

TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

MG50J2YS50

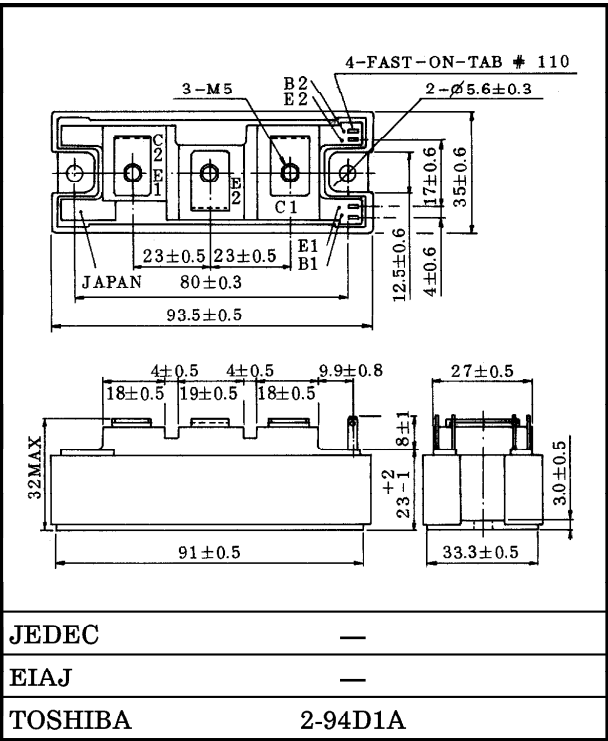
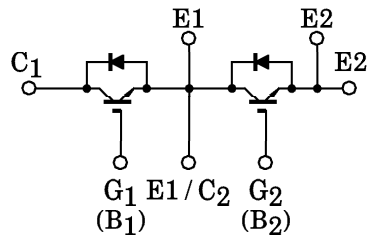
HIGH POWER SWITCHING APPLICATIONS.

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



JEDEC	—
EIAJ	—
TOSHIBA	2-94D1A

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	
Forward Current	DC	I_F	50	A
	1ms	I_{FM}	100	
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 1Min.)	V
Screw Torque (Terminal / Mounting)		—	3 / 3	N·m

961001EAA2

- TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.
- The information contained herein is subject to change without notice.

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		IGES	VGE = ±20V, VCE = 0	—	—	±500	nA
Collector Cut-off Current		ICES	VCE = 600V, VGE = 0	—	—	1.0	mA
Gate-Emitter Cut-off Voltage		VGE (off)	IC = 5mA, VCE = 5V	5.0	7.0	8.0	V
Collector-Emitter Saturation Voltage		VCE (sat)	IC = 50A, VGE = 15V	—	2.10	2.70	V
Input Capacitance		Cies	VCE = 10V, VGE = 0, f = 1MHz	—	4950	—	pF
Switching Time	Turn-on Delay Time	td (on)	Inductive Load VCC = 300V IC = 50A VGE = ±15V RG = 24Ω (Note 1)	—	0.08	0.16	μs
	Rise Time	tr		—	0.12	0.24	
	Turn-on Time	ton		—	0.40	0.80	
	Turn-off Delay Time	td (off)		—	0.20	0.40	
	Fall Time	tf		—	0.15	0.30	
	Turn-off Time	toff		—	0.50	1.00	
Forward Voltage		VF	IF = 50A, VGE = 0	—	2.30	3.00	V
Reverse Recovery Time		trr	IF = 50A, VGE = -10V di / dt = 100A / μs	—	0.08	0.15	μs
Thermal Resistance		Rth (j-c)	Transistor Stage	—	—	0.45	°C / W
			Diode Stage	—	—	0.90	

Note 1 Switching Time Test Circuit & Timing Chart

