

TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

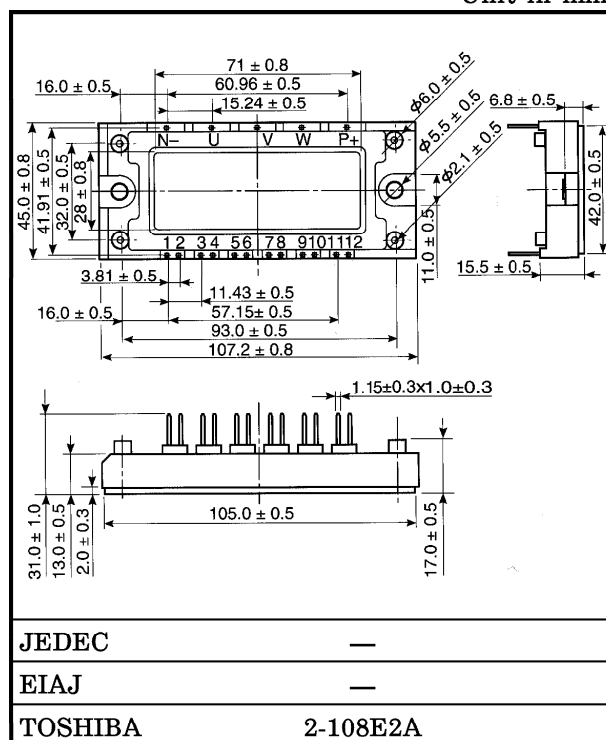
MG50Q6ES51A

HIGH POWER SWITCHING APPLICATIONS

MOTOR CONTROL APPLICATIONS

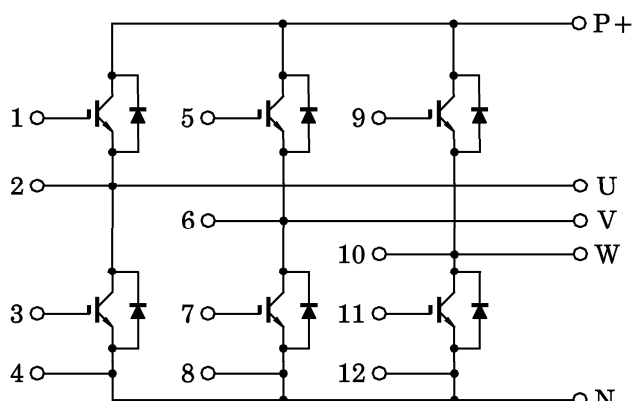
- The Electrodes are Isolated from Case.
- High Input Impedance.
- 6 IGBTs Built Into 1 Package.

Unit in mm



Weight : 185 g

EQUIVALENT CIRCUIT



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MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Emitter Voltage		V_{CES}	1200	V
Gate-Emitter Voltage		V_{GES}	± 20	V
Collector Current	DC	I_C ($25^\circ\text{C} / 80^\circ\text{C}$)	50 / 45	A
	1 ms	I_{CP} ($25^\circ\text{C} / 80^\circ\text{C}$)	100 / 90	
Forward Current	DC	I_F	50	A
	1 ms	I_{FM}	100	
Collector Power Dissipation ($T_c = 25^\circ\text{C}$)		P_C	350	W
Junction Temperature		T_j	150	$^\circ\text{C}$
Storage Temperature Range		T_{stg}	$-40 \sim 125$	$^\circ\text{C}$
Isolation Voltage		V_{Isol}	2500 (AC 1 minute)	V
Screw Torque		—	6	N·m

ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

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		$V_{CE}(\text{sat})$	$I_C = 50 \text{ A},$	$T_j = 25^\circ\text{C}$	—	2.8	3.2
			$V_{GE} = 15 \text{ V}$	$T_j = 125^\circ\text{C}$	—	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	$V_{CC} = 600 \text{ V}$	—	0.07	0.15	μs
	Turn-on Time	t_{on}	$I_C = 50 \text{ A}, V_{GE} = \pm 15 \text{ V}$	—	0.15	0.30	
	Fall Time	t_f	$R_G = 24 \Omega, T_j = 125^\circ\text{C}$	—	0.07	0.10	
	Turn-off Time	t_{off}	(Note 1)	—	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

