

TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

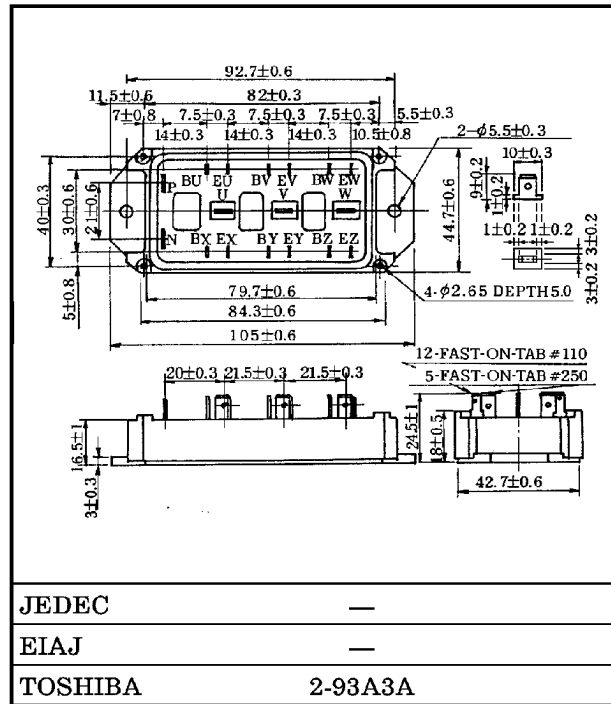
# MG8Q6ES42

HIGH POWER SWITCHING APPLICATIONS.

MOTOR CONTROL APPLICATIONS.

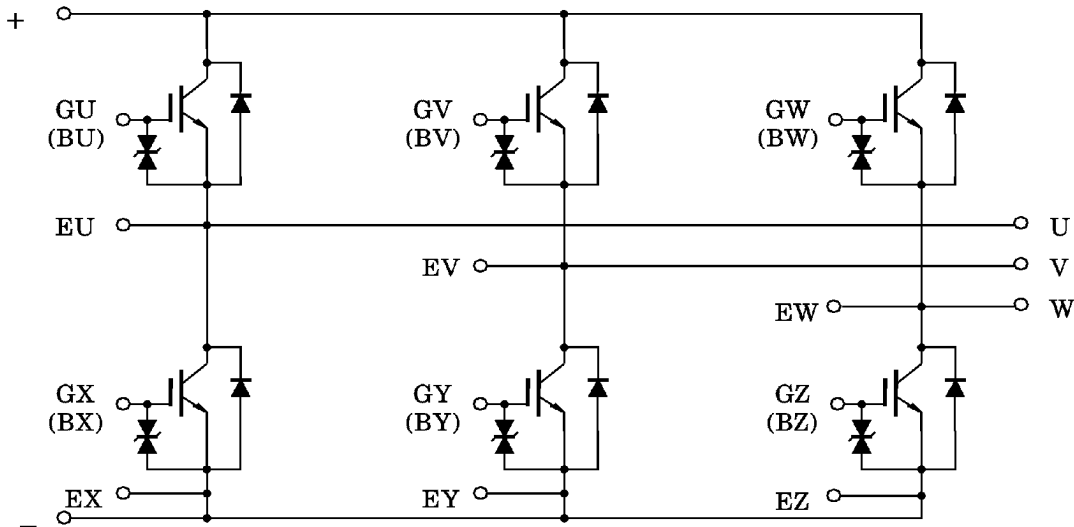
- The Electrodes are Isolated From Case.
- 6 IGBTs are Built Into 1 Package.
- Enhancement-Mode
- Low Saturation Voltage
  - :  $V_{CE(sat)} = 4.0V(\text{Max.})$
- High Speed :  $t_f = 0.5\mu s(\text{Max.})$   
 $t_{rr} = 0.5\mu s(\text{Max.})$

