

TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

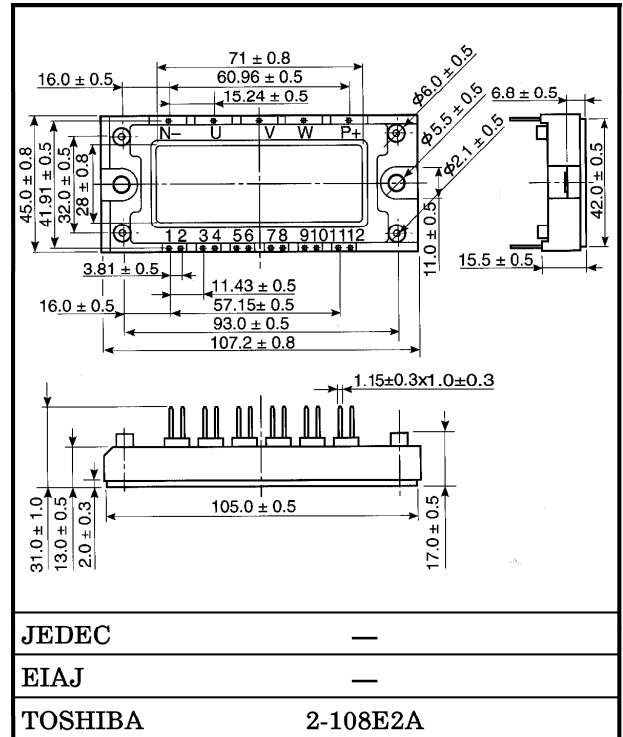
# MG50Q6ES51A

HIGH POWER SWITCHING APPLICATIONS

MOTOR CONTROL APPLICATIONS

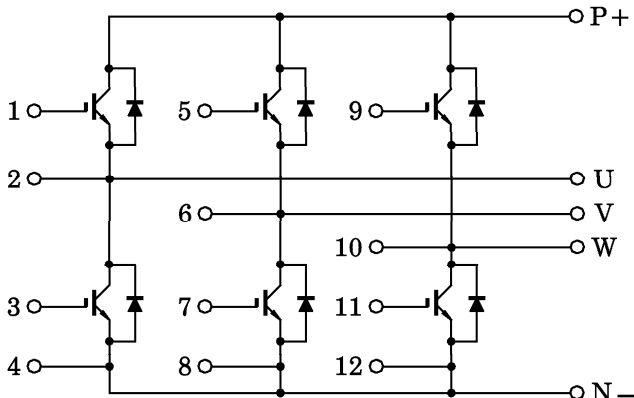
- The Electrodes are Isolated from Case.
- High Input Impedance.
- 6 IGBTs Built Into 1 Package.

Unit in mm



Weight : 185 g

EQUIVALENT CIRCUIT



961001EAA1

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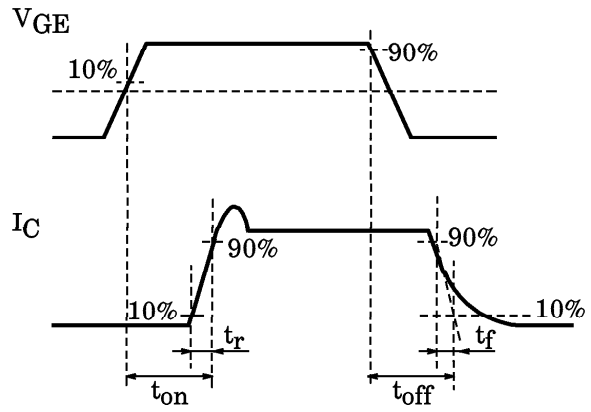
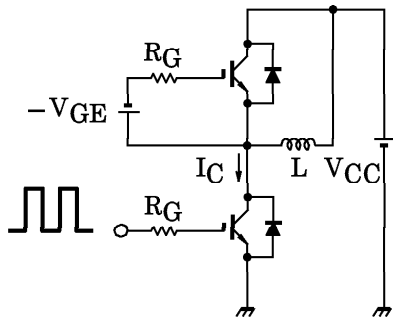
MAXIMUM RATINGS (Ta = 25°C)

