ShinDengen

MG048A150004A

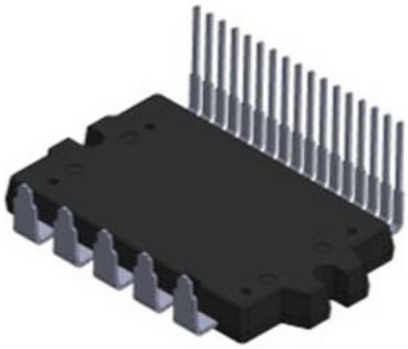
3 phase Inverter Module

Feature

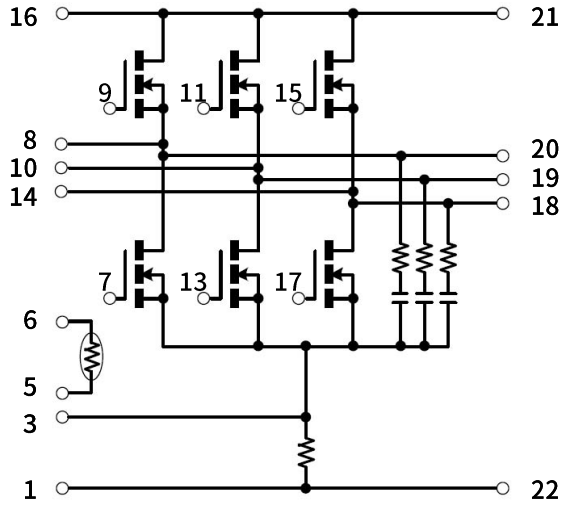
- 3 phase Inverter
- MOSFET(N-channel)
- High current capacity
- Isolated package
- Low Ron
- Halogen free
- Pb free terminal
- RoHS:Yes

Outline

House Name: MG048



Equivalent circuit



Absolute maximum ratings （Tc = 25℃ unless otherwise specified ）

MOSFET

Item	Symbol	Conditions	Ratings	Unit
Channel temperature	T_{ch}		150	℃
Drain-source voltage	V_{DSS}		40	V
Gate-source voltage	V_{GSS}		±20	V
Continuous drain current (DC)	I_D		150	A
Continuous drain current (Peak)	I_{DP}	Pulse width 10μs, Duty = 1/100	600	A
Total power dissipation	P_T		147	W
Single avalanche current	I_{AS}	Starting Tch=25°C Tch≦150°C	77	A
Single avalanche energy	E_{AS}	Starting Tch=25°C Tch≦150°C	730	mJ

Module

Item	Symbol	Conditions	Ratings	Unit
Storage temperature	Tstg		−40～125	℃
Mounting torque	TOR	Fixing screw M3	1.2	N・m

Electrical and thermal characteristics （Tc=25℃ unless otherwise specified.）

MOSFET

Item	Symbol	Conditions		Ratings			Unit
				Min.	Typ.	Max.	
Drain−source breakdown voltage	$V_{(BR)DSS}$	I_D=1mA, V_{GS}=0V		40	−	−	V
Zero gate voltage rain current	I_{DSS}	V_{DS}=40V, V_{GS}=0V		−	−	1.0	μA
Gate−source leakage current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V		−	−	±0.1	μA
Static drain−source on−state resistance	$R_{DS(ON)}$	Chip	I_D=75A, V_{GS}=10V	−	1.02	−	mΩ
		Terminal	I_D=75A, V_{GS}=10V (Electrical characteristics of Q6)	−	2.1	2.7	mΩ
Gate threshold voltage	V_{TH}	I_D=1mA, V_{DS}=10V		2.0	3.0	4.0	V
Source−drain diode forward voltage	V_{SD}	Is=150A, V_{GS}=0V		−	−	1.5	V
Total gate charge	Q_g	V_{DD}=32V, V_{GS}=10V, I_D=150A		−	111	−	nC
Gate to source charge	Q_{gs}			−	32	−	
Gate to drain charge	Q_{gd}			−	57	−	
Input capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0V, f=1MHz (Electrical characteristics of discrete MOSFET device)		−	5900	−	pF
Reverse transfer capacitance	C_{rss}			−	590	−	
Output capacitance	C_{oss}			−	1100	−	

