

(Target Spec.)

TOSHIBA GTR MODULE

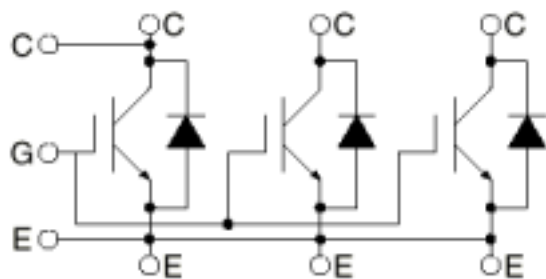
MG1200FXF1US53

S ILICON N-CHANNEL IGBT

HIGH POWER SWITCHING APPLICATIONS.
MOTOR CONTROL APPLICATIONS.

- Features
- High Input Impedance
 - Enhancement Mode
 - Electrodes are Isolated from Case

EQUIVALENT CIRCUIT



MAXIMUM RATINGS (Ta=25degC)

Characteristic		Symbol	Rating	Unit
Collector-Emitter Voltage		VCES	3300	V
Gate-Emitter Voltage		VGES	+/-20	V
Collector Current	RMS	IC	1200 (Note.1)	A
	Peak Turn off current	ICP	2400 (Note.2)	A
Peak 1 cycle surge Current	10ms(half sine)	IFSM	10	kA
Collector Power Dissipation		Pc	4000	W
Operating Junction Temperature		Tj	-40...125	degC
Storage Temperature Range		Tstg	-40...125	degC
Isolation Voltage		VIsol	6000 (AC 1MIN.)	V
Screw Torque	Terminal:M4/M8	-	2/7	Nm
	Mounting		4	

Note.1 50Hz(Half Sine), Tc=75degC, Switching Loss is not contained.
Note.2 Vcc=<2200V, Vcp=<2700V, Ls=160nH, RG=9.1ohm, VGE=+/-15V, Tj=<125 degC

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ELECTRICAL CHARACTERISTICS(Tvj=125 degC)

Characteristic		Symbol	Test condition	Min.	Typ.	Max.	Unit
Gate leakage current		IGES	VGE=+/-20V, VCE=0V	-	-	+/-50	nA
Collector cut-off current		ICES	VCE=3300V, VGE=0V	-	75	100	mA
Gate-Emitter cut-off voltage		VGE(off)	VCE=5V, IC=1.2A	-	7.2	-	V
Collector-Emitter saturation voltage		VCE(sat)	IC=1200A, VGE=15V	-	4.2	4.5	V
Input capacitance		Cies	VCE=10V, VGE=0V, f=100kHz	-	230	-	nF
Switching time	Rise time	tr	VCC=1800V, IC=1200A,	-	0.3	-	μs
	Turn-on time	ton	VGG=+/-15V, RG(on)/(off)=3.0/9.1Ω	-	0.8	-	μs
	Fall time	tf	(diC/dt(on)<>4500A/μs) (Inductive Load,	-	1.2	-	μs
	Turn-off time	toff	Ls=160nH)	-	4.9	-	μs
Forward voltage of Diode		VF	IF=1200A, VGE=0V	-	3.1	3.5	V
Reverse recovery charge		Qrr	IF=1200A, VGG=-15V, diF/dt<>-4500A/μs,	-	1000	-	μC
Peak reverse recovery current		Irr	VCC=1800V	-	1400	-	A
Switching dissipation	turn-on loss	Eon	VCC=1800V, IC=1200A, VGG=+/-15V, RG(on)/(off)=3.0/9.1Ω	-	2.0	-	J
	turn-off loss	Eoff	(diC/dt(on)<>4500A/μs) (Inductive Load, Ls=160nH)	-	1.7	-	J
	Diode Reverse recovery loss	Edsw	IF=1200A, VGG=-15V, diF/dt□4500A/μs, VCC=1800V	-	1.3	-	J