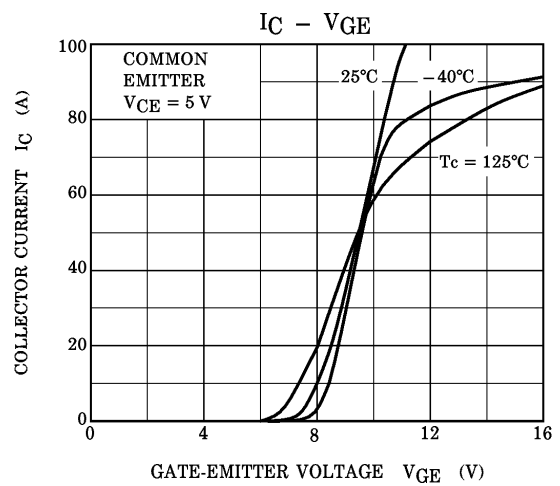
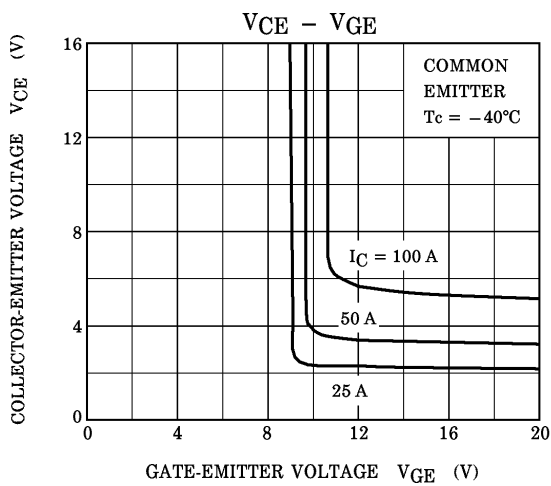
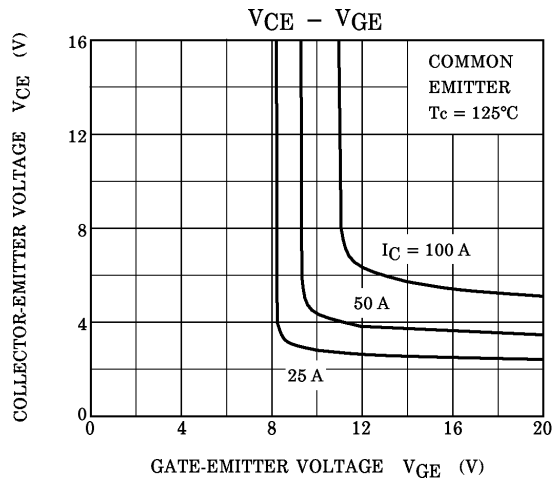
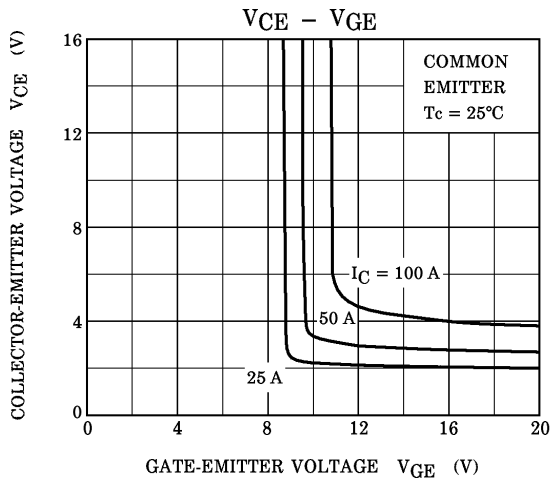
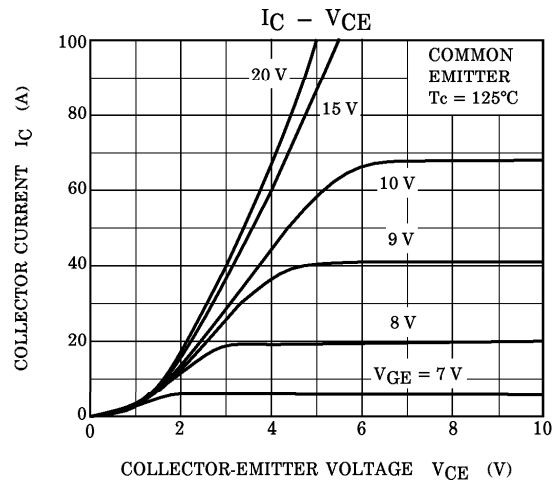
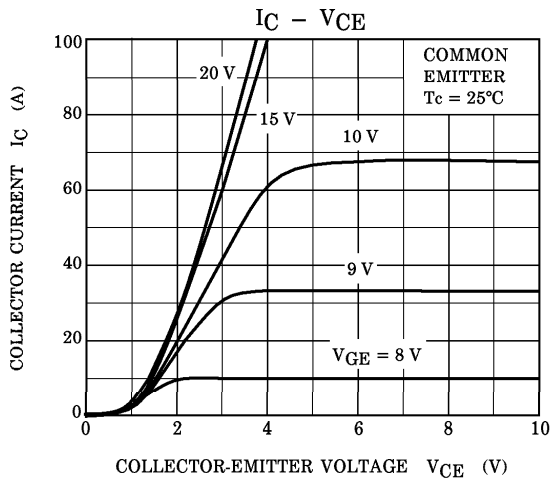
CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Emitter Voltage		V <sub>CES</sub>	1200	V
Gate-Emitter Voltage		V <sub>GES</sub>	±20	V
Collector Current	DC	I <sub>C</sub> (25°C / 80°C)	50 / 45	A
	1 ms	I <sub>CP</sub> (25°C / 80°C)	100 / 90	
Forward Current	DC	I <sub>F</sub>	50	A
	1 ms	I <sub>FM</sub>	100	
Collector Power Dissipation (T <sub>c</sub> = 25°C)		P <sub>C</sub>	350	W
Junction Temperature		T <sub>j</sub>	150	°C
Storage Temperature Range		T <sub>stg</sub>	-40~125	°C
Isolation Voltage		V <sub>Isol</sub>	2500 (AC 1 minute)	V
Screw Torque		—	6	N·m

