

### GTR Module

### Silicon N Channel IGBT

### High Power Switching Applications

### Motor Control Applications

#### Features

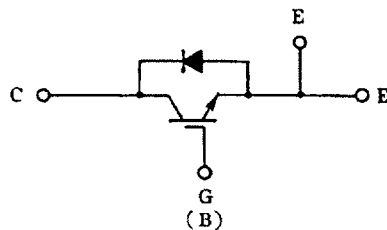
- High input impedance
- High speed:  $t_f = 1.0\mu\text{s}$  (Max.)  $t_{rr} = 0.5\mu\text{s}$  (Max.)
- Low saturation voltage:  $V_{CE(sat)} = 2.7\text{V}$  (Max.)
- Enhancement mode
- The electrodes are isolated from case

#### Maximum Ratings (Ta = 25°C)

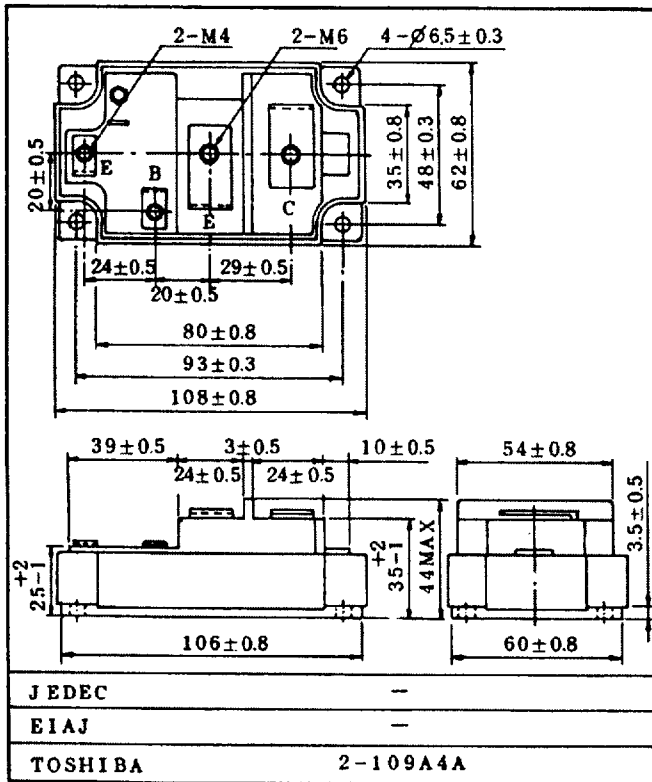
CHARACTERISTICS		SYMBOL	RATING	UNIT
Collector-Emitter Voltage		$V_{CES}$	1200	V
Gate-Emitter Voltage		$V_{GES}$	$\pm 20$	V
Collector Current	DC	$I_C$	300	A
	1ms	$I_{CP}$	600	
Forward Current	DC	$I_F$	300	A
	1ms	$I_{FM}$	600	
Collector Power Dissipation (Tc = 25°C)		$P_C$	2000	W
Junction Temperature		$T_j$	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

#### Equivalent Circuit

(MG300Q1US11)



