

TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

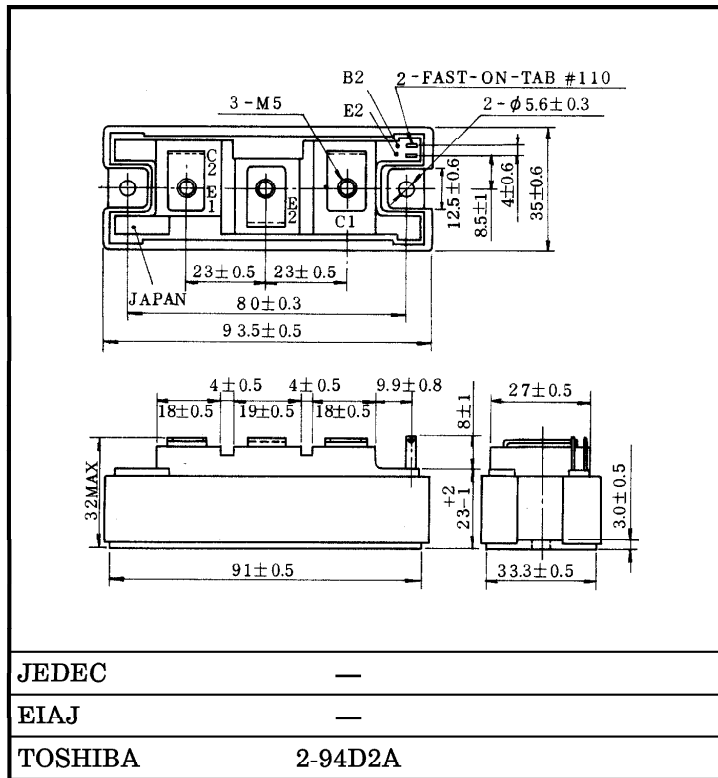
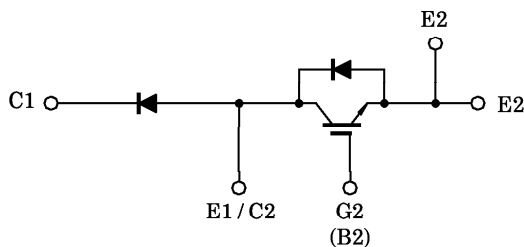
# MG50J1ZS40

HIGH POWER SWITCHING APPLICATIONS.  
MOTOR CONTROL APPLICATIONS.

Unit in mm

- High Input Impedance
- High Speed :  $t_f = 0.35 \mu s$  (Max.)  
 $t_{rr} = 0.15 \mu s$  (Max.)
- Low Saturation Voltage  
:  $V_{CE(sat)} = 3.5V$  (Max.)
- Enhancement-Mode
- The Electrodes are Isolated from Case.

EQUIVALENT CIRCUIT



Weight : 202g

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
	1ms	$I_{CP}$	100
Forward Current	DC	$I_F$	50
	1ms	$I_{FM}$	100
Collector Power Dissipation	$P_C$	250	W
Junction Temperature	$T_j$	150	°C
Storage Temperature Range	$T_{stg}$	-40~150	°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 <sub>GES</sub>	V <sub>GE</sub> = ±20V, V <sub>CE</sub> = 0	—	—	±500	nA
Collector Cut-off Current		I <sub>CES</sub>	V <sub>CE</sub> = 600V, V <sub>GE</sub> = 0	—	—	1.0	mA
Collector-Emitter Breakdown Voltage		V <sub>(BR)CES</sub>	I <sub>C</sub> = 10mA, V <sub>GE</sub> = 0	600	—	—	V
Gate-Emitter Cut-off Voltage		V <sub>GE(off)</sub>	I <sub>C</sub> = 50mA, V <sub>CE</sub> = 5V	3.0	—	6.0	V
Collector-Emitter Saturation Voltage		V <sub>CE(sat)</sub>	I <sub>C</sub> = 50A, V <sub>GE</sub> = 15V	—	2.7	3.5	V
Input Capacitance		C <sub>ies</sub>	V <sub>CE</sub> = 10V, V <sub>GE</sub> = 0 f = 1MHz	—	4000	—	pF
Switching Time	Rise Time	t <sub>r</sub>		—	0.30	0.60	μs
	Turn-on Time	t <sub>on</sub>		—	0.40	0.80	
	Fall Time	t <sub>f</sub>		—	0.18	0.35	
	Turn-off Time	t <sub>off</sub>		—	0.60	1.00	
Forward Voltage		V <sub>F</sub>	I <sub>F</sub> = 50A, V <sub>GE</sub> = 0	—	1.7	2.5	V
Reverse Recovery Time		t <sub>rr</sub>	I <sub>F</sub> = 50A, V <sub>GE</sub> = -10V di / dt = 100A / μs	—	0.08	0.15	μs
Thermal Resistance		R <sub>th(j-c)</sub>	Transistor	—	—	0.50	°C / W
			Diode	—	—	1.00	

