

TOSHIBA GTR MODULE SILICON N-CHANNEL IGBT

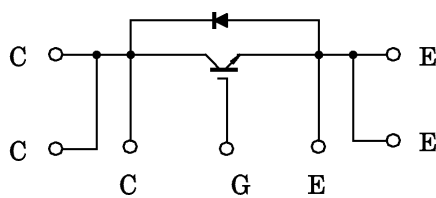
MG1200V1US51

HIGH POWER SWITCHING APPLICATIONS
MOTOR CONTROL APPLICATIONS

FEATURES

- High Input Impedance
- Enhancement Mode
- Electrodes are isolated from case.

EQUIVALENT CIRCUIT



MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTICS		SYMBOL	RATING	UNIT
Collector-Emitter Voltage		V _{CES}	1700	V
Gate-Emitter Voltage		V _{GES}	20	V
Collector Current	DC	I _C	1200	A
	1ms	I _{CP}	2400	
Forward Current	DC	I _F	1200	A
	1ms	I _{FM}	2400	
Collector Power Dissipation (Tc = 25°C)		P _C	5560	W
Junction Temperature		T _j	−20~125	°C
Storage Temperature Range		T _{stg}	−40~125	°C
Isolation Voltage		V _{Isol}	5400 (AC 1min.)	V
Screw Torque	Terminal : M4 / M8	—	2 / 7	N·m
	Mounting		4	

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ELECTRICAL CHARACTERISTICS (T_c = 125°C : except thermal resistance)

CHARACTERISTICS		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I _{GES}	V _{GE} = ±20V, V _{CE} = 0V	—	—	±50	nA
Collector Cut-Off Current		I _{CES}	V _{CE} = 1700V, V _{GE} = 0V	—	—	100	mA
Gate-Emitter Cut-Off Voltage		V _{GE (off)}	V _{CE} = 5V, I _C = 1.2A	3.0	—	7.0	V
Collector-Emitter Saturation Voltage		V _{CE (sat)}	V _{GE} = 15V, I _C = 1200A	—	—	5.0	V
Input Capacitance		C _{ies}	V _{CE} = 10V, V _{GE} = 0V, f = 300kHz	—	130	—	nF
Switching Time (Note 1)	Rise Time	t _r	V _{CC} = 900V, I _C = 1200A V _{GE} = ±15V, R _G = 1.8Ω (Inductive load : L _s = 150nH)	—	—	0.7	μs
	Turn-On Time	t _{on}		—	—	1.0	μs
	Fall Time	t _f		—	—	0.8	μs
	Turn-Off Time	t _{off}		—	—	1.5	μs
Forward Voltage		V _F	I _F = 1200A, V _{GE} = 0V	—	—	3.2	V
Reverse Recovery Time (Note 1)		t _{rr}	I _F = 1200A, V _{GE} = 15V di / dt = 4000A / μs, V _{CC} = 900V	—	—	0.8	μs
Switching Dissipation (Note 1)	Turn-On Loss	E _{on}	V _{CC} = 900V, I _C = 1200A	—	250	—	mJ
	Turn-Off Loss	E _{off}	V _{GE} = ±15V, R _G = 1.8Ω	—	500	—	mJ
	Diode Loss	E _{dsw}	I _F = 1200A, V _{GE} = -15V di / dt = 4000A / μs, V _{CC} = 900V	—	300	—	mJ
Thermal Resistance		R _{th (j-c)}	Transistor (IGBT) Stage	—	—	0.018	°C / W
			Diode Stage	—	—	0.035	°C / W

(Note 1) Test circuit and timing chart of switching time, reverse recovery time and switching dissipation.