Unit in mm

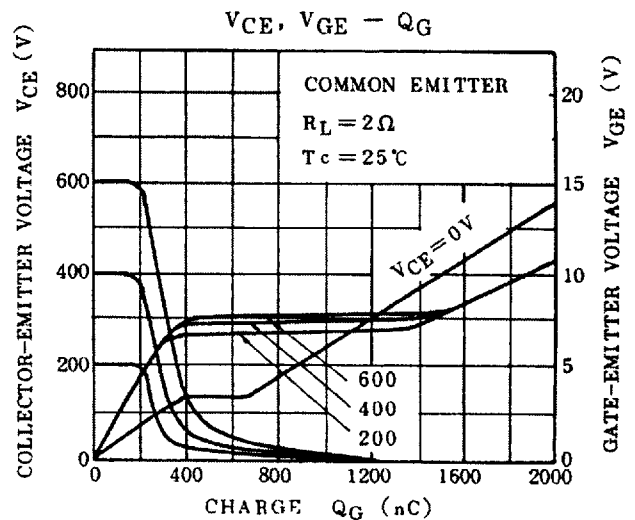
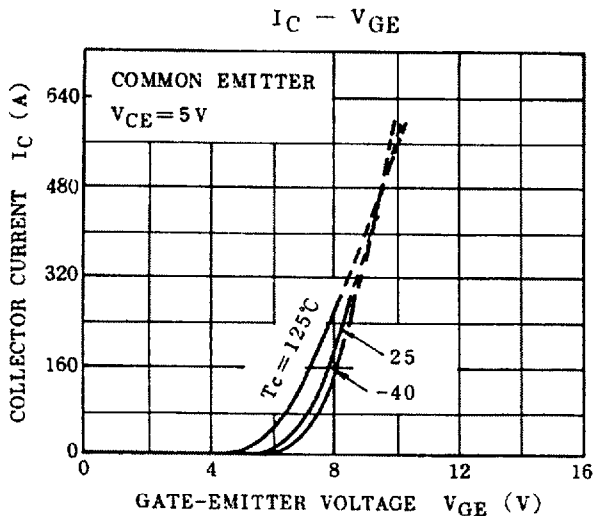
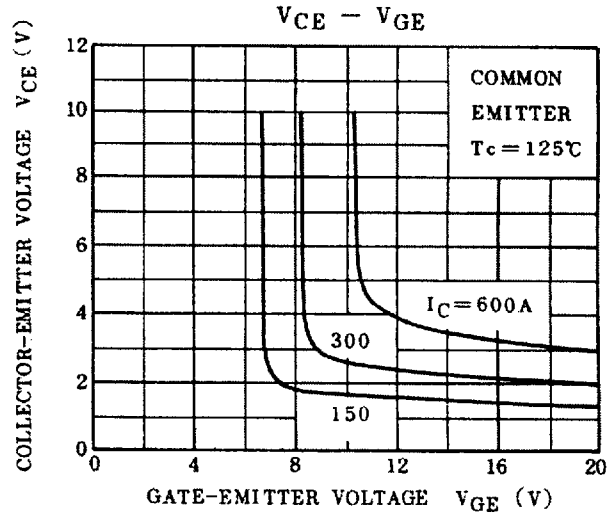
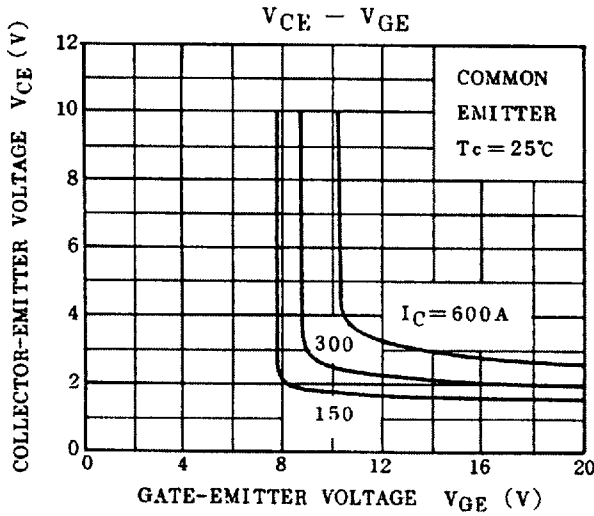
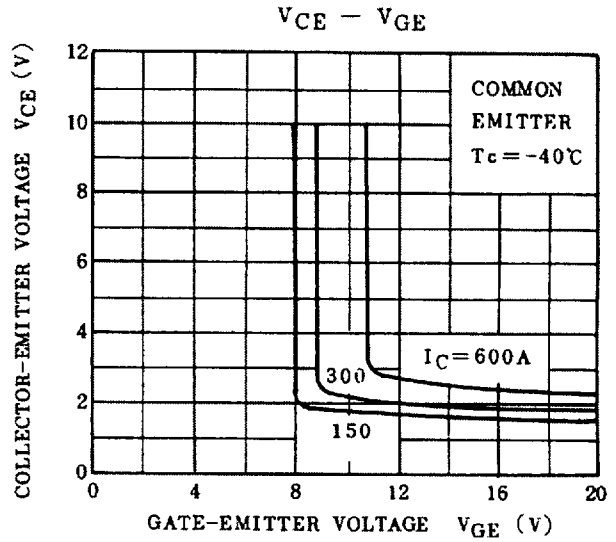
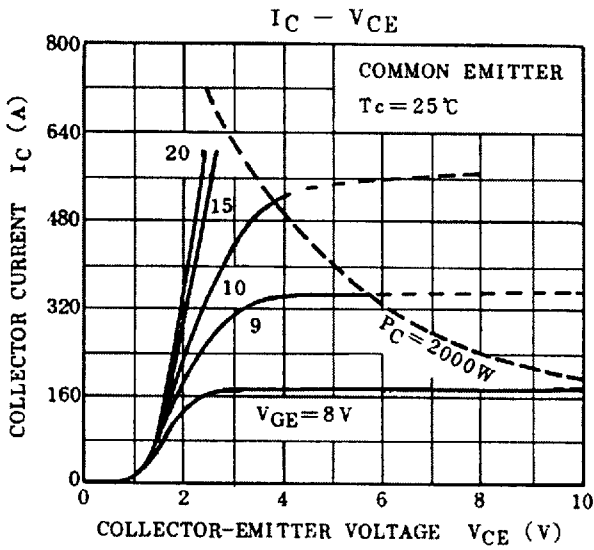


