ShinDengen

MG032A4207R5A

3 phase Inverter Module

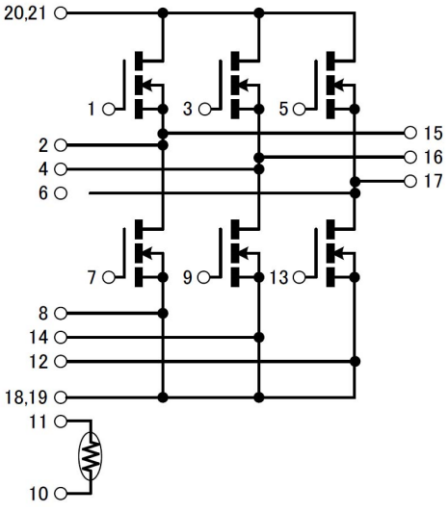
Feature

- 3 phase Inverter
- MOSFET(N-channel)
- High current capacity
- Isolated package
- Low Ron
- Pb free terminal
- RoHS:Yes

Outline

House Name: MG032

Equivalent circuit



Absolute Maximum Ratings （unless otherwise specified：Tc=25°C）

MOSFET

Item	Symbol	Conditions	Ratings	Unit
Channel temperature	Tch		150	°C
Drain-source voltage	V_{DSS}		75	V
Gate-source voltage	V_{GSS}		±20	V
Continuous drain current (DC)	I_D	These are characteristics of the 2 devices	420	A
Continuous drain current （Peak）	I_{DP}	Pulse width 10μs, Duty = 1/100	840	A
Total power dissipation	P_T		500	W
Single avalanche current	I_{AS}	Starting Tch=25°C Tch≦150°C , These are characteristics of the 2 devices	108	A
Single avalanche energy	E_{AS}	Starting Tch=25°C Tch≦150°C , These are characteristics of the 2 devices	580	mJ

Module

Item	Symbol	Conditions	Ratings	Unit
Storage temperature	Tstg		-40 to 150	°C
Dielectric strength	Vdis	Terminal to Cu base , AC 1 minute , Cutoff=5mA	2.0	kV
Mounting torque	TOR	Fixing screw M5 (For mount module)	3.5	N·m
Mounting torque	TOR	Fixing screw M6 (For external connection)	4.5	N·m

Electrical and thermal characteristics (unless otherwise specified：Tc=25℃、Characteristics of the 2 devices)

