

# CM200TU-5F

HIGH POWER SWITCHING USE

## CM200TU-5F



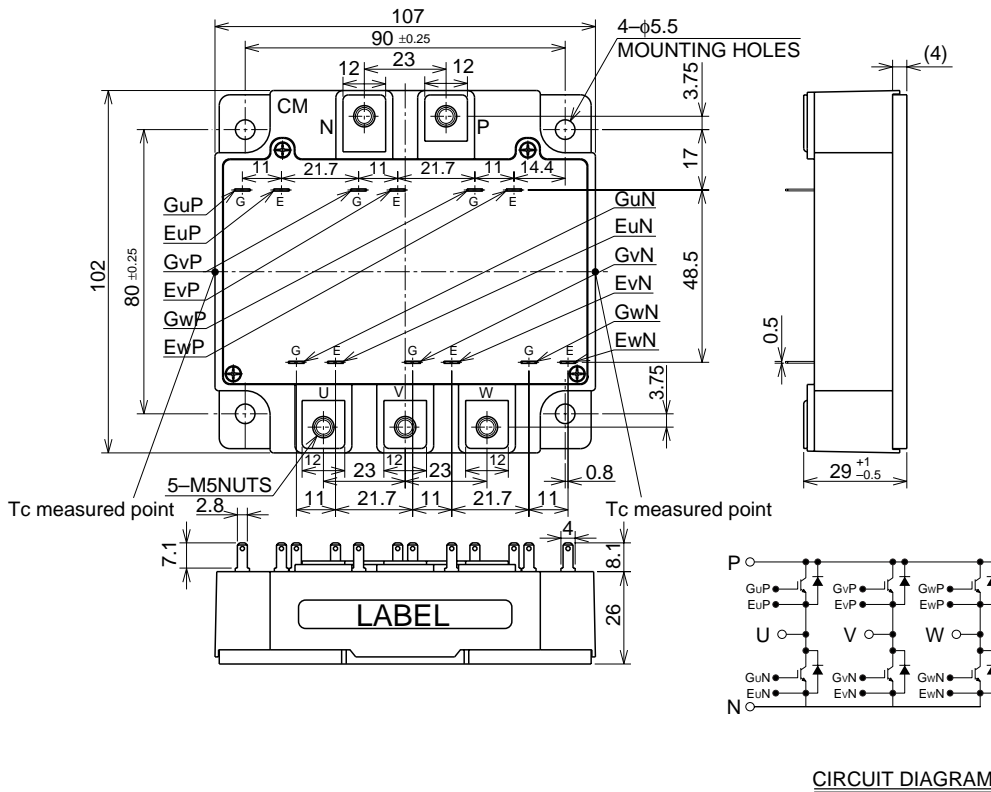
- Ic .....200A
- VCES .....250V
- Insulated Type
- 6-elements in a pack

## APPLICATION

Inverters for battery power source

## OUTLINE DRAWING & CIRCUIT DIAGRAM

Dimensions in mm



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MAXIMUM RATINGS (Tj = 25°C)

Symbol	Parameter	Conditions	Ratings	Unit
V <sub>CE</sub> S	Collector-emitter voltage	G-E Short	250	V
V <sub>GE</sub> S	Gate-emitter voltage	C-E Short	±20	V
I <sub>C</sub>	Collector current	T <sub>C</sub> = 25°C	200	A
I <sub>CM</sub>		Pulse (Note 2)	400	
I <sub>E</sub> (Note 1)	Emitter current	T <sub>C</sub> = 25°C	200	A
I <sub>EM</sub> (Note 1)		Pulse (Note 2)	400	
P <sub>C</sub> (Note 3)	Maximum collector dissipation	T <sub>C</sub> = 25°C	600	W
T <sub>j</sub>	Junction temperature		-40 ~ +150	°C
T <sub>stg</sub>	Storage temperature		-40 ~ +125	°C
V <sub>iso</sub>	Isolation voltage	Main Terminal to base plate, AC 1 min.	2500	V
—	Torque strength	Main Terminal M5	2.5 ~ 3.5	N • m
		Mounting holes M5	2.5 ~ 3.5	N • m
—	Weight	Typical value	680	g

ELECTRICAL CHARACTERISTICS (Tj = 25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
I <sub>CE</sub> S	Collector cutoff current	V <sub>CE</sub> = V <sub>CE</sub> S, V <sub>GE</sub> = 0V	—	—	1	mA
V <sub>GE(th)</sub>	Gate-emitter threshold voltage	I <sub>C</sub> = 20mA, V <sub>CE</sub> = 10V	3.0	4.0	5.0	V
I <sub>GE</sub> S	Gate leakage current	V <sub>GE</sub> = V <sub>CE</sub> S, V <sub>CE</sub> = 0V	—	—	0.5	µA
V <sub>CE(sat)</sub>	Collector to emitter saturation voltage	T <sub>j</sub> = 25°C	—	1.2	1.7	V
		T <sub>j</sub> = 125°C	—	1.1	—	
C <sub>ies</sub>	Input capacitance	V <sub>CE</sub> = 10V V <sub>GE</sub> = 0V	—	—	55	nF
C <sub>oes</sub>	Output capacitance		—	—	3.5	
C <sub>res</sub>	Reverse transfer capacitance		—	—	1.9	
Q <sub>G</sub>	Total gate charge	V <sub>CC</sub> = 100V, I <sub>C</sub> = 200A, V <sub>GE</sub> = 10V	—	1500	—	nC
t <sub>d(on)</sub>	Turn-on delay time	V <sub>CC</sub> = 100V, I <sub>C</sub> = 200A V <sub>GE1</sub> = V <sub>GE2</sub> = 10V R <sub>G</sub> = 13Ω, Inductive load switching operation I <sub>E</sub> = 200A	—	—	600	ns
t <sub>r</sub>	Turn-on rise time		—	—	300	
t <sub>d(off)</sub>	Turn-off delay time		—	—	900	
t <sub>f</sub>	Turn-off fall time		—	—	500	
t <sub>rr</sub> (Note 1)	Reverse recovery time		—	—	250	
Q <sub>rr</sub> (Note 1)	Reverse recovery charge	—	10.0	—	µC	
V <sub>EC</sub> (Note 1)	Emitter-collector voltage	I <sub>E</sub> = 200A, V <sub>GE</sub> = 0V	—	—	2.0	V
R <sub>th(j-c)Q</sub>	Thermal resistance*1	IGBT part (1/6 module)	—	—	0.21	°C/W
R <sub>th(j-c)R</sub>		FWDi part (1/6 module)	—	—	0.47	
R <sub>th(c-f)</sub>	Contact thermal resistance	Case to fin, Thermal compound applied*2 (1/6 module)	—	0.09	—	
R <sub>th(j-c')Q</sub>	Thermal resistance*3	T <sub>C</sub> measured point is just under the chips	—	—	0.16	

Note 1. I<sub>E</sub>, V<sub>EC</sub>, t<sub>rr</sub>, Q<sub>rr</sub> and die/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<sub>j</sub>) does not exceed T<sub>jmax</sub> rating.

3. Junction temperature (T<sub>j</sub>) should not increase beyond 150°C.

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

\*1 : T<sub>C</sub> measured point is indicated in OUTLINE DRAWING.

\*2 : Typical value is measured by using Shin-etsu Silicone "G-746".

\*3 : If you use this value, R<sub>th(f-a)</sub> should be measured just under the chips.