ShinDengen

MG048B100006A

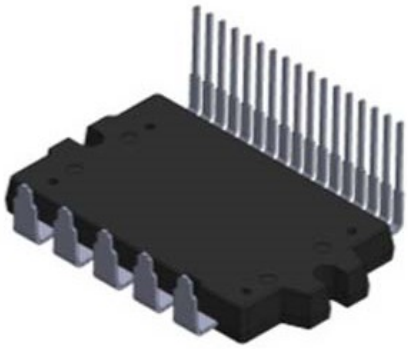
3 phase Inverter Module

Feature

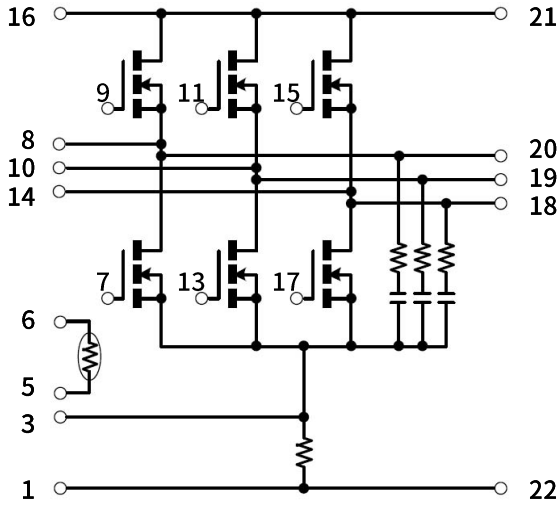
- 3 phase Inverter
- MOSFET(N-channel)
- High current capacity
- Isolated package
- Low Ron
- Halogen free
- Pb free terminal
- RoHS:Yes

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}		60	V
Gate-source voltage	V_{GSS}		±20	V
Continuous drain current (DC)	I_D		100	A
Continuous drain current (Peak)	I_{DP}	Pulse width 10μs, Duty = 1/100	400	A
Total power dissipation	P_T		147	W
Single avalanche current	I_{AS}	Starting T_{ch}=25℃ T_{ch}≦150℃	58	A
Single avalanche energy	E_{AS}	Starting T_{ch}=25℃ T_{ch}≦150℃	408	mJ

Module

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

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

These are characteristics of the 1 chip 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		60	−	−	V
Zero gate voltage rain current	I_{DSS}	V_{DS}=60V, 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=50A, V_{GS}=10V	−	1.84	−	mΩ
		Terminal	I_D=50A, V_{GS}=10V (Electrical characteristics of Q6)	−	2.92	3.65	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=100A, V_{GS}=0V		−	−	1.5	V
Total gate charge	Q_g	V_{DD}=48V, V_{GS}=10V, I_D=100A		−	129	−	nC
Gate to source charge	Q_{gs}			−	39	−	
Gate to drain charge	Q_{gd}			−	63	−	
Input capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0V, f=1MHz (Electrical characteristics of discrete MOSFET device)		−	8100	−	pF
Reverse transfer capacitance	C_{rss}			−	370	−	
Output capacitance	C_{oss}			−	830	−	

