

**TOSHIBA****MG75J1ZS50**

TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

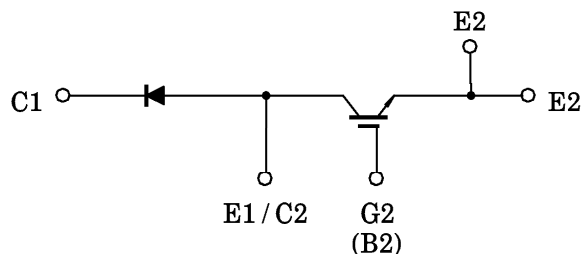
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HIGH POWER SWITCHING APPLICATIONS.

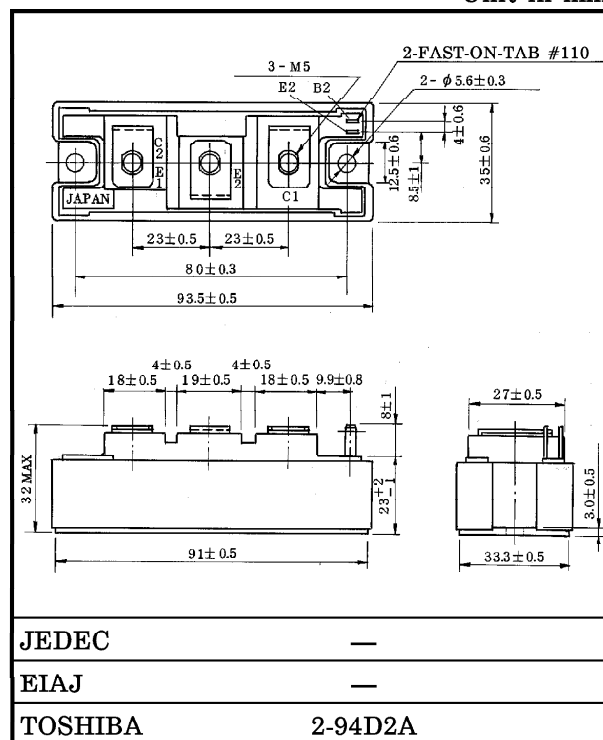
MOTOR CONTROL APPLICATIONS.

- The Electrodes are Isolated from Case.
- High Input Impedance
- Includes a Complete Half Bridge in One Package.
- Enhancement-Mode
- High Speed :  $t_f=0.30\mu\text{s}$  (MAX.) ( $I_C=75\text{A}$ )  
 $t_{rr}=0.15\mu\text{s}$  (MAX.) ( $I_F=75\text{A}$ )
- Low Saturation Voltage  
:  $V_{CE(sat)}=2.70\text{V}$  (MAX.) ( $I_C=75\text{A}$ )

EQUIVALENT CIRCUIT



Unit in mm



Weight : 202g (Typ.)

MAXIMUM RATINGS ( $T_a=25^\circ\text{C}$ )

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Emitter Voltage		$V_{CES}$	600	V
Gate-Emitter Voltage		$V_{GES}$	$\pm 20$	V
Collector Current	DC	$I_C$	75	A
	1ms	$I_{CP}$	150	
Forward Current	DC	$I_F$	75	A
	1ms	$I_{FM}$	150	
Collector Power Dissipation ( $T_c=25^\circ\text{C}$ )		$P_C$	390	W
Junction Temperature		$T_j$	150	$^\circ\text{C}$
Storage Temperature Range		$T_{stg}$	$-40\sim 125$	$^\circ\text{C}$
Isolation Voltage		$V_{Isol}$	2500 (AC 1 min.)	V
Screw Torque (Terminal/Mounting)		—	3 / 3	N·m