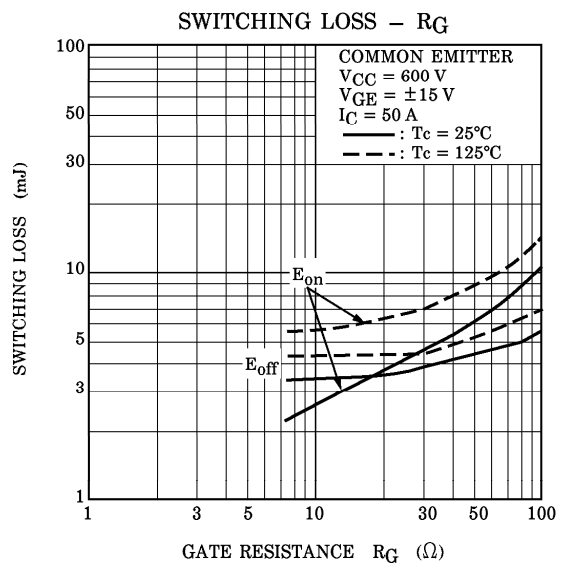
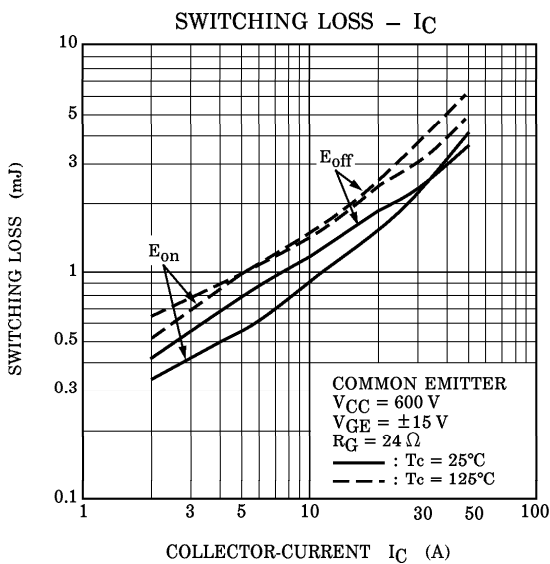
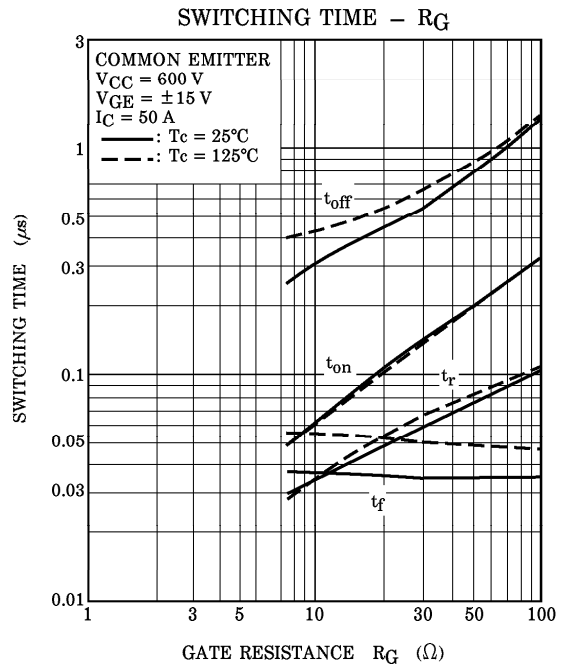
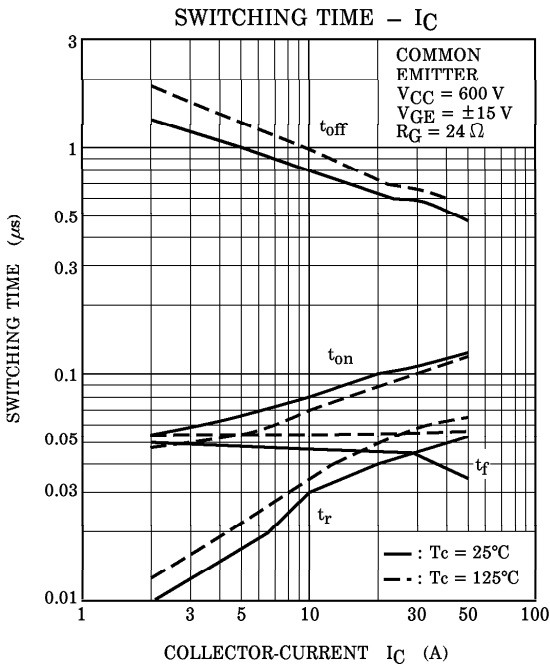
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

