CR5AS-12A

600V - 5A - Thyristor

Medium Power Use

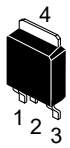
R07DS0332EJ0301
Rev.3.01
May. 10, 2019

Features

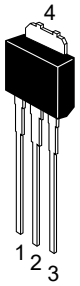
- $I_{T\,(AV)}$: 5 A
- V_{DRM} : 600 V
- I_{GT}: 100 µA
- Planar Passivation Type
- RoHS Compliant

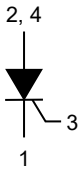
Outline

RENESAS Package code: PRSS0004ZG-A (Package name: MP-3A)



PRSS0004ZD-D (Package name: DPAK(L)-(3))





1. Cathode
2. Anode
3. Gate
4. Anode

Application

Switching mode power supply, igniter, pulse generator, electric tools, etc.

Maximum Ratings

Parameter	Symbol	Voltage class	Unit
		12	
Repetitive peak reverse voltage	V_{RRM}	600	V
Non-repetitive peak reverse voltage	V_{RSM}	720	V
DC reverse voltage	$V_{R(DC)}$	480	V
Repetitive peak off-state voltage Note1	V_{DRM}	600	V
DC off-state voltage Note1	$V_{D(DC)}$	480	V

Notes: 1. With gate to cathode resistance R_{GK}=220 Ω

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_{T\ (RMS)}$	7.8	A	
Average on-state current	$I_{T\ (AV)}$	5	A	Commercial frequency, sine half wave 180°conduction, Ta = 88°C
Surge on-state current	I_{TSM}	90	A	60 Hz sine half wave 1 full cycle, peak value, non-repetitive
I^2t for fusing	I^2t	33	A^2s	Value corresponding to 1 cycle of half wave 60 Hz, surge on-state current
Peak gate power dissipation	P_{GM}	0.5	W	
Average gate power dissipation	$P_{G\ (AV)}$	0.1	W	
Peak gate forward voltage	V_{FGM}	6	V	
Peak gate reverse voltage	V_{RGM}	6	V	
Peak gate forward current	I_{FGM}	0.3	A	
Junction temperature	Tj	–40 to +125	°C	
Storage temperature	Tstg	–40 to +125	°C	

Electrical Characteristics

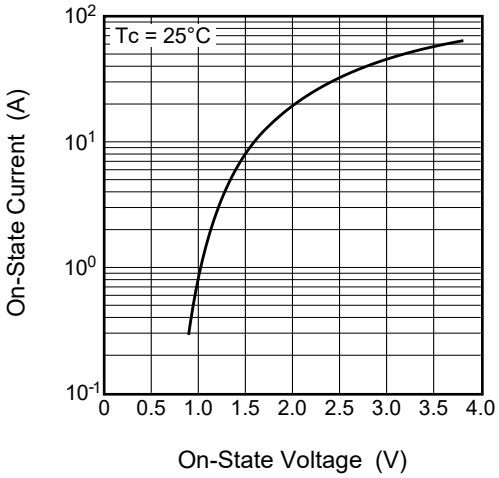
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak reverse current	I_{RRM}	—	—	1.0	mA	Tj = 125°C, V_{RRM} applied, R_{GK} = 220 Ω
Repetitive peak off-state current	I_{DRM}	—	—	1.0	mA	Tj = 125°C, V_{DRM} applied, R_{GK} = 220 Ω
On-state voltage	V_{TM}	—	—	1.8	V	Tc = 25°C, I_{TM} = 15 A, instantaneous value
Gate trigger voltage	V_{GT}	—	—	0.8	V	Tj = 25°C, V_D = 6 V, I_T = 0.1 A
Gate non-trigger voltage	V_{GD}	0.1	—	—	V	Tj = 125°C, V_D = 1/2 V_{DRM}, R_{GK} = 220 Ω
Gate trigger current	I_{GT}	1 Note3	—	100 Note3	μA	Tj = 25°C, V_D = 6 V, I_T = 0.1 A
Holding current	I_H	—	3.5	—	mA	Tj = 25°C, V_D = 12 V, R_{GK} = 220 Ω
Thermal resistance	$R_{th\ (j-c)}$	—	—	3.0	°C/W	Junction to case Note2

Notes: 2. The measurement point for case temperature is at anode tab.

