

TOSHIBA GTR MODULE SILICON N-CHANNEL IGBT

# MG1200V1US51

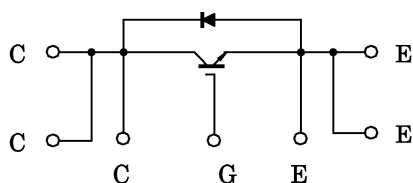
HIGH POWER SWITCHING APPLICATIONS

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 <sub>CES</sub>	1700	V
Gate-Emitter Voltage		V <sub>GES</sub>	20	V
Collector Current	DC	I <sub>C</sub>	1200	A
	1ms	I <sub>CP</sub>	2400	
Forward Current	DC	I <sub>F</sub>	1200	A
	1ms	I <sub>FM</sub>	2400	
Collector Power Dissipation (Tc = 25°C)		P <sub>C</sub>	5560	W
Junction Temperature		T <sub>j</sub>	-20~125	°C
Storage Temperature Range		T <sub>stg</sub>	-40~125	°C
Isolation Voltage		V <sub>Isol</sub>	5400 (AC 1min.)	V
Screw Torque	Terminal : M4 / M8	—	2 / 7	N·m
	Mounting		4	

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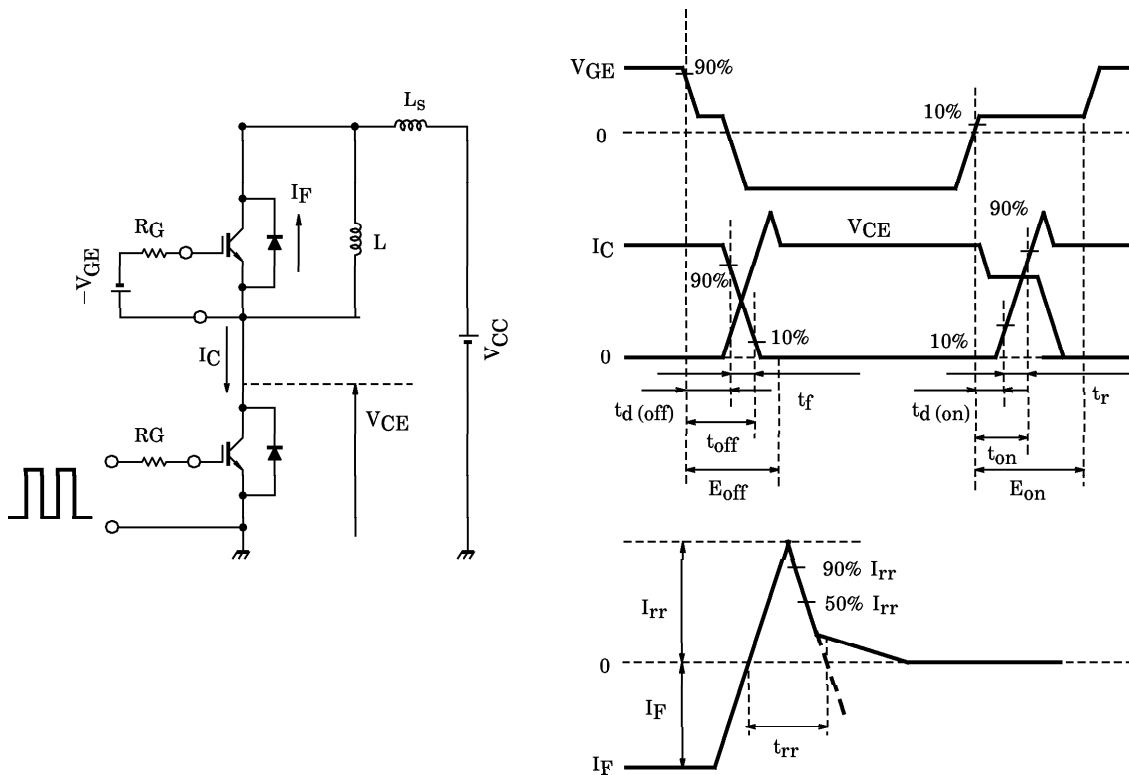
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## ELECTRICAL CHARACTERISTICS (Tc = 125°C : except thermal resistance)

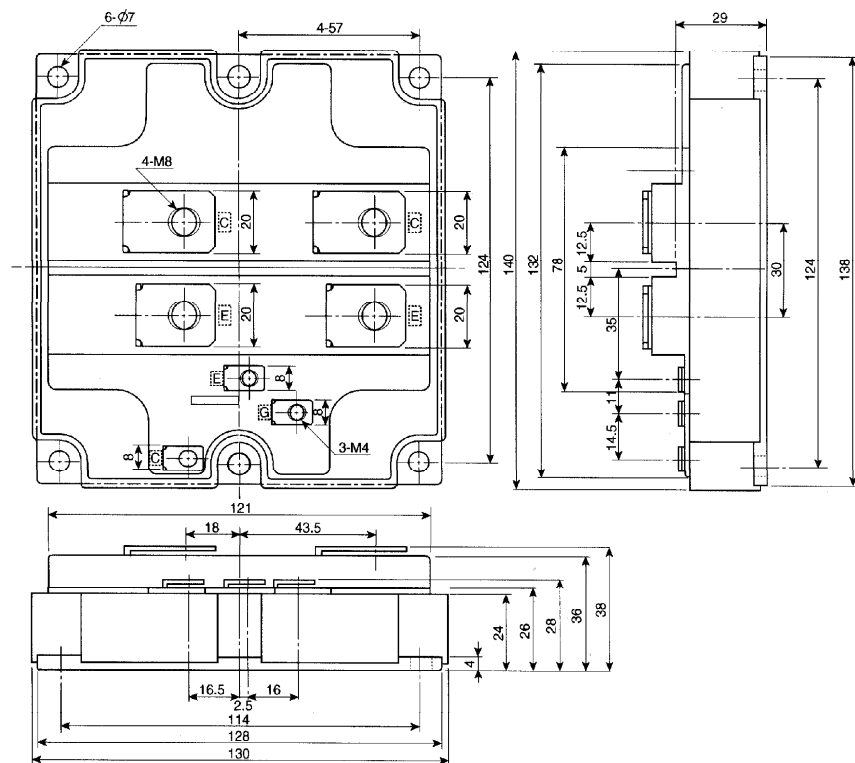
CHARACTERISTICS		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I <sub>GES</sub>	V <sub>GE</sub> = ±20V, V <sub>CE</sub> = 0V	—	—	±50	nA
Collector Cut-Off Current		I <sub>CES</sub>	V <sub>CE</sub> = 1700V, V <sub>GE</sub> = 0V	—	—	100	mA
Gate-Emitter Cut-Off Voltage		V <sub>GE (off)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



OUTLINE DRAWING

Unit : mm



Weight : 900g (Typ.)