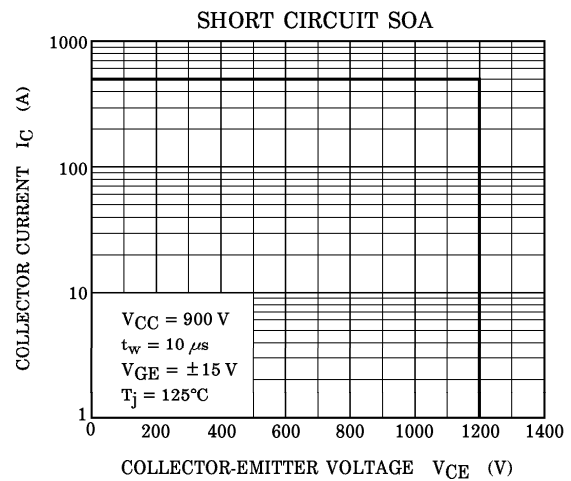
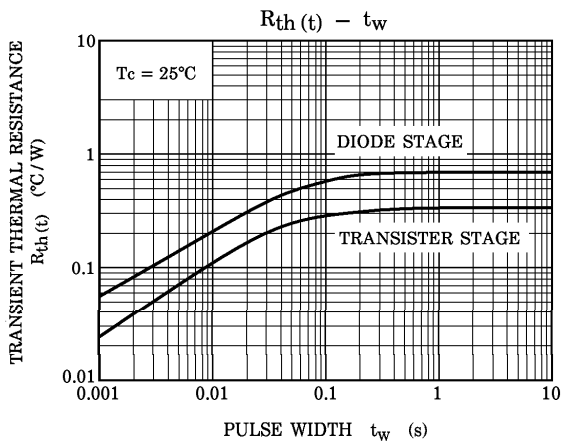
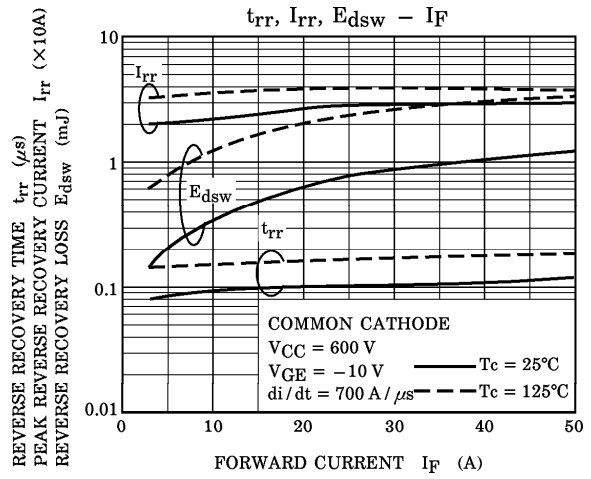
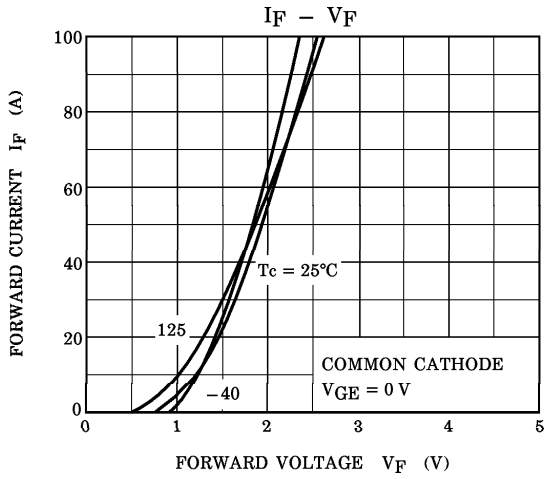
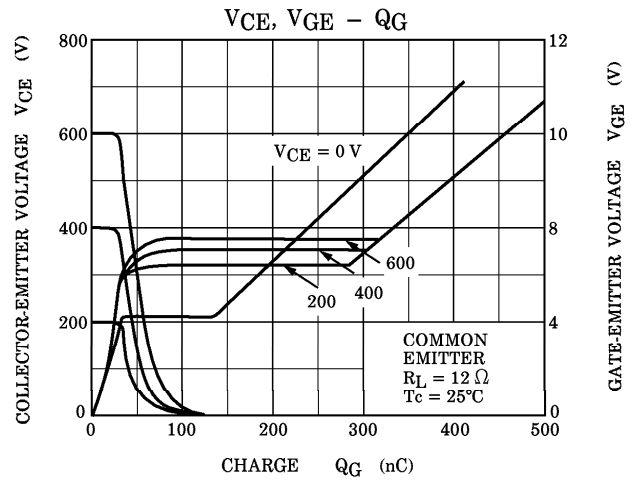
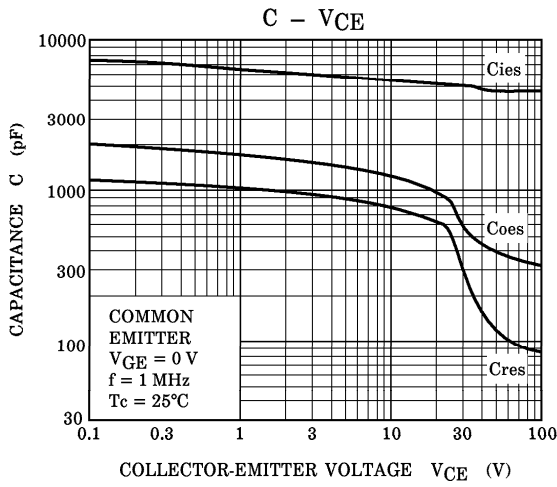
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Gate Leakage Current		I <sub>GES</sub>	V <sub>GE</sub> = ±20 V, V <sub>CE</sub> = 0	—	—	±500	nA	
Collector Cut-off Current		I <sub>CES</sub>	V <sub>CE</sub> = 1200 V, V <sub>GE</sub> = 0	—	—	0.5	mA	
Gate-Emitter Cut-off Voltage		V <sub>GE (off)</sub>	I <sub>C</sub> = 50 mA, V <sub>CE</sub> = 5 V	—	6.0	—	V	
Collector-Emitter Saturation Voltage		V <sub>CE (sat)</sub>	I <sub>C</sub> = 50 A, V <sub>GE</sub> = 15 V	T <sub>j</sub> = 25°C	—	2.8	3.2	V
				T <sub>j</sub> = 125°C	—	3.1	—	
Input Capacitance		C <sub>ies</sub>	V <sub>CE</sub> = 10 V, V <sub>GE</sub> = 0, f = 1 MHz	—	6.0	—	nF	