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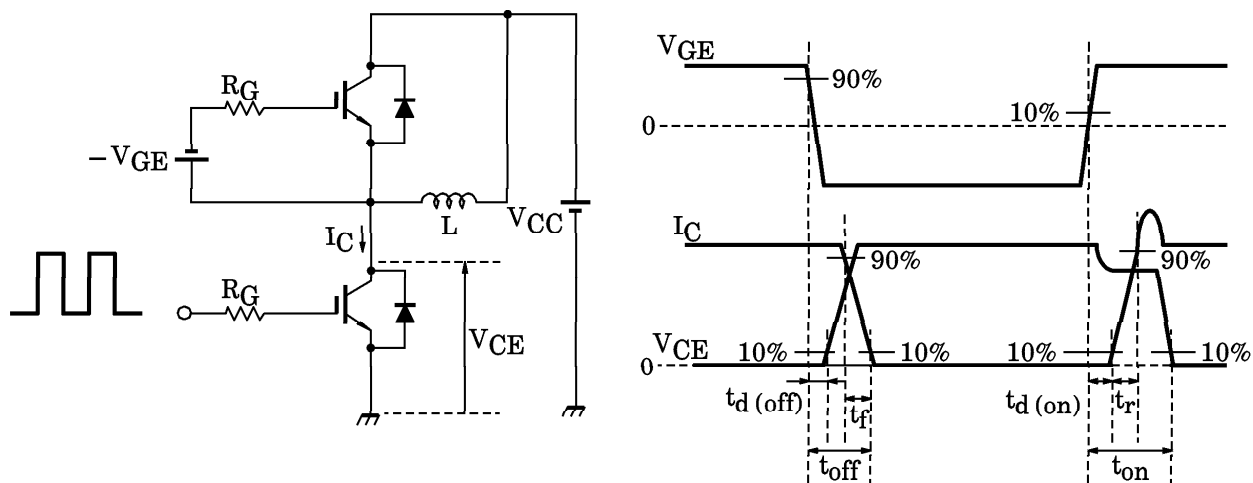
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## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		$I_{GES}$	$V_{GE} = \pm 20V, V_{CE} = 0$	—	—	$\pm 500$	nA
Collector Cut-off Current		$I_{CES}$	$V_{CE} = 600V, V_{GE} = 0$	—	—	1.0	mA
Gate-Emitter Cut-off Voltage		$V_{GE (off)}$	$I_C = 7.5mA, V_{CE} = 5V$	5.0	7.0	8.0	V
Collector-Emitter Saturation Voltage		$V_{CE (sat)}$	$I_C = 75A, V_{GE} = 15V$	—	2.10	2.70	V
Input Capacitance		$C_{ies}$	$V_{CE} = 10V, V_{GE} = 0,$ $f = 1MHz$	—	7100	—	pF
Switching Time	Turn-on Delay Time	$t_d (on)$	Inductive Load $V_{CC} = 300V$ $I_C = 75A$ $V_{GE} = \pm 15V$ $R_G = 18\Omega$ (Note 1)	—	0.08	0.16	$\mu s$
	Rise Time	$t_r$		—	0.12	0.24	
	Turn-on Time	$t_{on}$		—	0.40	0.80	
	Turn-off Delay Time	$t_d (off)$		—	0.20	0.40	
	Fall Time	$t_f$		—	0.15	0.30	
	Turn-off Time	$t_{off}$		—	0.50	1.00	
Forward Voltage		$V_F$	$I_F = 75A, V_{GE} = 0$	—	2.10	2.80	V
Reverse Recovery Time		$t_{rr}$	$I_F = 75A, V_{GE} = -10V$ $di/dt = 100A/\mu s$	—	0.08	0.15	$\mu s$
Thermal Resistance		$R_{th (j-c)}$	Transistor Stage	—	—	0.32	$^{\circ}C/W$
			Diode Stage	—	—	0.69	

