

TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

# MG50J2YS50

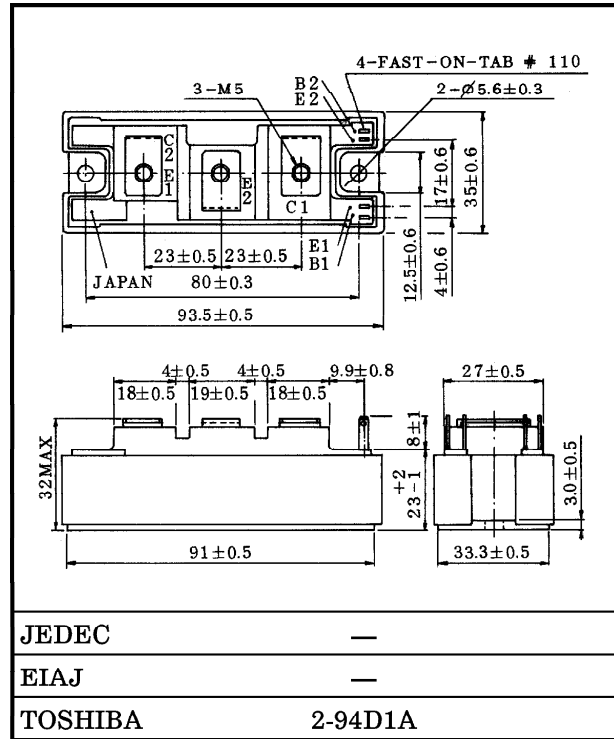
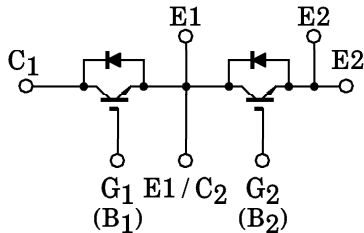
HIGH POWER SWITCHING APPLICATIONS.

MOTOR CONTROL APPLICATIONS.

Unit in 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 ( $T_a = 25^\circ C$ )

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Emitter Voltage	$V_{CES}$	600	V
Gate-Emitter Voltage	$V_{GES}$	$\pm 20$	V
Collector Current	DC	$I_C$	50
	1ms	$I_{CP}$	100
Forward Current	DC	$I_F$	50
	1ms	$I_{FM}$	100
Collector Power Dissipation ( $T_c = 25^\circ C$ )	$P_C$	280	W
Junction Temperature	$T_j$	150	$^\circ C$
Storage Temperature Range	$T_{stg}$	-40~125	$^\circ C$
Isolation Voltage	$V_{Isol}$	2500 (AC 1Min.)	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		$I_{GES}$	$V_{GE} = \pm 20V, V_{CE} = 0$	—	—	$\pm 500$	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	$\mu s$
	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		$V_F$	$I_F = 50A, V_{GE} = 0$	—	2.30	3.00	V
Reverse Recovery Time		$t_{rr}$	$I_F = 50A, V_{GE} = -10V$ $di/dt = 100A/\mu s$	—	0.08	0.15	$\mu s$
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