Unit in mm



Weight : 220g

EQUIVALENT CIRCUIT



961001EAA2

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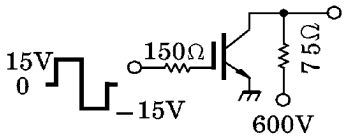
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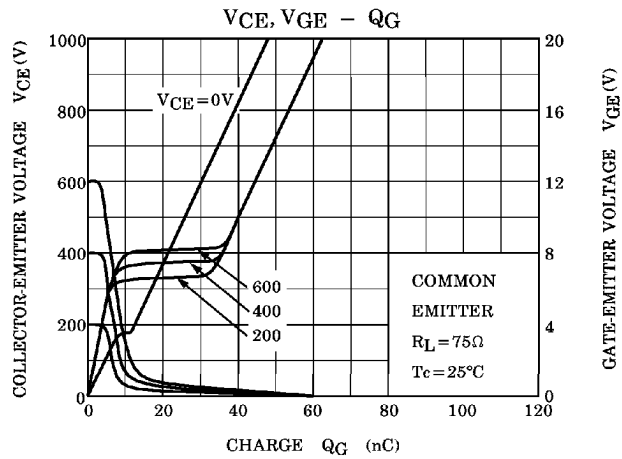
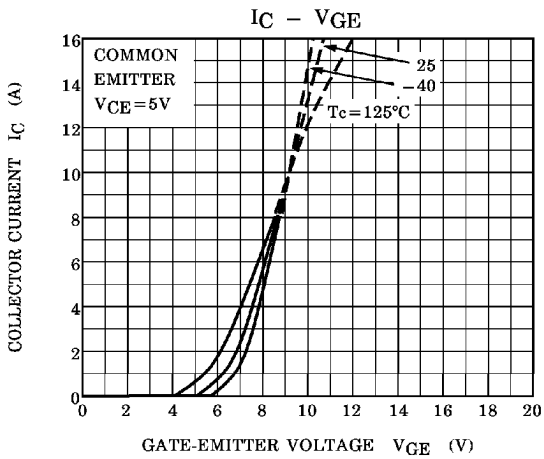
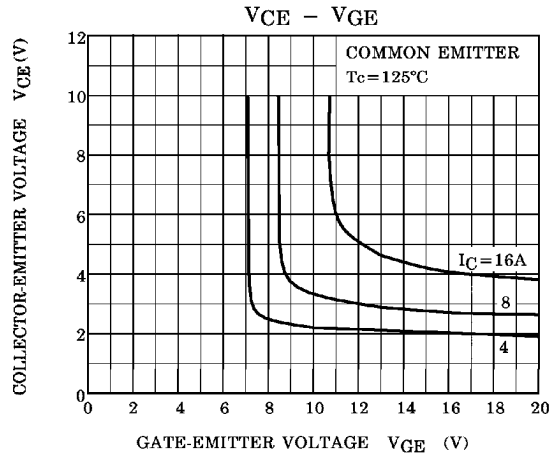
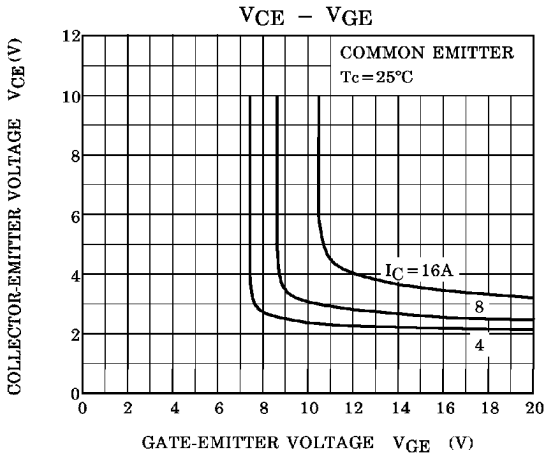
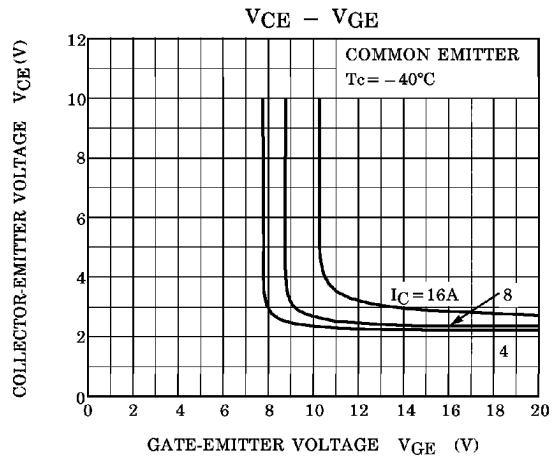
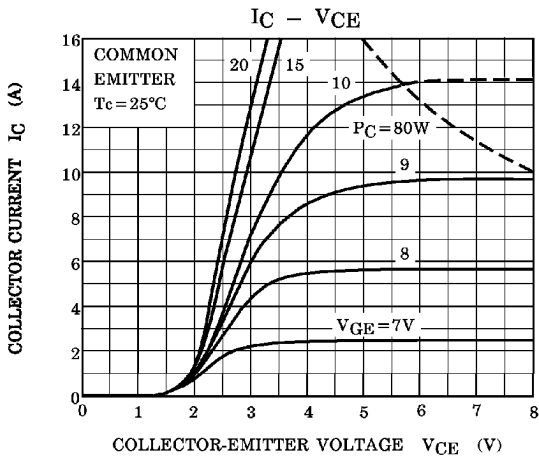
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MAXIMUM RATINGS (Ta = 25°C)

