

CR5AS-12A

600V - 5A - Thyristor

Medium Power Use

R07DS0332EJ0301

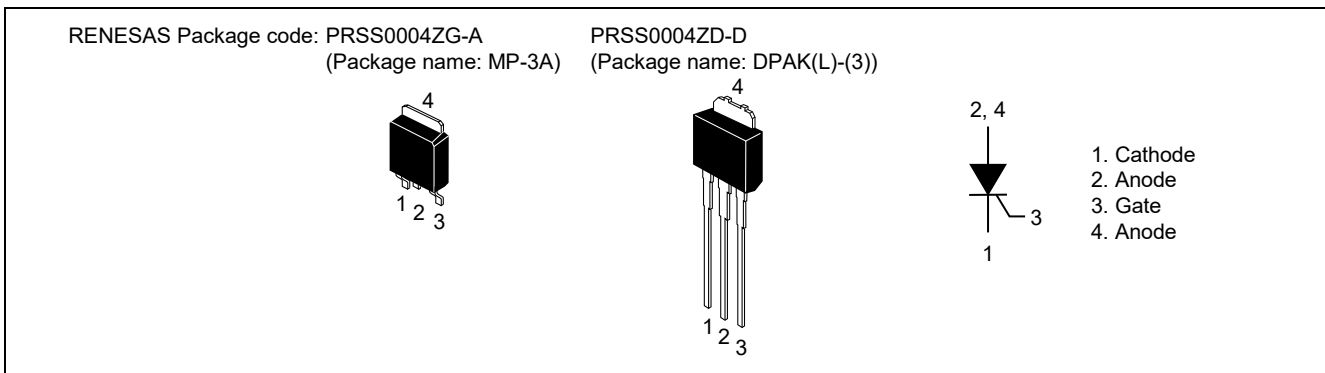
Rev.3.01

May. 10, 2019

Features

- $I_T(AV)$: 5 A
- V_{DRM} : 600 V
- I_{GT} : 100 μ A
- Planar Passivation Type
- RoHS Compliant

Outline



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 $R_{GK}=220 \Omega$

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, $T_a = 88^\circ\text{C}$
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	T_j	-40 to +125	$^\circ\text{C}$	
Storage temperature	T_{stg}	-40 to +125	$^\circ\text{C}$	