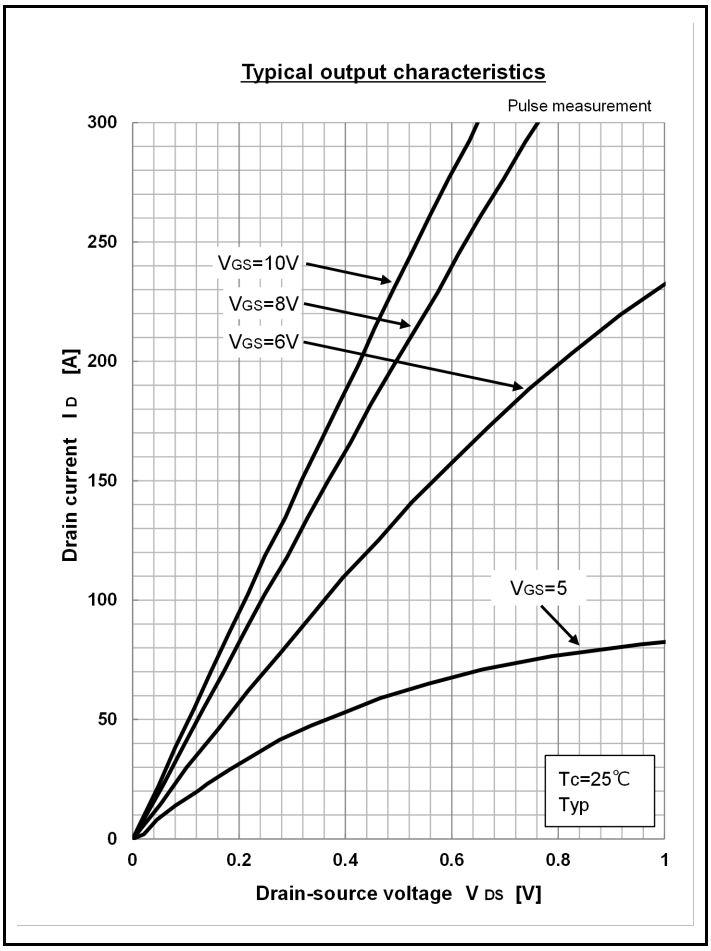
Turn—on delay time	td(on)	I_D=87.5A, R_L=0.23Ω, V_{DD}=20V, Rg=0Ω $V_{GS(+)}$=10V, $V_{GS(-)}$=0V, (Electrical characteristics of discrete MOSFET device)	—	12	—	ns
Rise time	tr		—	117	—	
Turn—off delay time	td(off)		—	52	—	
Fall time	tf		—	32	—	
Diode reverse recovery time	trr	I_F=150A, V_{GS}=0V di/dt=100A/μs	—	62	—	ns
Diode reverse recovery charge	Qrr		—	39	—	nC