Weight : 465g

Electrical Characteristics (Ta = 25°C)

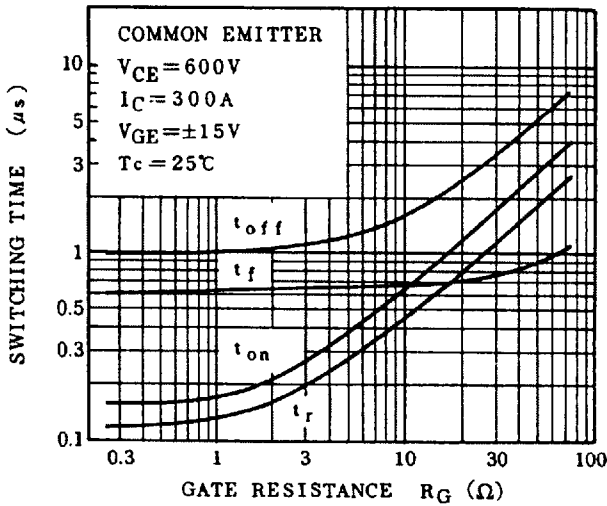
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		$I_{GES}$	$V_{GE} = \pm 20V, V_{CE} = 0$	—	—	$\pm 500$	nA
Collector Cut-off Current		$I_{CES}$	$V_{CE} = 1200V, V_{GE} = 0$	—	—	4	mA
Gate-Emitter Cut-off Voltage		$V_{GE(OFF)}$	$I_C = 300mA, V_{CE} = 5V$	3.0	—	6.0	V
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	$I_C = 300A, V_{GE} = 15V$	—	2.2	2.7	V
Input Capacitance		$C_{ies}$	$V_{CE} = 10V, V_{GE} = 0, f = 1MHz$	—	42000	—	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		$V_F$	$I_F = 300A, V_{GE} = 0$	—	2.0	3.0	V
Reverse Recovery Time		$t_{rr}$	$I_F = 300A, V_{GE} = -10V, di/dt = 300A/\mu s$	—	0.25	0.5	μs
Thermal Resistance		$R_{th(j-c)}$	Transistor	—	—	0.062	°C/W
			Diode	—	—	0.2	