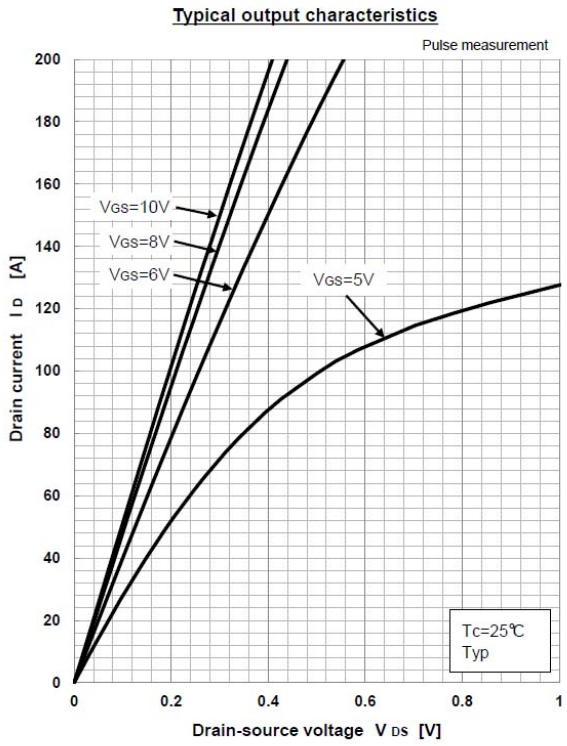
Turn—on delay time	td(on)	I_D=50A, R_L=0.6Ω, V_{DD}=30V, Rg=0Ω $V_{GS(+)}$=10V, $V_{GS(-)}$=0V, (Electrical characteristics of discrete MOSFET device)	—	10	—	ns
Rise time	tr		—	42	—	
Turn—off delay time	td(off)		—	100	—	
Fall time	tf		—	50	—	
Diode reverse recovery time	trr	I_F=100A, V_{GS}=0V, di/dt=100A/μs	—	93	—	ns
Diode reverse recovery charge	Qrr		—	115	—	nC

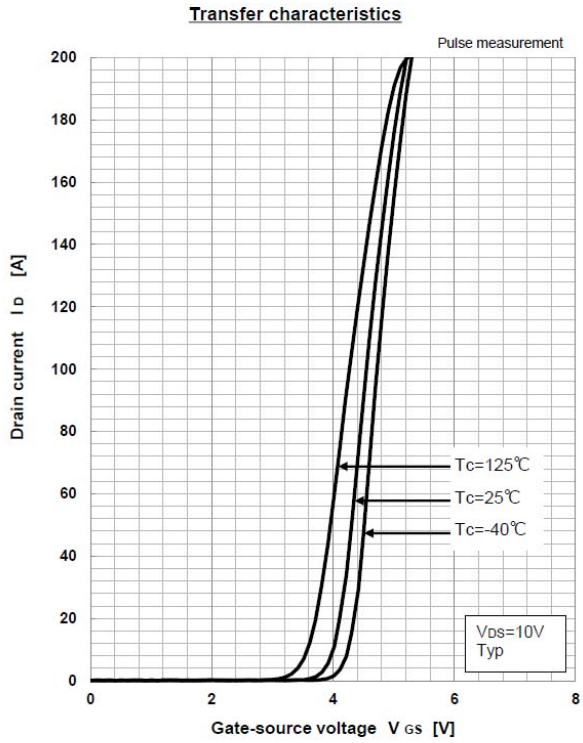
Module

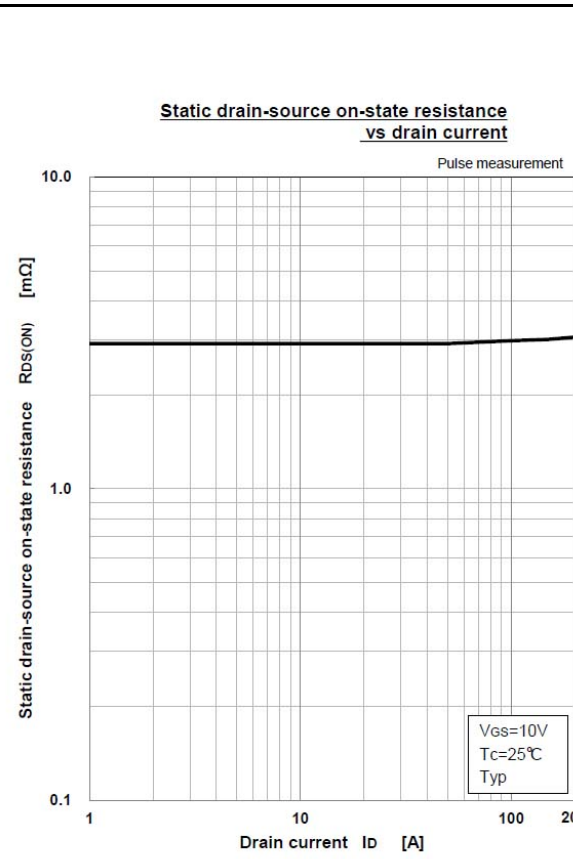
Item	Symbol	Conditions	Ratings			Unit
			Min.	Typ.	Max.	
Thermal resistance	$R_{th(j-c)}$	Junction to case, with heatsink	—	—	0.85	°C/W