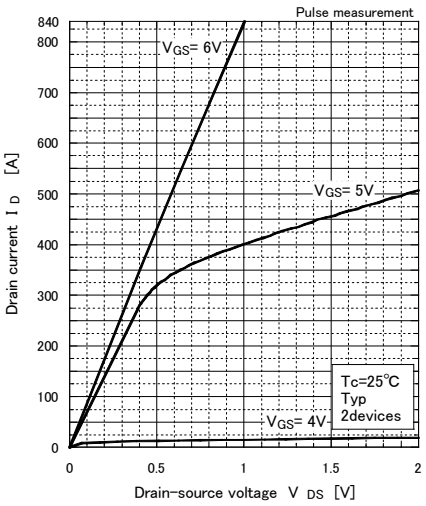
MOSFET

Item	Symbol	Conditions	Ratings			Unit
			MIN	TYP	MAX	
Drain-source breakdown voltage	$V_{(BR)DSS}$	I_D=2mA , V_{GS}=0V	78	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=75V , V_{GS}=0V	-	-	4.0	μA
Gate-source leakage current	I_{GSS}	V_{GS}=±20V , V_{DS}=0V	-	-	±0.2	μA
Static drain-source on-state resistance	$R_{DS(ON)}$	I_D=210A , V_{GS}=10V	-	-	0.98	mΩ
Gate threshold voltage	V_{TH}	I_D=2mA , V_{DS}=10V	2.5	3.0	3.5	V
Source-drain diode forward voltage	V_{SD}	I_S=210A , V_{GS}=0V	-	-	1.5	V
Total gate charge	Qg	V_{DD}=60V,V_{GS}=10V,I_D=180A（※1device）	-	505	-	nC
Gate to source charge	Qgs	V_{DD}=60V,V_{GS}=10V,I_D=180A（※1device）	-	130	-	nC
Gate to drain charge	Qgd	V_{DD}=60V,V_{GS}=10V,I_D=180A（※1device）	-	210	-	nC
Input capacitance	Ciss	V_{DS}=25V , V_{GS}=0V , f=1MHz	-	80120	-	pF
Reverse transfer capacitance	Crss	V_{DS}=25V , V_{GS}=0V , f=1MHz	-	6000	-	pF
Output capacitance	Coss	V_{DS}=25V , V_{GS}=0V , f=1MHz	-	15080	-	pF
Turn-on delay time	td(on)	I_D=90A , R_L=0.42Ω , V_{DD}=37.5V , R_G=0Ω , $V_{GS(+)}$=10V , $V_{GS(-)}$=0V（※1device）	-	20	-	ns
Rise time	tr	I_D=90A , R_L=0.42Ω , V_{DD}=37.5V , R_G=0Ω , $V_{GS(+)}$=10V , $V_{GS(-)}$=0V（※1device）	-	147	-	ns
Turn-off delay time	td(off)	I_D=90A , R_L=0.42Ω , V_{DD}=37.5V , R_G=0Ω , $V_{GS(+)}$=10V , $V_{GS(-)}$=0V（※1device）	-	460	-	ns
Fall time	tf	I_D=90A , R_L=0.42Ω , V_{DD}=37.5V , R_G=0Ω , $V_{GS(+)}$=10V , $V_{GS(-)}$=0V（※1device）	-	274	-	ns

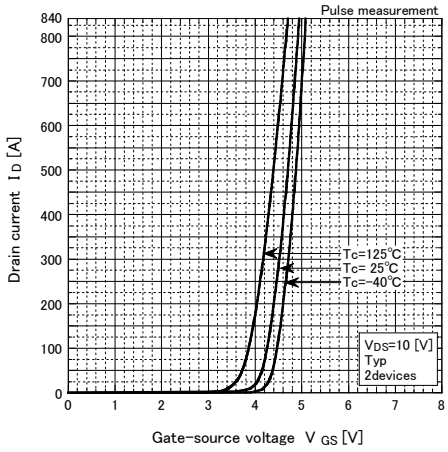
Module

Item	Symbol	Conditions	Ratings			Unit
			MIN	TYP	MAX	
熱抵抗	$R_{th(j-c)}$	Junction to case , With heatsink	-	-	0.25	℃/W

