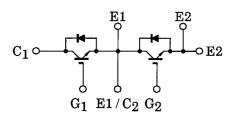
TOSHIBA GTR Module Silicon N Channel IGBT

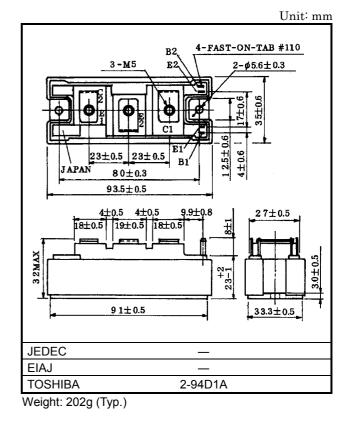
# MG75J2YS50

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 :  $t_f = 0.30 \mu s(Max)$  (IC = 75A)  $t_{rr} = 0.15 \mu s(Max)$  (IF = 75A)
- Low saturation voltage
  - :  $V_{CE}$  (sat) = 2.70V (Max) (I<sub>C</sub> = 75A)

#### **Equivalent Circuit**





Maximum Ratings (Ta = 25°C)

Characteristic		Symbol	Rating	Unit	
Collector-emitter voltage		V <sub>CES</sub>	600	V	
Gate-emitter voltage		V <sub>GES</sub>	±20	V	
Collector current	DC	۱ <sub>C</sub>	75	A	
	1ms	I <sub>CP</sub>	150		
Forward current	DC	١ <sub>F</sub>	75	A	
	1ms	I <sub>FM</sub>	150		
Collector power dissipation ( $T_c = 25^{\circ}C$ )		P <sub>C</sub>	390	W	
Junction temperature		Тj	150	°C	
Storage temperature range		T <sub>stg</sub>	-40 ~ 125	°C	
Isolation voltage		V <sub>Isol</sub>	2500 (AC 1 min.)	V	
Screw torque (Terminal / mounting)		—	3/3	N∙m	

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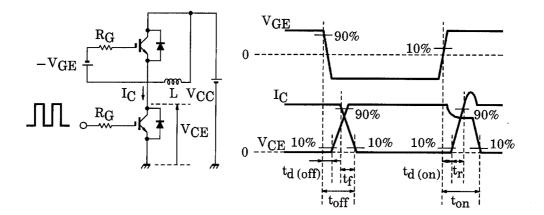
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**Electrical Characteristics (Ta = 25°C)** 

Characteristic		Symbol	Test Condition	Min	Тур.	Max	Unit
Gate leakage current		I <sub>GES</sub>	$V_{GE}$ = ±20V, $V_{CE}$ = 0	_	—	±500	nA
Collector cut-off current		ICES	V <sub>CE</sub> = 600V, V <sub>GE</sub> = 0	_	_	1.0	mA
Gate-emitter cut-off voltage		V <sub>GE (off)</sub>	I <sub>C</sub> = 7.5mA, V <sub>CE</sub> = 5V	5.0	7.0	8.0	V
Collector-emitter saturation voltage		V <sub>CE (sat)</sub>	I <sub>C</sub> = 75A, V <sub>GE</sub> = 15V	_	2.10	2.70	V
Input capacitance		Cies	V <sub>CE</sub> = 10V, V <sub>GE</sub> = 0, f = 1MHz	_	7100	_	pF
Switching time	Turn-on delay time	t <sub>d (on)</sub>	Inductive load $V_{CC} = 300V$ $I_C = 75A$ $V_{GE} = \pm 15V$ $R_G = 18\Omega$ (Note 1)	_	0.08	0.16	μs
	Rise time	tr		—	0.12	0.24	
	Turn-on time	t <sub>on</sub>		—	0.40	0.80	
	Turn-off delay time	t <sub>d (off)</sub>		—	0.20	0.40	
	Fall time	t <sub>f</sub>		_	0.15	0.30	
	Turn-off time	t <sub>of</sub> f		—	0.50	1.00	
Forward voltage		V <sub>F</sub>	I <sub>F</sub> = 75A, V <sub>GE</sub> = 0	_	2.10	2.80	V
Reverse recovery time		t <sub>rr</sub>	I <sub>F</sub> = 75A, V <sub>GE</sub> = -10V di / dt = 100A / μs	_	0.08	0.15	μs
Thermal resistance		R <sub>th (j-c)</sub>	Transistor stage	—	_	0.32	°C/W
			Diode stage	_	—	0.69	

