

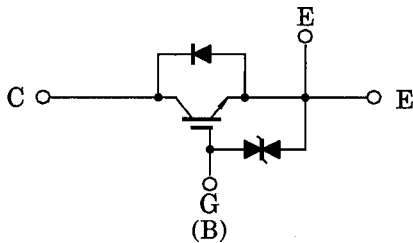
TOSHIBA GTR Module Silicon N Channel IGBT

MG400Q1US41

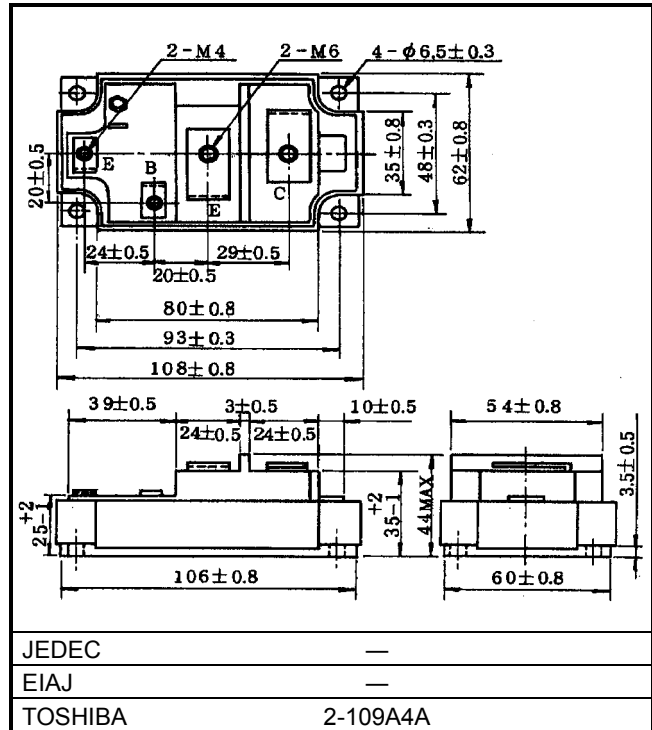
High Power Switching Applications
 Motor Control Applications

