

TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

M G 4 0 0 Q 1 U S 4 1

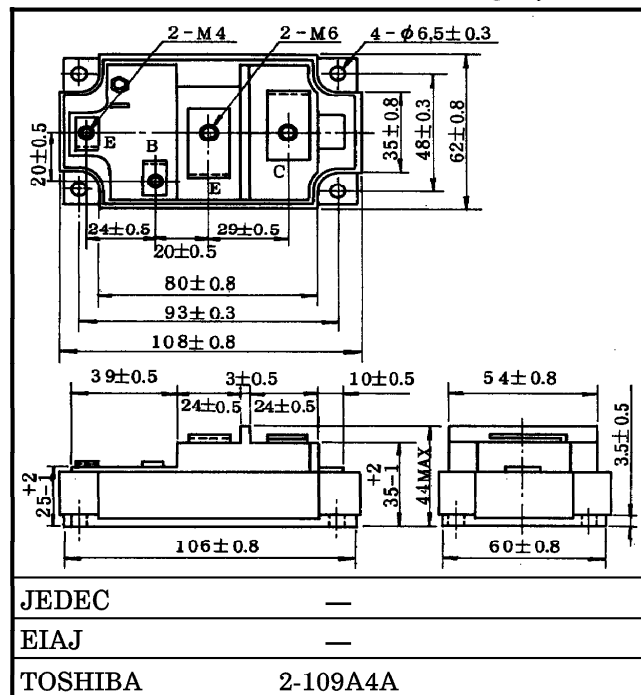
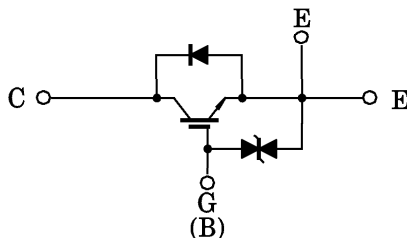
HIGH POWER SWITCHING APPLICATIONS.

Unit in mm

MOTOR CONTROL APPLICATIONS.

- High Input Impedance
- High Speed : $t_f = 0.5 \mu s$ (Max.)
 $t_{rr} = 0.5 \mu s$ (Max.)
- Low Saturation Voltage : $V_{CE(sat)} = 4.0 V$ (Max.)
- Enhancement-Mode
- The Electrodes are Isolated from Case.

EQUIVALENT CIRCUIT



Weight : 465g

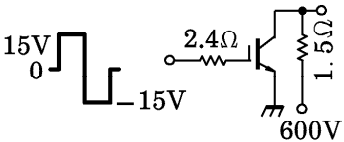
MAXIMUM RATINGS (T_a = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Emitter Voltage		V_{CES}	1200	V
Gate-Emitter Voltage		V_{GES}	± 20	V
Collector Current	DC	I_C	400	A
	1ms	I_{CP}	800	
Forward Current	DC	I_F	400	A
	1ms	I_{FM}	800	
Collector Power Dissipation ($T_c = 25^\circ\text{C}$)		P_C	2400	W
Junction Temperature		T_j	150	$^\circ\text{C}$
Storage Temperature Range		T_{stg}	$-40 \sim 125$	$^\circ\text{C}$
Isolation Voltage		V_{Isol}	2500 (AC 1 minute)	V
Screw Torque (Terminal : M4 / M6 / Mounting)		—	2 / 3 / 3	$\text{N} \cdot \text{m}$

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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		IGES	VGE = ±20V, VCE = 0	—	—	±40	μA
Collector Cut-off Current		ICES	VCE = 1200V, VGE = 0	—	—	4	mA
Gate-Emitter Cut-off Voltage		VGE(OFF)	IC = 400mA, VCE = 5V	3.0	—	6.0	V
Collector-Emitter Saturation Voltage		VCE(sat)	IC = 400A, VGE = 15V	—	3.0	4.0	V
Input Capacitance		Cies	VCE = 10V, VGE = 0, f = 1MHz	—	48000	—	pF
Switching Time	Rise Time	tr		—	0.3	0.6	μs
	Turn-on Time	ton		—	0.4	0.8	
	Fall Time	tf		—	0.2	0.5	
	Turn-off Time	toff		—	0.8	1.5	
Forward Voltage		VF		—	2.0	3.0	V
Reverse Recovery Time		trr	IF = 400A, VGE = -10V di / dt = 300A / μs	—	0.25	0.5	μs
Thermal Resistance		Rth(j-c)	Transistor	—	—	0.052	°C / W
			Diode	—	—	0.2	