Switching Time	Rise Time	t <sub>r</sub>	V <sub>CC</sub> = 600 V I <sub>C</sub> = 50 A, V <sub>GE</sub> = ±15 V R <sub>G</sub> = 24 Ω, T <sub>j</sub> = 125°C (Note 1)	—	0.07	0.15	μs	
	Turn-on Time	t <sub>on</sub>		—	0.15	0.30		
	Fall Time	t <sub>f</sub>		—	0.07	0.10		
	Turn-off Time	t <sub>off</sub>		—	0.60	0.90		
Forward Voltage		V <sub>F</sub>	I <sub>F</sub> = 50 A, V <sub>GE</sub> = 0	—	2.0	2.8	V	
Reverse Recovery Time		t <sub>rr</sub>	I <sub>F</sub> = 50 A, V <sub>GE</sub> = -10 V, di / dt = 700 A / μs	—	0.10	0.25	μs	
Thermal Resistance		R <sub>th (j-c)</sub>	Transistor Stage	—	—	0.35	°C / W	
			Diode Stage	—	—	0.7		

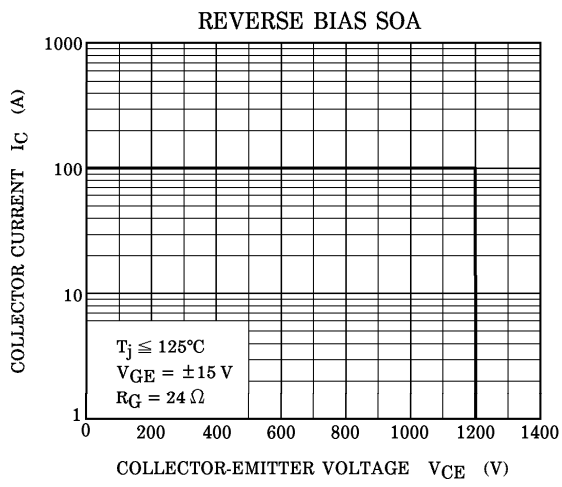
(Note 1) Switching Time Test Circuit & Timing Chart











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