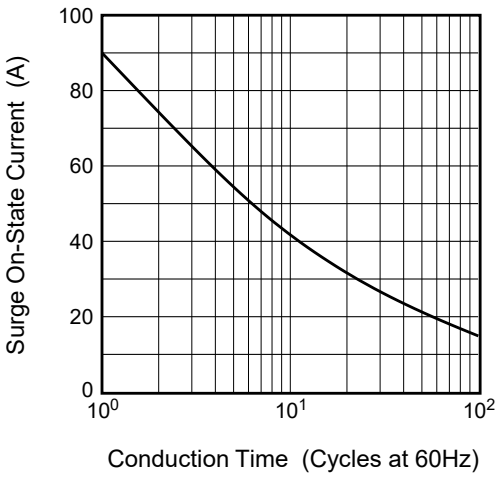
3. If special values of I_{GT} are required, please refer to the ordering information. The above values do not include the current flowing through the 220 Ω resistance between the gate and cathode.

Performance Curves

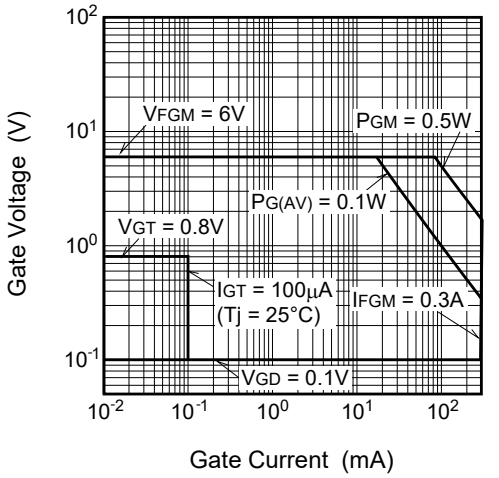
Maximum On-State Characteristics



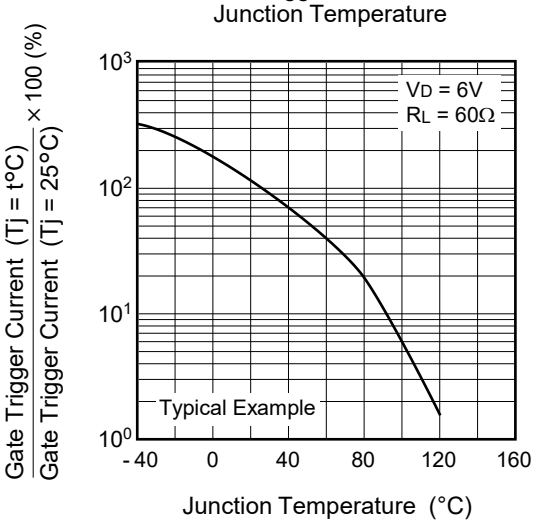
Rated Surge On-State Current



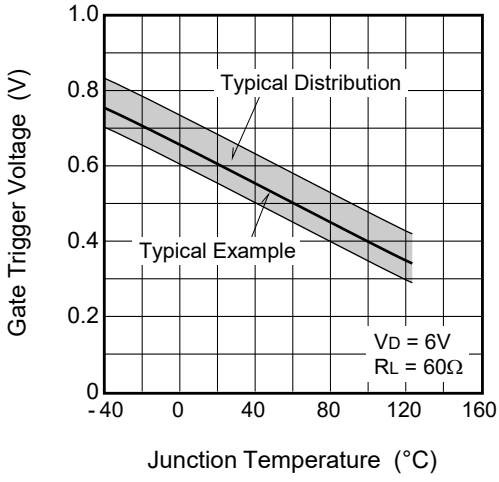
Gate Characteristics



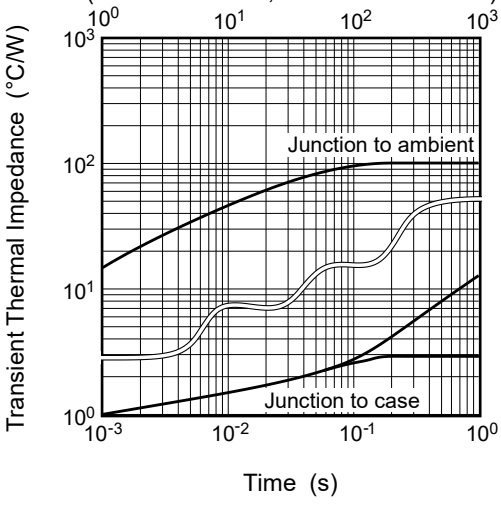
Gate Trigger Current vs.
Junction Temperature



