

GTR Module

Silicon N Channel IGBT

High Power Switching Applications

Motor Control Applications

Features

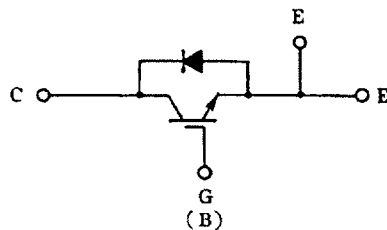
- High input impedance
- High speed: $t_f = 1.0\mu\text{s}$ (Max.) $t_{rr} = 0.5\mu\text{s}$ (Max.)
- Low saturation voltage: $V_{CE(sat)} = 2.7\text{V}$ (Max.)
- Enhancement mode
- The electrodes are isolated from case

Maximum Ratings ($T_a = 25^\circ\text{C}$)

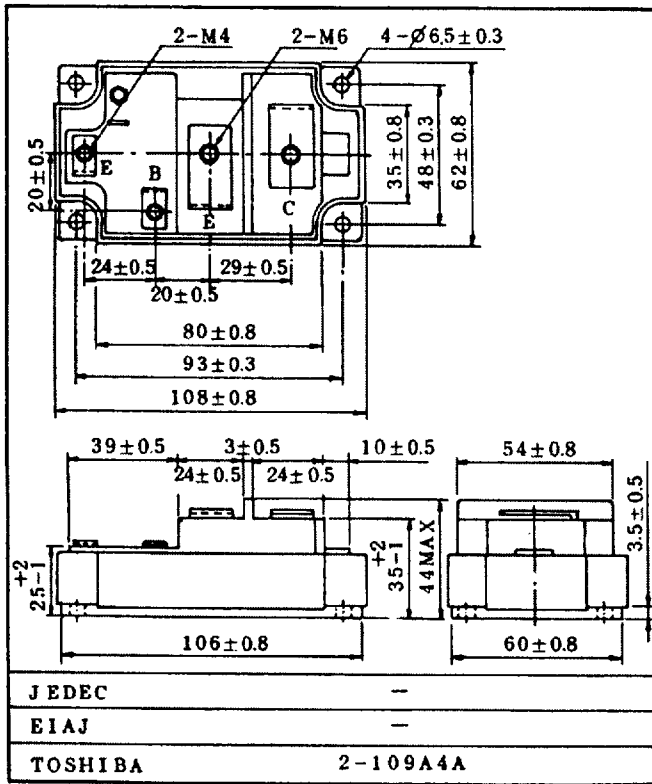
CHARACTERISTICS		SYMBOL	RATING	UNIT
Collector-Emitter Voltage		V_{CES}	1200	V
Gate-Emitter Voltage		V_{GES}	± 20	V
Collector Current	DC	I_C	300	A
	1ms	I_{CP}	600	
Forward Current	DC	I_F	300	A
	1ms	I_{FM}	600	
Collector Power Dissipation ($T_c = 25^\circ\text{C}$)		P_C	2000	W
Junction Temperature		T_j	150	$^\circ\text{C}$
Storage Temperature Range		T_{stg}	-40 ~ 125	$^\circ\text{C}$
Isolation Voltage		V_{Isol}	2500 (AC 1 Minute)	V
Screw Torque (Terminal: M4/M6/Mounting)		—	2/3/3	N \neq m

Equivalent Circuit

(MG300Q1US11)



