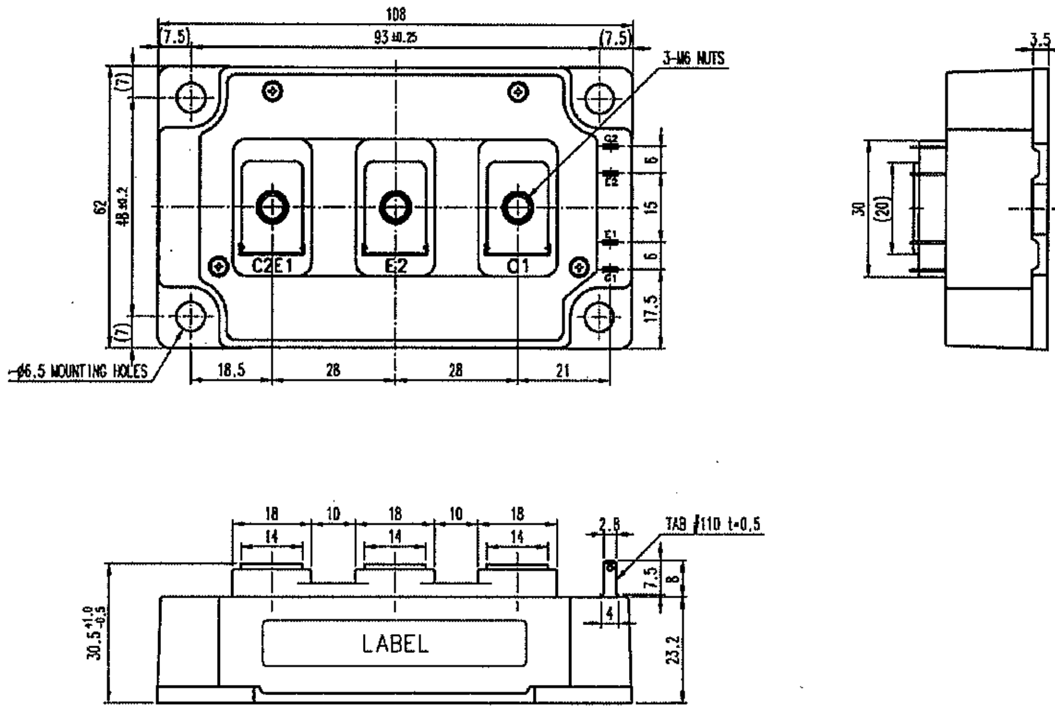
Dimensions in mm

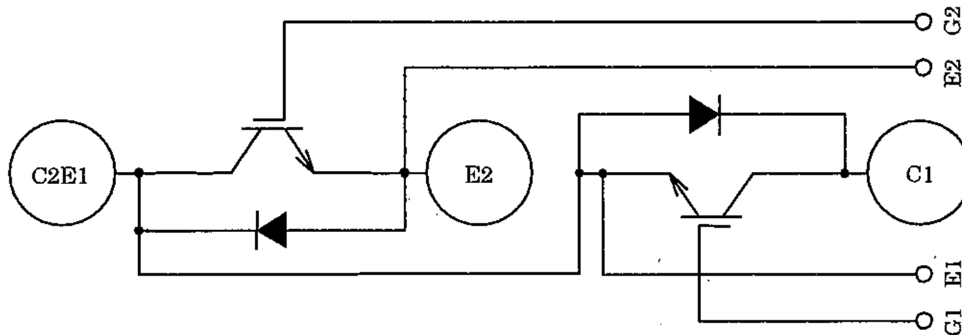


Each mark points the center position of each chip. Tr1&Tr2 : IGBT , Di1&Di2 : FWDi.

OUTLINE DRAWING

Dimensions in mm





CIRCUIT DIAGRAM

G2
E2
C2E1
E2
C1
E1
G1