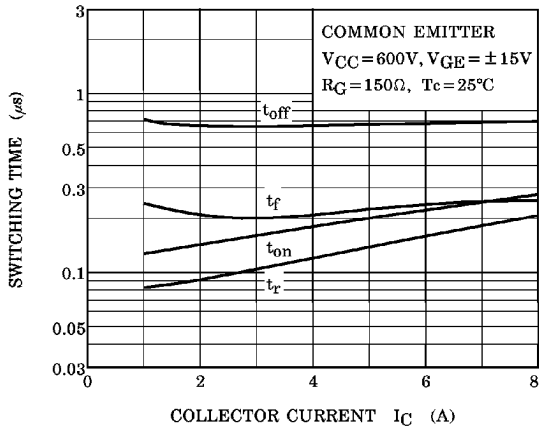
CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Emitter Voltage		V <sub>CES</sub>	1200	V
Gate-Emitter Voltage		V <sub>GES</sub>	±20	V
Collector Current	DC	I <sub>C</sub>	8	A
	1ms	I <sub>CP</sub>	16	
Forward Current	DC	I <sub>F</sub>	8	A
	1ms	I <sub>FM</sub>	16	
Collector Power Dissipation		P <sub>C</sub>	80	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		—	3	N·m

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

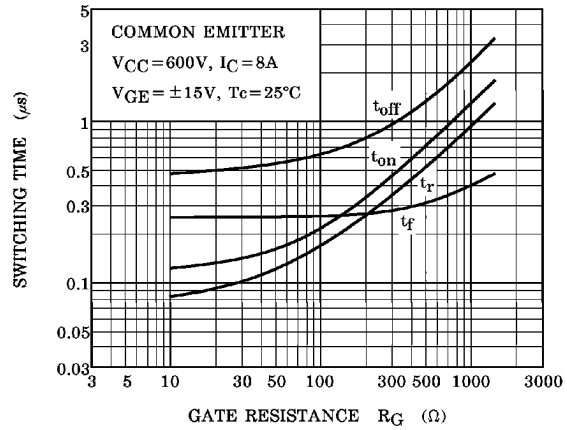
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I <sub>GES</sub>	V <sub>GE</sub> = ±20V, V <sub>CE</sub> = 0	—	—	±10	μA
Collector Cut-off Current		I <sub>CES</sub>	V <sub>CE</sub> = 1200V, V <sub>GE</sub> = 0	—	—	1.0	mA
Gate-Emitter Cut-off Voltage		V <sub>GE (OFF)</sub>	I <sub>C</sub> = 8mA, V <sub>CE</sub> = 5V	3.0	—	6.0	V