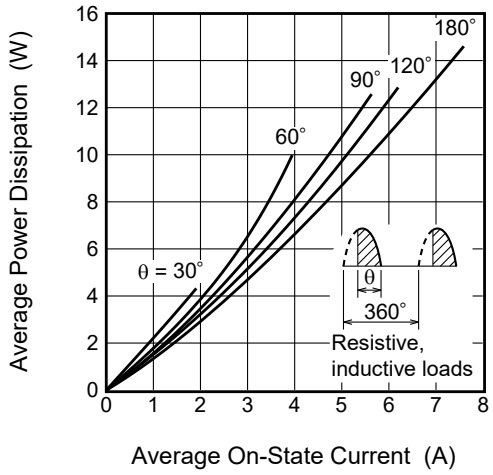
Gate Trigger Voltage vs.
Junction Temperature



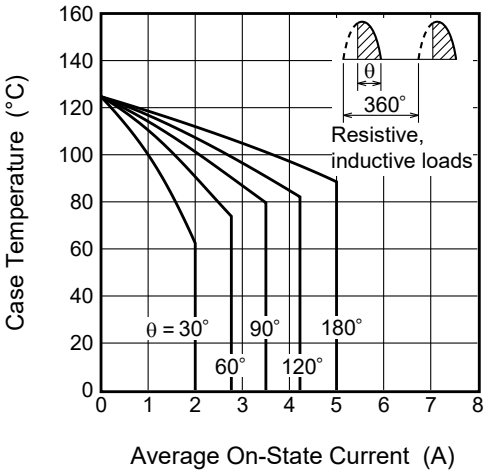
Maximum Transient Thermal
Impedance Characteristics
(Junction to case, Junction to ambient)



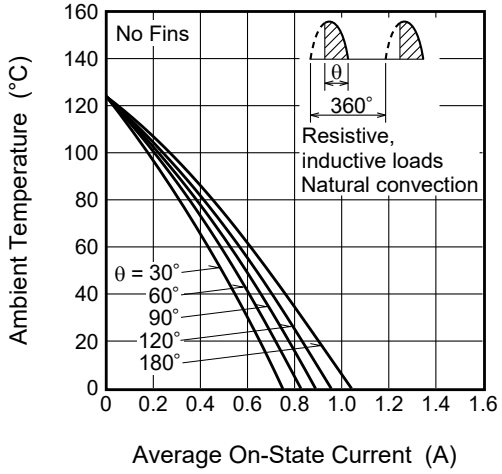
Maximum Average Power Dissipation
(Single-Phase Half Wave)



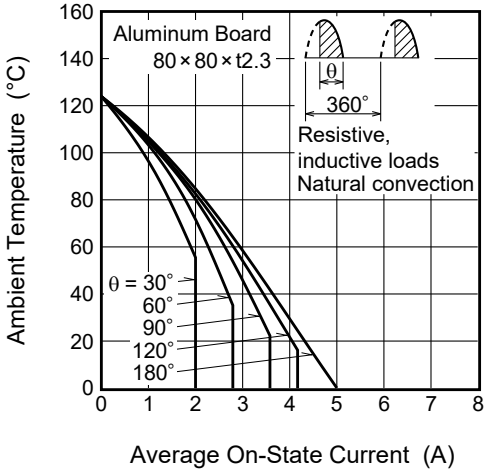
Allowable Case Temperature vs.
Average On-State Current
(Single-Phase Half Wave)



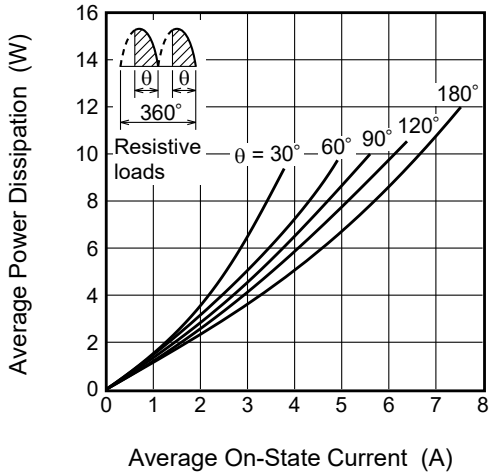
Allowable Ambient Temperature vs.
Average On-State Current
(Single-Phase Half Wave)



