

TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

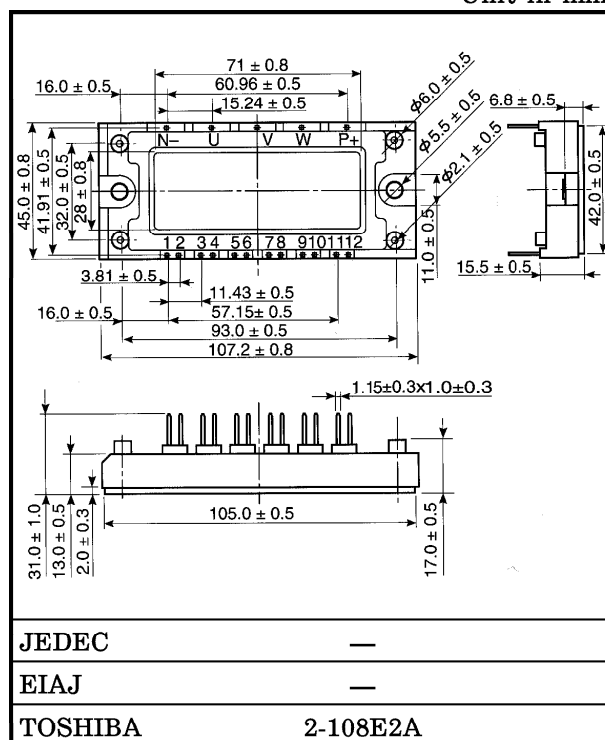
MG50Q6ES51A

HIGH POWER SWITCHING APPLICATIONS

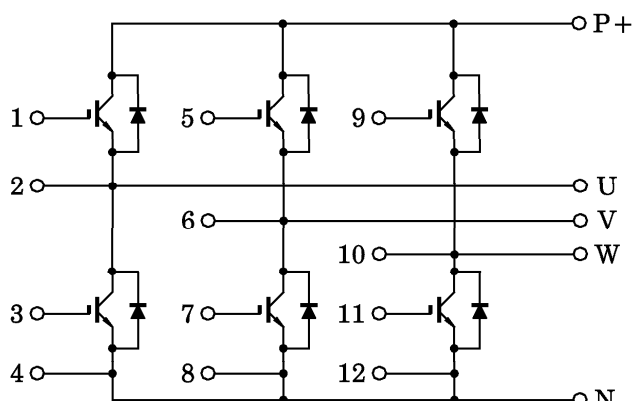
MOTOR CONTROL APPLICATIONS

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

Unit in mm



EQUIVALENT CIRCUIT



961001EAA1

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MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Emitter Voltage		V_{CES}	1200	V
Gate-Emitter Voltage		V_{GES}	± 20	V
Collector Current	DC	I_C (25°C / 80°C)	50 / 45	A
	1 ms	I_{CP} (25°C / 80°C)	100 / 90	
Forward Current	DC	I_F	50	A
	1 ms	I_{FM}	100	
Collector Power Dissipation (Tc = 25°C)		P_C	350	W
Junction Temperature		T_j	150	°C
Storage Temperature Range		T_{stg}	-40~125	°C
Isolation Voltage		V_{Isol}	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_{GES}	$V_{GE} = \pm 20\text{ V}, V_{CE} = 0$	—	—	± 500	nA	
Collector Cut-off Current		I_{CES}	$V_{CE} = 1200\text{ V}, V_{GE} = 0$	—	—	0.5	mA	
Gate-Emitter Cut-off Voltage		$V_{GE}(\text{off})$	$I_C = 50\text{ mA}, V_{CE} = 5\text{ V}$	—	6.0	—	V	
Collector-Emitter Saturation Voltage		$V_{CE}(\text{sat})$	$I_C = 50\text{ A},$ $V_{GE} = 15\text{ V}$	$T_j = 25^\circ\text{C}$	—	2.8	3.2	V
				$T_j = 125^\circ\text{C}$	—	3.1	—	
Input Capacitance		C_{ies}	$V_{CE} = 10\text{ V}, V_{GE} = 0,$ $f = 1\text{ MHz}$	—	6.0	—	nF	
Switching Time	Rise Time	t_r	$V_{CC} = 600\text{ V}$ $I_C = 50\text{ A}, V_{GE} = \pm 15\text{ V}$ $R_G = 24\ \Omega, T_j = 125^\circ\text{C}$ (Note 1)	—	0.07	0.15	μs	
	Turn-on Time	t_{on}		—	0.15	0.30		
	Fall Time	t_f		—	0.07	0.10		
	Turn-off Time	t_{off}		—	0.60	0.90		
Forward Voltage		V_F	$I_F = 50\text{ A}, V_{GE} = 0$	—	2.0	2.8	V	
Reverse Recovery Time		t_{rr}	$I_F = 50\text{ A}, V_{GE} = -10\text{ V},$ $di/dt = 700\text{ A}/\mu\text{s}$	—	0.10	0.25	μs	
Thermal Resistance		$R_{th(j-c)}$	Transistor Stage	—	—	0.35	$^\circ\text{C}/\text{W}$	
			Diode Stage	—	—	0.7		

(Note 1) Switching Time Test Circuit & Timing Chart