Electrical Characteristics

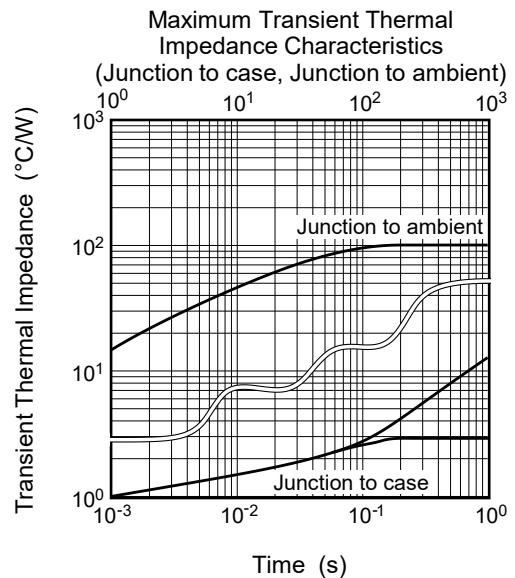
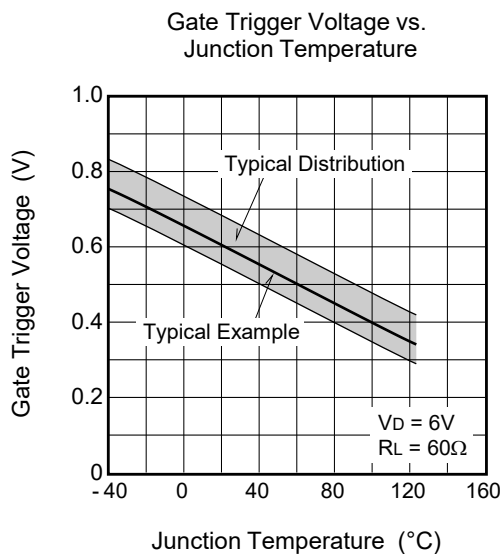
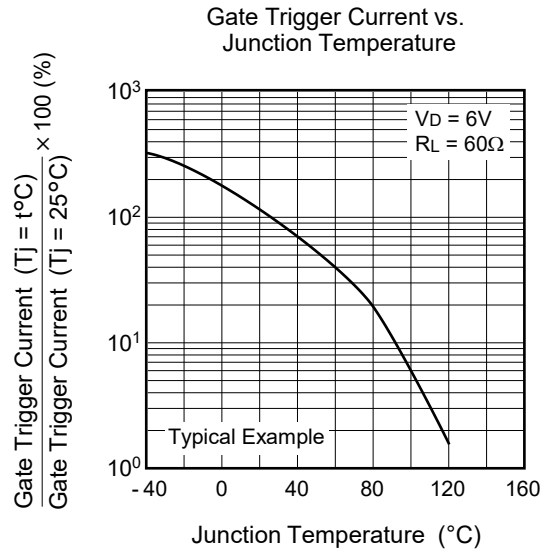
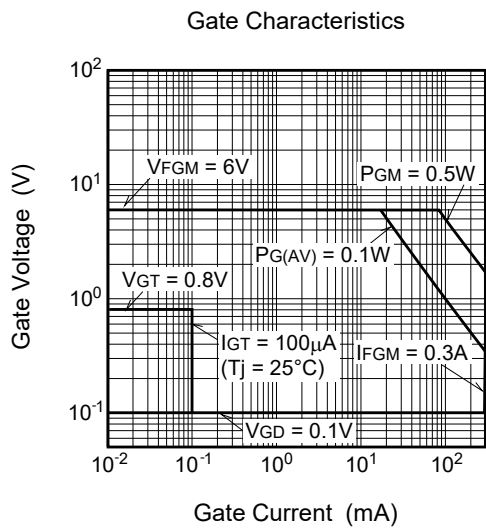
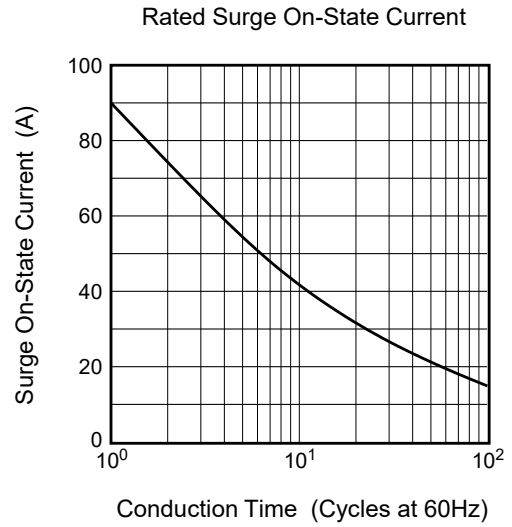
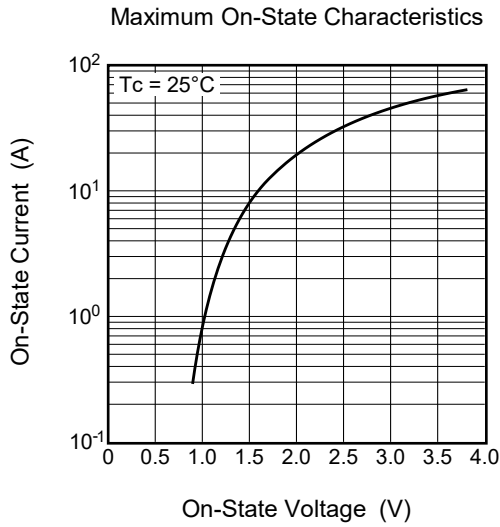
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak reverse current	I_{RRM}	—	—	1.0	mA	$T_j = 125^\circ\text{C}$, V_{RRM} applied, $R_{GK} = 220\ \Omega$
Repetitive peak off-state current	I_{DRM}	—	—	1.0	mA	$T_j = 125^\circ\text{C}$, V_{DRM} applied, $R_{GK} = 220\ \Omega$
On-state voltage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

