

TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

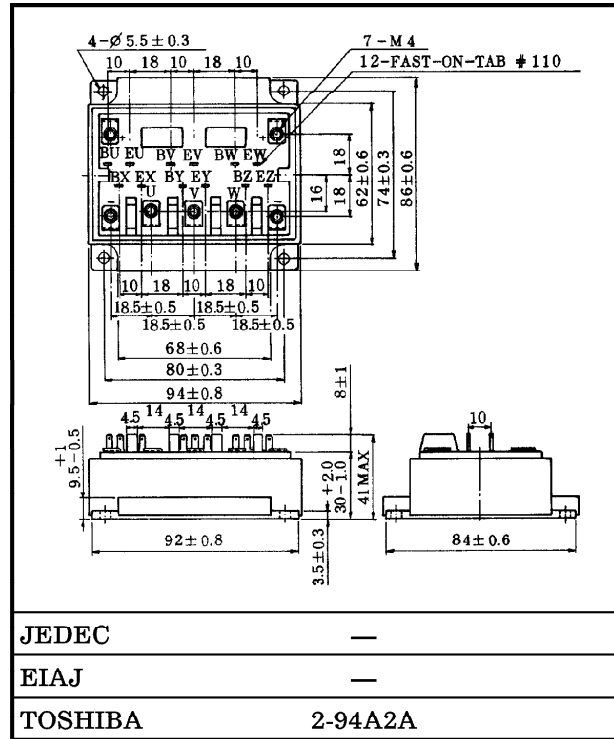
# MG50J6ES50

HIGH POWER SWITCHING APPLICATIONS.

Unit in mm

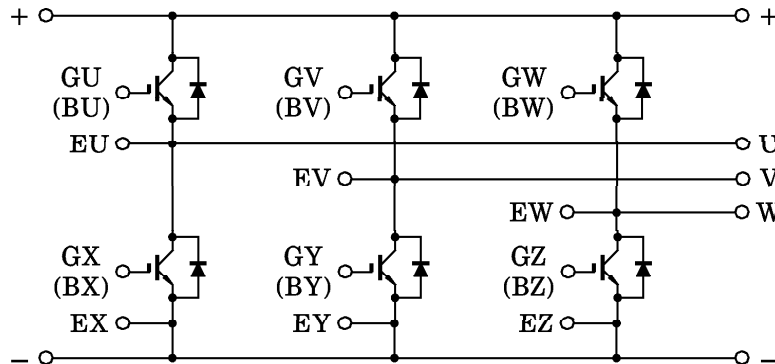
MOTOR CONTROL APPLICATIONS.

- The Electrodes are Isolated from Case.
- High Input Impedance.
- 6 IGBTs Built Into 1 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.) ( $I_C=50A$ )



Weight : 505g (Typ.)

EQUIVALENT CIRCUIT



961001EAA2

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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	I <sub>C</sub>	50	A
	1ms	I <sub>CP</sub>	100	
Forward Current	DC	I <sub>F</sub>	50	A
	1ms	I <sub>FM</sub>	100	
Collector Power Dissipation (Tc = 25°C)		P <sub>C</sub>	280	W
Junction Temperature		T <sub>j</sub>	150	°C
Storage Temperature Range		T <sub>stg</sub>	-40~125	°C
Isolation Voltage		V <sub>Isol</sub>	2500 (AC 1Min.)	V
Screw Torque (Terminal/Mounting)		—	2 / 3	N·m

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
Gate-Emitter Cut-off Voltage		V <sub>GE (off)</sub>	I <sub>C</sub> = 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> = 50A, V <sub>GE</sub> = 15V	—	2.10	2.70	V
Input Capacitance		C <sub>ies</sub>	V <sub>CE</sub> = 10V, V <sub>GE</sub> = 0, f = 1MHz	—	4950	—	pF
Switching Time	Turn-on Delay Time	t <sub>d (on)</sub>	Inductive Load V <sub>CC</sub> = 300V I <sub>C</sub> = 50A V <sub>GE</sub> = ±15V R <sub>G</sub> = 24Ω (Note 1)	—	0.08	0.16	μs
	Rise Time	t <sub>r</sub>		—	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>off</sub>		—	0.50	1.00	
Forward Voltage		V <sub>F</sub>	I <sub>F</sub> = 50A, V <sub>GE</sub> = 0	—	2.30	3.00	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	—	—	0.45	°C / W
			Diode	—	—	0.90	

Note 1 Switching Time Test Circuit & Timing Chart