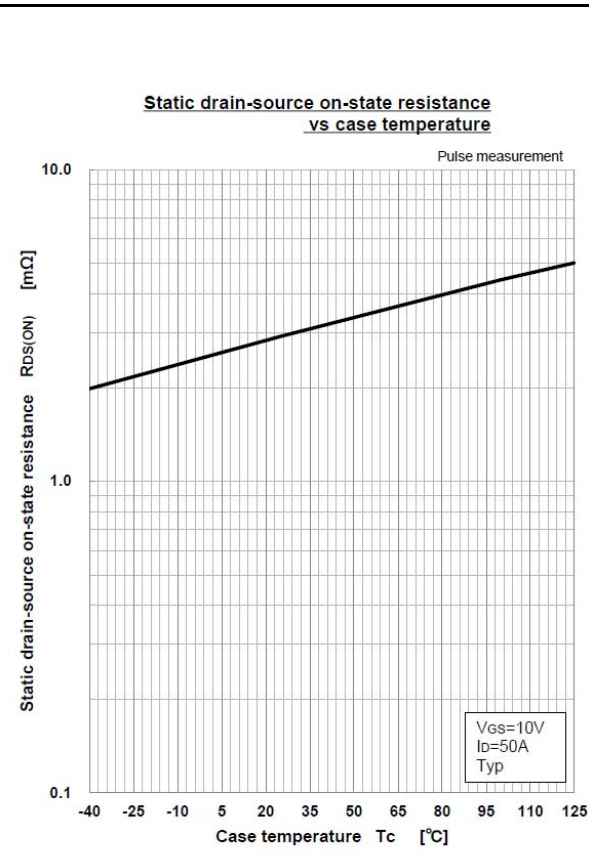
Note：Thermal resistance was measured at Q3