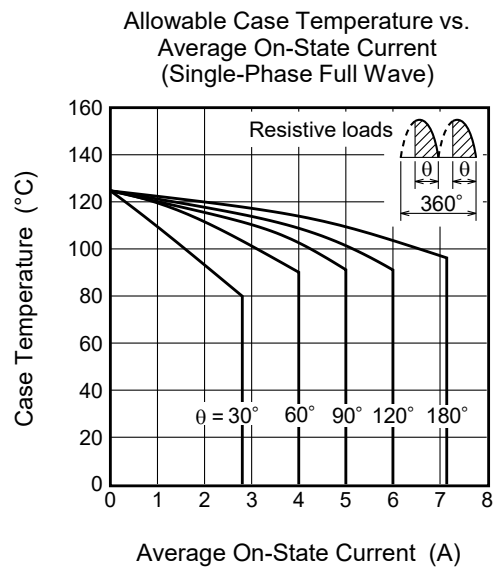
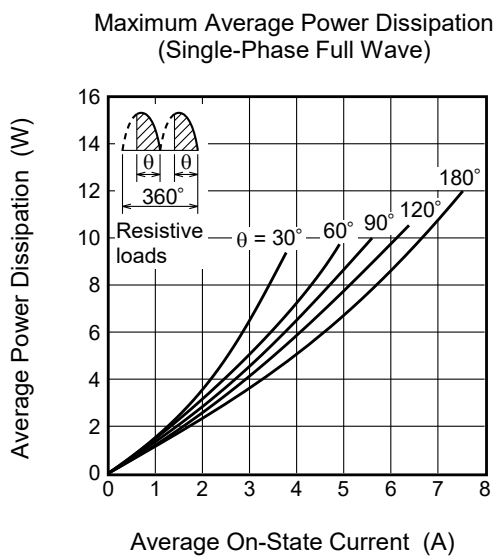
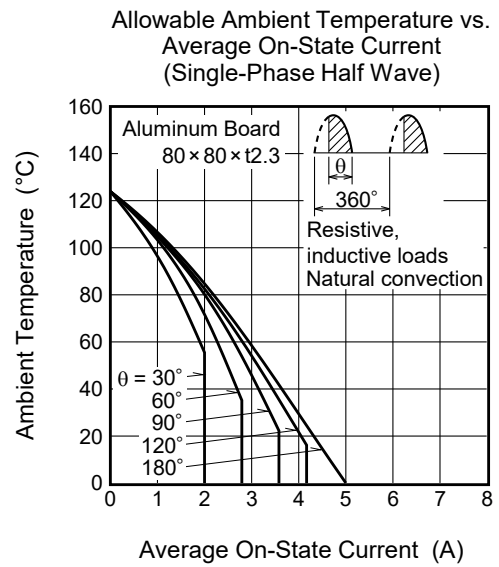
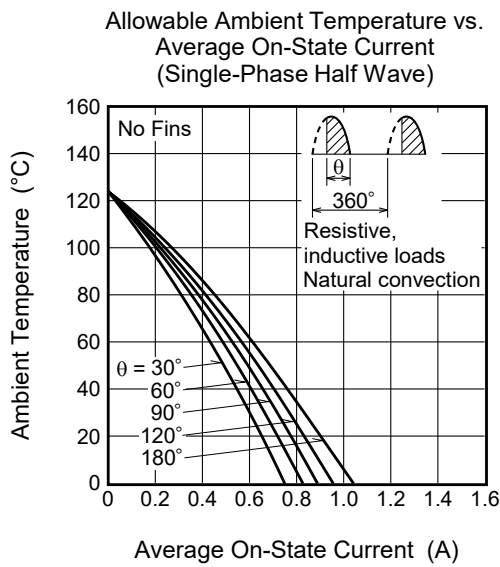
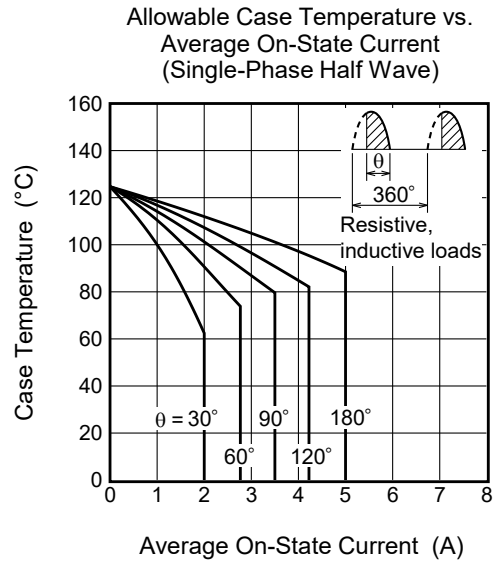
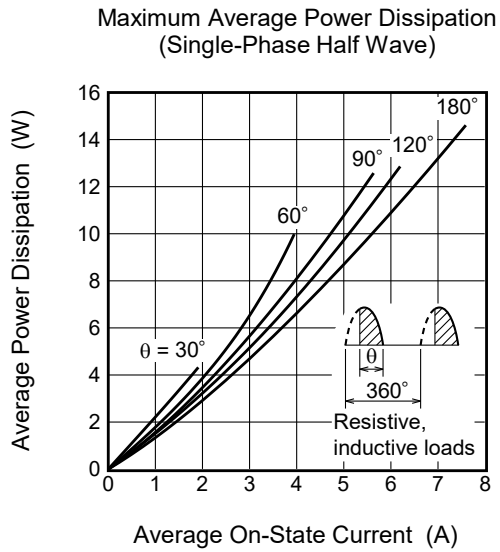
Notes: 2. The measurement point for case temperature is at anode tab.

