

TENTATIVE TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

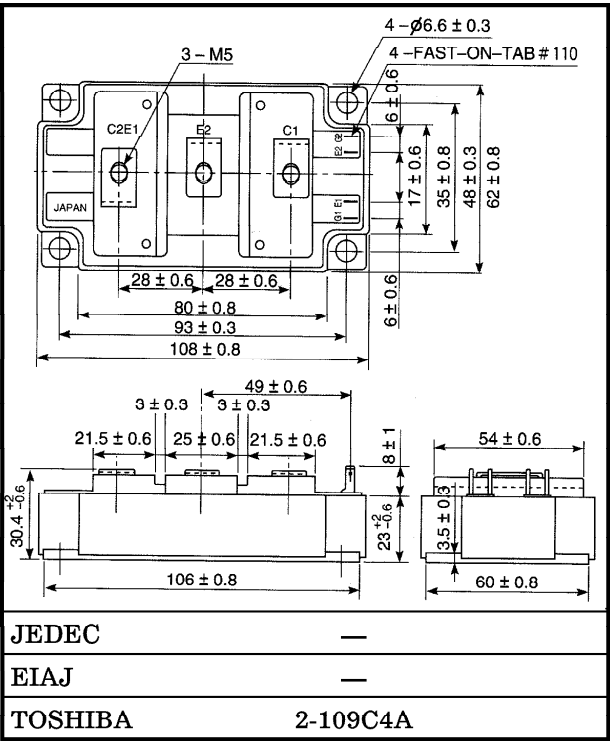
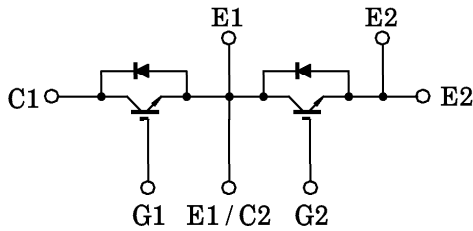
MG300Q2YS50

HIGH POWER SWITCHING APPLICATIONS.
MOTOR CONTROL APPLICATIONS.

Unit in mm

- High Input Impedance
- High Speed : $t_f=0.3\mu s$ (Max.)
 ⊙ Inductive Load
- Low Saturation Voltage
 : $V_{CE(sat)}=3.6V$ (Max.)
- Enhancement-Mode
- Includes a Complete Half Bridge in One Package.
- The Electrodes are Isolated from Case.

EQUIVALENT CIRCUIT



Weight : 430g

961001FAA1

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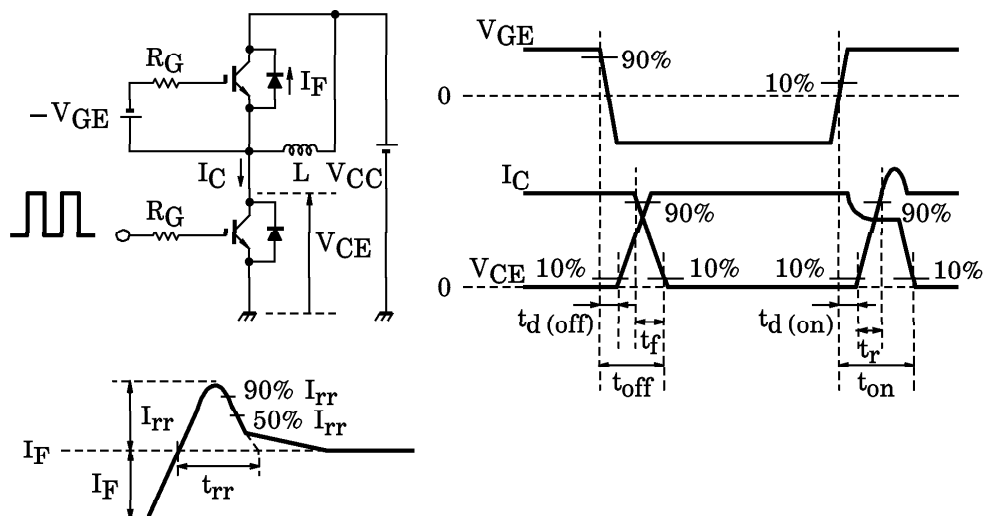
MAXIMUM RATINGS (Ta = 25°C)