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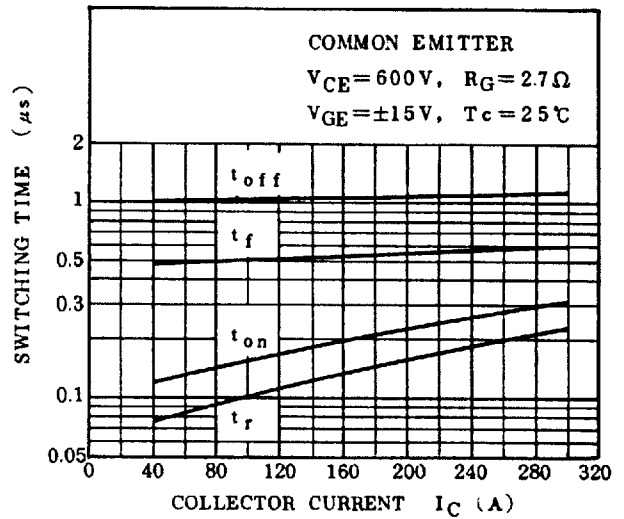


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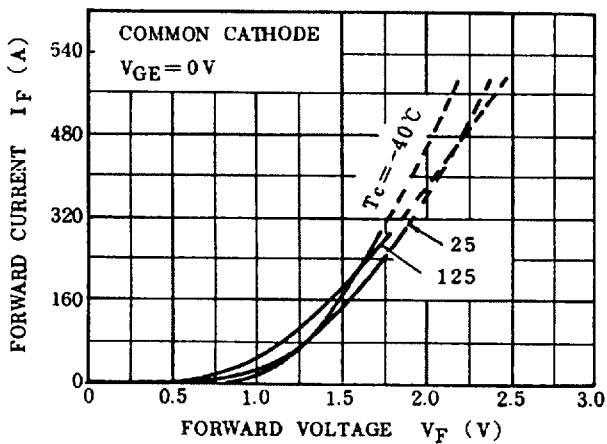
SWITCHING TIME -  $R_G$