CHARACTERISTIC DIAGRAMS

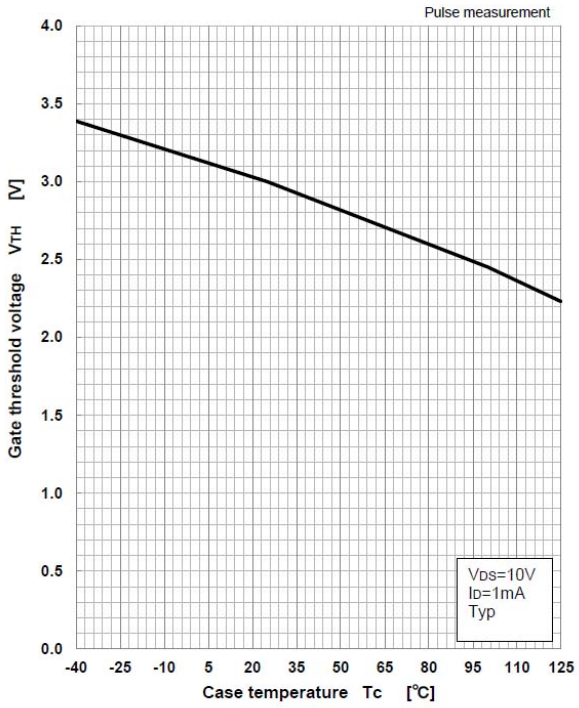




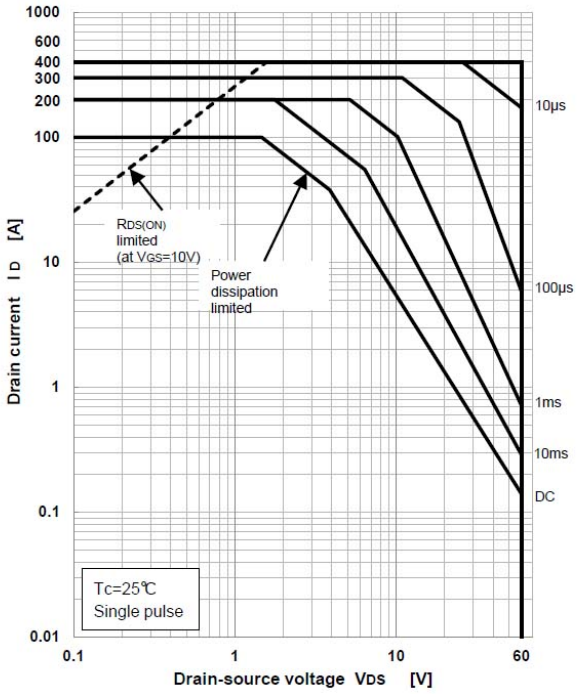


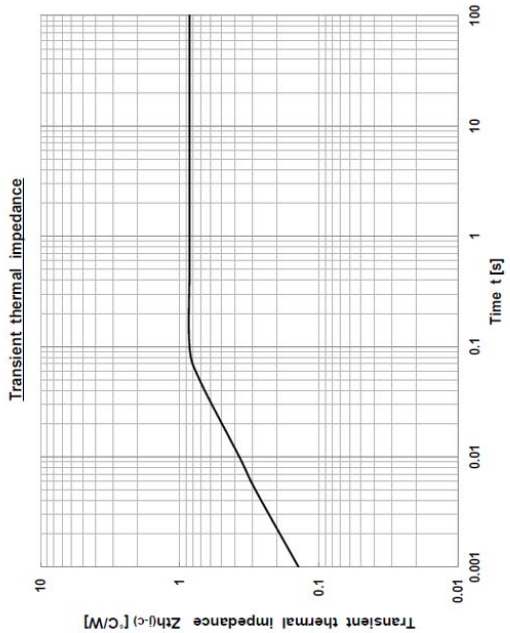


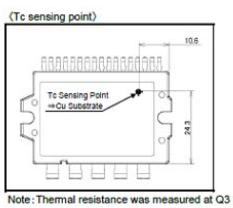
Gate threshold voltagence vs case temperature



