

**TOSHIBA**

**MG50Q2YS40**

TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

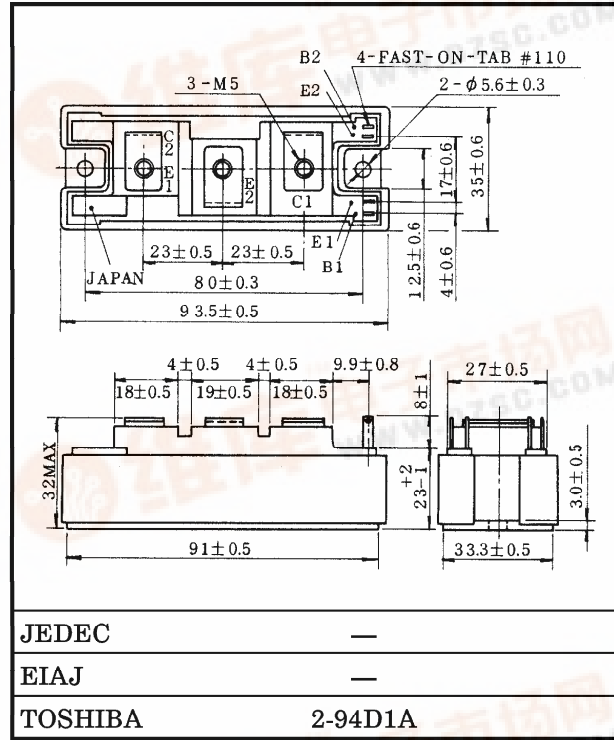
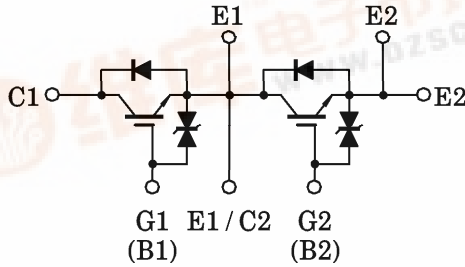
# MG50Q2YS40

HIGH POWER SWITCHING APPLICATIONS.  
MOTOR CONTROL APPLICATIONS.

Unit in mm

- High Input Impedance
- High Speed :  $t_f = 0.5 \mu s$  (Max.)  
 $t_{rr} = 0.5 \mu s$  (Max.)
- Low Saturation Voltage :  $V_{CE(sat)} = 4.0V$  (Max.)
- Enhancement-Mode
- Includes a Complete Half Bridge in One Package.
- The Electrodes are Isolated from Case.

EQUIVALENT CIRCUIT



Weight : 202g

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	$I_C$	50
	1ms	$I_{CP}$	100
Forward Current	DC	$I_F$	50
	1ms	$I_{FM}$	100
Collector Power Dissipation (Tc = 25°C)	$P_C$	400	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