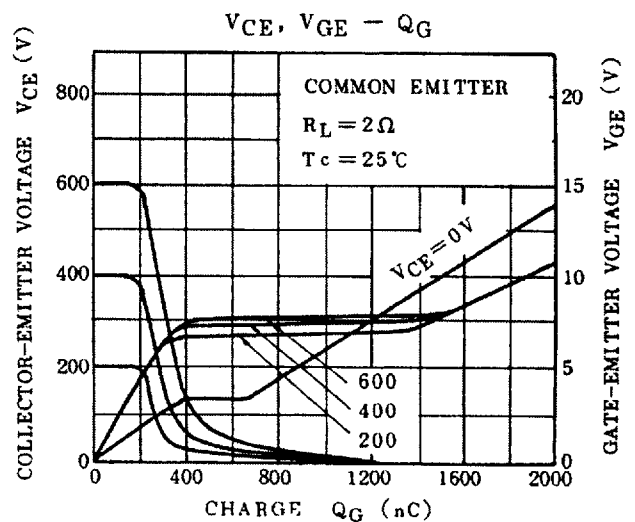
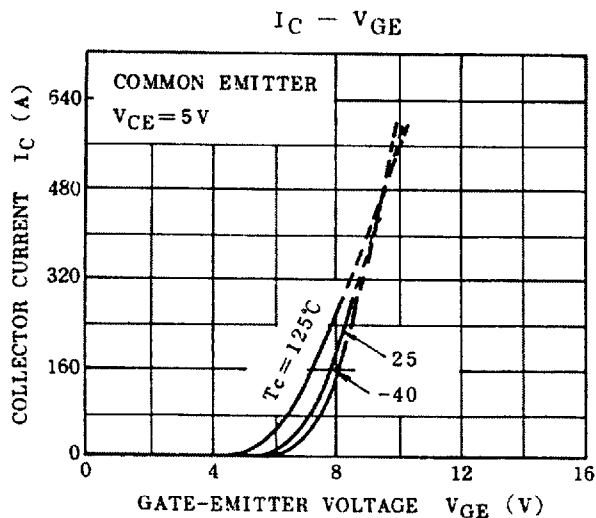
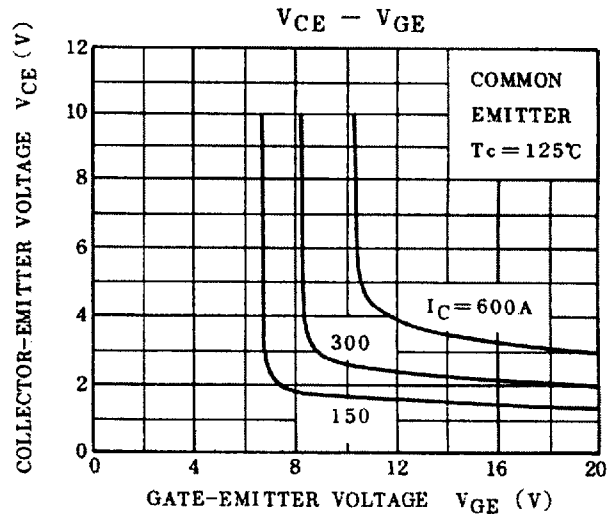
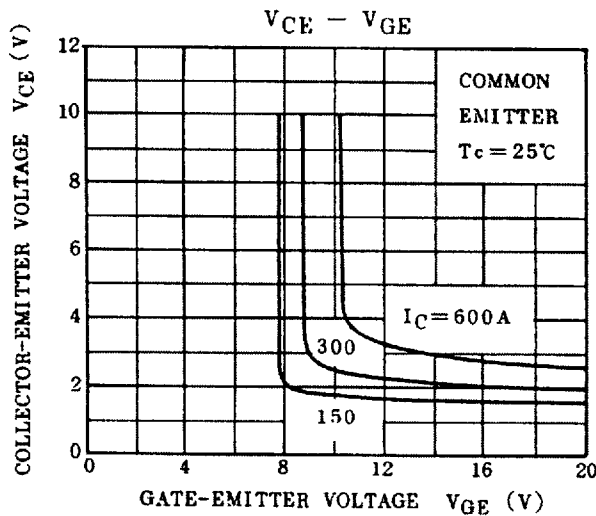
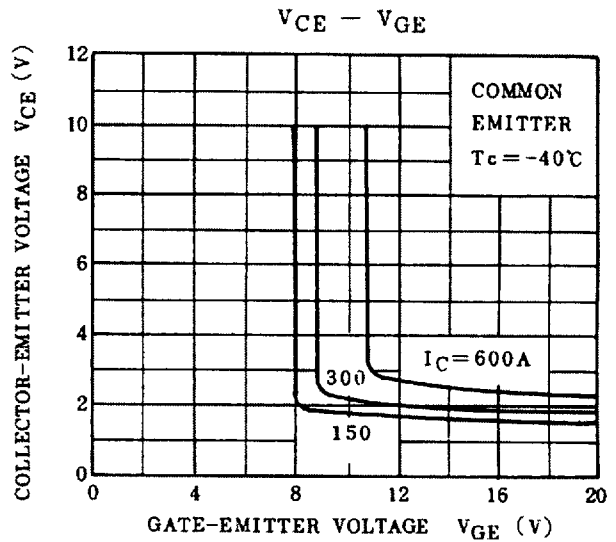
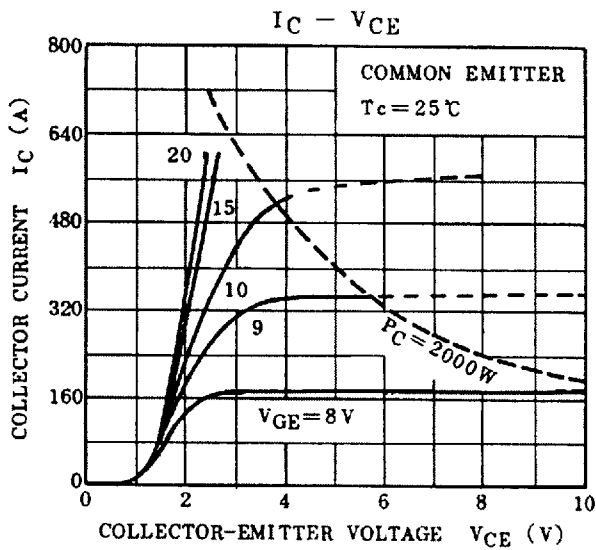
Unit in mm