Safe operating area

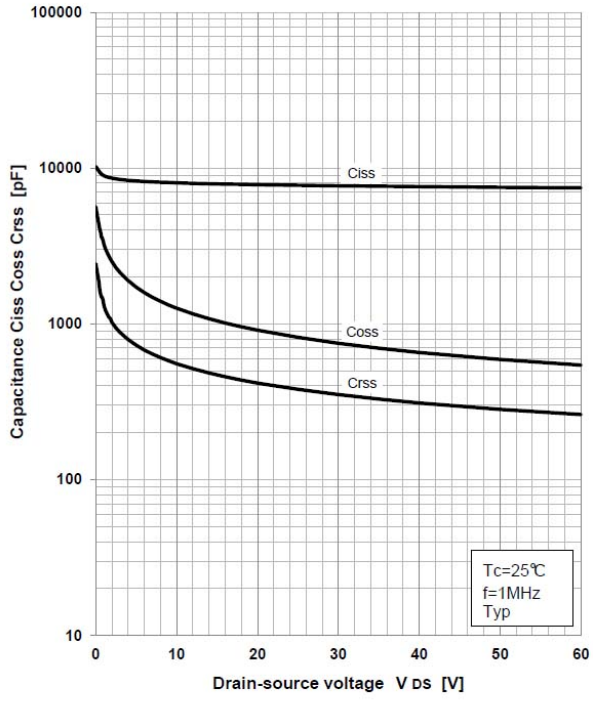




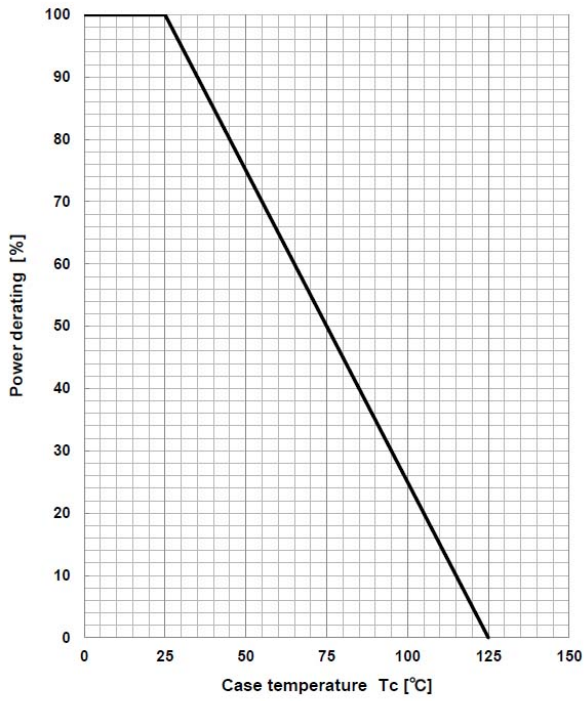


Note : Thermal resistance was measured at Q3

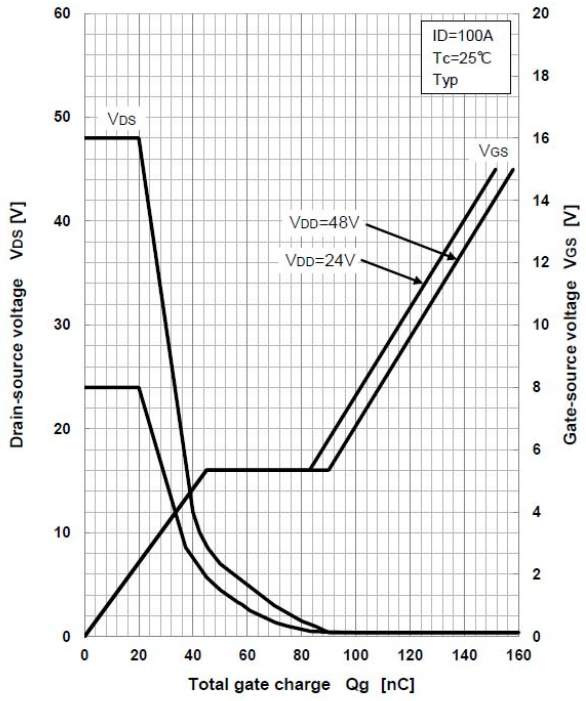
Capacitance characteristics



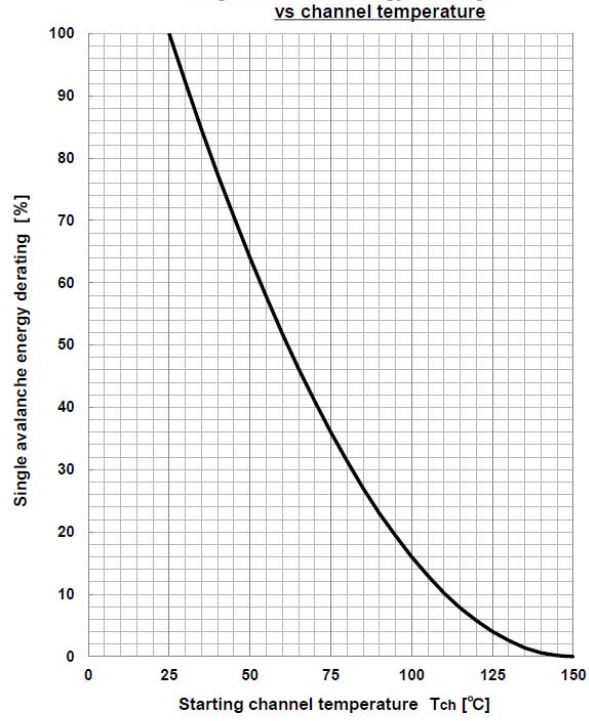
Power derating vs case temperature