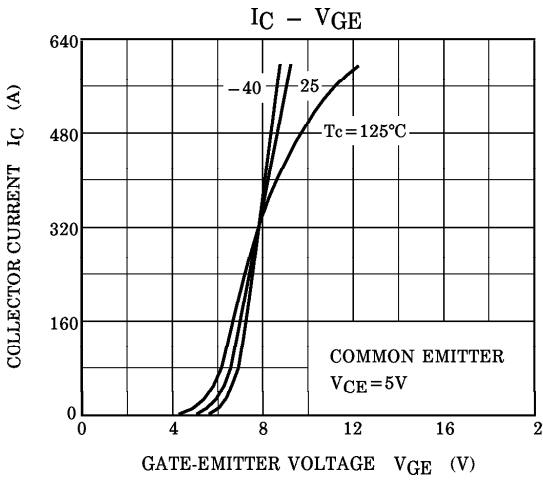
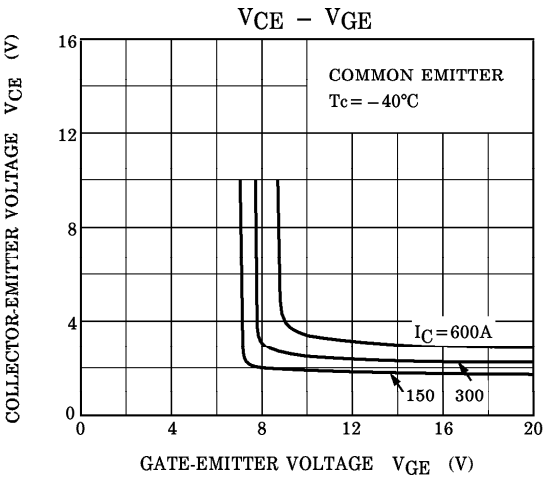
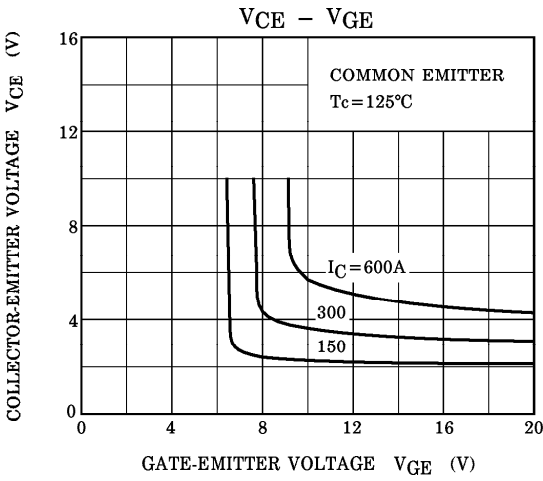
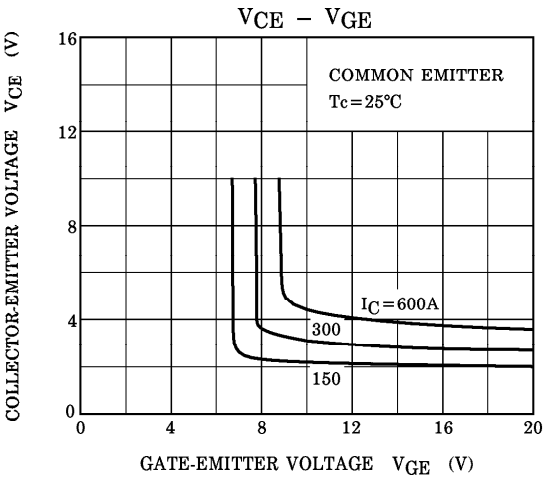
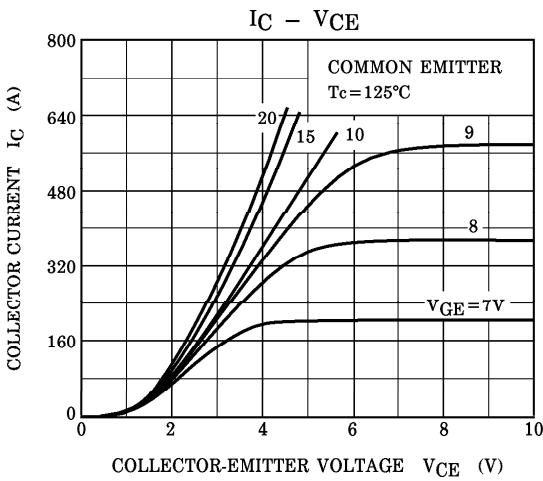
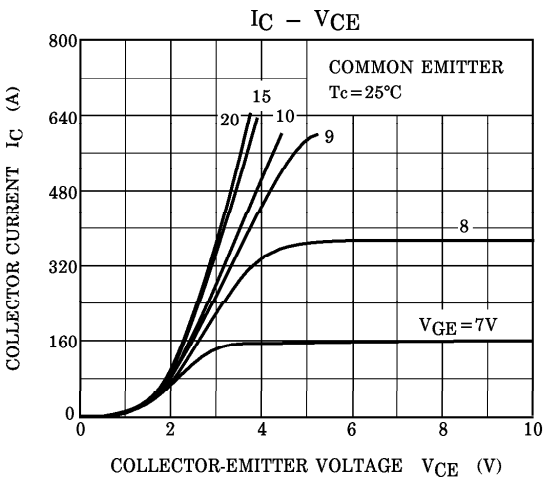
CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Emitter Voltage		V _{CES}	1200	V
Gate-Emitter Voltage		V _{GES}	± 20	V
Collector Current	DC	I _C (25°C / 80°C)	— / 300	A
	1ms	I _{CP} (25°C / 80°C)	— / 600	A
Forward Current	DC	I _F	300	A
	1ms	I _{FM}	600	A
Collector Power Dissipation (T _c = 25°C)		P _C	2000	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 / Mounting)		—	3 / 3	N·m

