

**TENTATIVE**

**CM100DC-24NFM**

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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 ( $T_j=25^\circ\text{C}$ , 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	$\pm 20$	V
$I_C$	Collector current	Operation	100	A
$I_{CM}$		Pulse <sup>*4</sup>	200	
$I_E$ <sup>*3</sup>	Emitter current	Operation	100	A
$I_{EM}$ <sup>*3</sup>		Pulse <sup>*4</sup>	200	
$P_C$ <sup>*5</sup>	Maximum collector dissipation	$T_C=25^\circ\text{C}$ <sup>*1</sup>	670	W
$T_j$	Junction temperature		- 40 ~ +150	$^\circ\text{C}$
$T_{stg}$	Storage temperature		- 40 ~ +125	$^\circ\text{C}$
$V_{iso}$	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 ( $T_j=25^\circ\text{C}$ , unless otherwise specified)

Symbol	Item	Conditions	Min.	Typ.	Max.	Units
$I_{CES}$	Collector cutoff current	$V_{CE}=V_{CES}$ , $V_{GE}=0\text{V}$	-	-	1	mA
$V_{GE(th)}$	Gate-emitter threshold voltage	$I_C=10\text{mA}$ , $V_{CE}=10\text{V}$	4.5	6.0	7.5	V
$I_{GES}$	Gate leakage current	$\pm V_{GE}=V_{GES}$ , $V_{CE}=0\text{V}$	-	-	0.5	$\mu\text{A}$
$V_{CE(sat)}$	Collector to emitter saturation voltage	$I_C=100\text{A}$ *6	-	3.0	4.5	V
		$V_{GE}=15\text{V}$	-	3.0	-	
$C_{ies}$	Input capacitance	$V_{GE}=0\text{V}$ , $V_{CE}=10\text{V}$ *6	-	-	16	nF
$C_{oes}$	Output capacitance		-	-	1.3	
$C_{res}$	Reverse transfer capacitance		-	-	0.3	
$Q_G$	Total gate charge	$V_{CC}=600\text{V}$ , $I_C=100\text{A}$ , $V_{GE}=15\text{V}$	-	450	-	nC
$t_{d(on)}$	Turn-on delay time	$V_{CC}=600\text{V}$ , $I_C=100\text{A}$	-	-	100	ns
$t_r$	Turn-on rise time	$V_{GE1}=V_{GE2}=15\text{V}$ , $R_G=3.1\Omega$	-	-	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	$I_E=100\text{A}$	-	70	120	
$Q_{rr}$ *3	Reverse recovery charge		-	6	-	$\mu\text{C}$
$V_{EC}$ *3	Emitter-collector voltage	$I_E=100\text{A}$ , $V_{GE}=0\text{V}$	-	2.0	3.0	V
$R_{th(j-c)Q}$	Thermal resistance	IGBT part (1/2 module) *1	-	-	0.186	$^\circ\text{C/W}$
$R_{th(j-c)R}$		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	$\Omega$

\*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).

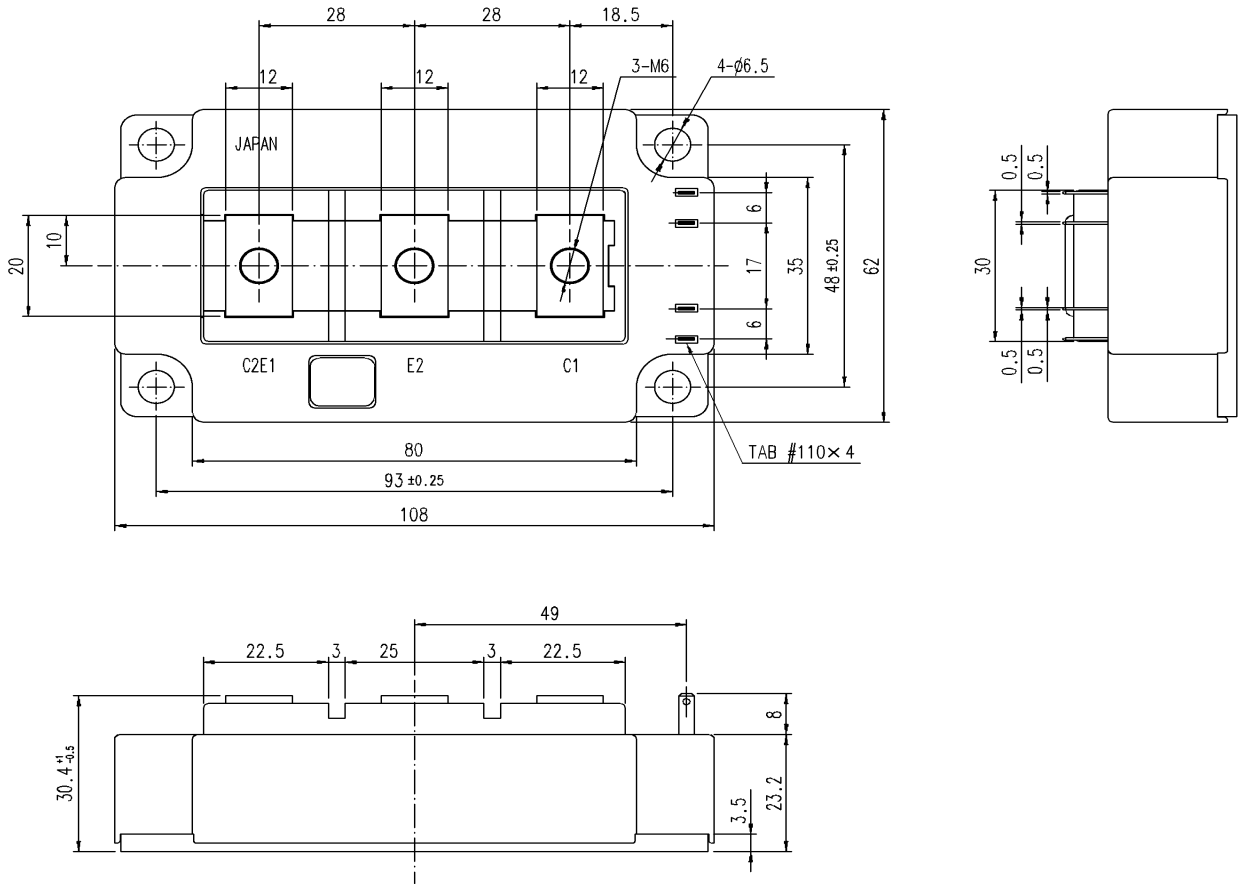
\*4: Pulse width and repetition rate should be such that the device junction temperature ( $T_j$ ) dose not exceed  $T_{jmax}$  rating.

\*5: Junction temperature ( $T_j$ ) should not increase beyond  $150^\circ\text{C}$ .

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

OUTLINE DRAWING

Dimensions in mm



CIRCUIT DIAGRAM