## Note 1 Switching Time Test Circuit &amp; Timing Chart



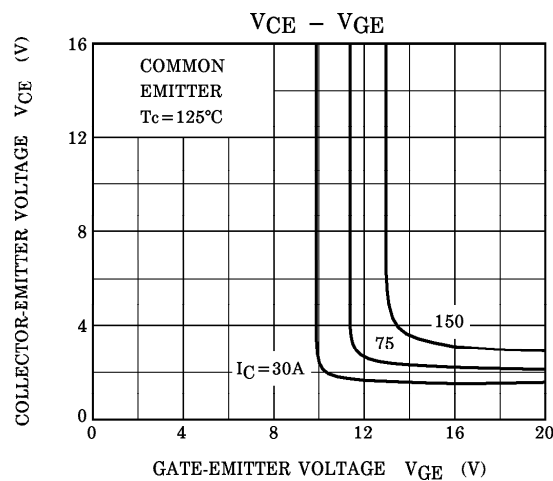
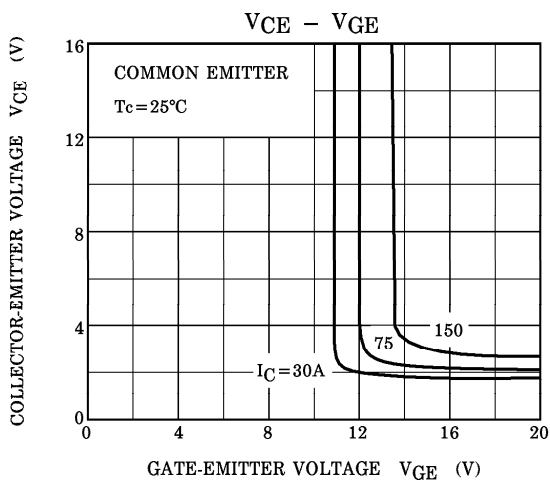
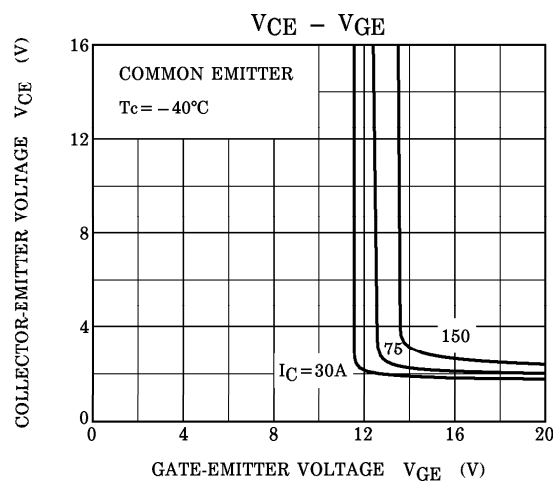
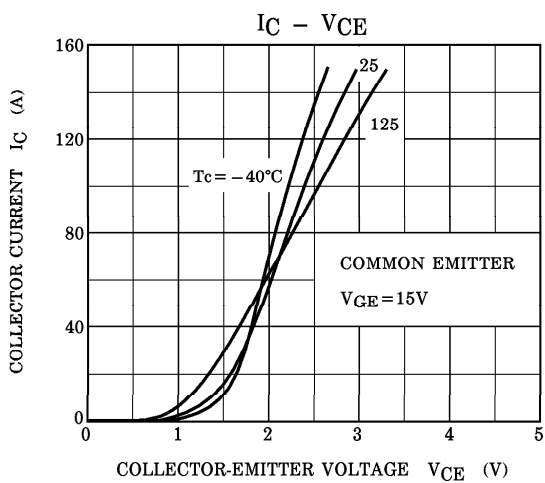
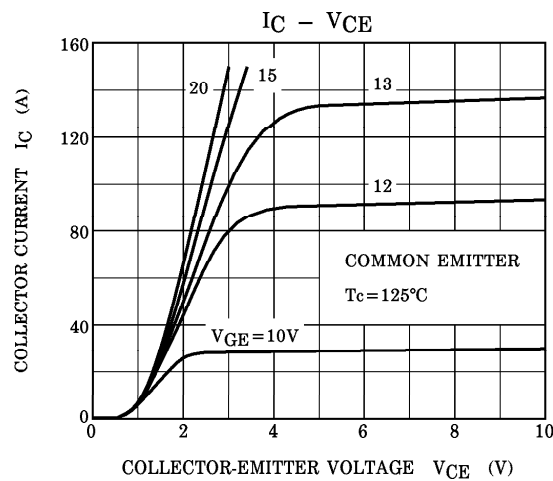
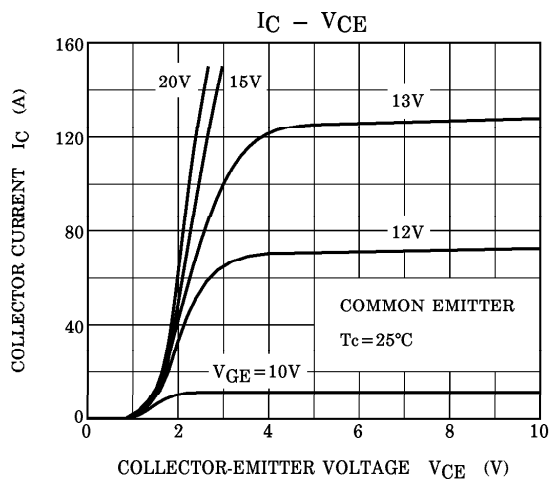
