

# CR5AS-12A

600V - 5A - Thyristor

Medium Power Use

R07DS0332EJ0301

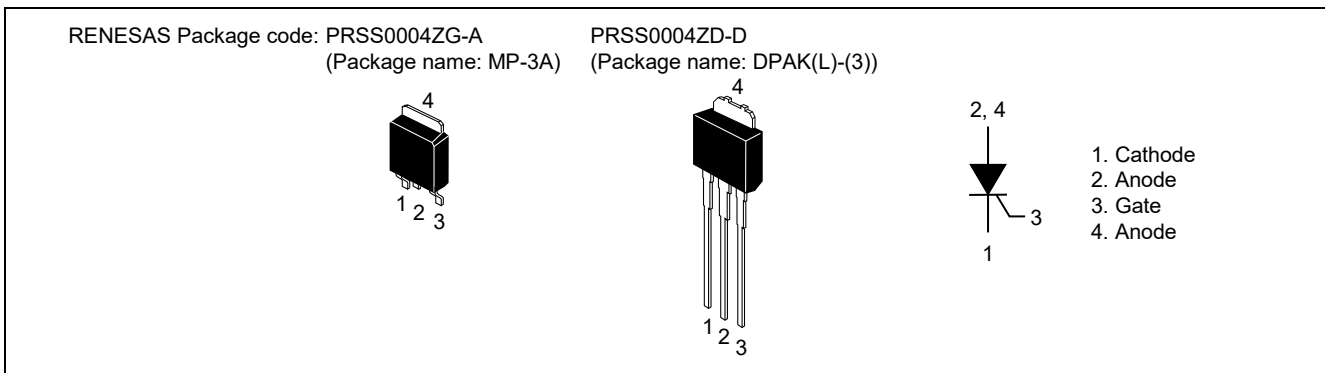
Rev.3.01

May. 10, 2019

## Features

- $I_T(AV)$  : 5 A
- $V_{DRM}$  : 600 V
- $I_{GT}$ : 100  $\mu$ 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 <sup>Note1</sup>	$V_{DRM}$	600	V
DC off-state voltage <sup>Note1</sup>	$V_{D(DC)}$	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	$\text{A}^2\text{s}$	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

