

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	$I_C=20mA, V_{CE}=10V$	5	6	7.5	V	A	
I_{GES}	Gate leakage current	$V_{GE}=V_{GES}, V_{CE}=0V$	—	—	0.5	μA		
$V_{CE(sat)}$	Collector to emitter saturation voltage	$T_j = 25\text{ }^\circ\text{C}$ $I_C = 200A$	—	1.7	2.2	V		
		$T_j = 125\text{ }^\circ\text{C}$ $V_{GE}=15V$	—	1.7	—			
C_{ies}	Input capacitance	$V_{CE}=10V$	—	—	30	nF		
C_{oes}	Output capacitance	$V_{GE}=0V$	—	—	3.7			
C_{res}	Reverse transfer capacitance		—	—	1.2			
Q_G	Total gate charge	$V_{CC}=300V, I_C=200A, V_{GE}=15V$	—	800	—	nC		
$t_{d(on)}$	Turn-on delay time	$V_{CC}=300V, I_C=200A$	—	—	120	ns	A	
t_r	Turn-on rise time	$V_{GE1}=V_{GE2}=15V$	—	—	120		A	
$t_{d(off)}$	Turn-off delay time	$R_G=3.1\Omega$, Inductive load	—	—	300		A	
t_f	Turn-off fall time	switching operation	—	—	300			
t_{rr} ①	Reverse recovery time	$I_E=200A$	—	—	150	ns	A	
Q_{rr} ①	Reverse recovery charge		—	3.5	—	μC	A	
V_{EC} ①	Emitter-collector voltage	$I_E=200A, V_{GE}=0V$	—	—	2.6	V		
$R_{th(j-c)Q}$	Thermal resistance	IGBT part (1/2 module) *1	—	—	0.19	$^\circ\text{C/W}$	A	
$R_{th(j-c)R}$		FWDi part(1/2 module) *1	—	—	0.35			
$R_{th(c-f)}$	Contact thermal resistance	Case to fin,Thermal compound Applied (1/2module) *2	—	0.07	—			B
$R_{th(j-c)Q}$	Thermal resistance	IGBT part (1/2 module) *3	—	—	0.13			
R_G	External gate resistance		3.1	—	31	Ω		

*1: T_c measured point is shown in page OUTLINE DRAWING.

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

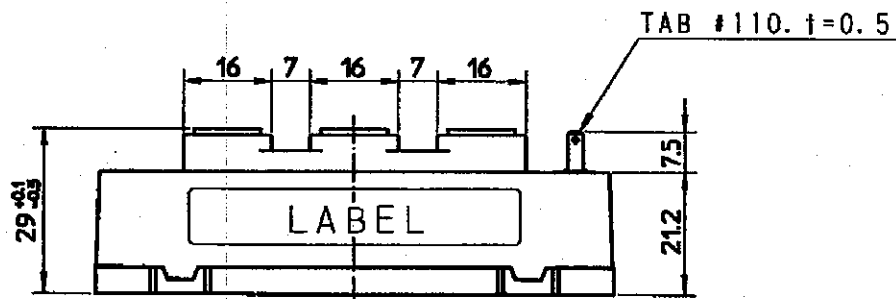
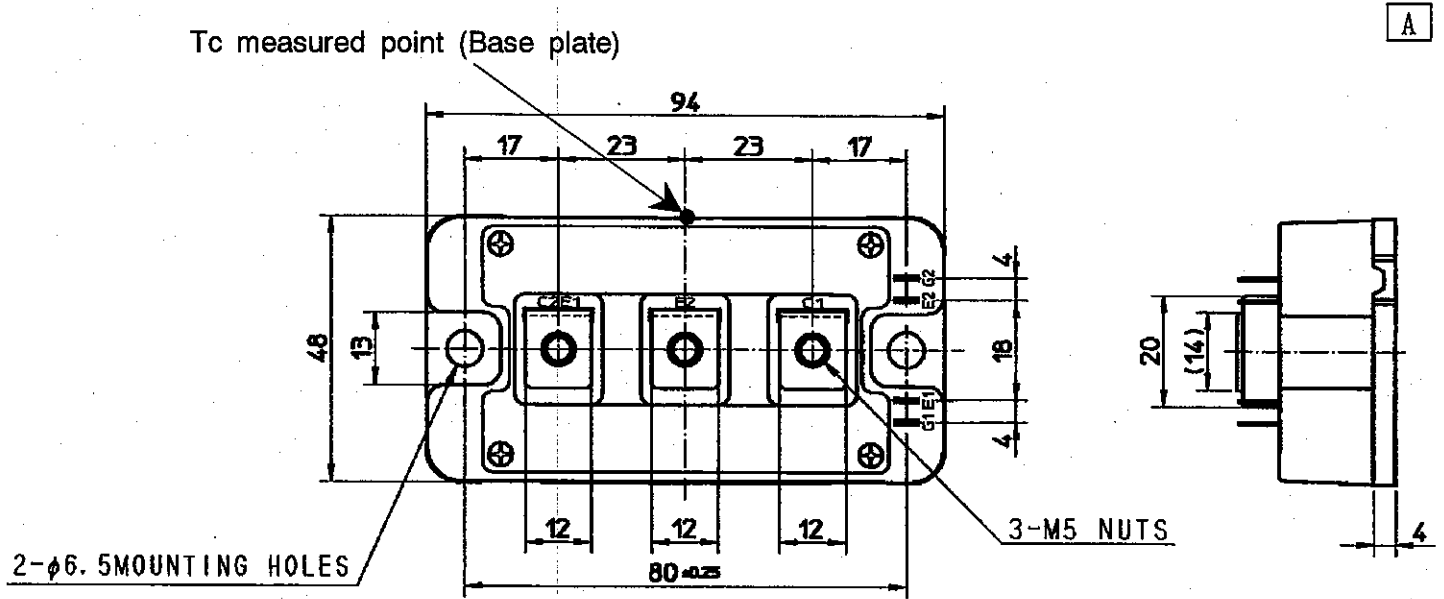
*3: T_c measured point is just under the chips.

If you use this value, $R_{th(f-a)}$ should be measured just under the chips.

- 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 negligble temperature rise.

OUTLINE DRAWING

Dimensions in mm.



CIRCUIT DIAGRAM

