

TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

MG500Q1US11

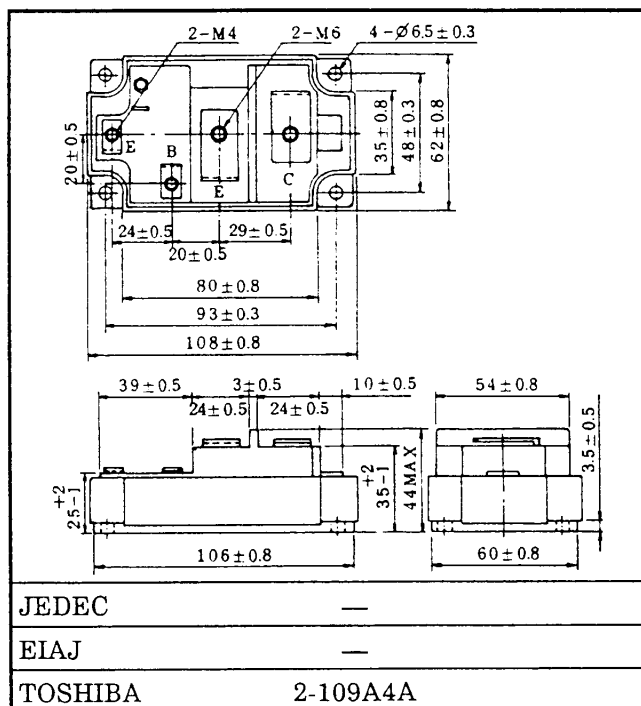
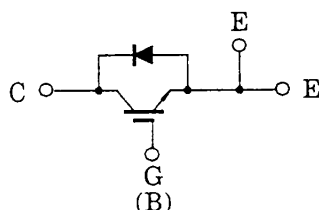
HIGH POWER SWITCHING APPLICATIONS

Unit in mm

MOTOR CONTROL APPLICATIONS

- High Input Impedance
- High Speed : $t_f = 1.0\mu s$ (Max.)
: $t_{rr} = 0.5\mu s$ (Max.)
- Low Saturation Voltage
: $V_{CE(sat)} = 2.7V$ (Max.)
- Enhancement-Mode
- The Electrodes are Isolated from Case.

EQUIVALENT CIRCUIT



Weight : 465g

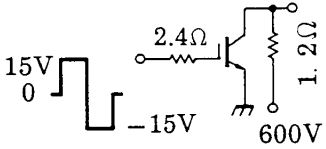
MAXIMUM RATINGS ($T_a = 25^\circ C$)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Emitter Voltage		V_{CES}	1200	V
Gate-Emitter Voltage		V_{GES}	± 20	V
Collector Current	DC	I_C	500	A
	1ms	I_{CP}	1000	
Forward Current	DC	I_F	500	A
	1ms	I_{FM}	1000	
Collector Power Dissipation ($T_c = 25^\circ C$)		P_C	2400	W
Junction Temperature		T_j	150	$^\circ C$
Storage Temperature Range		T_{stg}	$-40 \sim 125$	$^\circ C$
Isolation Voltage		V_{Isol}	2500 (AC, 1min.)	V
Screw Torque (Terminal : M4 / M6 / Mounting)		—	2 / 3 / 3	N·m

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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GES}	$V_{GE} = \pm 20V, V_{CE} = 0$	—	—	± 500	nA
Collector Cut-off Current		I_{CES}	$V_{CE} = 1200V, V_{GE} = 0$	—	—	4.0	mA
Gate-Emitter Cut-off Voltage		$V_{GE} (OFF)$	$I_C = 500mA, V_{CE} = 5V$	3.0	—	6.0	V
Collector-Emitter Saturation Voltage		$V_{CE} (sat)$	$I_C = 500A, V_{GE} = 15V$	—	2.2	2.7	V
Input Capacitance		C_{ies}	$V_{CE} = 10V, V_{GE} = 0, f = 1MHz$	—	80000	—	pF
Switching Time	Rise Time	t_r		—	0.3	0.6	μs
	Turn-on Time	t_{on}		—	0.4	0.8	
	Fall Time	t_f		—	0.6	1.0	
	Turn-off Time	t_{off}		—	1.2	1.8	
Forward Voltage		V_F	$I_F = 500A, V_{GE} = 0$	—	2.0	3.0	V
Reverse Recovery Time		t_{rr}	$I_F = 500A, V_{GE} = -10V$ $di/dt = 300A/\mu s$	—	0.25	0.5	μs
Thermal Resistance		$R_{th} (j-c)$	Transistor	—	—	0.042	$^{\circ}C/W$
			Diode	—	—	0.20	

