

TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

MG500Q1US1

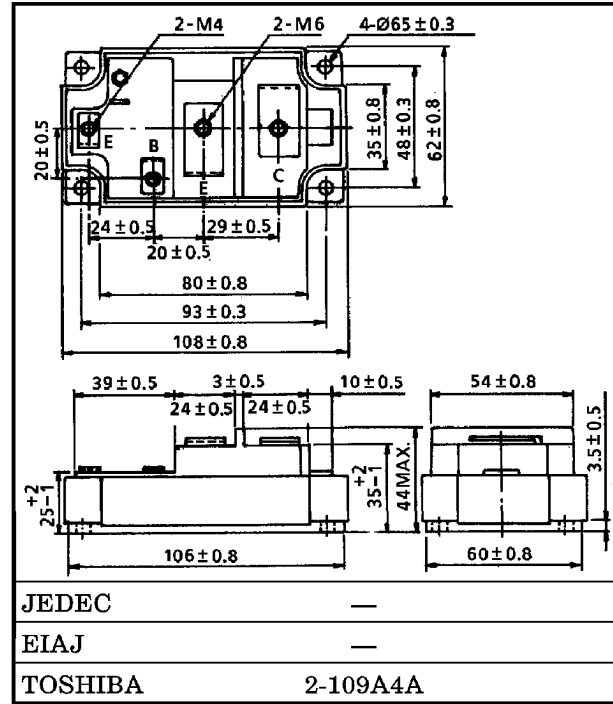
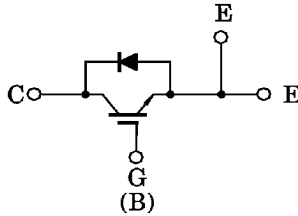
HIGH POWER SWITCHING APPLICATIONS

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
: $V_{CE(sat)} = 4.0V$ (Max.)
- Enhancement-Mode
- The Electrodes are Isolated from Case.

EQUIVALENT CIRCUIT



Weight : 465g

MAXIMUM RATINGS (Ta = 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	A
	1ms	I_{CP}	
Forward Current	DC	I_F	A
	1ms	I_{FM}	
Collector Power Dissipation (Tc = 25°C)	P_C	2900	W
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	-40~125	°C
Isolation Voltage	V_{Isol}	2500 (AC, 1min.)	V
Screw Torque (Terminal : M4 / M6 / Mounting)	—	2 / 3 / 3	N·m