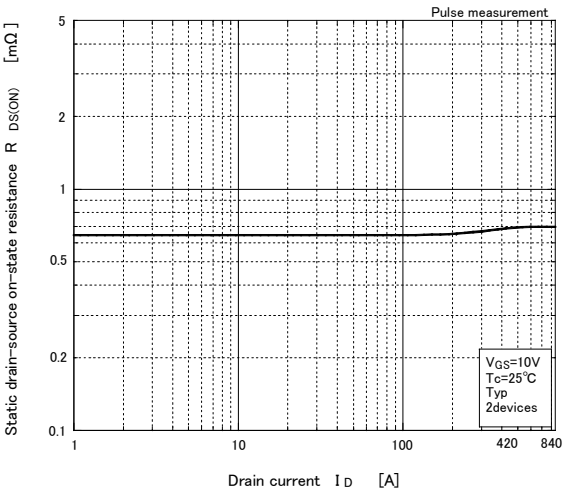
Typical output characteristics



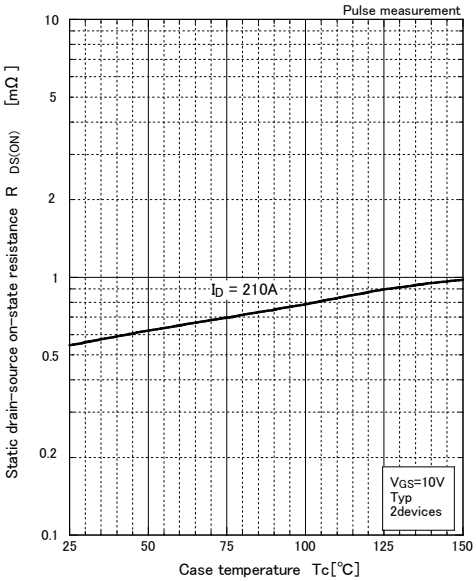
Transfer characteristics



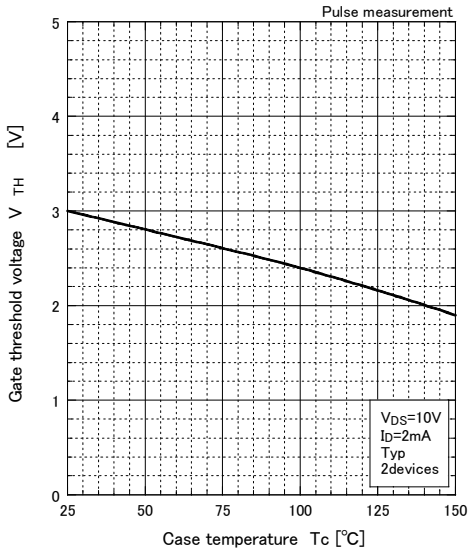
Static drain-source on-state resistance vs drain current



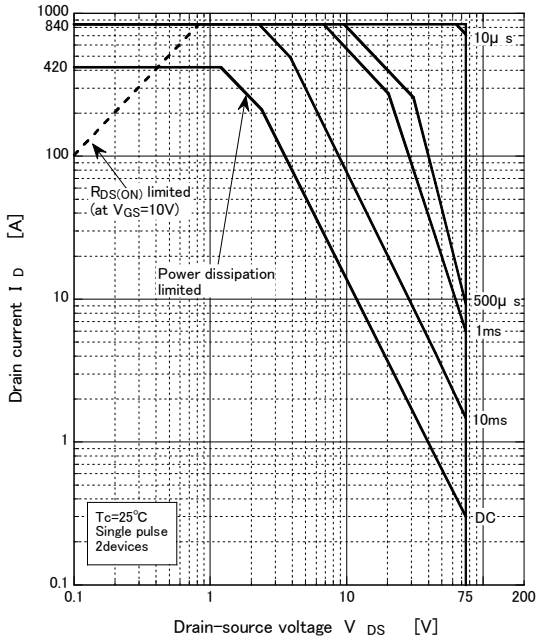
Static drain-source on-state resistance vs case temperature



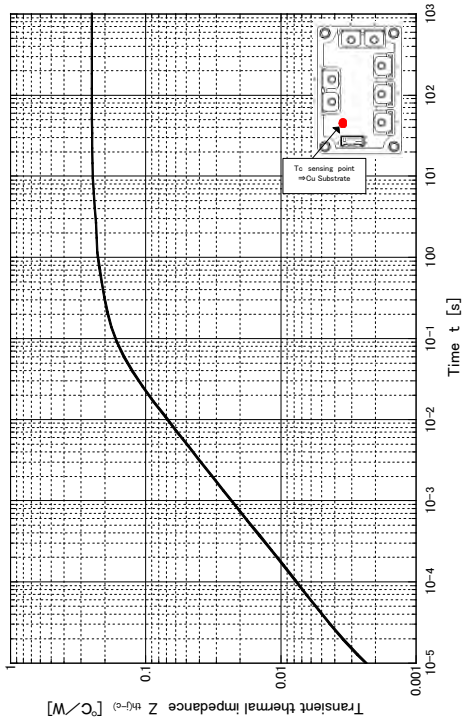
Gate threshold voltage
vs case temperature



