

TOSHIBA GTR MODULE SILICON N-CHANNEL IGBT

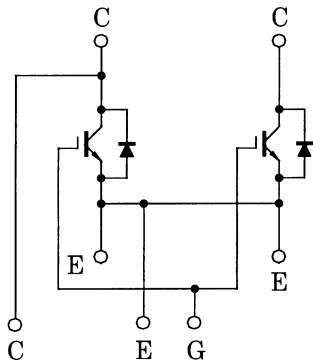
MG1200V1US51

HIGH POWER SWITCHING APPLICATIONS
MOTOR CONTROL APPLICATIONS

FEATURES

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

EQUIVALENT CIRCUIT



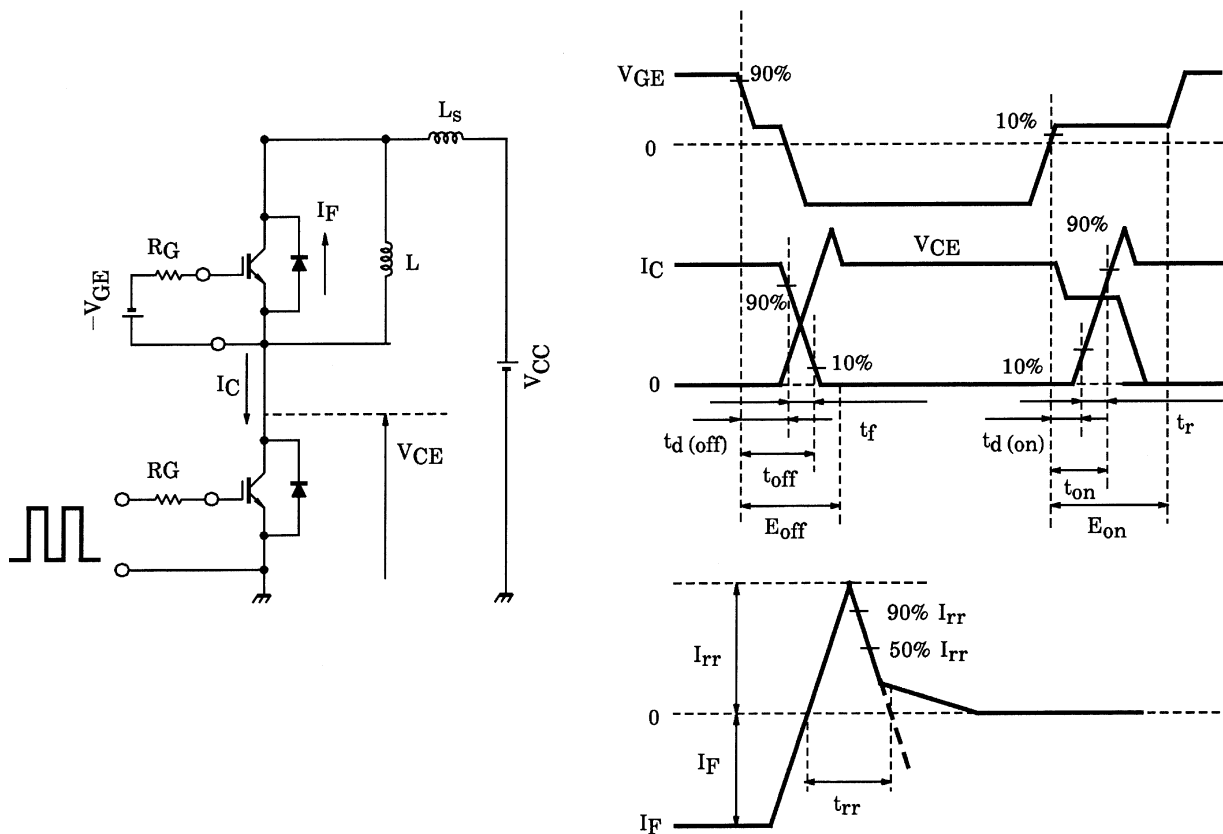
MAXIMUM RATINGS (Ta = 25°C)