3. If special values of I_{GT} are required, please refer to the ordering information.

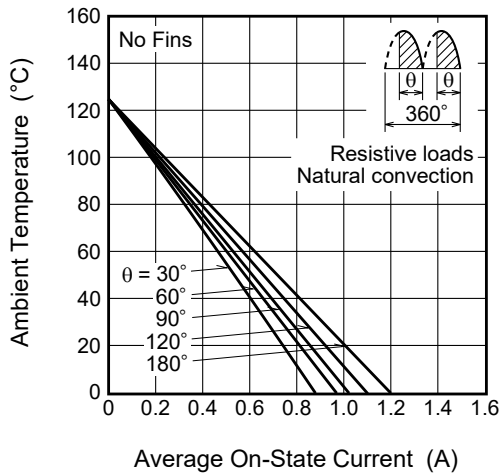
The above values do not include the current flowing through the $220\ \Omega$ resistance between the gate and cathode.

Performance Curves

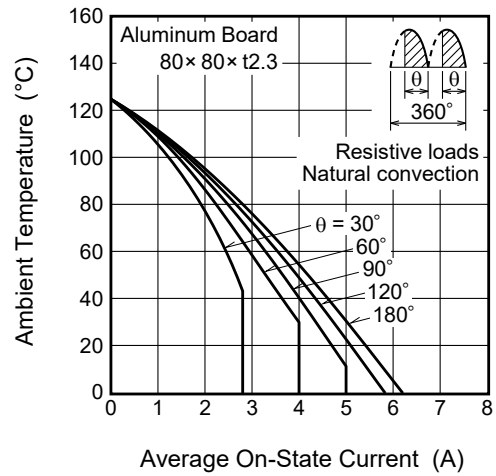




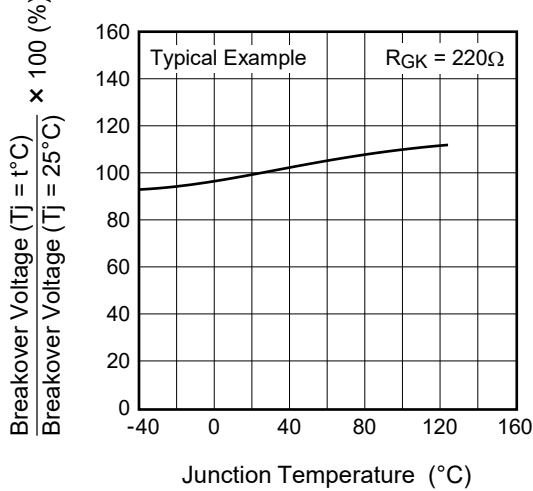
Allowable Ambient Temperature vs. Average On-State Current (Single-Phase Full Wave)