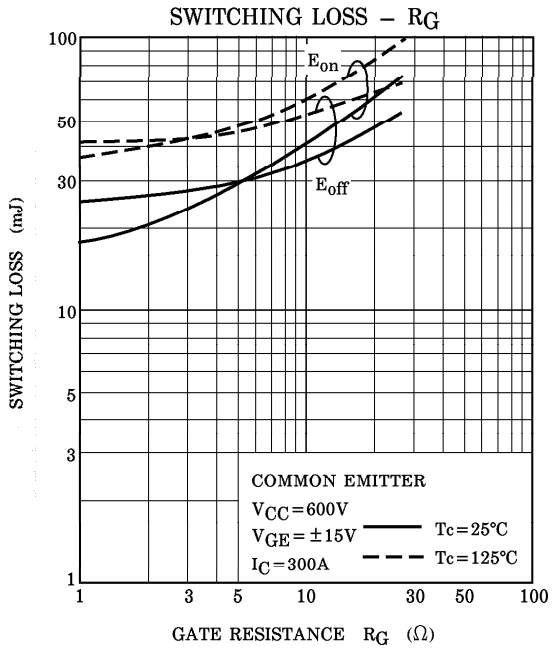
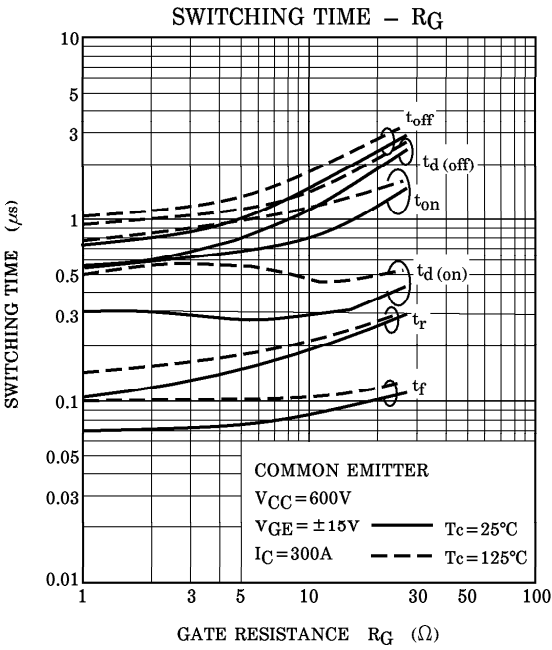
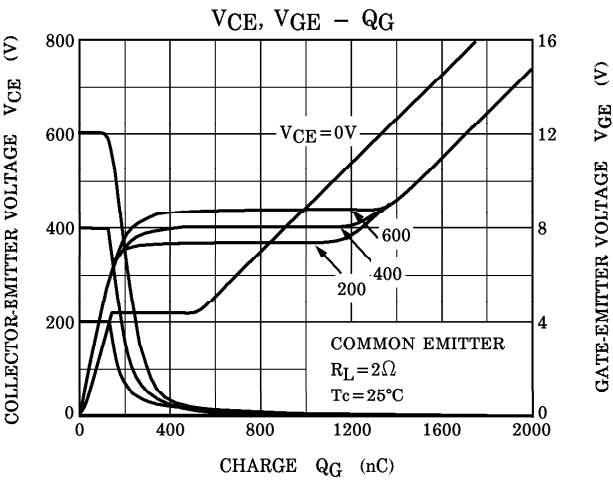
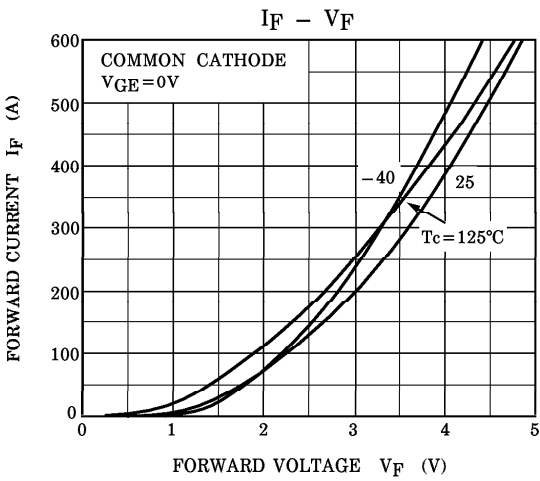
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

