

TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

M G 1 2 0 V 2 Y S 4 0

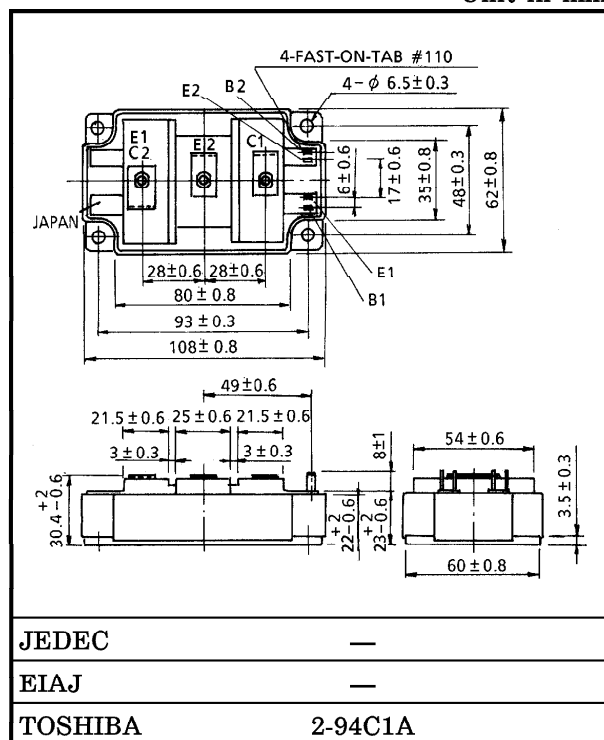
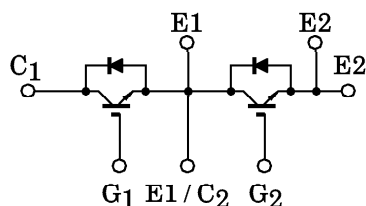
HIGH POWER SWITCHING APPLICATIONS

Unit in mm

MOTOR CONTROL APPLICATIONS

- The Electrodes are Isolated from Case.
- High Input Impedance
- Includes a Complete Half Bridge in One Package.
- Enhancement-Mode
- High Speed : $t_f = 1.5\mu s$ (Max.) ($I_C = 120A$)
 $t_{rr} = 0.6\mu s$ (Max.) ($I_F = 120A$)

EQUIVALENT CIRCUIT



Weight : 430g (Typ.)

MAXIMUM RATINGS (T_a = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Emitter Voltage		V _{CES}	1700	V
Gate-Emitter Voltage		V _{GES}	± 20	V
Collector Current	DC	I _C	120	A
	1ms	I _{CP}	240	
Forward Current	DC	I _F	120	A
	1ms	I _{FM}	240	
Collector Power Dissipation (T _c =25°C)		P _C	1200	W
Junction Temperature		T _j	150	°C
Storage Temperature Range		T _{stg}	−40~125	°C
Isolation Voltage		V _{Isol}	4000 (AC 1 min.)	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		I_{GES}	$V_{GE} = \pm 20V, V_{CE} = 0$	—	—	± 100	nA
Collector Cut-off Current		I_{CES}	$V_{CE} = 1700V, V_{GE} = 0$	—	—	1	mA
Gate-Emitter Cut-off Voltage		$V_{GE(off)}$	$I_C = 120mA, V_{CE} = 5V$	4.0	—	8.0	V
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	$I_C = 120A, V_{GE} = 15V$	—	3.2	4.5	V
Input Capacitance		C_{ies}	$V_{CE} = 10V, V_{GE} = 0, f = 1MHz$	—	16400	—	pF
Switching Time	Turn-on Delay Time	$t_d(on)$	Inductive Load $V_{CC} = 900V$ $I_C = 120A$ $V_{GE} = \pm 15V$ $R_G = 4.7\Omega$ (Note 1)	—	0.1	—	μs
	Rise Time	t_r		—	0.1	—	
	Turn-on Time	t_{on}		—	0.5	—	
	Turn-off Delay Time	$t_d(off)$		—	0.4	—	
	Fall Time	t_f		—	0.5	1.5	
	Turn-off Time	t_{off}		—	1.0	—	
Forward Voltage		V_F	$I_F = 120A, V_{GE} = 0$	—	3.5	4.5	V
Reverse Recovery Time		t_{rr}	$I_F = 120A, V_{GE} = -15V$ $di/dt = 500A/\mu s$ (Note 1)	—	0.3	0.6	μs
Thermal Resistance		$R_{th(j-c)}$	Transistor Stage	—	—	0.104	$^{\circ}C/W$
			Diode Stage	—	—	0.25	

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