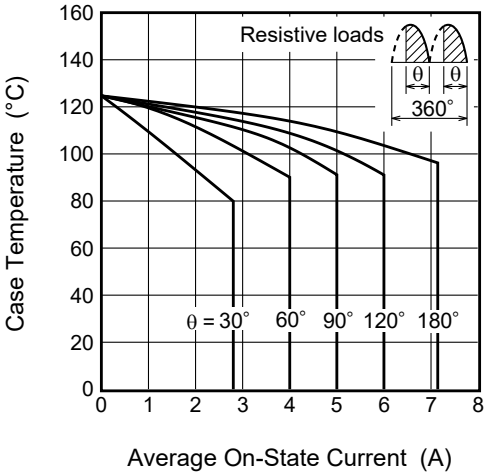
Allowable Ambient Temperature vs.
Average On-State Current
(Single-Phase Half Wave)



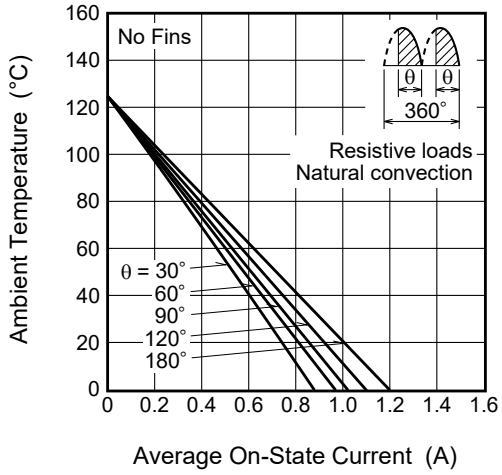
Maximum Average Power Dissipation
(Single-Phase Full Wave)



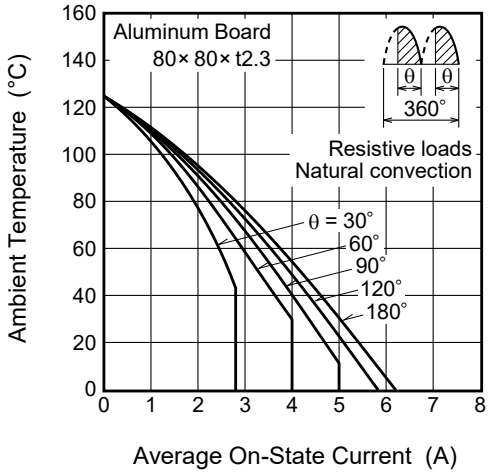
Allowable Case Temperature vs.
Average On-State Current
(Single-Phase Full Wave)



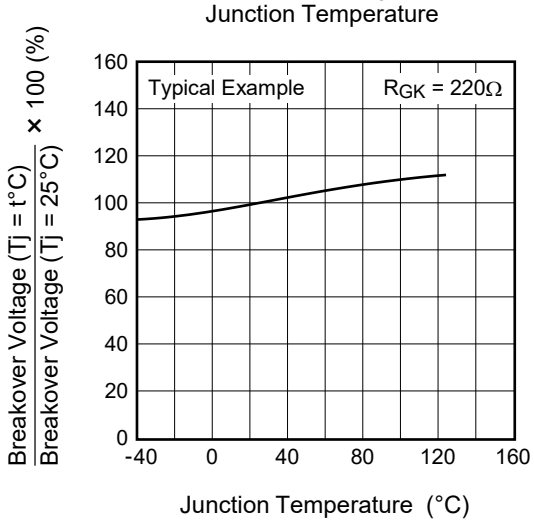
Allowable Ambient Temperature vs.
Average On-State Current
(Single-Phase Full Wave)



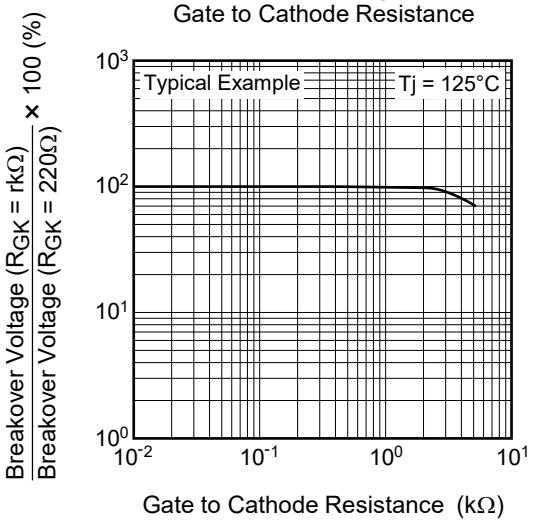
Allowable Ambient Temperature vs.
Average On-State Current
(Single-Phase Full Wave)