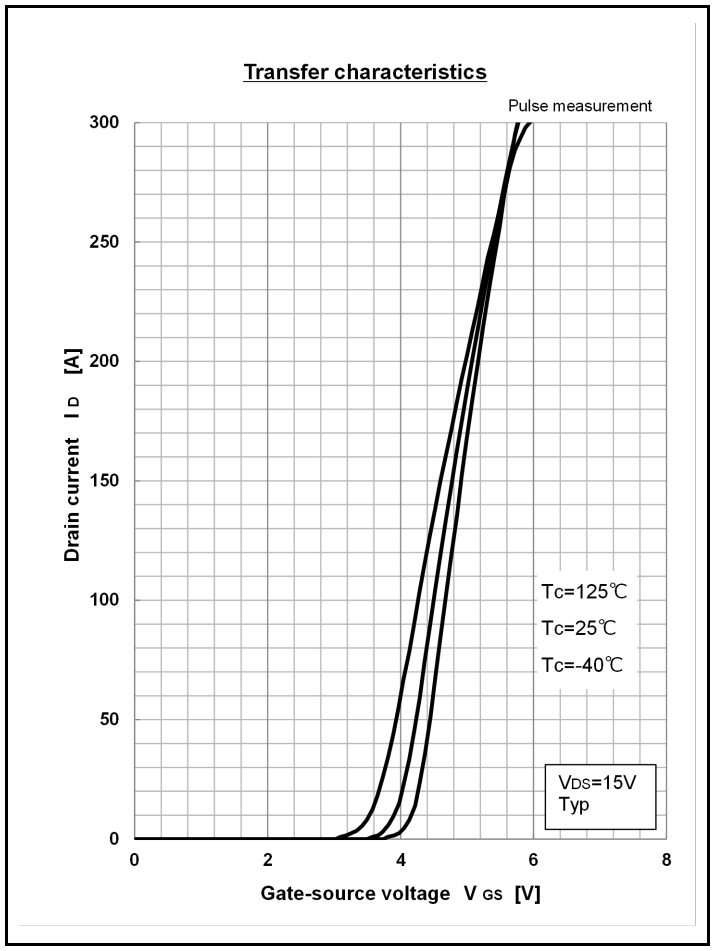
Module

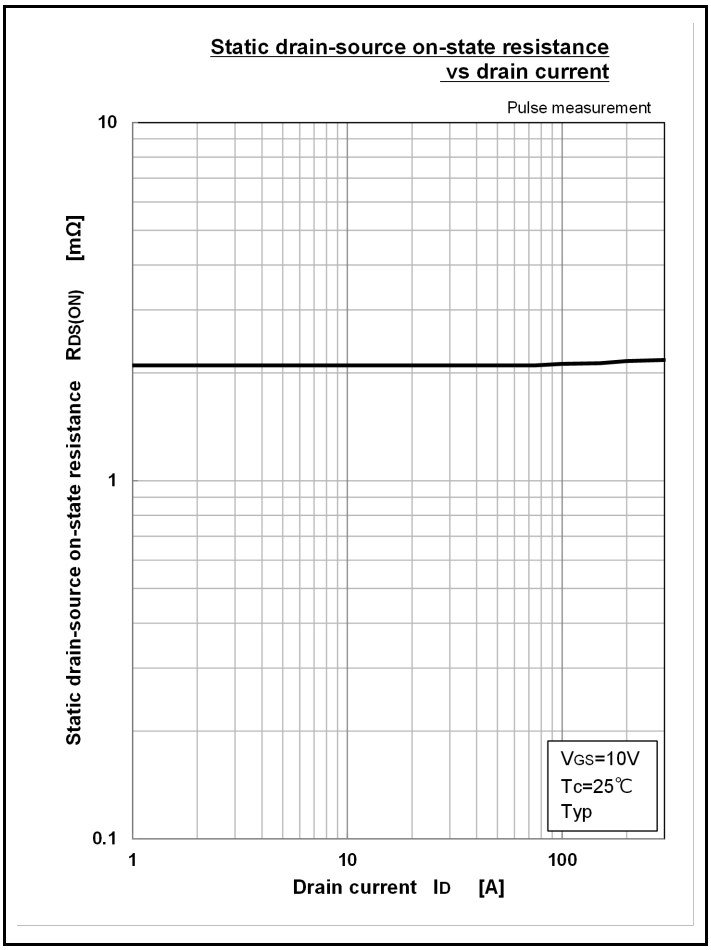
Item	Symbol	Conditions	Ratings			Unit
			Min.	Typ.	Max.	