Weight : 465g

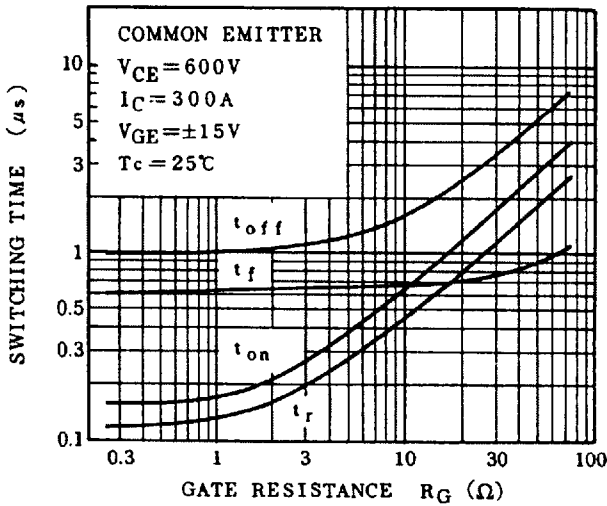
Electrical Characteristics (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GES}	$V_{GE} = \pm 20V, V_{CE} = 0$	—	—	± 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	

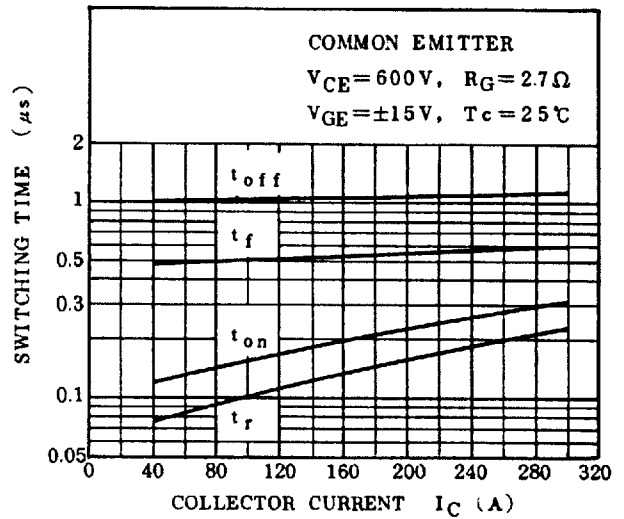


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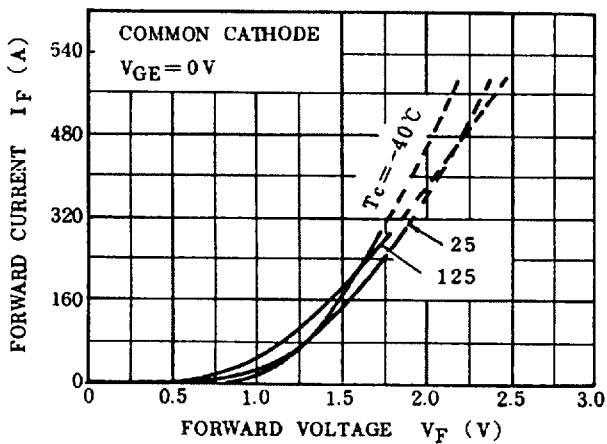
SWITCHING TIME - R_G