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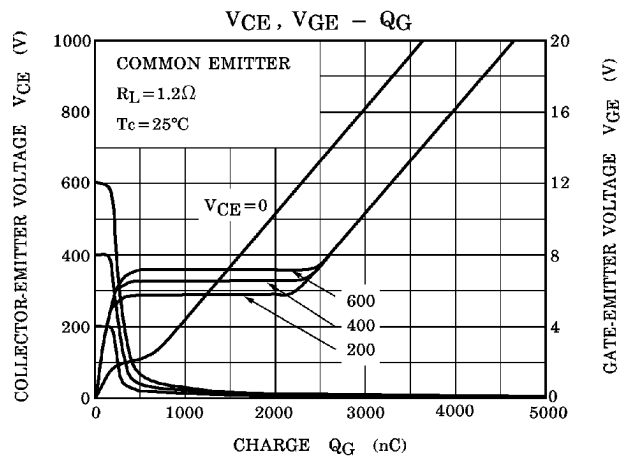
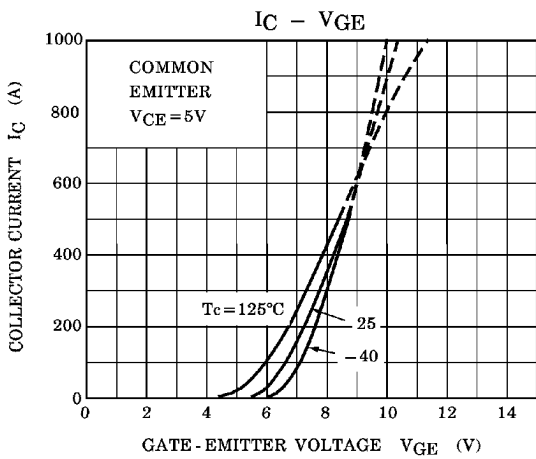
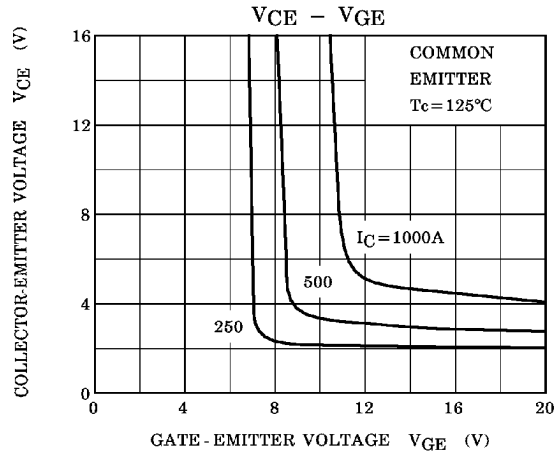
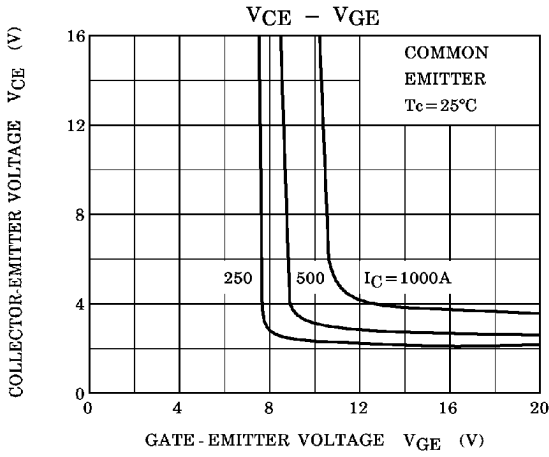
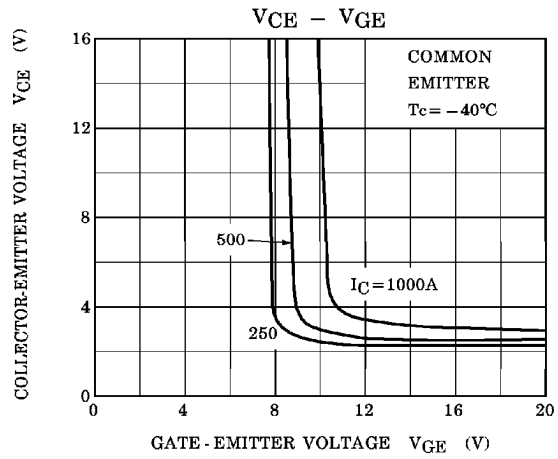
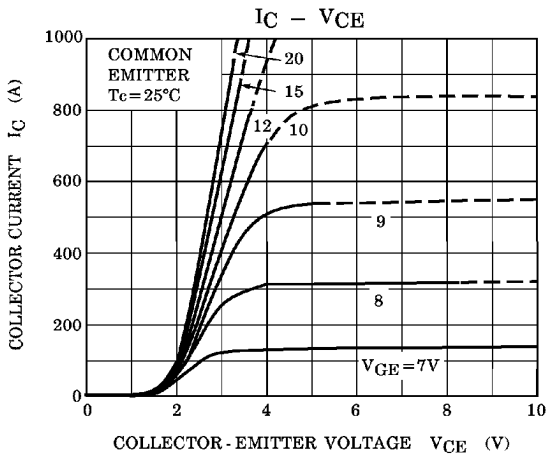
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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

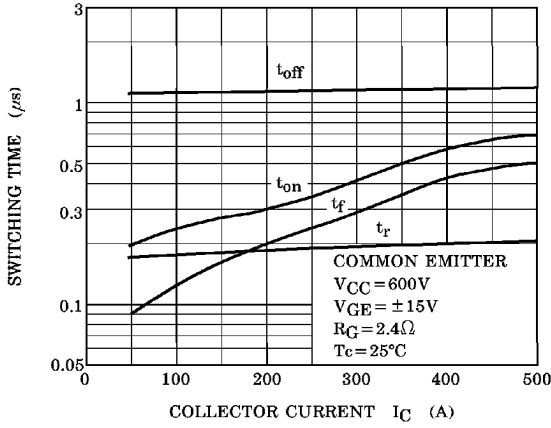
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current	I _{GES}	V _{GE} = ±20V, V _{CE} = 0	—	—	±500	nA
Collector Cut-off Current	I _{CES}	V _{CE} = 1200V, V _{GE} = 0	—	—	4.0	mA
Gate-Emitter Cut-off Voltage	V _{GE (OFF)}	I _C = 500mA, V _{CE} = 5V	3.0	—	6.0	V
Collector-Emitter Saturation Voltage	V _{CE (sat)}	I _C = 500A, V _{GE} = 15V	—	3.0	4.0	V
Input Capacitance	C _{ies}	V _{CE} = 10V, V _{GE} = 0, f = 1MHz	—	80000	—	pF
Switching Time	Rise Time		—	0.3	0.6	μs
	Turn-on Time		—	0.4	0.8	
	Fall Time		—	0.2	0.5	
	Turn-off Time		—	0.8	1.5	
Forward Voltage	V _F	I _F = 500A, V _{GE} = 0	—	—	3.0	V
Reverse Recovery Time	t _{rr}	I _F = 500A, V _{GE} = -10V di / dt = 300A / μs	—	0.25	0.5	μs
Thermal Resistance	R _{th (j-c)}	Transistor	—	—	0.042	°C / W
		Diode	—	—	0.20	