Collector-Emitter Saturation Voltage		V <sub>CE (sat)</sub>	I <sub>C</sub> = 8A, V <sub>GE</sub> = 15V	—	3.0	4.0	V
Input Capacitance		C <sub>ies</sub>	V <sub>CE</sub> = 10V, V <sub>GE</sub> = 0, f = 1MHz	—	900	—	pF
Switching Time	Rise Time	t <sub>r</sub>		—	0.3	0.6	μs
	Turn-on Time	t <sub>on</sub>		—	0.4	0.8	
	Fall Time	t <sub>f</sub>		—	0.25	0.5	
	Turn-off Time	t <sub>off</sub>		—	0.8	1.5	
Forward Voltage		V <sub>F</sub>	I <sub>F</sub> = 8A, V <sub>GE</sub> = 0	—	1.4	2.5	V
Reverse Recovery Time		t <sub>rr</sub>	I <sub>F</sub> = 8A, V <sub>GE</sub> = -10V di / dt = 100A / μs	—	0.2	0.5	μs
Thermal Resistance		R <sub>th (j-c)</sub>	Transistor	—	—	1.56	°C / W
			Diode	—	—	1.8	



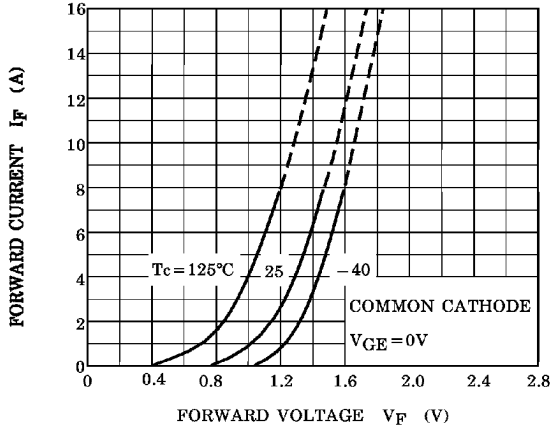
SWITCHING TIME -  $I_C$



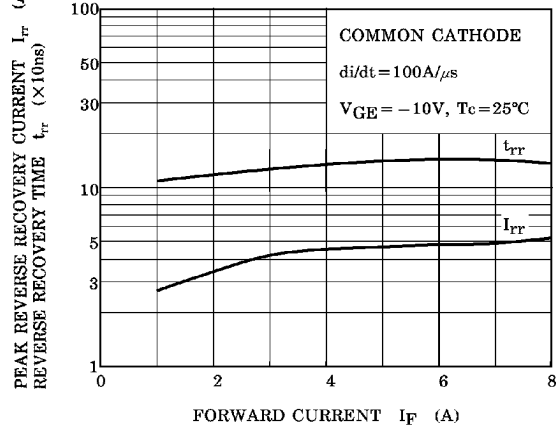
SWITCHING TIME -  $R_G$



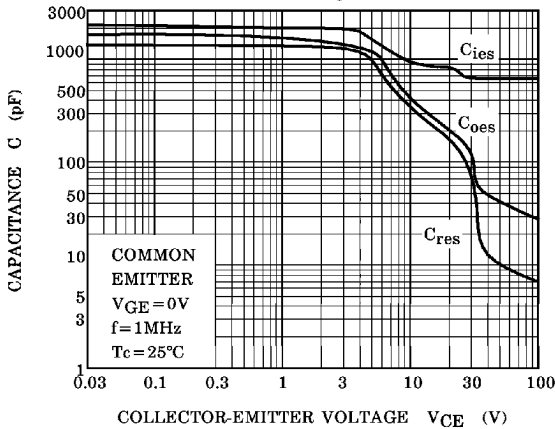
$I_F - V_F$



$t_{rr}, I_{rr} - I_F$



C -  $V_{CE}$



$R_{th}(t) - t_w$