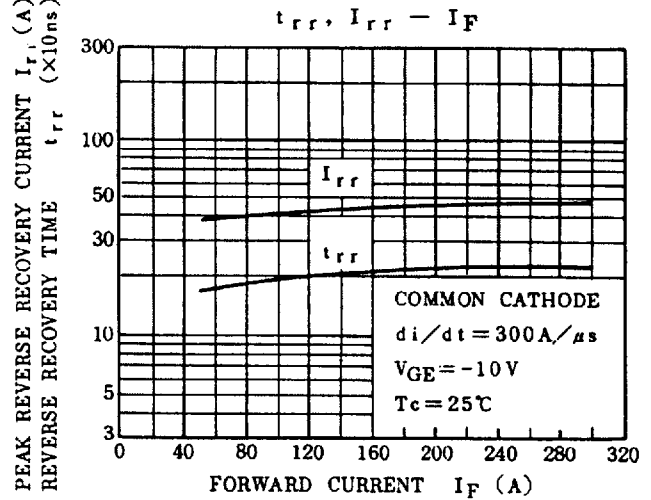
SWITCHING TIME -  $I_C$



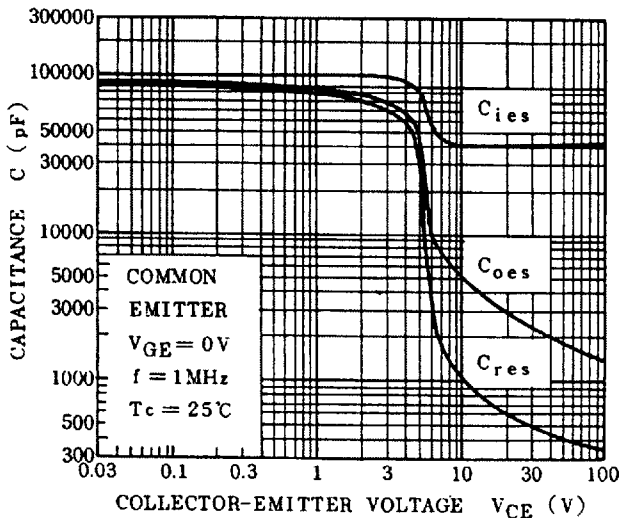
$I_F - V_F$



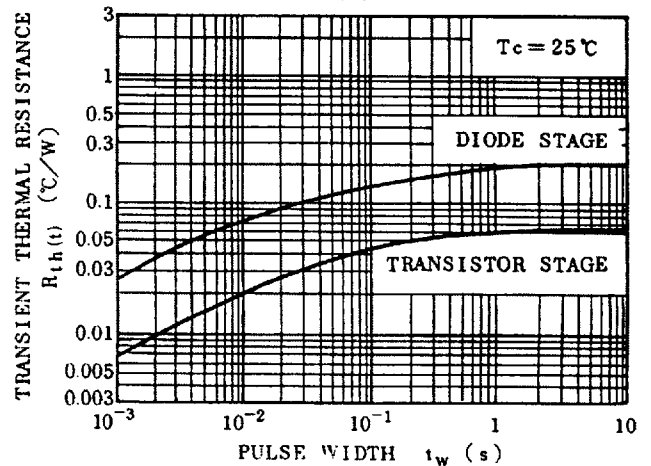
PEAK REVERSE RECOVERY CURRENT  $I_{rr}$  (A)  
 REVERSE RECOVERY TIME  $t_{rr}$  ( $\times 10ns$ )



$C - V_{CE}$

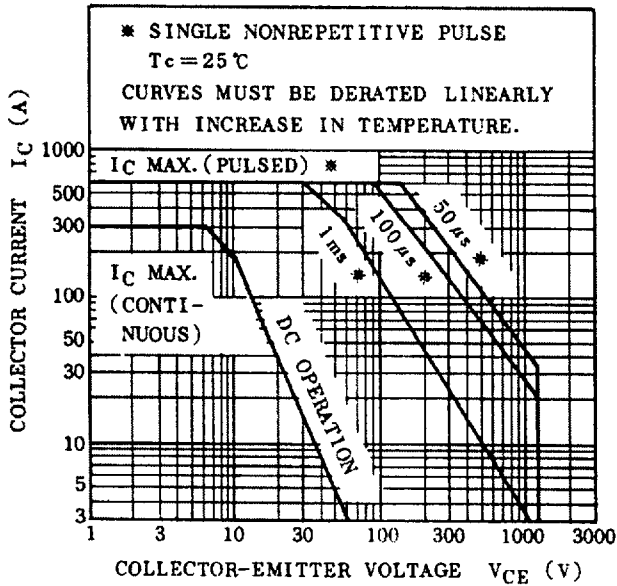


$R_{th}(t) - t_w$

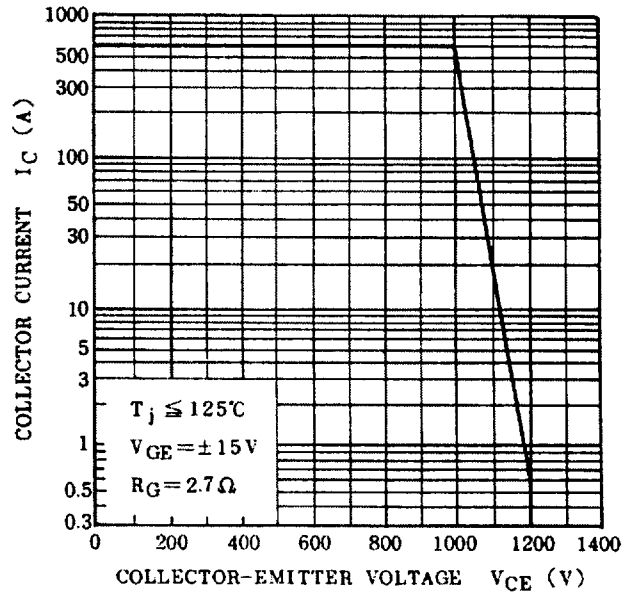


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