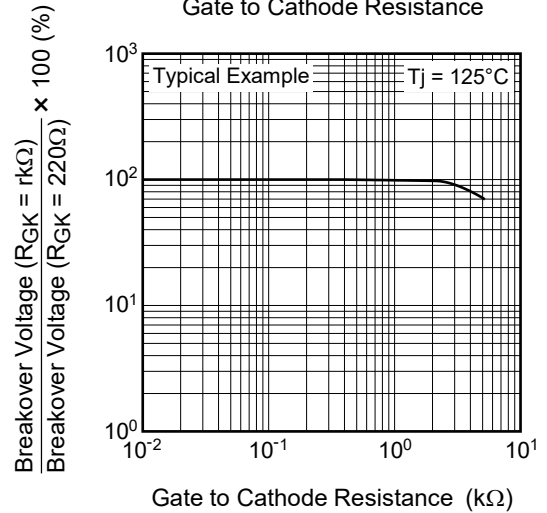
Allowable Ambient Temperature vs. Average On-State Current (Single-Phase Full Wave)



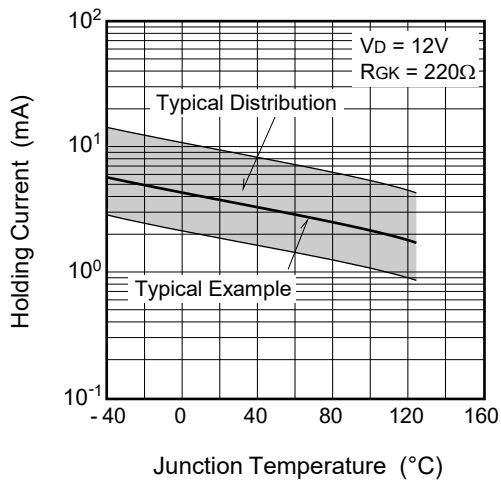
Breakover Voltage vs. Junction Temperature



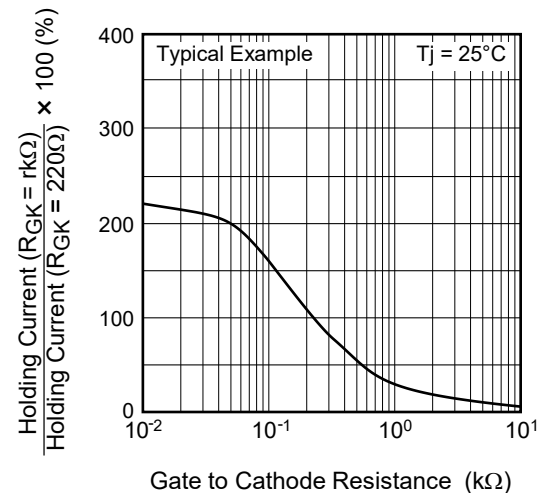
Breakover Voltage vs. Gate to Cathode Resistance

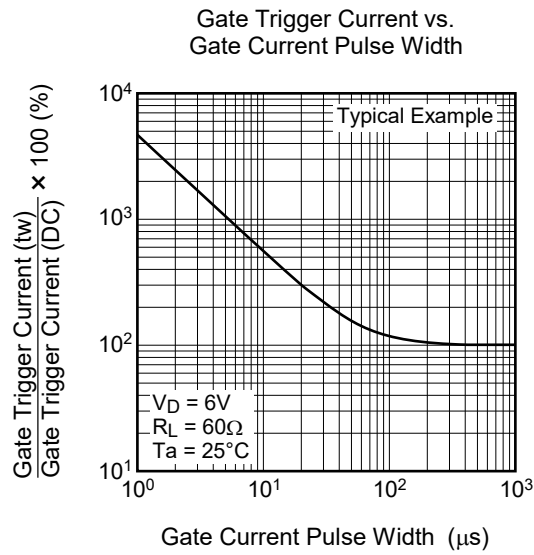
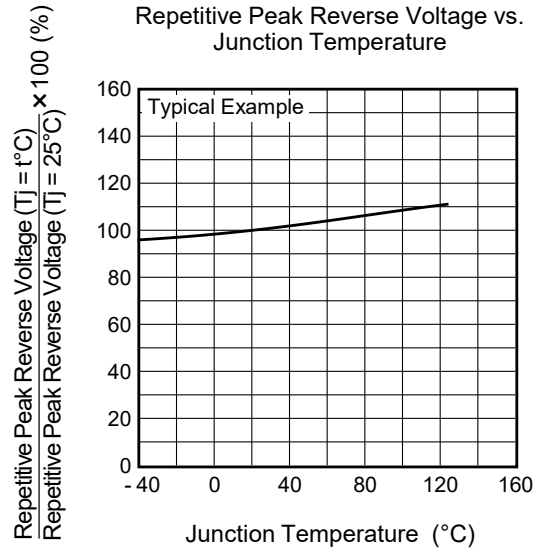
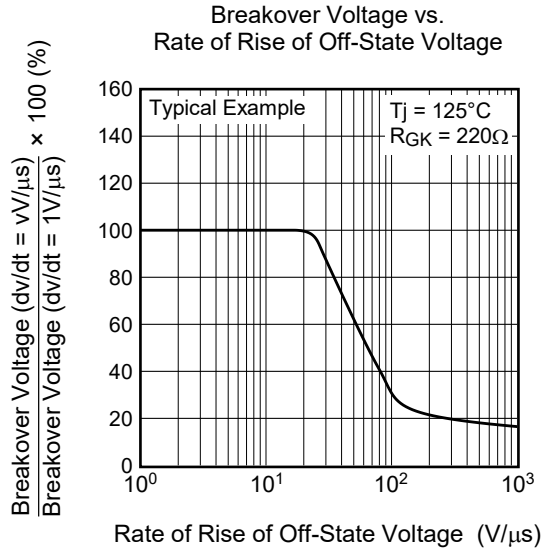