Gate charge characteristics



Single avalanche energy derating
vs channel temperature

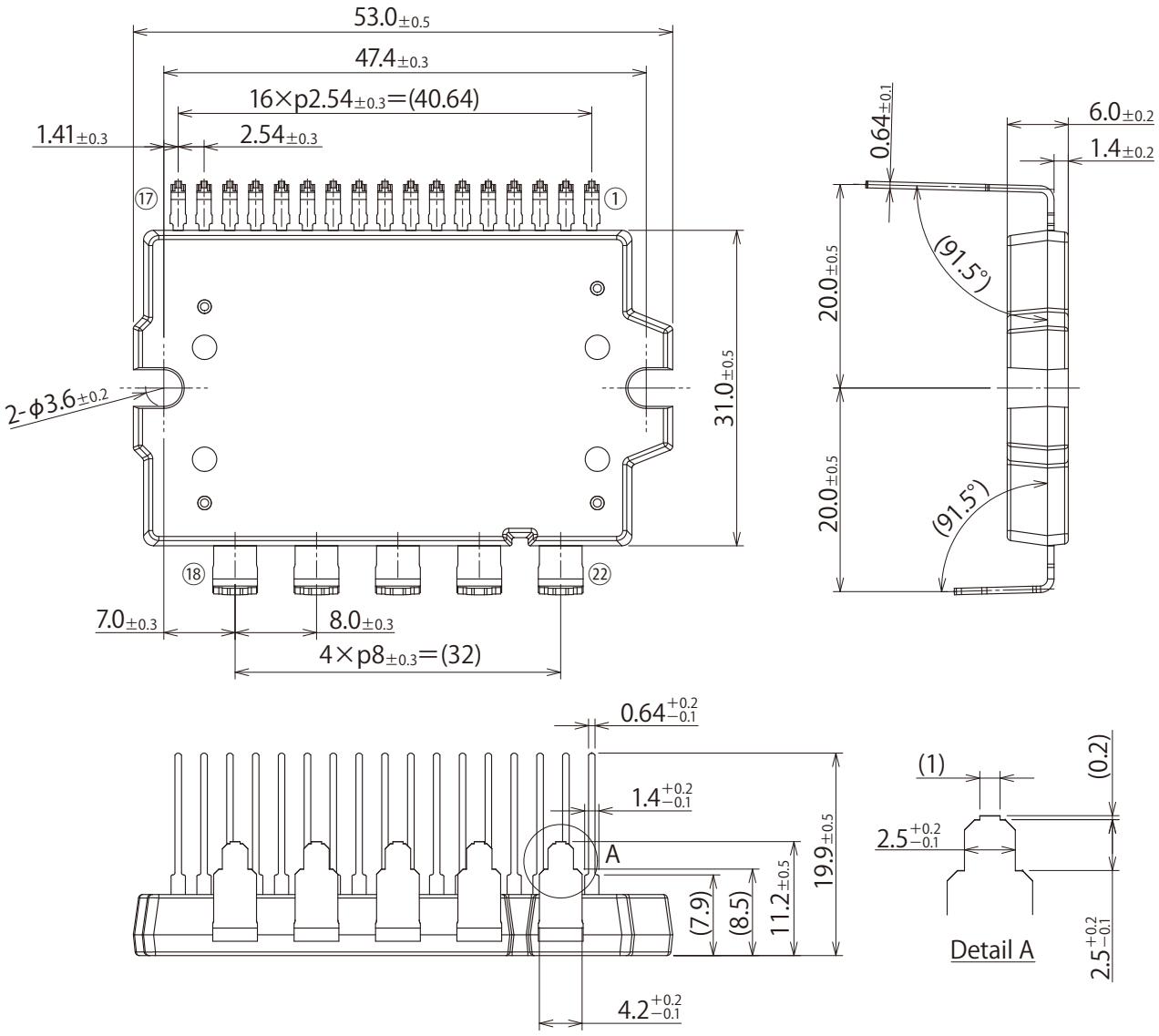


Package Outline-Dimensions

unit : mm

F8

JEDEC Code	–
JEITA Code	–
House Name	MG048



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