- 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



Unit: mm



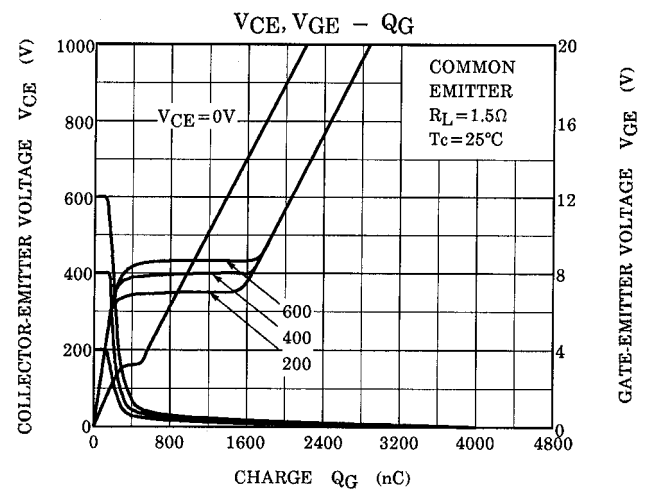
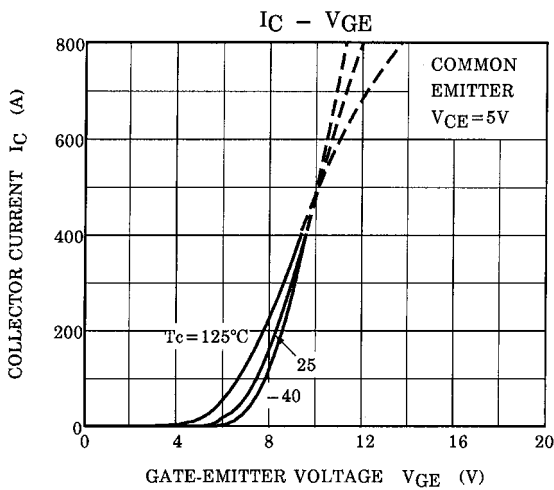
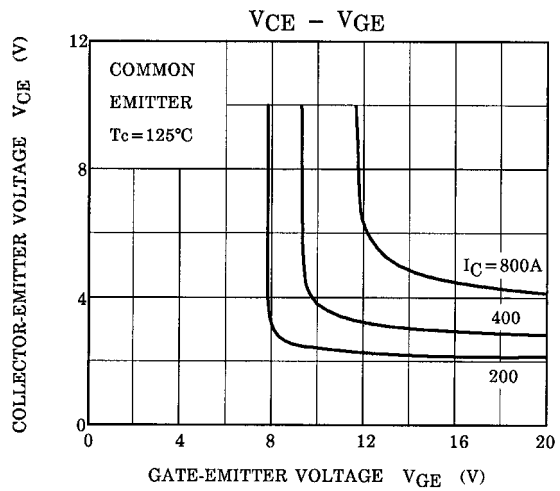
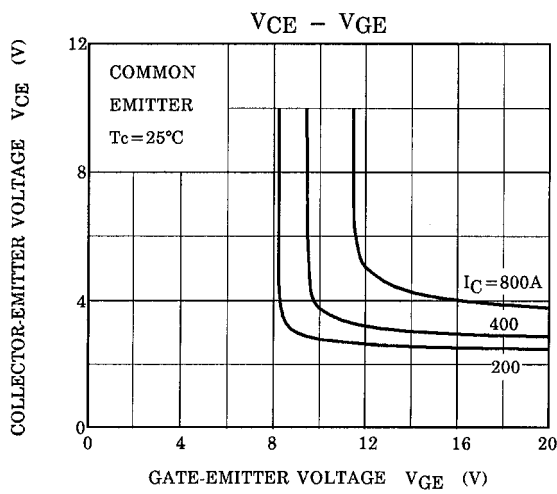
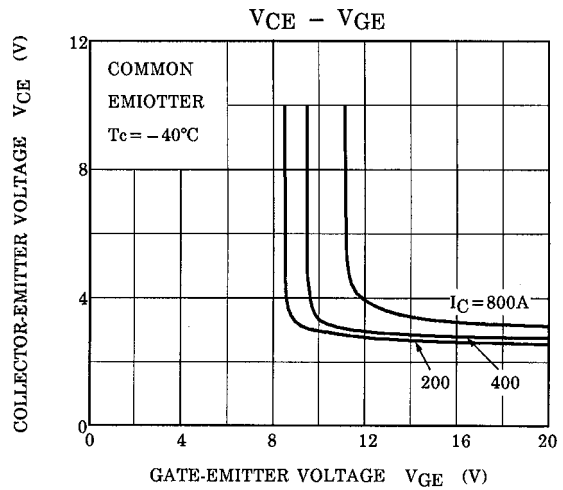
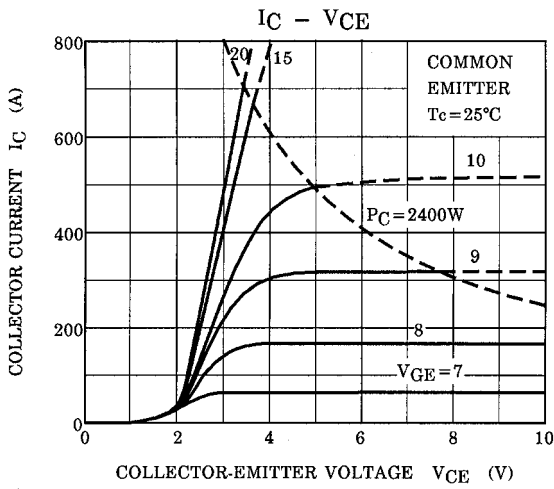
Weight: 465g

