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Apr.	Y.Nagashima 1-Dec-'06			

HIGH POWER SWITCHING USE

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

CM100DC-24NFM

I_C ····· 100A
V_{CES} ····· 1200V
Insulated Type
2-elements in a pack

Caution: No short circuit capability is designed.

APPLICATION

High frequency switching use & Resonant inverter power supply, etc

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	200	
I_E *3	Emitter current	Operation	100	A
I_{EM} *3		Pulse *4	200	
P_C *5	Maximum collector dissipation	T_C=25°C *1	670	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	375	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	$\pm V_{GE}=V_{GES}$, V_{CE}=0V		-	-	0.5	µA
$V_{CE(sat)}$	Collector to emitter saturationvoltage	I_C=100A *6 V_{GE}=15V	T_j=25°C	-	3.0	4.5	V
			T_j=125°C	-	3.0	-	
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 $V_{GE1}=V_{GE2}$=15V, R_G=3.1Ω Inductive load switching operation I_E=100A		-	-	100	ns
t_r	Turn-on rise time			-	-	50	
$t_{d(off)}$	Turn-off delay time			-	-	250	
t_f	Turn-off fall time			-	60	200	
t_{rr} *3	Reverse recovery time			-	70	120	
Q_{rr} *3	Reverse recovery charge			-	6	—	µC
V_{EC} *3	Emitter-collector voltage	I_E=100A, V_{GE}=0V		-	2.0	3.0	V
$R_{th(j-c)Q}$	Thermal resistance	IGBT part (1/2 module) *1		-	-	0.186	°C/W
$R_{th(j-c)R}$		FWDi part (1/2 module) *1		-	-	0.28	
$R_{th(c-f)}$	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.

*2: Typical value is measured by using Shin-Etsu Chemical Co.,Ltd "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).

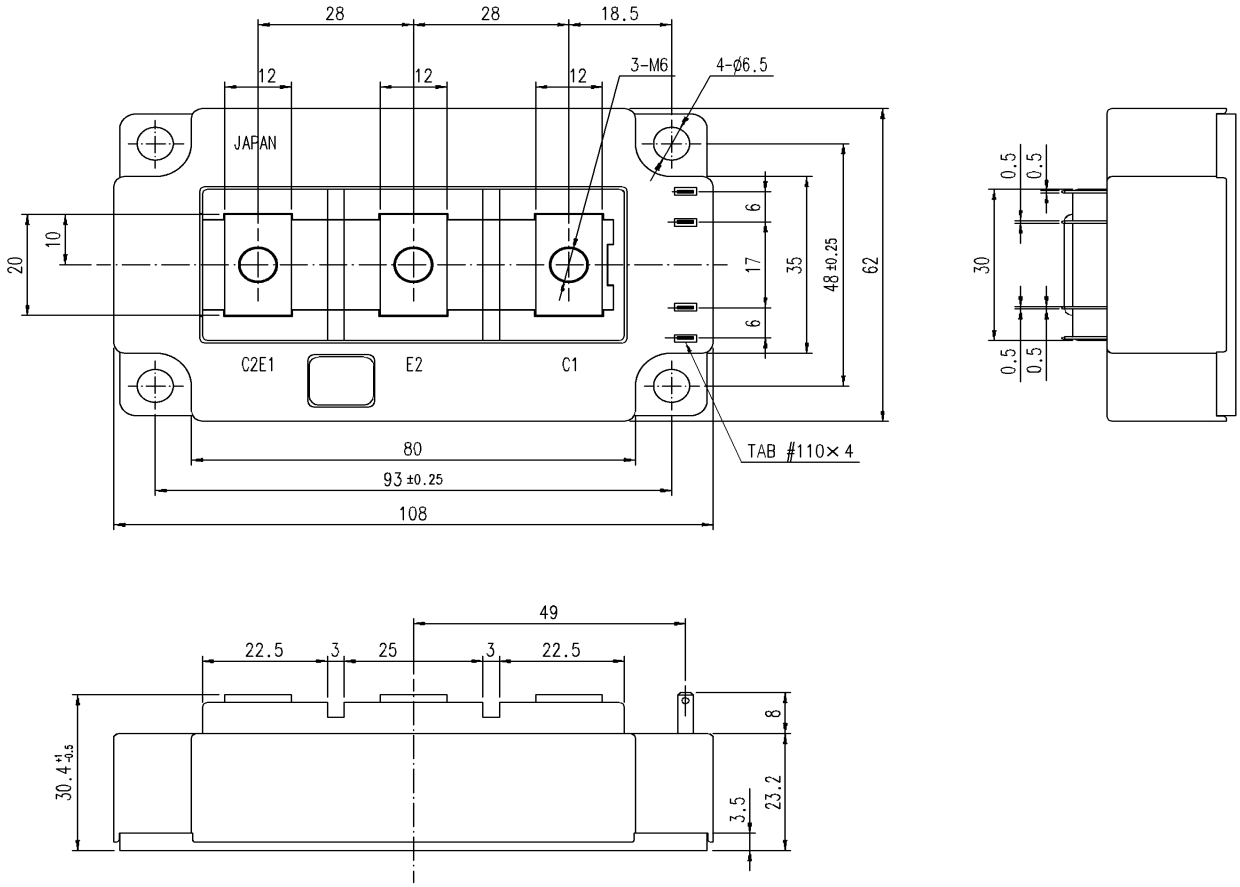
*4: Pulse width and repetition rate should be such that the device junction temperature (T_j) dose not exceed Tjmax rating.

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

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

OUTLINE DRAWING

Dimensions in mm



CIRCUIT DIAGRAM