

TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

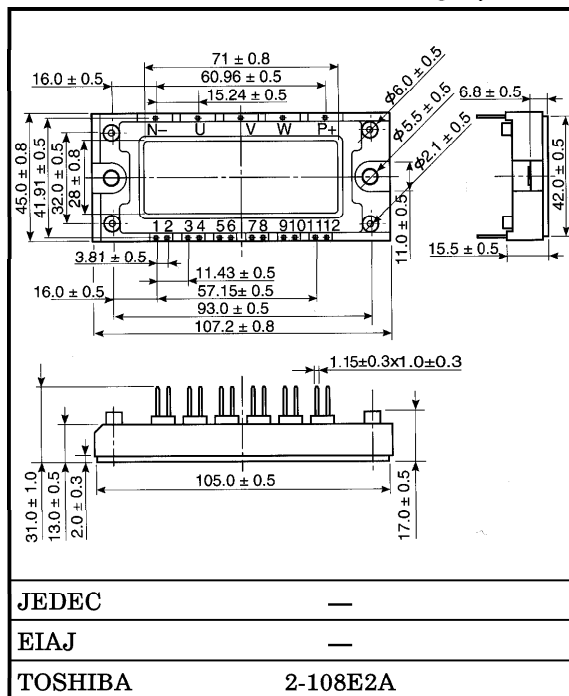
# MG15Q6ES51A

HIGH POWER SWITCHING APPLICATIONS

Unit in mm

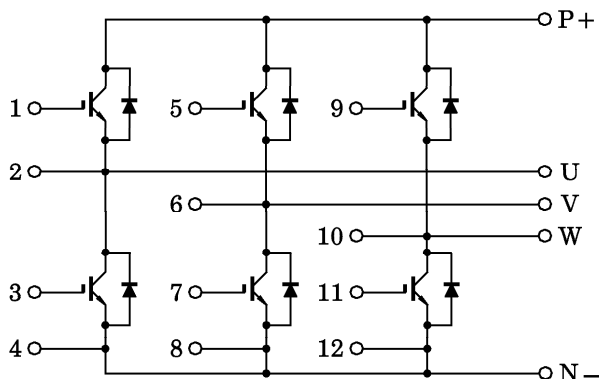
MOTOR CONTROL APPLICATIONS

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



Weight : 185 g

### EQUIVALENT CIRCUIT



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)	25 / 15	A
	1 ms	I <sub>CP</sub> (25°C / 80°C)	50 / 30	
Forward Current	DC	I <sub>F</sub>	15	A
	1 ms	I <sub>FM</sub>	30	
Collector Power Dissipation (Tc = 25°C)		P <sub>C</sub>	145	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> = ±20 V, V <sub>CE</sub> = 0	—	—	±500	nA
Collector Cut-off Current		I <sub>CES</sub>	V <sub>CE</sub> = 1200 V, V <sub>GE</sub> = 0	—	—	0.5	mA
Gate-Emitter Cut-off Voltage		V <sub>GE (off)</sub>	I <sub>C</sub> = 15 mA, V <sub>CE</sub> = 5 V	—	6.0	—	V
Collector-Emitter Saturation Voltage		V <sub>CE (sat)</sub>	I <sub>C</sub> = 15 A, T <sub>j</sub> = 25°C	—	2.8	3.2	V
			V <sub>GE</sub> = 15 V, T <sub>j</sub> = 125°C	—	3.1	3.7	
Input Capacitance		C <sub>ies</sub>	V <sub>CE</sub> = 10 V, V <sub>GE</sub> = 0, f = 1 MHz	—	1850	—	pF
Switching Time	Rise Time	t <sub>r</sub>	V <sub>CC</sub> = 600 V	—	0.07	0.15	μs
	Turn-on Time	t <sub>on</sub>	I <sub>C</sub> = 15 A, V <sub>GE</sub> = ±15 V	—	0.15	0.30	
	Fall Time	t <sub>f</sub>	R <sub>G</sub> = 82 Ω, T <sub>j</sub> = 125°C	—	0.07	0.10	
	Turn-off Time	t <sub>off</sub>	(Note 1)	—	0.60	0.90	
Forward Voltage		V <sub>F</sub>	I <sub>F</sub> = 15 A, V <sub>GE</sub> = 0	—	2.0	2.8	V
Reverse Recovery Time		t <sub>rr</sub>	I <sub>F</sub> = 15 A, V <sub>GE</sub> = -10 V, di / dt = 200 A / μs	—	0.10	0.25	μs
Thermal Resistance		R <sub>th (j-c)</sub>	Transistor Stage	—	—	0.86	°C / W
			Diode Stage	—	—	1.5	

(Note 1) Switching Time Test Circuit & Timing Chart

