

TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

# MG10Q6ES50A

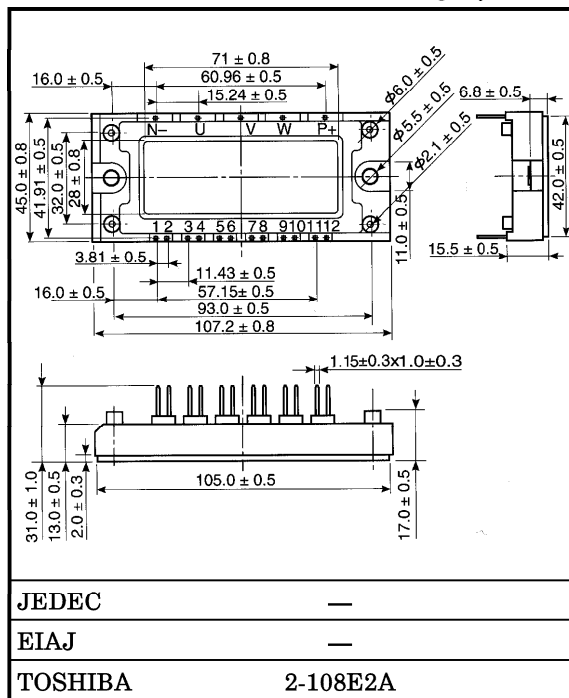
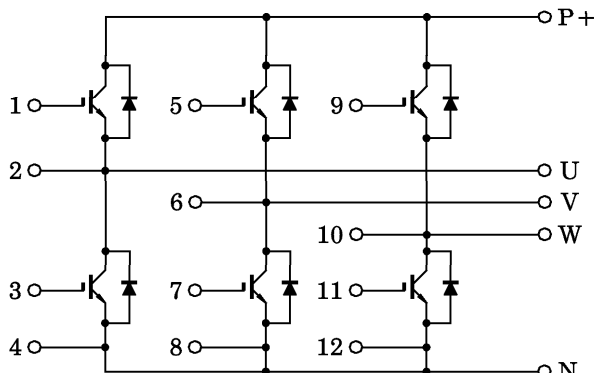
HIGH POWER SWITCHING APPLICATIONS

Unit in mm

MOTOR CONTROL APPLICATIONS

- The Electrodes are Isolated from Case.
- High Input Impedance.
- 6 IGBTs Built Into 1 Package.

EQUIVALENT CIRCUIT



Weight : 185g

961001EAA1

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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> (25°C / 80°C)	15 / 10	A
	1ms	I <sub>CP</sub> (25°C / 80°C)	30 / 20	A
Forward Current	DC	I <sub>F</sub>	10	A
	1ms	I <sub>FM</sub>	20	A
Collector Power Dissipation (T <sub>c</sub> = 25°C)		P <sub>C</sub>	80	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		—	6	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> = 1200V, V <sub>GE</sub> = 0	—	—	0.5	mA	
Gate-Emitter Cut-Off Voltage		V <sub>GE (off)</sub>	I <sub>C</sub> = 10mA, V <sub>CE</sub> = 5V	3.0	—	6.0	V	
Collector-Emitter Saturation Voltage		V <sub>CE (sat)</sub>	I <sub>C</sub> = 10A, V <sub>GE</sub> = 15V	T <sub>j</sub> = 25°C	—	2.8	3.2	V
				T <sub>j</sub> = 125°C	—	3.1	3.7	
Input Capacitance		C <sub>ies</sub>	V <sub>CE</sub> = 10V, V <sub>GE</sub> = 0, f = 1MHz	—	1200	—	pF	
Switching Time	Rise Time	t <sub>r</sub>	V <sub>CC</sub> = 600V	—	0.07	0.15	μs	
	Turn-On Time	t <sub>on</sub>	I <sub>C</sub> = 10A	—	0.15	0.30		
	Fall Time	t <sub>f</sub>	V <sub>GE</sub> = ±15V	—	0.07	0.10		
	Turn-Off Time	t <sub>off</sub>	R <sub>G</sub> = 120Ω T <sub>j</sub> = 125°C (Note 1)	—	0.60	0.90		
Forward Voltage		V <sub>F</sub>	I <sub>F</sub> = 10A, V <sub>GE</sub> = 0	—	2.2	3.0	V	
Reverse Recovery Time		t <sub>rr</sub>	I <sub>F</sub> = 10A, V <sub>GE</sub> = -10V, di / dt = 150A / μs	—	0.10	0.25	μs	
Thermal Resistance		R <sub>th (j-c)</sub>	Transistor	—	—	1.52	°C / W	
			Diode	—	—	2.0		

(Note 1) Switching Time Test Circuit & Timing Chart