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	

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

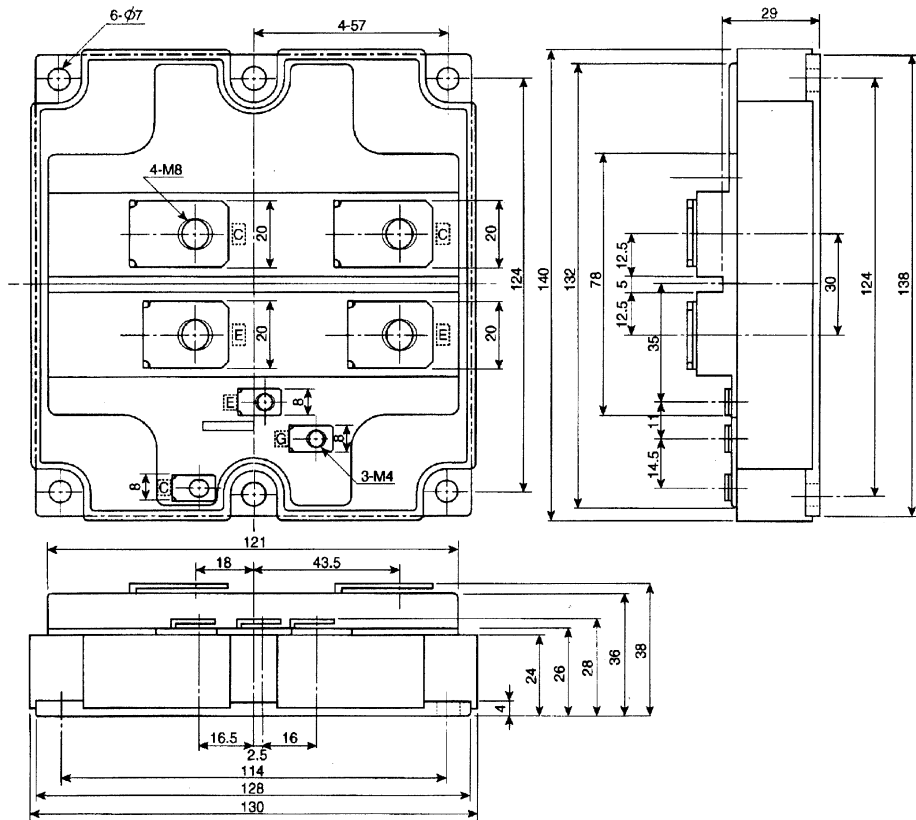
CHARACTERISTICS		SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
Gate Leakage Current		I_{GES}	$V_{GE} = \pm 20\text{ V}, V_{CE} = 0\text{ V}$	—	—	± 50	nA
Collector Cut-Off Current		I_{CES}	$V_{CE} = 1700\text{ V}, V_{GE} = 0\text{ V}$	—	—	100	mA
Gate-Emitter Cut-Off Voltage		$V_{GE(off)}$	$V_{CE} = 5\text{ V}, I_C = 1.2\text{ A}$	3.0	—	7.0	V
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	$V_{GE} = 15\text{ V}, I_C = 1200\text{ A}$	—	—	5.0	V
Input Capacitance		C_{ies}	$V_{CE} = 10\text{ V}, V_{GE} = 0\text{ V}, f = 300\text{ kHz}$	—	130	—	nF
Switching Time (Note 1)	Rise Time	t_r	$V_{CC} = 900\text{ V}, I_C = 1200\text{ A}$ $V_{GE} = \pm 15\text{ V}, R_G = 1.8\ \Omega$ (Inductive load: $L_s = 150\text{ nH}$)	—	—	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	$I_F = 1200\text{ A}, V_{GE} = 0\text{ V}$	—	—	3.2	V
Reverse Recovery Time (Note 1)		t_{rr}	$I_F = 1200\text{ A}, V_{GE} = 15\text{ V}$ $di/dt = 4000\text{ A}/\mu\text{s}, V_{CC} = 900\text{ V}$	—	—	0.8	μs
Switching Dissipation (Note 1)	Turn-On Loss	E_{on}	$V_{CC} = 900\text{ V}, I_C = 1200\text{ A}$ $V_{GE} = \pm 15\text{ V}, R_G = 1.8\ \Omega$	—	250	—	mJ
	Turn-Off Loss	E_{off}		—	500	—	mJ
	Diode Loss	E_{dsw}	$I_F = 1200\text{ A}, V_{GE} = -15\text{ V}$ $di/dt = 4000\text{ A}/\mu\text{s}, V_{CC} = 900\text{ V}$	—	300	—	mJ
Thermal Resistance		$R_{th(j-c)}$	Transistor (IGBT) Stage	—	—	0.018	$^{\circ}\text{C}/\text{W}$
			Diode Stage	—	—	0.035	$^{\circ}\text{C}/\text{W}$

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



PACKAGE DIMENSIONS: TOSHIBA 2-142A1A

Unit: mm



Weight: 900 g (typ.)

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