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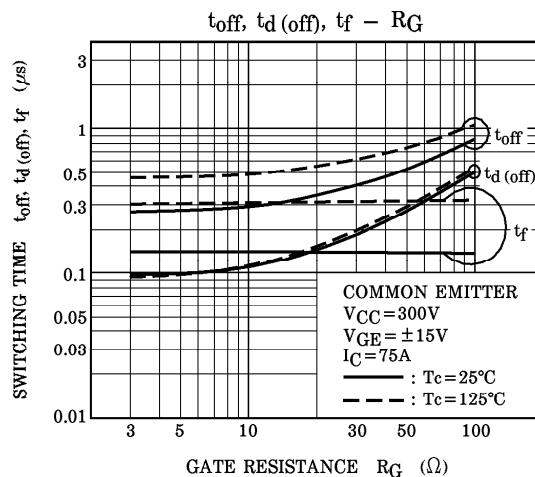
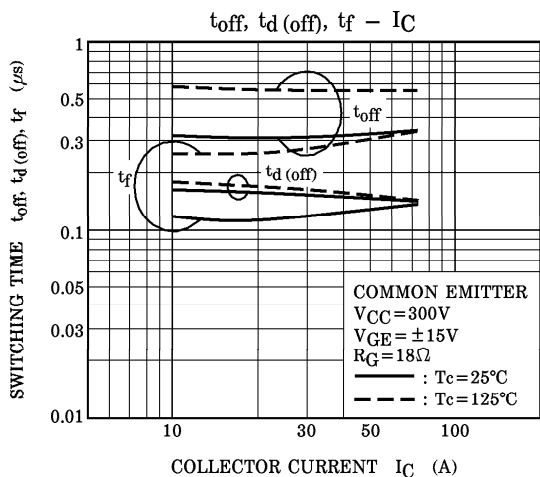
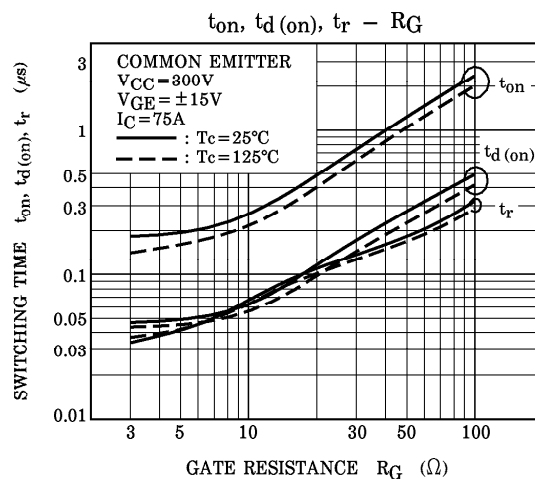
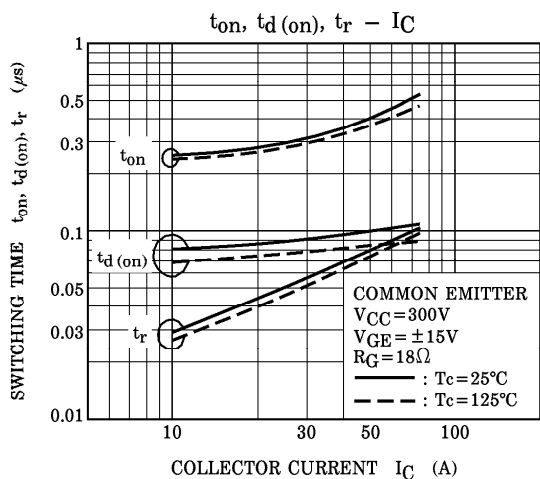
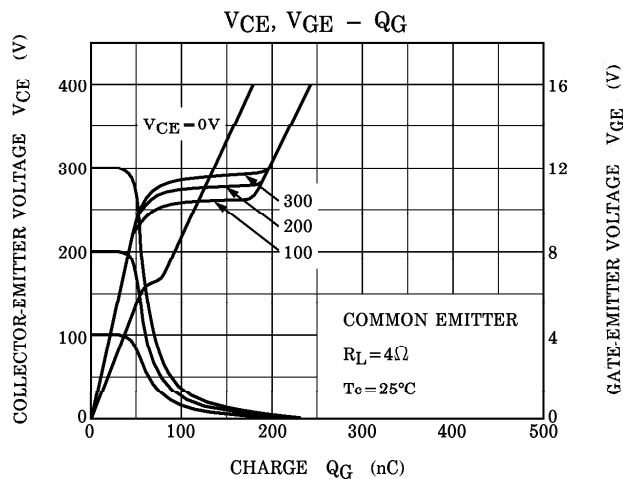
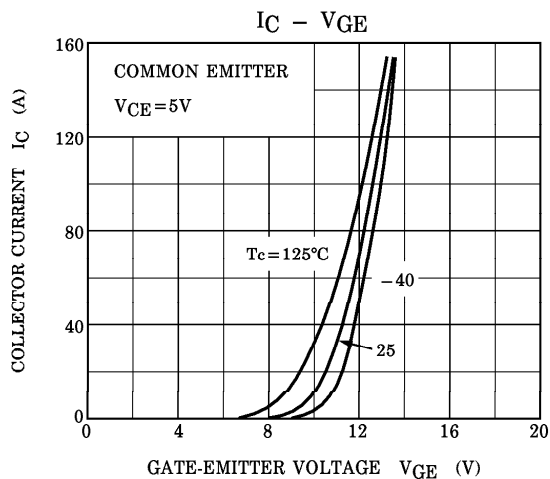
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