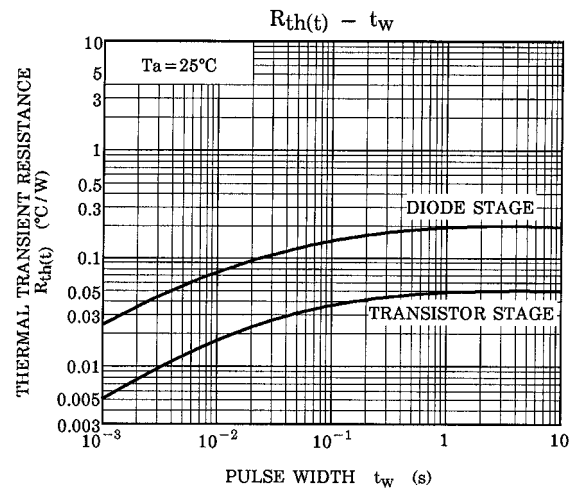
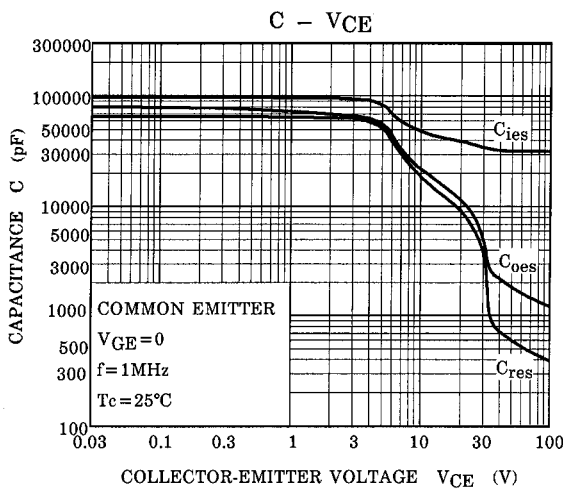
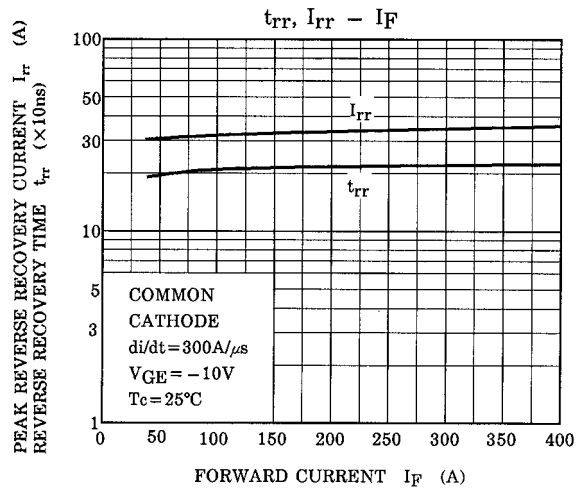
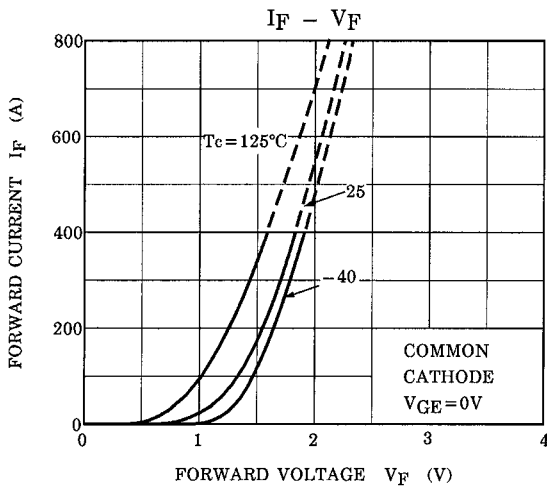
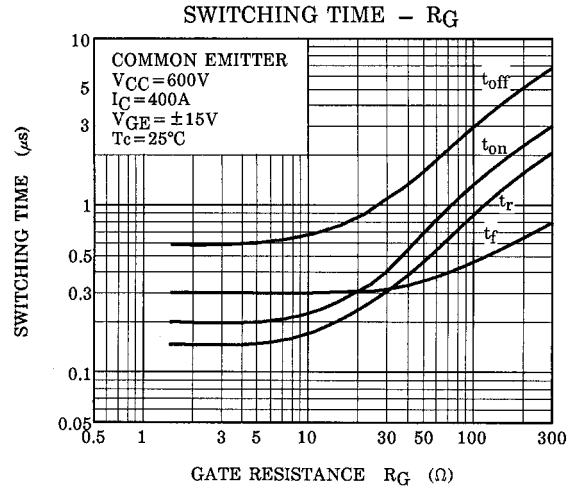
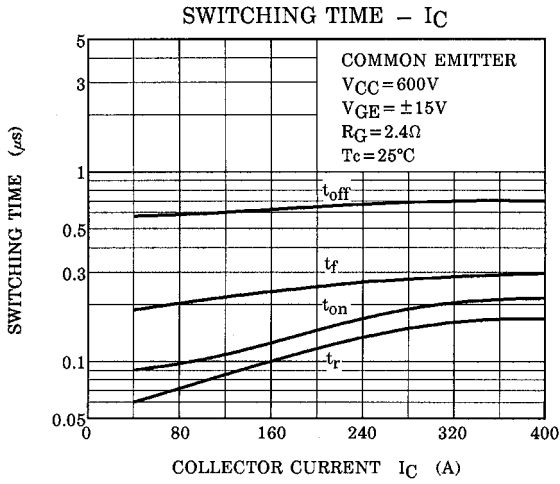
Maximum Ratings (Ta = 25°C)