Thermal resistance	$R_{th(j-c)}$	Junction to case, with heatsink	—	—	0.85	°C/W

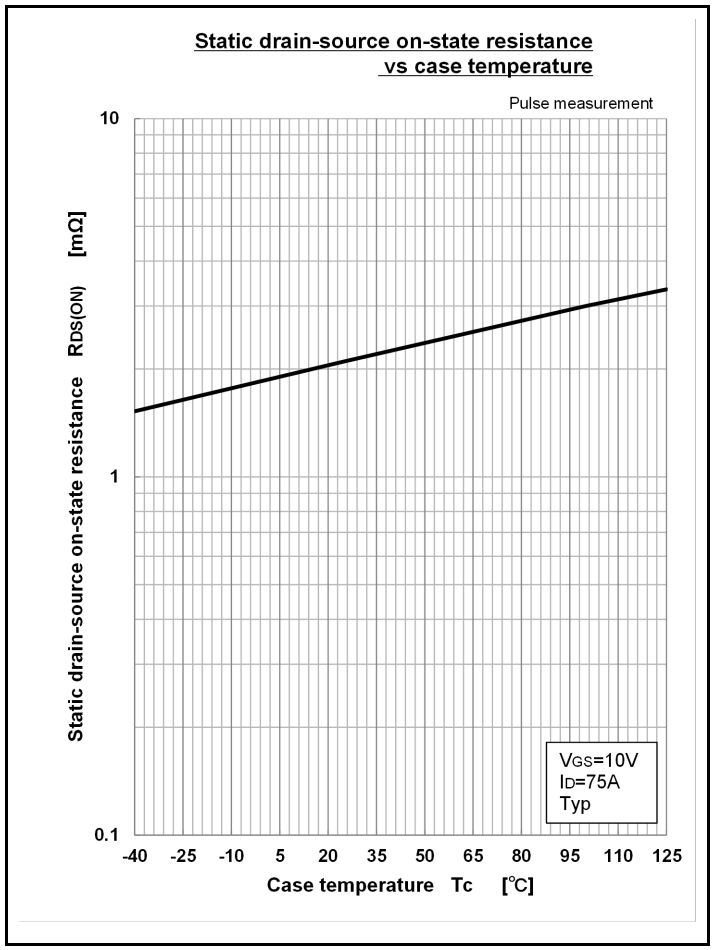
Note：Thermal resistance was measured at Q3