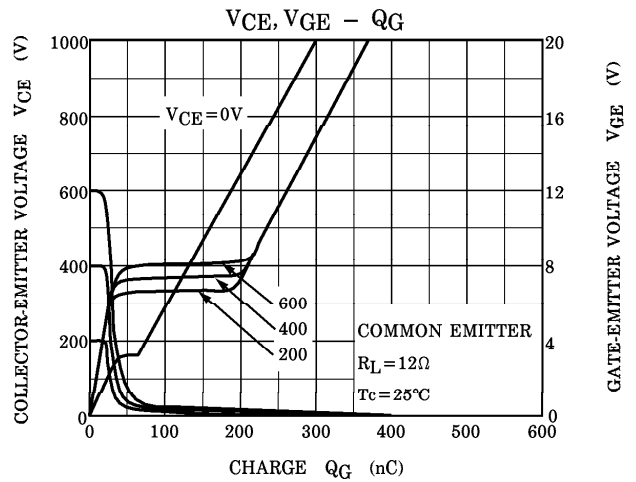
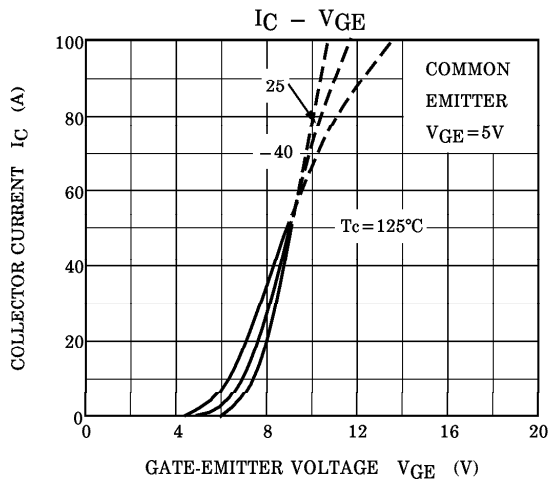
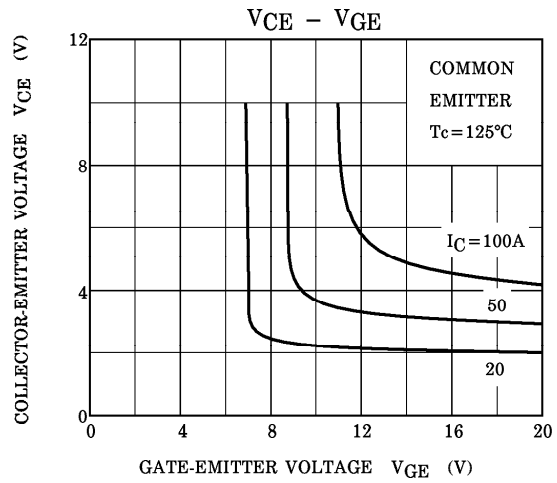
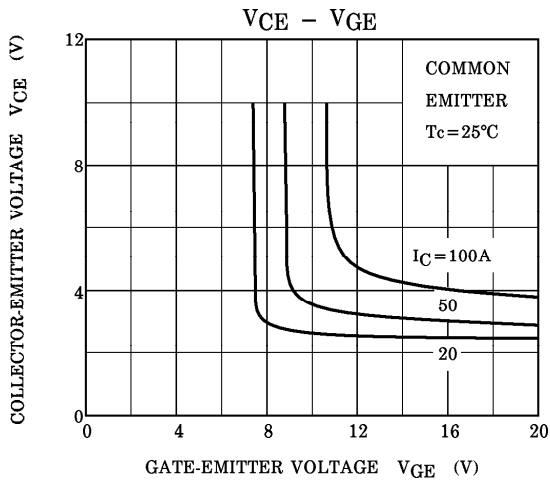
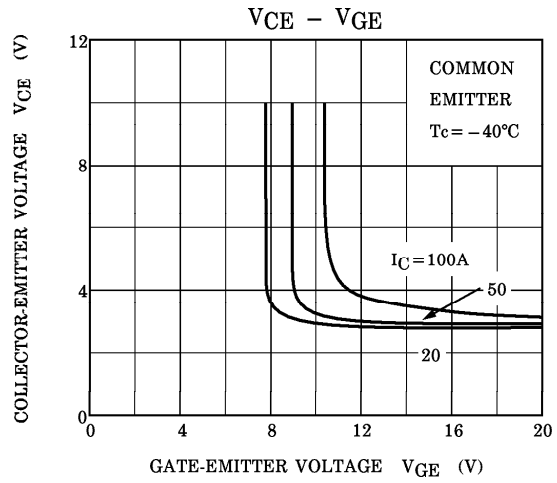
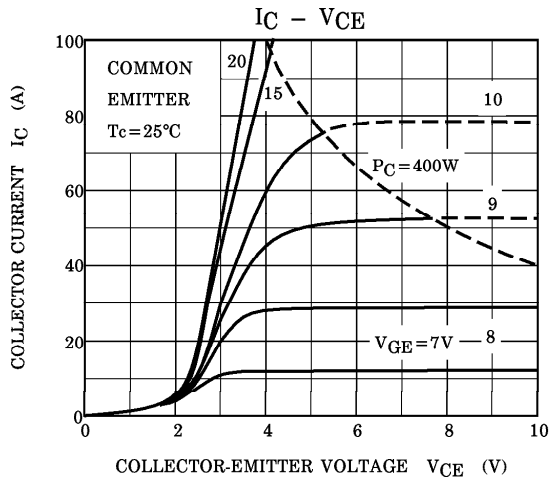
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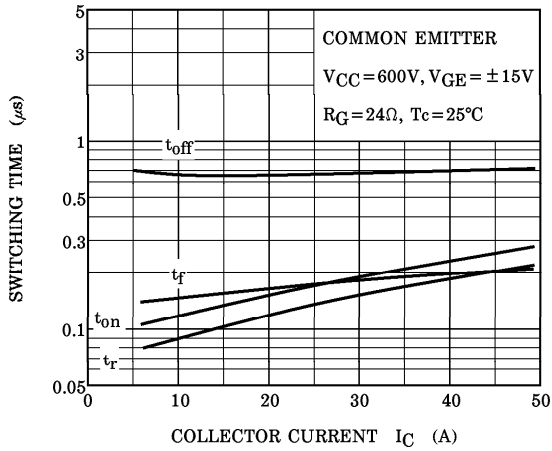


ELECTRICAL CHARACTERISTICS (Ta = 25°C)