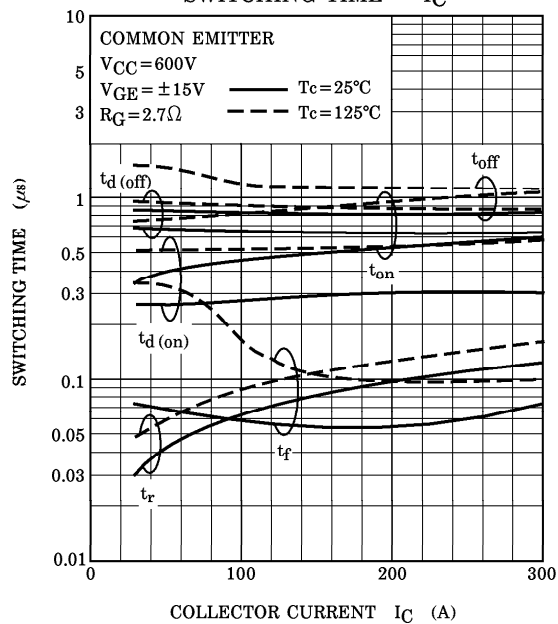
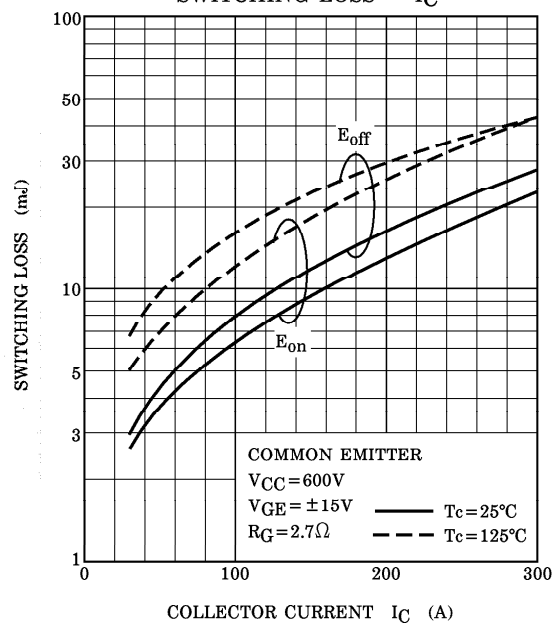
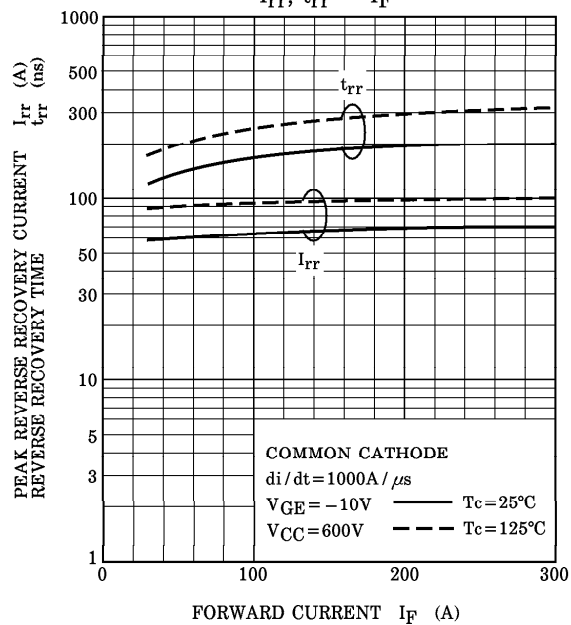
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I _{GES}	V _{GE} = ±20V, V _{CE} = 0	—	—	±500	nA
Collector Cut-Off Current		I _{CES}	V _{CE} = 1200V, V _{GE} = 0	—	—	2.0	mA
Gate-Emitter Cut-Off Voltage		V _{GE (off)}	I _C = 300mA, V _{CE} = 5V	3.0	—	6.0	V
Collector-Emitter Saturation Voltage		V _{CE (sat)}	I _C = 300A, V _{GE} = 15V	—	2.8	3.6	V
			T _j = 25°C T _j = 125°C	—	3.1	4.0	
Input Capacitance		C _{ies}	V _{CE} = 10V, V _{GE} = 0, f = 1MHz	—	30.0	—	nF
Switching Time	Turn-On Delay Time	t _{d (on)}	Inductive Load V _{CC} = 600V I _C = 300A V _{GE} = ±15V R _G = 2.7Ω (Note 1)	—	0.05	—	μs
	Rise Time	t _r		—	0.05	—	
	Turn-On Time	t _{on}		—	0.2	—	
	Turn-Off Delay Time	t _{d (off)}		—	0.5	—	
	Fall Time	t _f		—	0.1	0.3	
	Turn-Off Time	t _{off}		—	0.6	—	
Forward Voltage		V _F	I _F = 300A, V _{GE} = 0	—	3.0	4.0	V
Reverse Recovery Time		t _{rr}	I _F = 300A, V _{GE} = −10V di / dt = 1000A / μs (Note 1)	—	0.1	0.25	μs
Thermal Resistance		R _{th (j-c)}	Transistor Stage	—	—	0.06	°C / W
			Diode Stage	—	—	0.24	

(Note 1) Switching Time and Reverse Recovery Time Test Circuit & Timing Chart







SWITCHING TIME - I_C SWITCHING LOSS - I_C  I_{rr} , t_{rr} - I_F  E_{dsw} - I_F 