CHARACTERISTIC DIAGRAMS

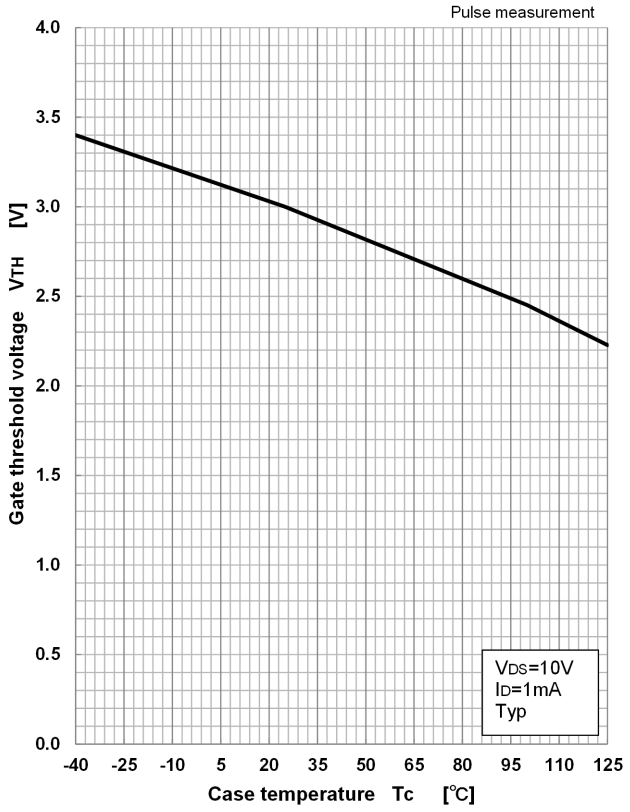




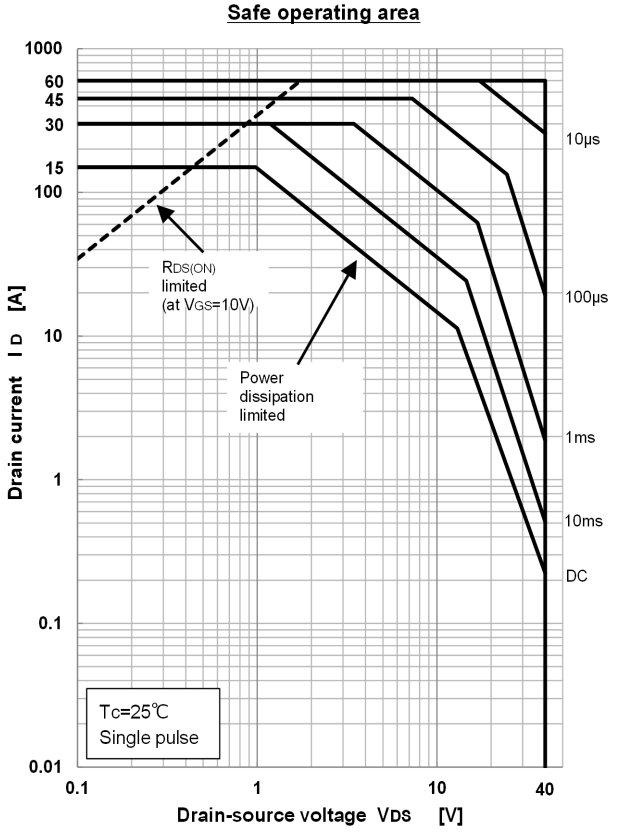




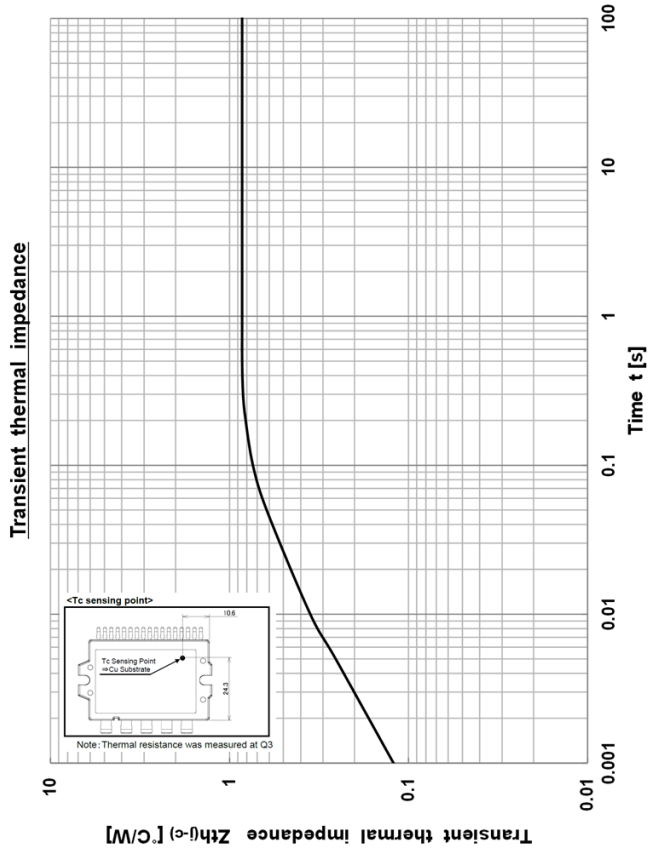
Gate threshold voltagence vs case temperature



