

TOSHIBA GTR Module Silicon N Channel IGBT

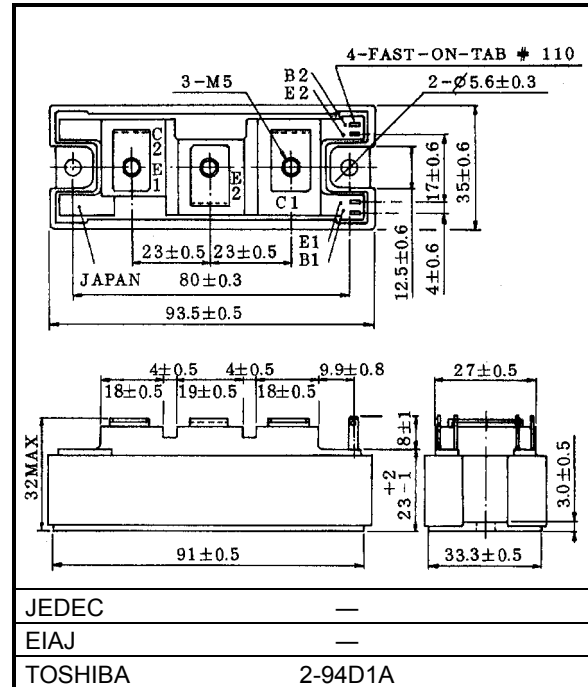
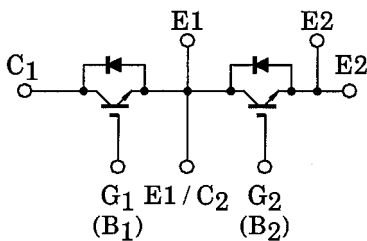
MG50J2YS50

High Power Switching Applications
 Motor Control Applications

Unit: mm

- 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.) ($I_C = 50A$)
 $t_{rr} = 0.15\mu s$ (Max.) ($I_F = 50A$)
- Low saturation voltage
 $V_{CE(sat)} = 2.70V$ (Max.) ($I_C = 50A$)

Equivalent Circuit



Weight: 202g (typ.)

Maximum Ratings (Ta = 25°C)

Characteristic	Symbol	Rating	Unit
Collector-emitter voltage	V_{CES}	600	V
Gate-emitter voltage	V_{GES}	±20	V
Collector current	DC	I_C	50 A
	1ms	I_{CP}	100 A
Forward current	DC	I_F	50 A
	1ms	I_{FM}	100 A
Collector power dissipation (Tc = 25°C)	P_C	280	W
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	-40 ~ 125	°C
Isolation voltage	V_{isol}	2500 (AC 1 min.)	V
Screw torque (Terminal / mounting)	—	3 / 3	N·m

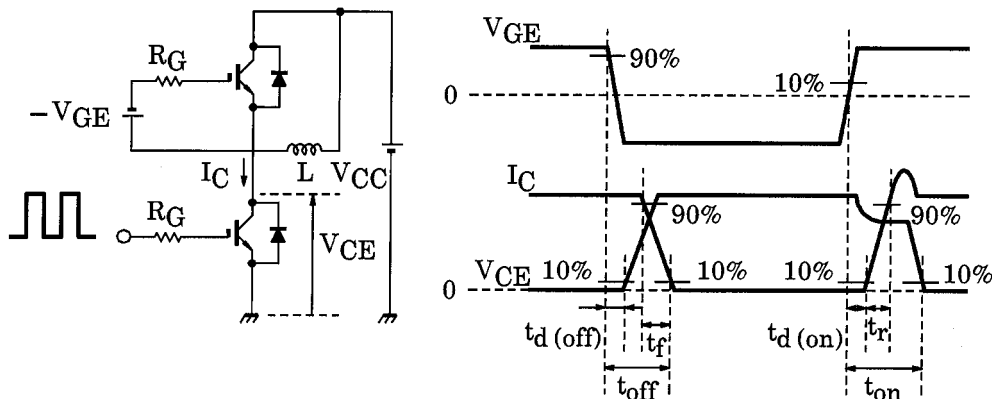
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Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current		I_{GES}	$V_{GE} = \pm 20V, V_{CE} = 0$	—	—	± 500	nA
Collector cut-off current		I_{CES}	$V_{CE} = 600V, V_{GE} = 0$	—	—	1.0	mA
Gate-emitter cut-off voltage		$V_{GE (off)}$	$I_C = 5mA, V_{CE} = 5V$	5.0	7.0	8.0	V
Collector-emitter saturation voltage		$V_{CE (sat)}$	$I_C = 50A, V_{GE} = 15V$	—	2.10	2.70	V
Input capacitance		C_{ies}	$V_{CE} = 10V, V_{GE} = 0, f = 1MHz$	—	4950	—	pF
Switching time	Turn-on delay time	$t_d (on)$	Inductive load $V_{CC} = 300V$ $I_C = 50A$ $V_{GE} = \pm 15V$ $R_G = 24\Omega$ (Note 1)	—	0.08	0.16	μs
	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	$I_F = 50 A, V_{GE} = 0$	—	2.30	3.00	V
Reverse recovery time		t_{rr}	$I_F = 50 A, V_{GE} = -10 V,$ $di / dt = 100 A / \mu s$	—	0.08	0.15	μs
Thermal resistance		$R_{th (j-c)}$	Transistor stage	—	—	0.45	$^{\circ}C / W$
			Diode stage	—	—	0.90	

Note 1: Switching time test circuit & timing chart



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