

TOSHIBA

MG50Q1ZS50

TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

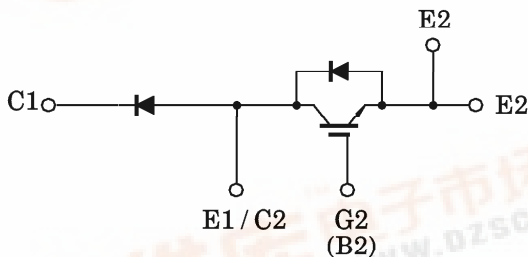
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HIGH POWER SWITCHING APPLICATIONS

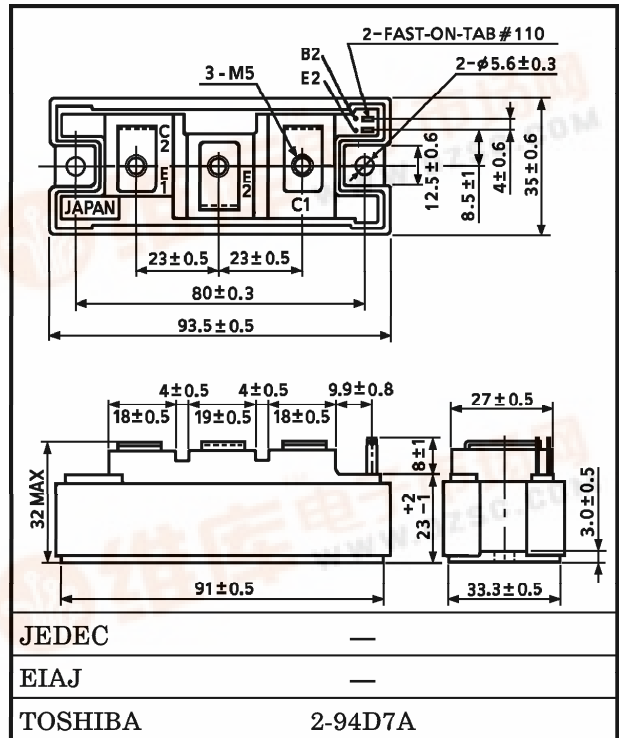
MOTOR CONTROL APPLICATIONS

- High Input Impedance
- High Speed : $t_f = 0.3 \mu s$ (Max.)
@Inductive Load
- Low Saturation Voltage
: $V_{CE(sat)} = 3.6 V$ (Max.)
- Enhancement-Mode
- The Electrodes are Isolated from Case.

EQUIVALENT CIRCUIT



Unit in mm



Weight : 202 g

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)	78 / 50	A
	1 ms I_{CP} (25°C / 80°C)	156 / 100	
Forward Current	DC I_F	50	A
	1 ms I_{FM}	100	
Collector Power Dissipation (Tc = 25°C)	P_C	400	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 (Terminal / Mounting)	—	3 / 3	N·m

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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Gate Leakage Current		IGES	VGE = ±20 V, VCE = 0	—	—	±500	nA	
Collector Cut-off Current		ICES	VCE = 1200 V, VGE = 0	—	—	1.0	mA	
Gate-Emitter Cut-off Voltage		VGE (off)	IC = 50 mA, VCE = 5 V	3.0	—	6.0	V	
Collector-Emitter Saturation Voltage		VCE (sat)	IC = 50 A, VGE = 15 V	Tj = 25°C	—	2.8	3.6	V
				Tj = 125°C	—	3.1	4.0	
Input Capacitance		Cies	VCE = 10 V, VGE = 0, f = 1 MHz	—	6.0	—	nF	
Switching Time	Turn-on Delay Time	td (on)	Inductive Load VCC = 600 V IC = 50 A VGE = ±15 V RG = 24 Ω (Note 1)	—	0.05	—	μs	
	Rise Time	tr		—	0.05	—		
	Turn-on Time	ton		—	0.2	—		
	Turn-off Delay Time	td (off)		—	0.5	—		
	Fall Time	tf		—	0.1	0.3		
	Turn-off Time	toff		—	0.6	—		
Forward Voltage		VF	IF = 50 A, VGE = 0	—	2.4	3.5	V	
Reverse Recovery Time		trr	IF = 50 A, VGE = -10 V di/dt = 700 A/μs (Note 1)	—	0.1	0.25	μs	
Thermal Resistance		Rth (j-c)	Transistor Stage	—	—	0.31	°C/W	
			Diode Stage	—	—	0.94		

(Note 1) Switching Time and Reverse Recovery Time Test Circuit & Timing Chart