Holding Current vs. Junction Temperature



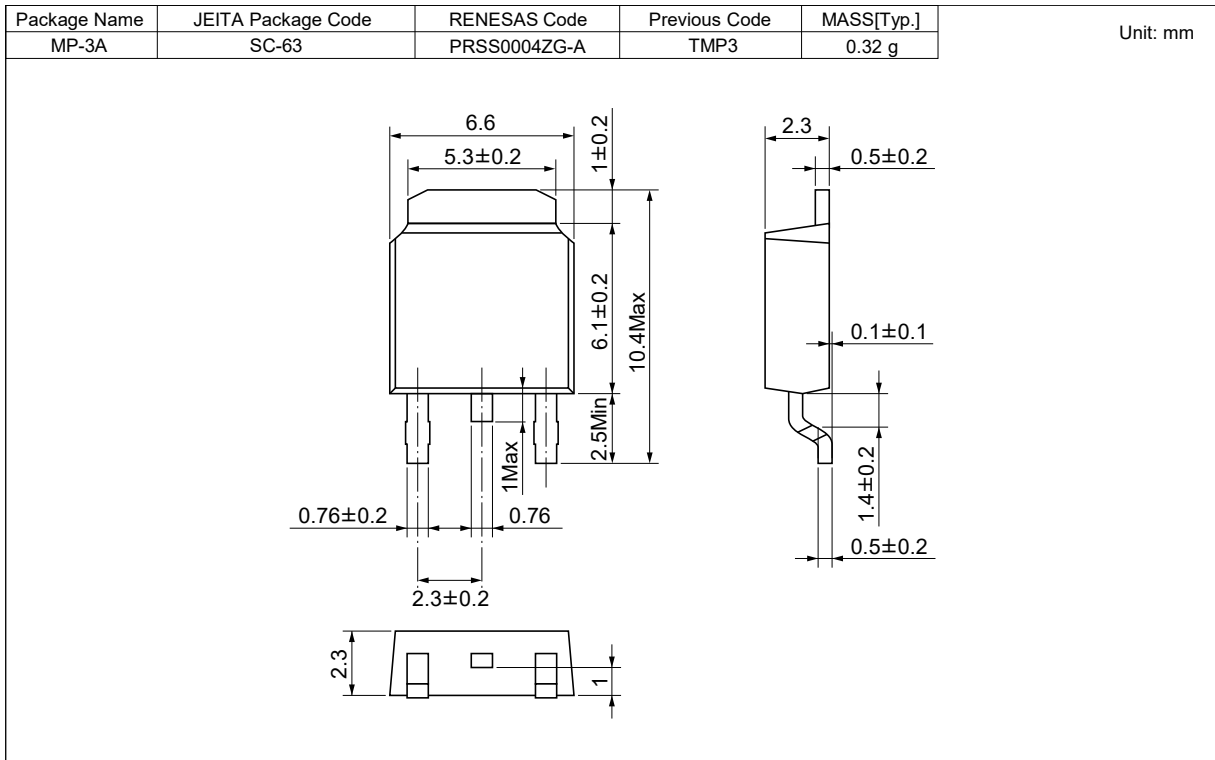
Holding Current vs. Gate to Cathode Resistance