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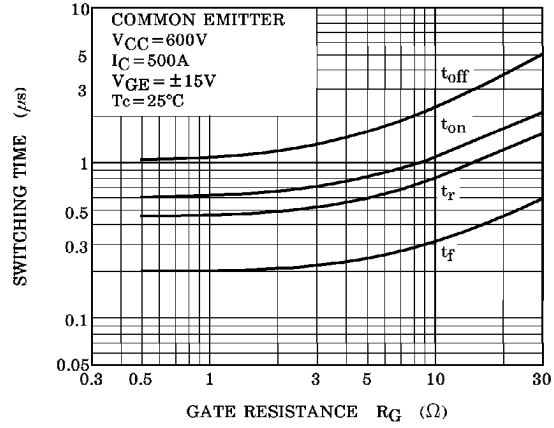
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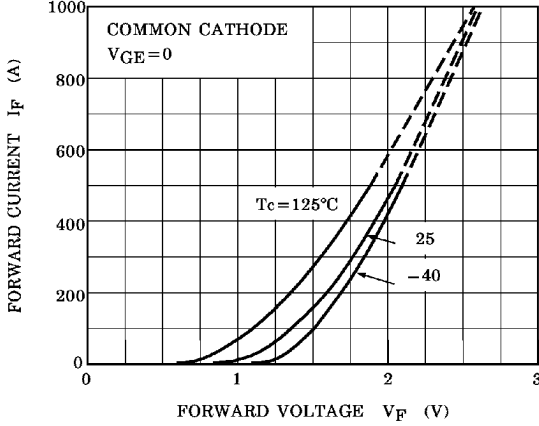
SWITCHING TIME - I_C



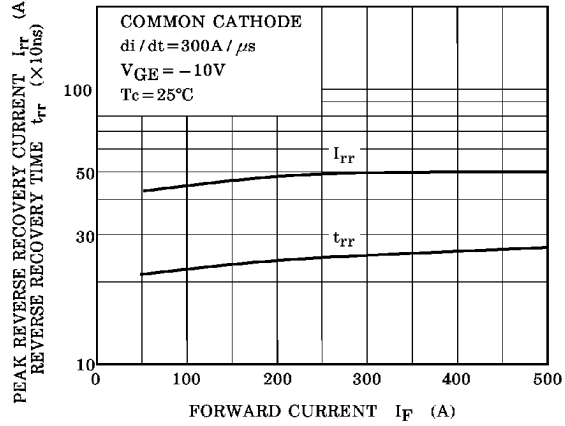
SWITCHING TIME - R_G



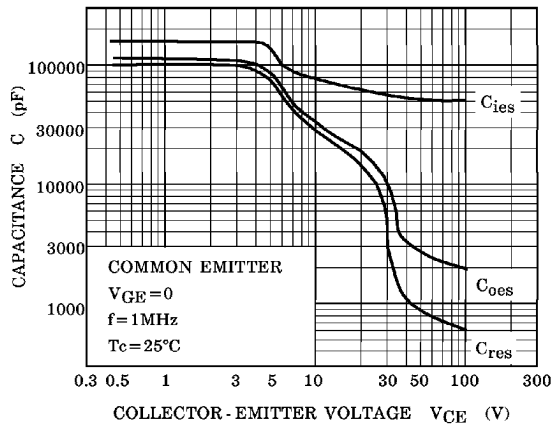
$I_F - V_F$



$t_{rr}, I_{rr} - I_F$



C - V_{CE}



$R_{th}(t) - t_w$