Note 1: Switching time test circuit & timing chart

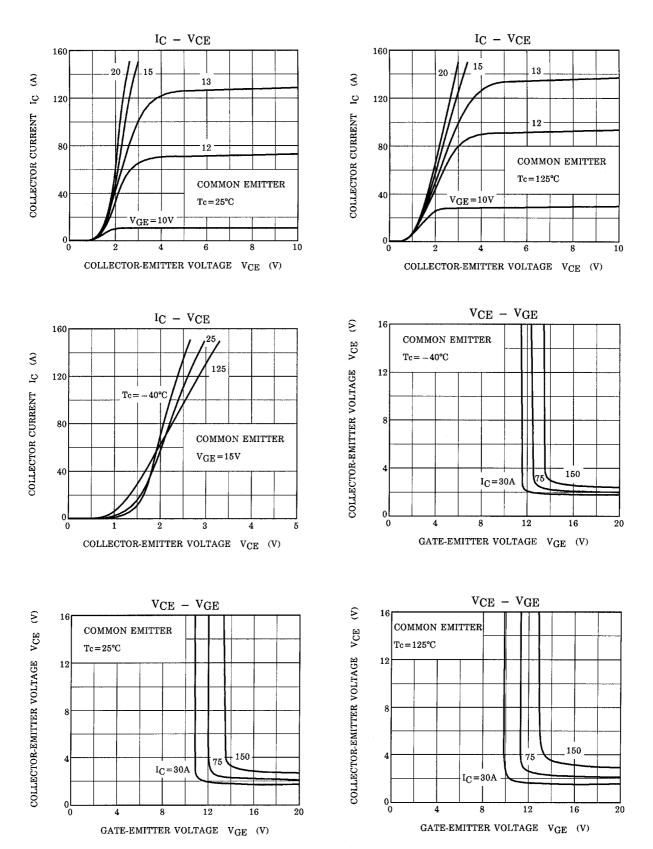


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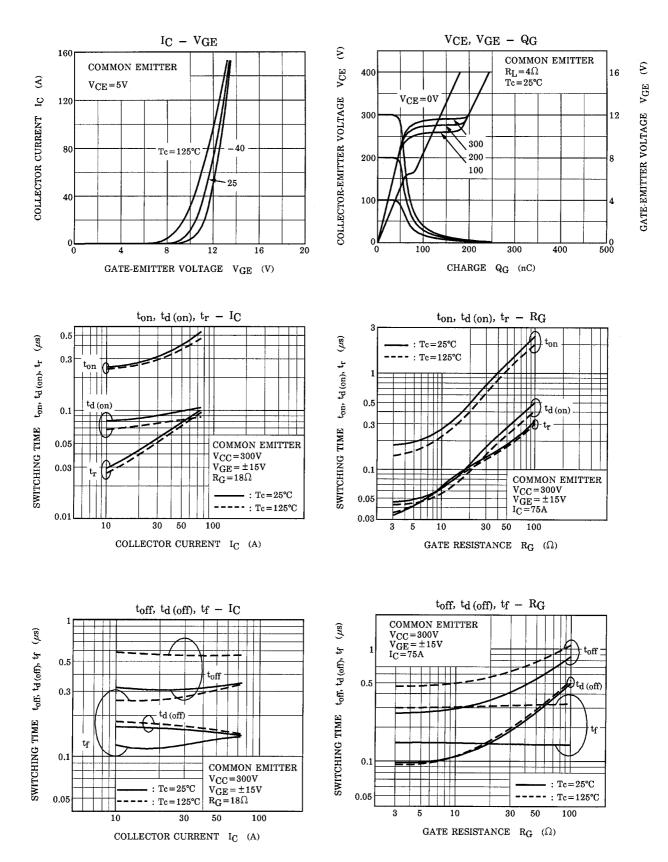
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