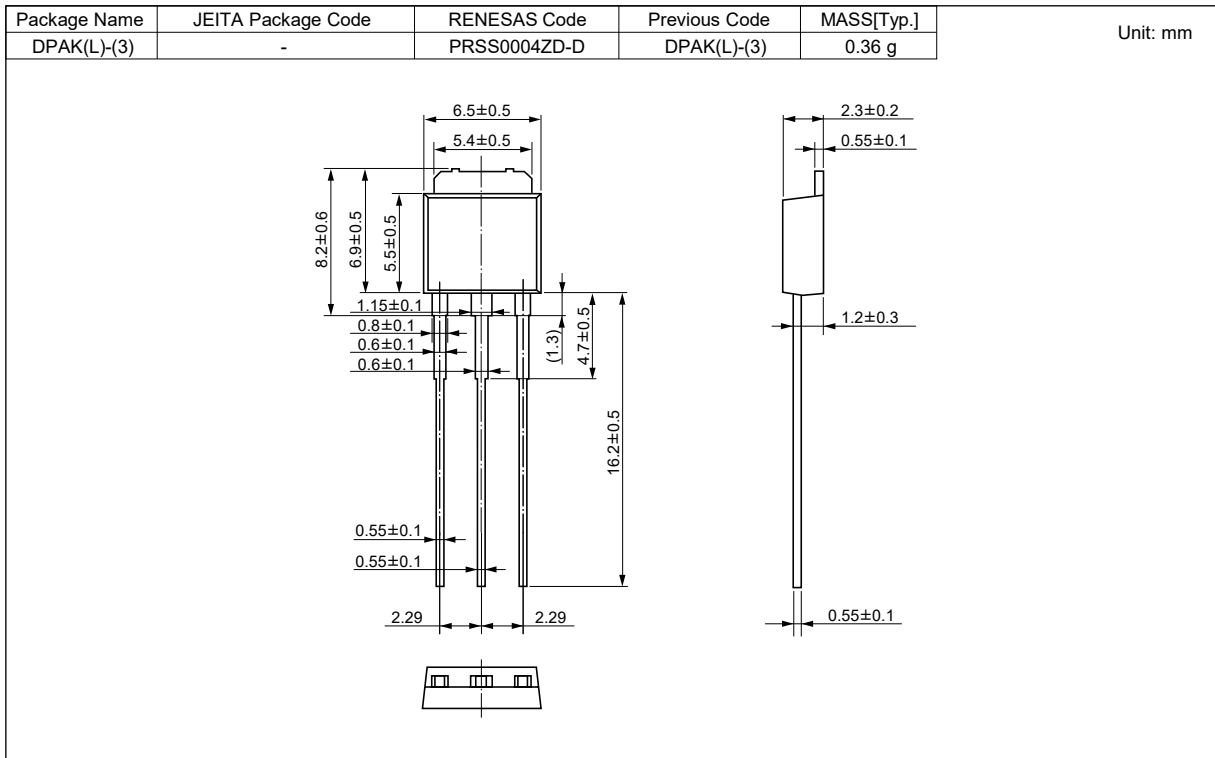


Package Dimensions

Package Name: MP-3A



Package Name: DPAK(L)-(3)



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 μ A
CR5AS-12A-T13#C04	MP-3A	Embossed tape	3000 pcs.		20-50 μ A
CR5AS-12A-T13#C05	MP-3A	Embossed tape	3000 pcs.		20-100 μ A
CR5AS-12A#B01	MP-3A	Tube	75 pcs.	Tube packing is to be abolished.	1-100 μ A
CR5AS-12A#C04	MP-3A	Tube	75 pcs.	Tube packing is to be abolished.	20-50 μ A
CR5AS-12A#C05	MP-3A	Tube	75 pcs.	Tube packing is to be abolished.	20-100 μ A
CR5AS-12A-A1#B00	DPAK(L)-(3)	Tube	80 pcs.		1-100 μ A
CR5AS-12A-BA1#B00	DPAK(L)-(3)	Tube	80 pcs.		20-50 μ A
CR5AS-12A-EA1#B00	DPAK(L)-(3)	Tube	80 pcs.		20-100 μ A

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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