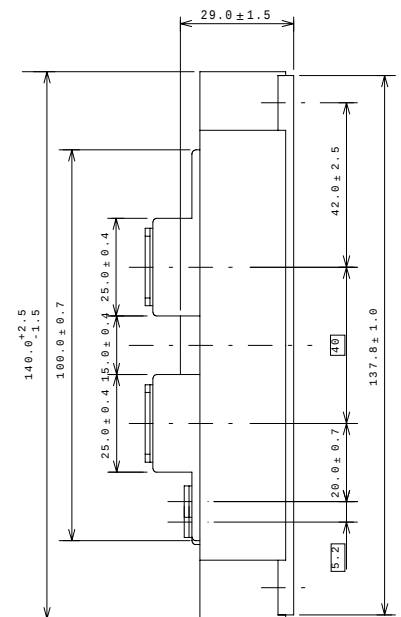
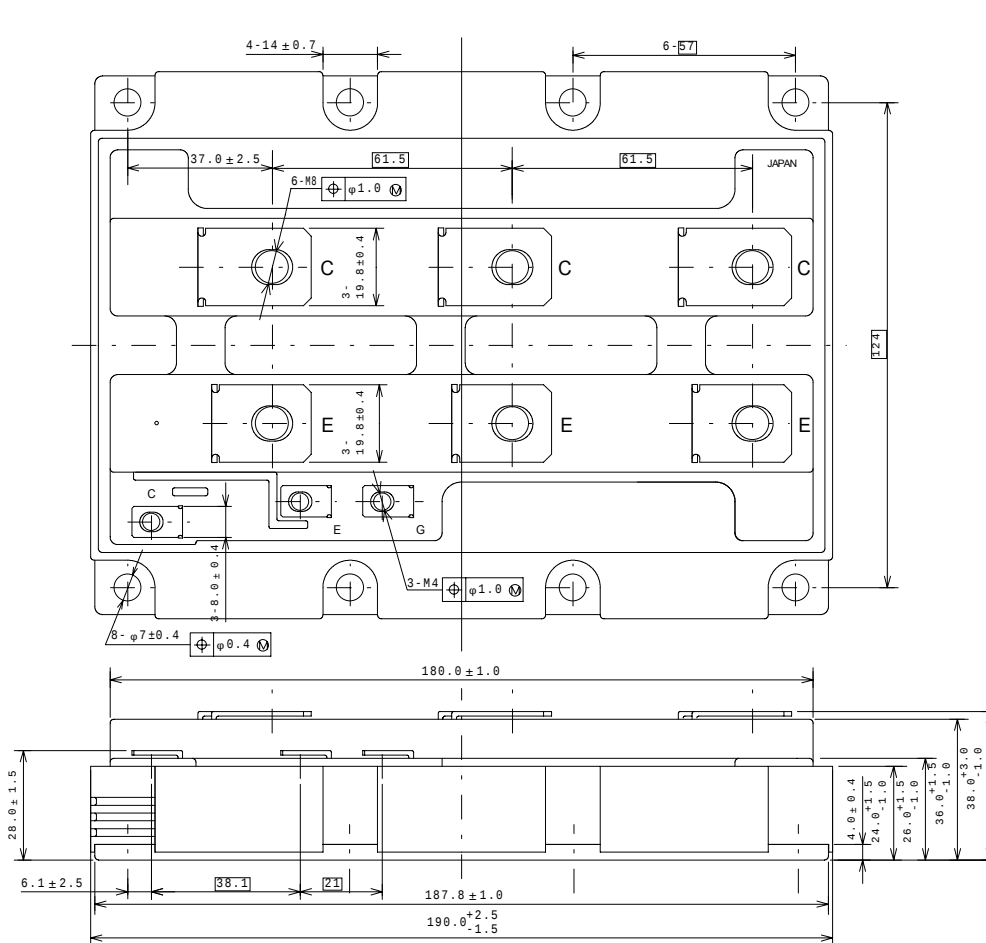
Thermal Resistance(Tc=25 degC)

Thermal Resistance	Rth(j-C)	Transistor(IGBT) Stage	-	-	8.0	degC /kW
		Diode Stage	-	-	16.0	
	Rth(C-f)	per Module(Note.3)	-	6.0	-	

Note.3:Toshiba Silicone's YG6260 heat radiation grease is recommended for use with semiconductor devices.

Apply a thin , even(100-to-200-um) coating of grease.

Outline



(Target Spec.)

RESTRICTIONS ON PRODUCT USE

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