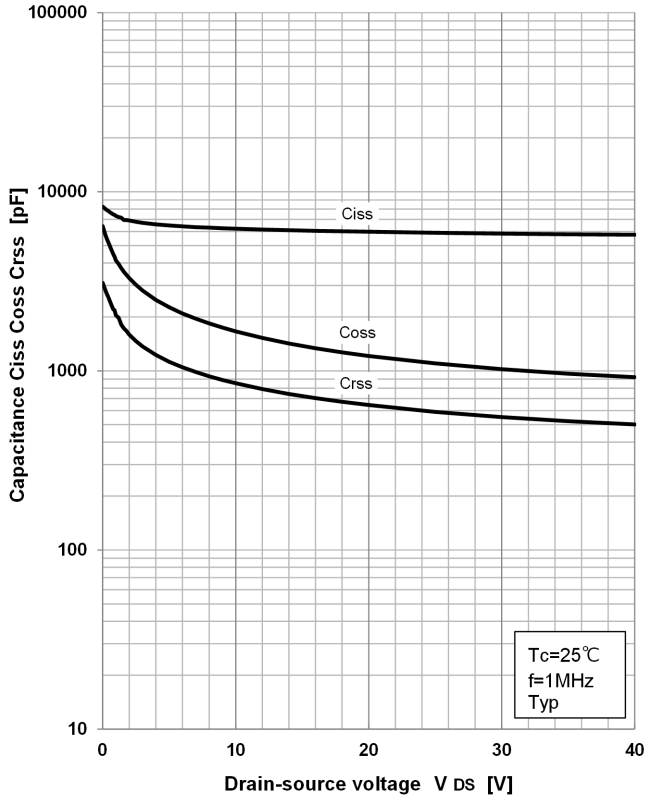
Safe operating area



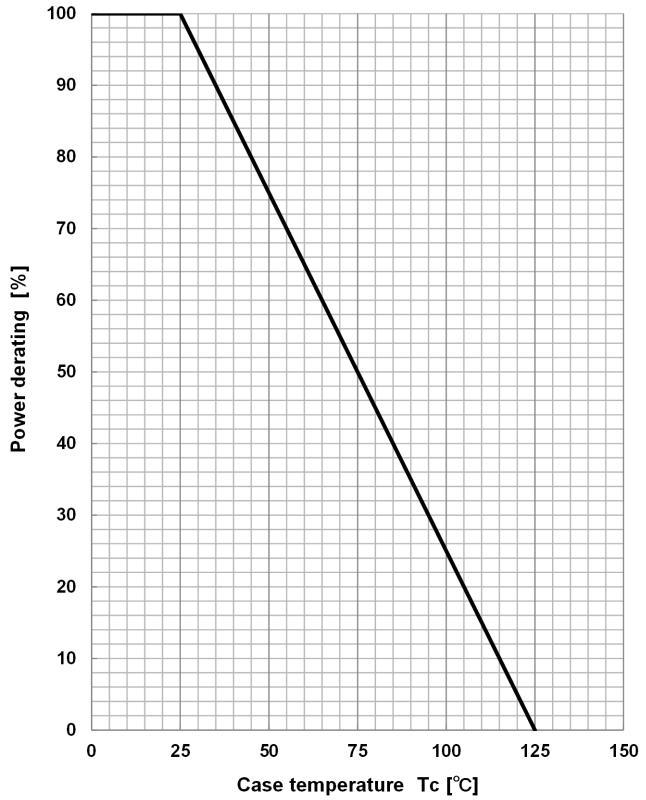
Transient thermal impedance



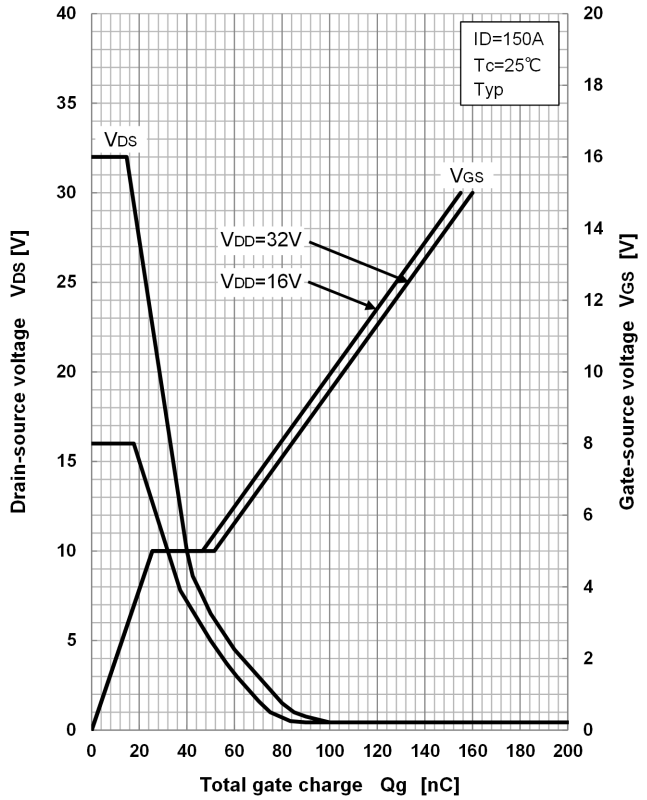
Capacitance characteristics



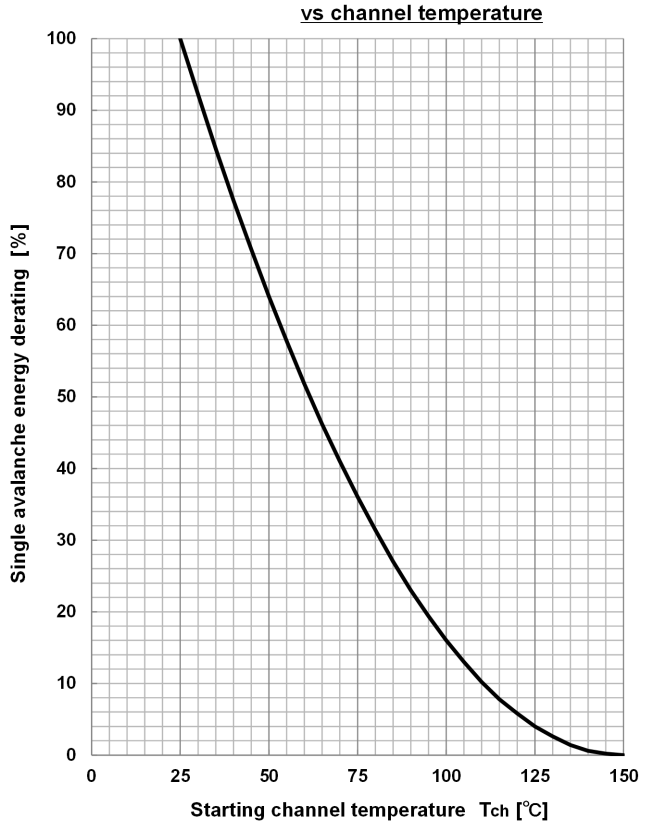
Power derating vs case temperature