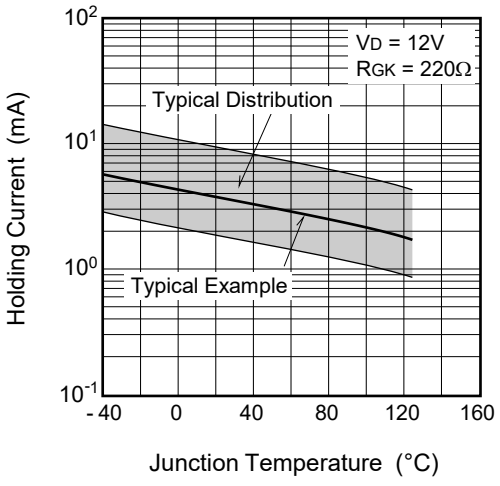
Breakover Voltage vs.
Junction Temperature



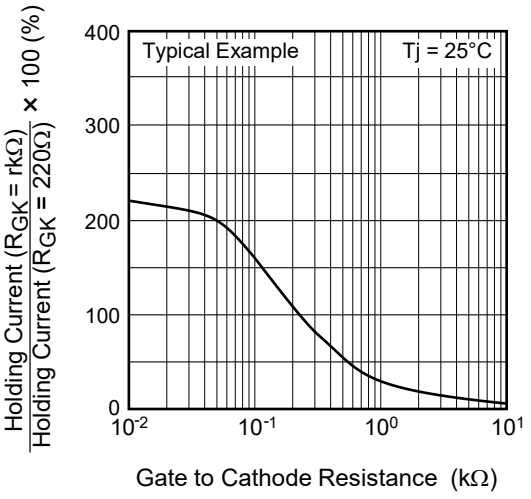
Breakover Voltage vs.
Gate to Cathode Resistance



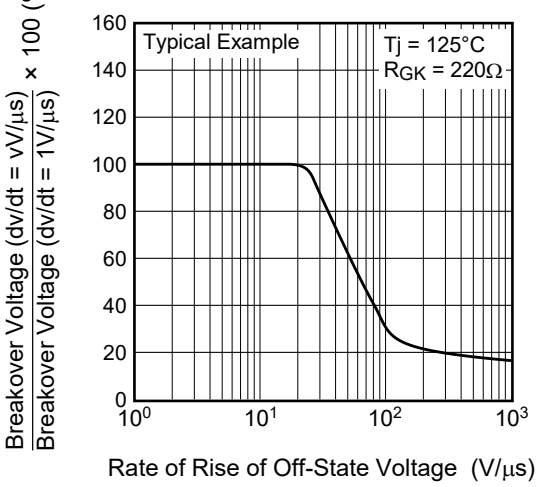
Holding Current vs.
Junction Temperature



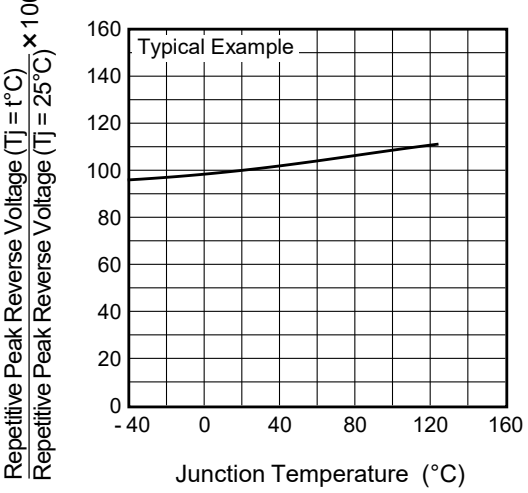
Holding Current vs.
Gate to Cathode Resistance



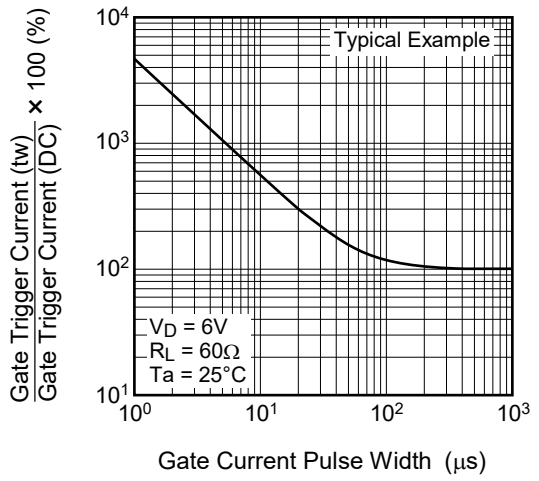
Breakover Voltage vs.
Rate of Rise of Off-State Voltage