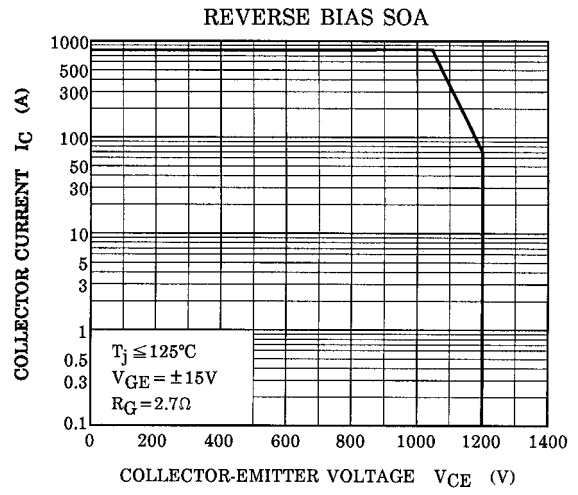
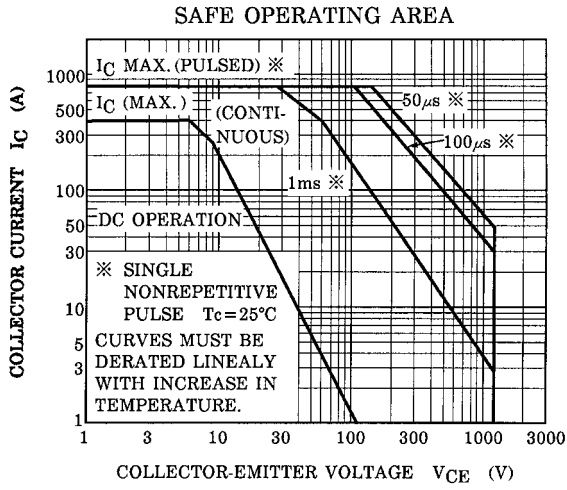
Characteristic	Symbol	Rating	Unit
Collector-emitter voltage	V_{CES}	1200	V
Gate-emitter voltage	V_{GES}	±20	V
Collector current	DC	I_C	A
	1ms	I_{CP}	
Forward current	DC	I_F	A
	1ms	I_{FM}	
Collector power dissipation (Tc = 25°C)	P_C	2400	W
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	-40 ~ 125	°C
Isolation voltage	V_{isol}	2500 (AC 1 minute)	V
Screw torque (Terminal : M4 / M6 / mounting)	—	2 / 3 / 3	N·m

Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current		I_{GES}	$V_{GE} = \pm 20V, V_{CE} = 0$	—	—	± 40	μA
Collector cut-off current		I_{CES}	$V_{CE} = 1200V, V_{GE} = 0$	—	—	4	mA
Gate-emitter cut-off voltage		$V_{GE (OFF)}$	$I_C = 400mA, V_{CE} = 5V$	3.0	—	6.0	V
Collector-emitter saturation voltage		$V_{CE (sat)}$	$I_C = 400A, V_{GE} = 15V$	—	3.0	4.0	V
Input capacitance		C_{ies}	$V_{CE} = 10V, V_{GE} = 0, f = 1MHz$	—	48000	—	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		—	0.2	0.5	
	Turn-off time	t_{off}		—	0.8	1.5	
Forward voltage		V_F		—	2.0	3.0	V
Reverse recovery time		t_{rr}	$I_F = 400 A, V_{GE} = -10 V, P$ $di / dt = 300 A / \mu s$	—	0.25	0.5	μs
Thermal resistance		$R_{th (j-c)}$	Transistor	—	—	0.052	$^{\circ}C / W$
			Diode	—	—	0.2	







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