Gate charge characteristics



Single avalanche energy derating vs channel temperature

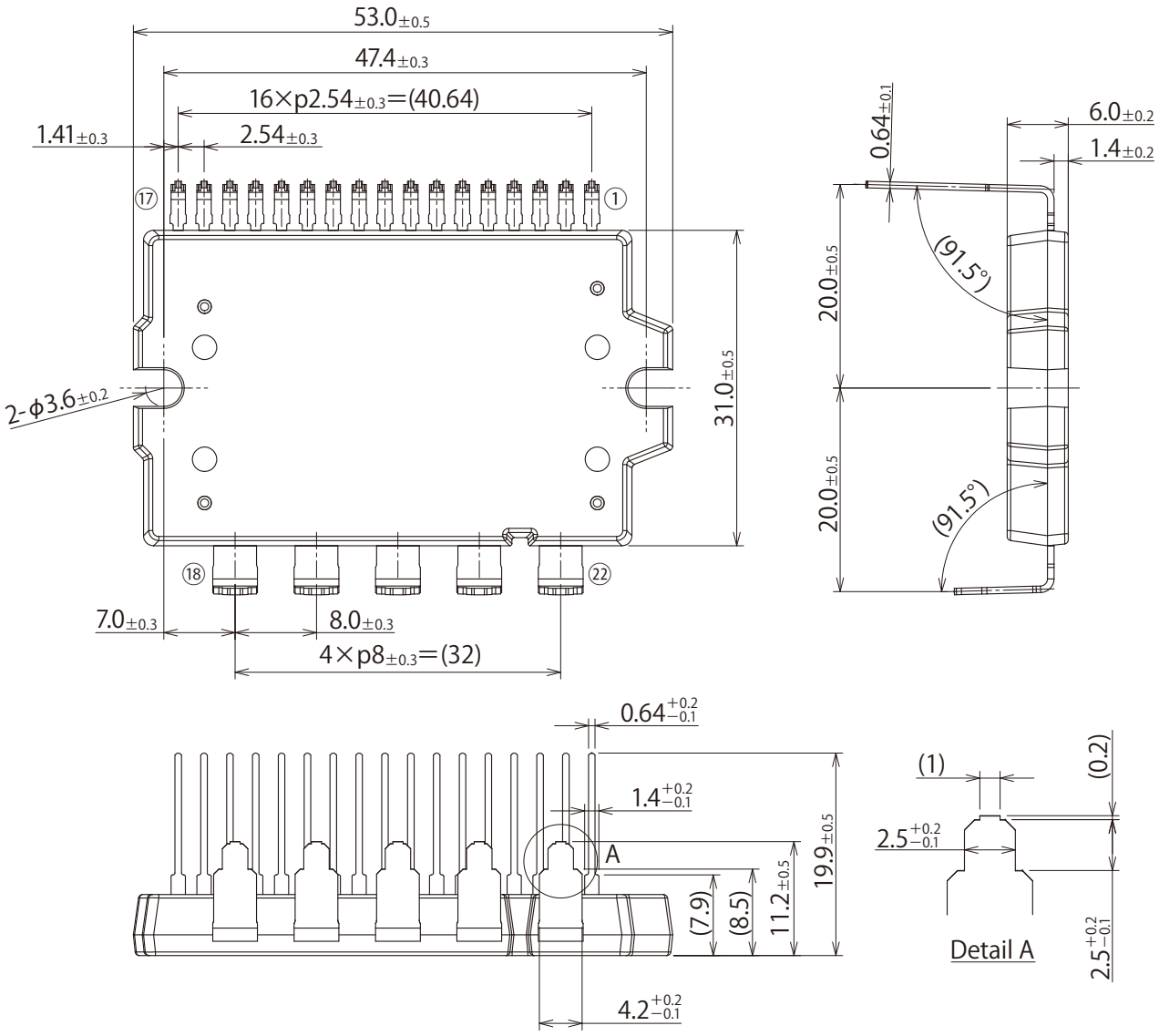


Package Outline-Dimensions

unit : mm

F8

JEDEC Code	–
JEITA Code	–
House Name	MG048



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