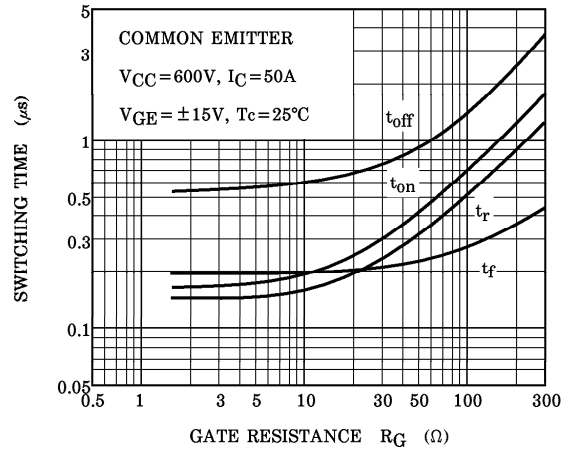
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		$I_{GES}$	$V_{GE} = \pm 20V, V_{CE} = 0$	—	—	$\pm 10$	$\mu A$
Collector Cut-off Current		$I_{CES}$	$V_{CE} = 1200V, V_{GE} = 0$	—	—	1.0	mA
Gate-Emitter Cut-off Voltage		$V_{GE(OFF)}$	$I_C = 50mA, V_{CE} = 5V$	3.0	—	6.0	V
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	$I_C = 50A, V_{GE} = 15V$	—	3.0	4.0	V
Input Capacitance		$C_{ies}$	$V_{CE} = 10V, V_{GE} = 0,$ $f = 1MHz$	—	6000	—	pF
Switching Time	Rise Time	$t_r$		—	0.3	0.6	$\mu s$
	Turn-on Time	$t_{on}$		—	0.4	0.8	
	Fall Time	$t_f$		—	0.2	0.5	
	Turn-off Time	$t_{off}$		—	0.8	1.5	
Forward Voltage		$V_F$	$I_F = 50A, V_{GE} = 0$	—	2.0	2.5	V
Reverse Recovery Time		$t_{rr}$	$I_F = 50A, V_{GE} = -10V$ $di / dt = 100A / \mu s$	—	0.25	0.5	$\mu s$
Thermal Resistance		$R_{th(j-c)}$	Transistor	—	—	0.31	$^{\circ}C / W$
			Diode	—	—	1.0	



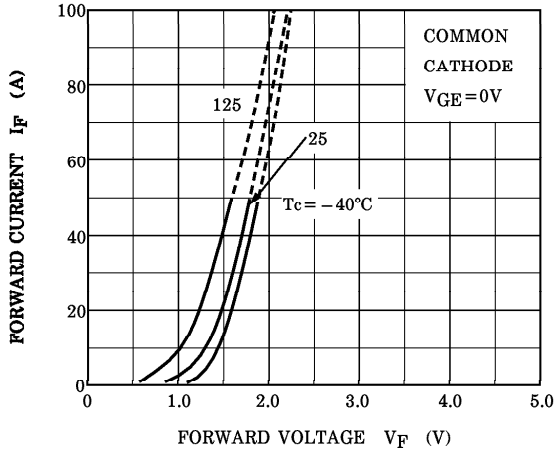
SWITCHING TIME -  $I_C$



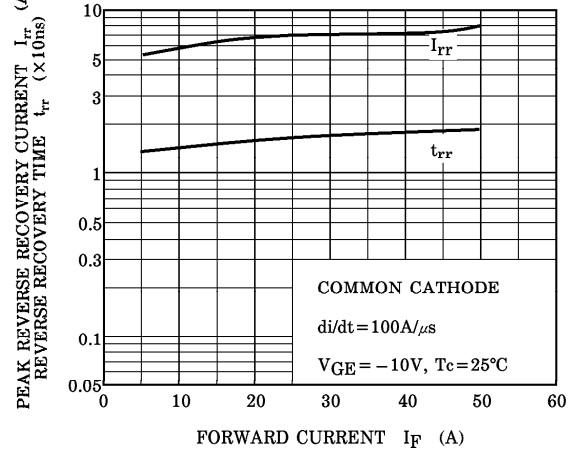
SWITCHING TIME -  $R_G$



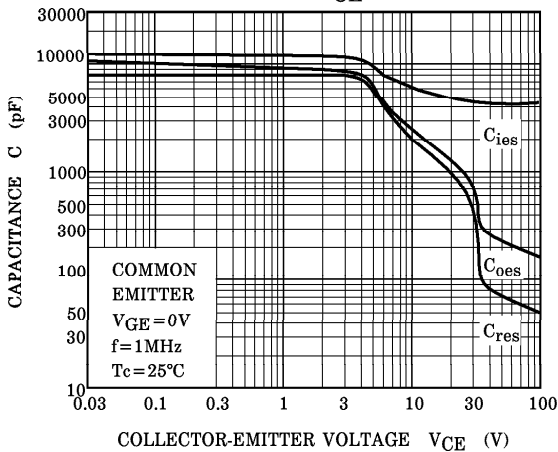
$I_F - V_F$



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



C -  $V_{CE}$



$R_{th}(t) - t_w$