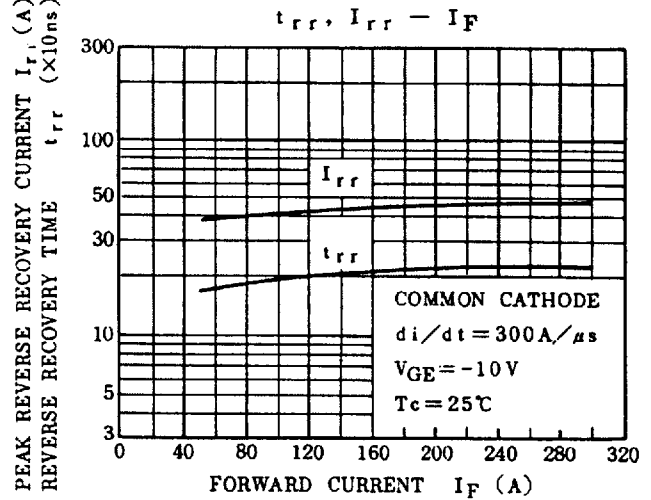
SWITCHING TIME - I_C



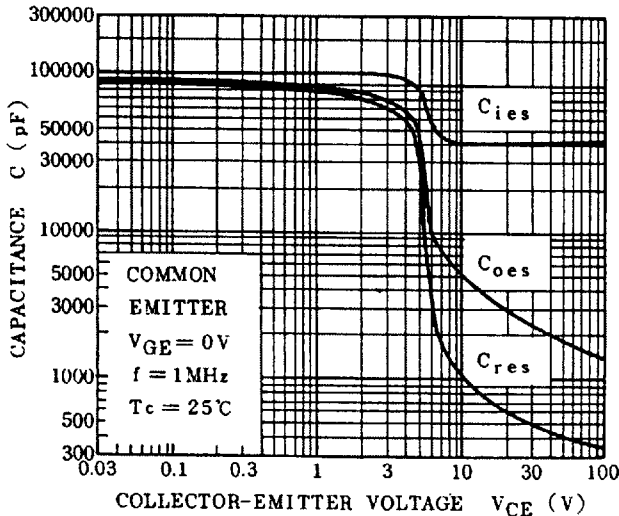
$I_F - V_F$



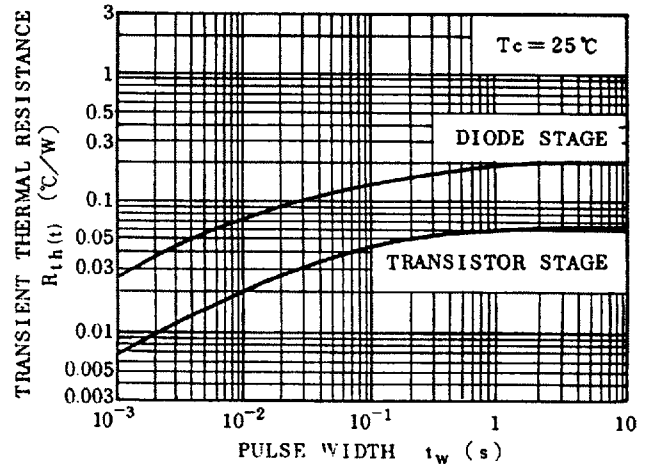
PEAK REVERSE RECOVERY CURRENT I_{rr} (A)
 REVERSE RECOVERY TIME t_{rr} ($\times 10ns$)



$C - V_{CE}$

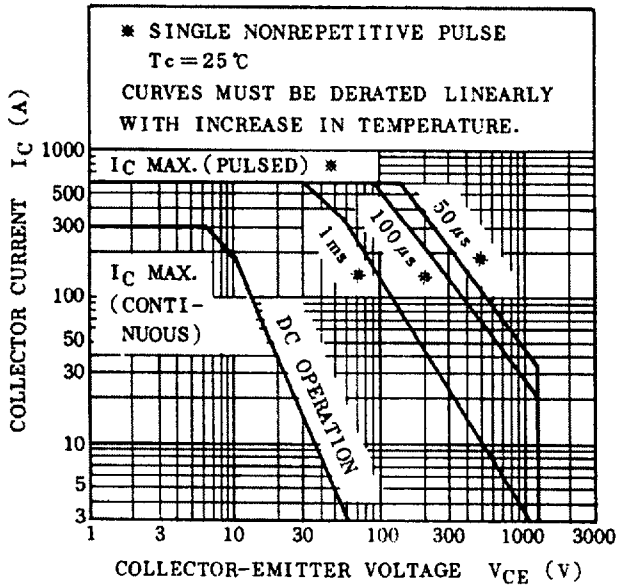


$R_{th}(t) - t_w$

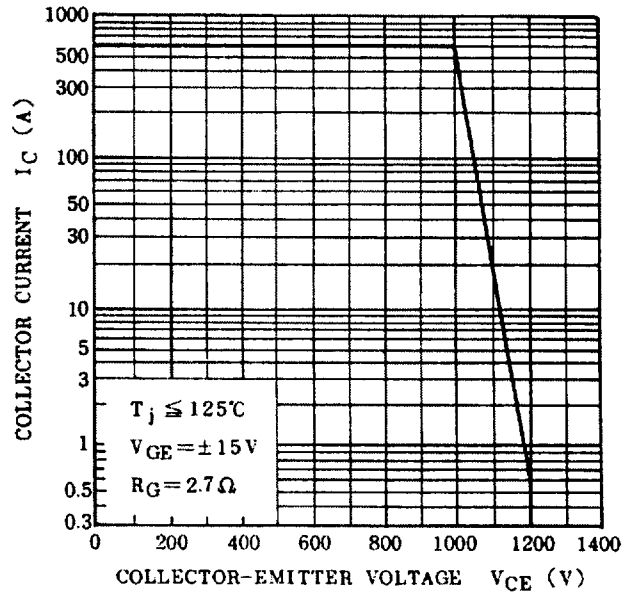


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SAFE OPERATING AREA



REVERSE BIAS SOA



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