Repetitive Peak Reverse Voltage vs.
Junction Temperature



Gate Trigger Current vs.
Gate Current Pulse Width

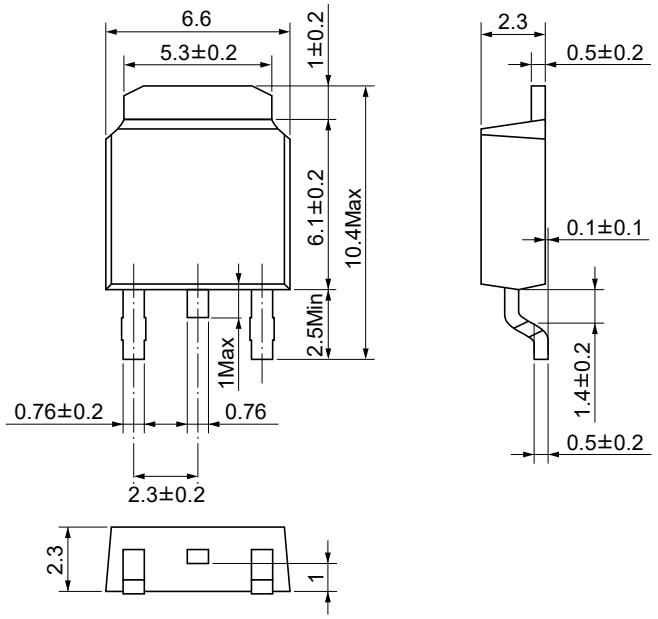


Package Dimensions

Package Name: MP-3A

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
MP-3A	SC-63	PRSS0004ZG-A	TMP3	0.32 g

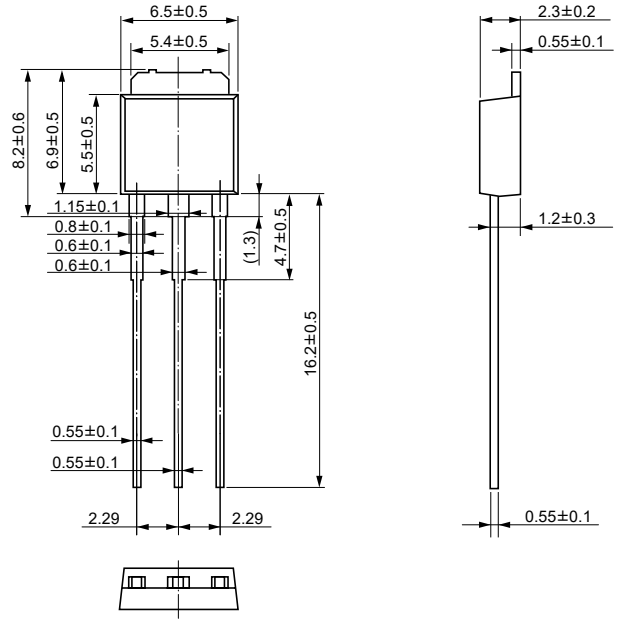
Unit: mm



Package Name: DPAK(L)-(3)

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
DPAK(L)-(3)	-	PRSS0004ZD-D	DPAK(L)-(3)	0.36 g

Unit: mm



Ordering Information

Orderable Part Number	Package	Packing Note4	Quantity	Remark	I_{GT} Note3
CR5AS-12A-T13#B01	MP-3A	Embossed tape	3000 pcs.		1-100 μA
CR5AS-12A-T13#C04	MP-3A	Embossed tape	3000 pcs.		20-50 μA
CR5AS-12A-T13#C05	MP-3A	Embossed tape	3000 pcs.		20-100 μA
CR5AS-12A#B01	MP-3A	Tube	75 pcs.	Tube packing is to be abolished.	1-100 μA
CR5AS-12A#C04	MP-3A	Tube	75 pcs.	Tube packing is to be abolished.	20-50 μA
CR5AS-12A#C05	MP-3A	Tube	75 pcs.	Tube packing is to be abolished.	20-100 μA
CR5AS-12A-A1#B00	DPAK(L)-(3)	Tube	80 pcs.		1-100 μA
CR5AS-12A-BA1#B00	DPAK(L)-(3)	Tube	80 pcs.		20-50 μA
CR5AS-12A-EA1#B00	DPAK(L)-(3)	Tube	80 pcs.		20-100 μA

Note: 4. Please confirm the specification about the shipping in detail.

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(Rev.4.0-1 November 2017)

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Colophon 7.2