

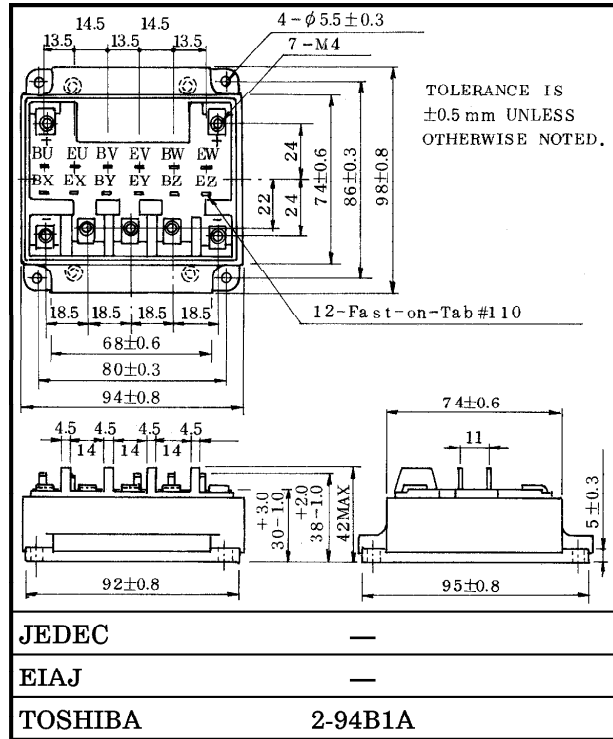
TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

# MG50Q6ES40

HIGH POWER SWITCHING APPLICATIONS.  
MOTOR CONTROL APPLICATIONS.

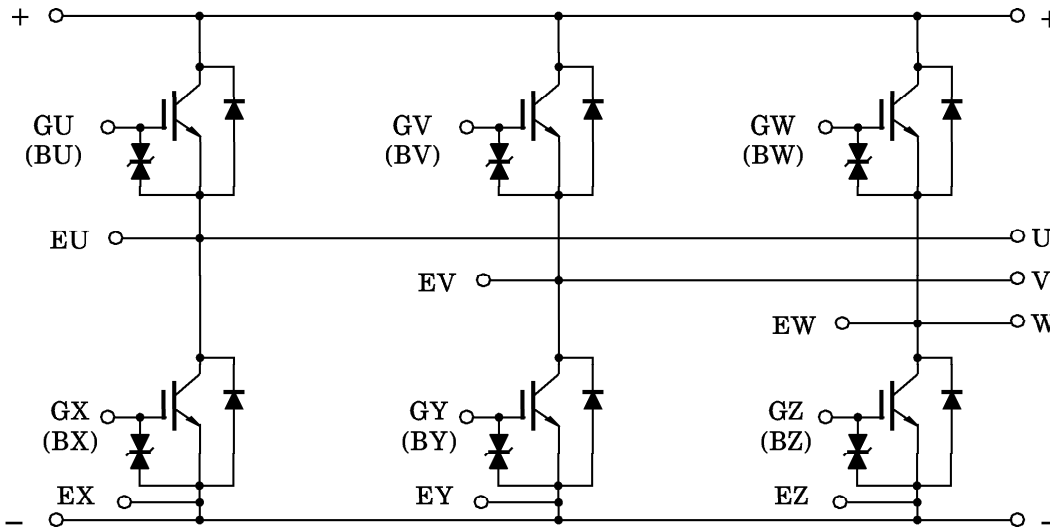
Unit in mm

- The Electrodes are Isolated from Case.
- 6 IGBTs are Built Into 1 Package.
- Enhancement-Mode
- Low Saturation Voltage  
:  $V_{CE(sat)} = 4.0V$  (Max.)
- High Speed :  $t_f = 0.5\mu s$  (Max.)



Weight : 690g

EQUIVALENT CIRCUIT



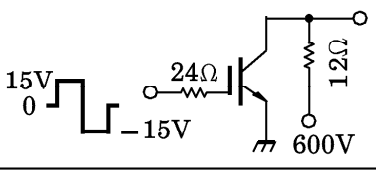
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MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Emitter Voltage		V <sub>CES</sub>	1200	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>	250	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 1 minute)	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	—	—	±10	μA
Collector Cut-off Current		I <sub>CES</sub>	V <sub>CE</sub> = 1200V, V <sub>GE</sub> = 0	—	—	1.0	mA
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	—	3.0	4.0	V
Input Capacitance		C <sub>ies</sub>	V <sub>CE</sub> = 10V, V <sub>GE</sub> = 0, f = 1MHz	—	6000	—	pF
Switching Time	Rise Time	t <sub>r</sub>		—	0.3	0.6	μs
	Turn-on Time	t <sub>on</sub>		—	0.4	0.8	
	Fall Time	t <sub>f</sub>		—	0.2	0.5	
	Turn-off Time	t <sub>off</sub>		—	0.8	1.5	
Forward Voltage		V <sub>F</sub>	I <sub>F</sub> = 50A, V <sub>GE</sub> = 0	—	2.0	2.5	V
Reverse Recovery Time		t <sub>rr</sub>	I <sub>F</sub> = 50A, V <sub>GE</sub> = -10V di / dt = 100A / μs	—	0.25	0.5	μs
Thermal Resistance	R <sub>th(j-c)</sub>	Transistor	—	—	0.5	°C / W	
		Diode	—	—	1.0		