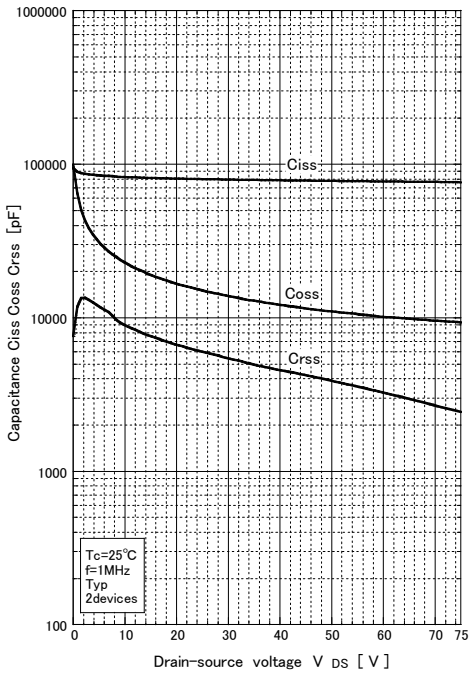
Safe operating area



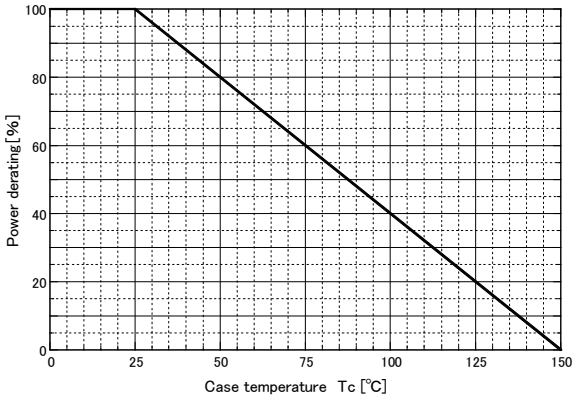
Transient thermal Impedance



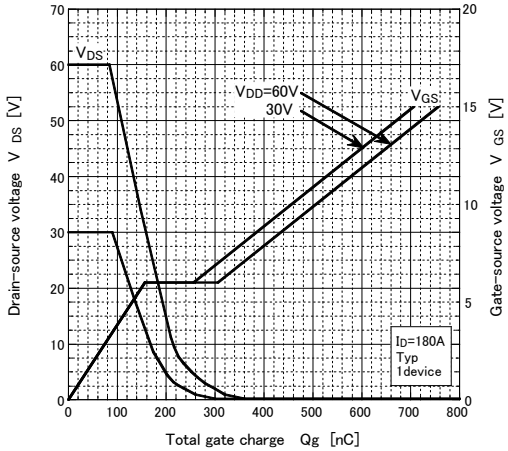
Capacitance characteristics



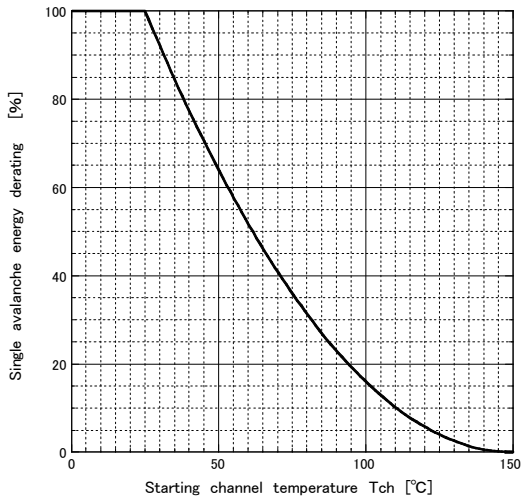
Power derating – case temperature



Gate charge characteristics



Single avalanche energy derating
vs channel temperature

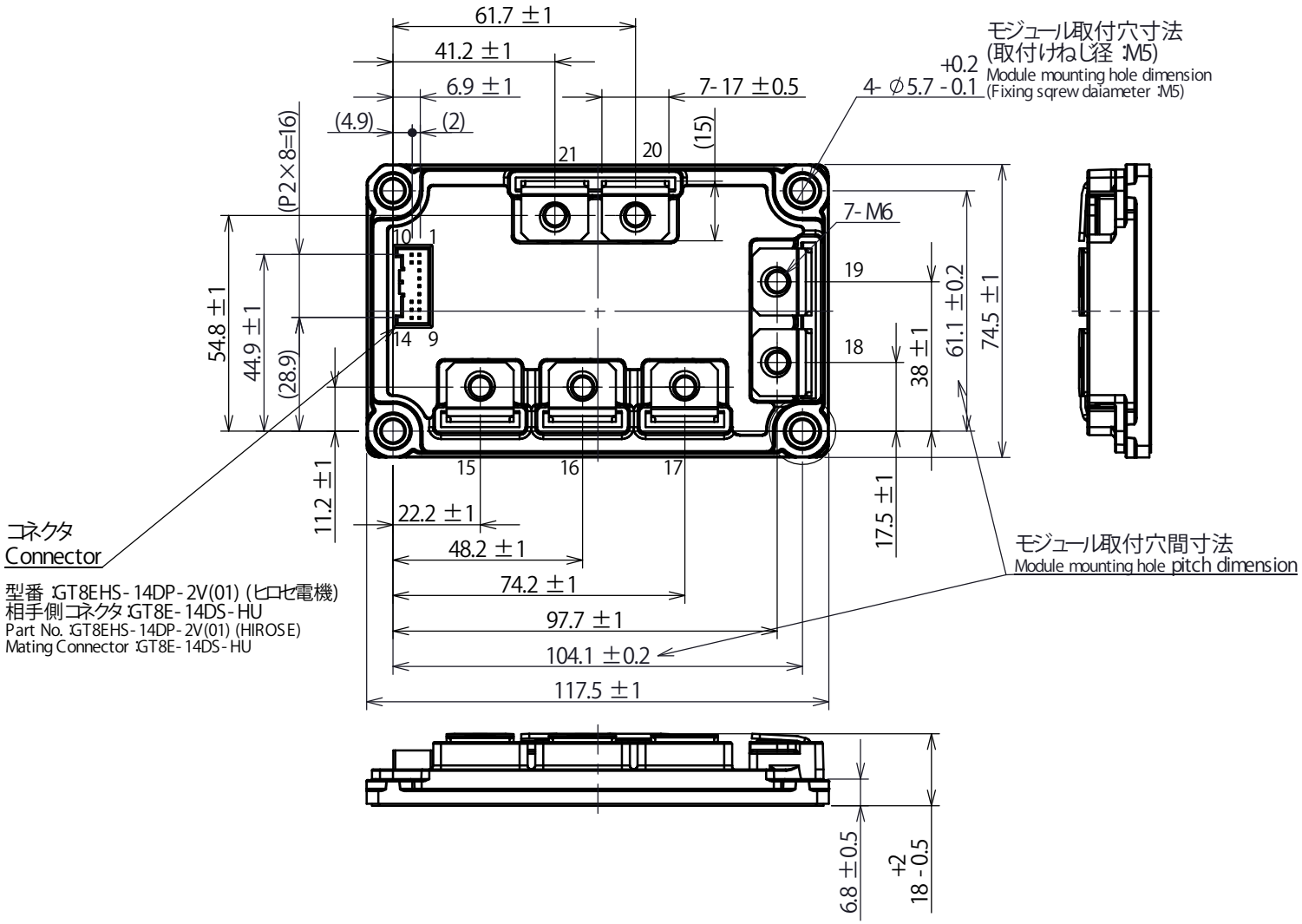


Package Outline-Dimensions

unit:mm

F6

JEDEC Code	–
JEITA Code	–
House Name	MG032



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