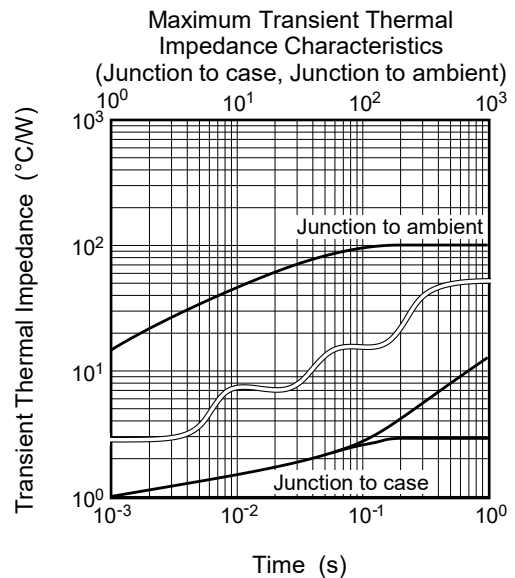
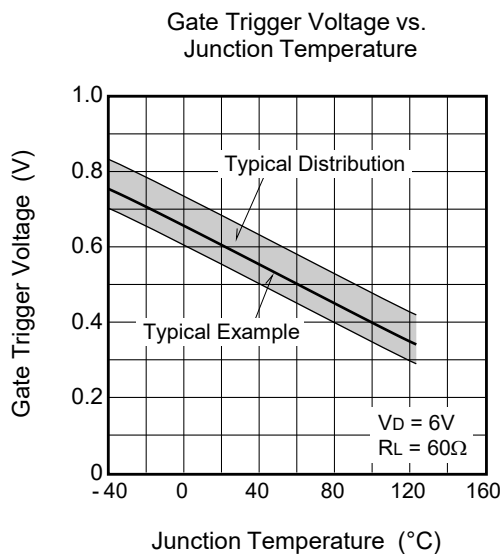
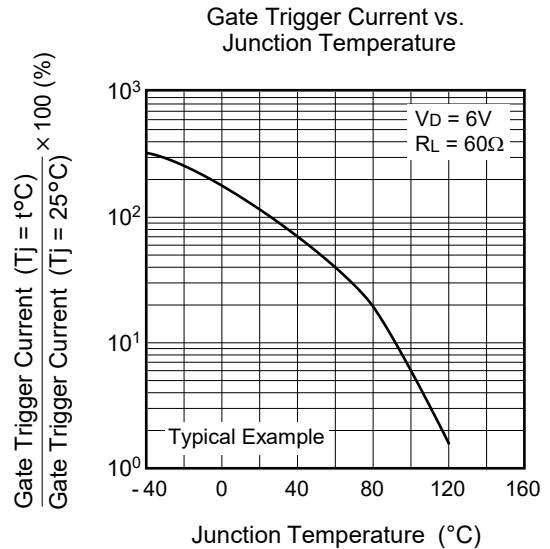
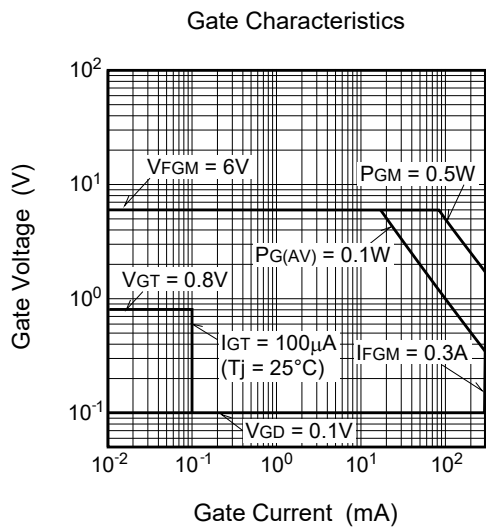
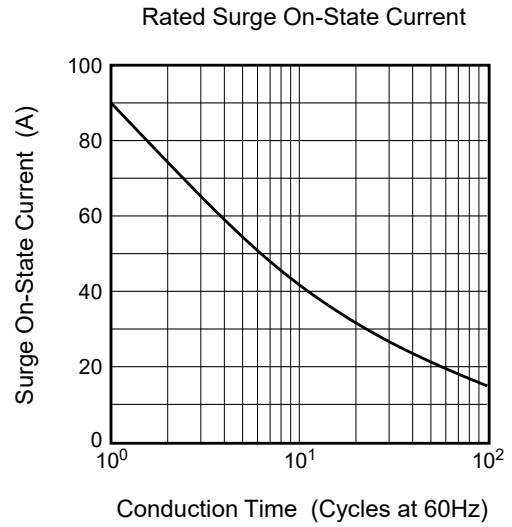
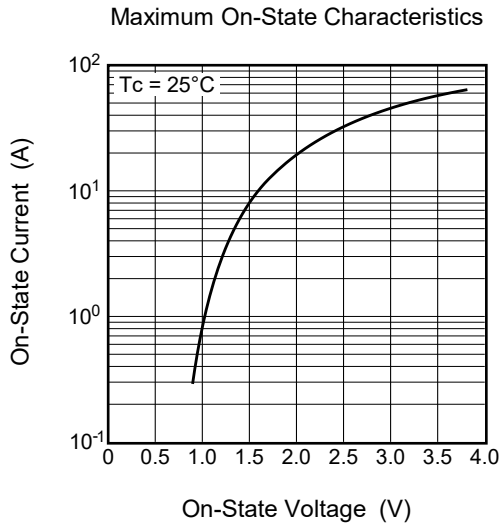
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak reverse current	$I_{RRM}$	—	—	1.0	mA	$T_j = 125^\circ\text{C}$ , $V_{RRM}$ applied, $R_{GK} = 220\ \Omega$
Repetitive peak off-state current	$I_{DRM}$	—	—	1.0	mA	$T_j = 125^\circ\text{C}$ , $V_{DRM}$ applied, $R_{GK} = 220\ \Omega$
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 <sup>Note3</sup>	—	100 <sup>Note3</sup>	$\mu\text{A}$	$T_j = 25^\circ\text{C}$ , $V_D = 6\ \text{V}$ , $I_T = 0.1\ \text{A}$
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 <sup>Note2</sup>

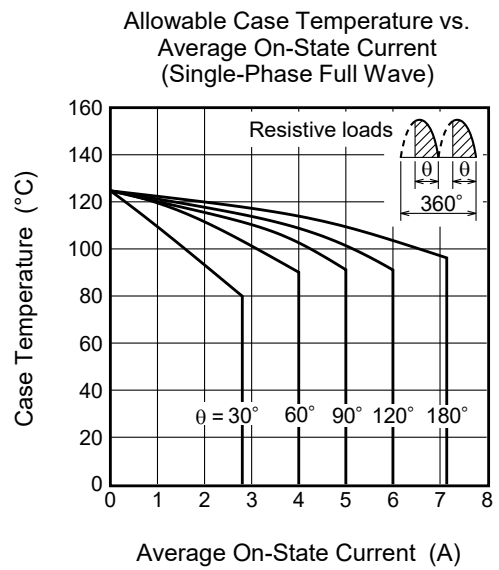
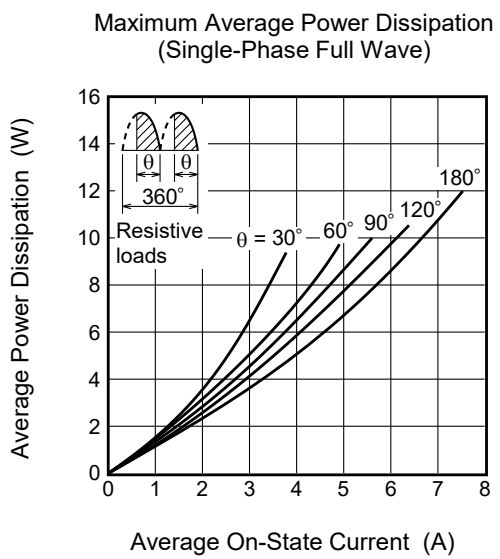
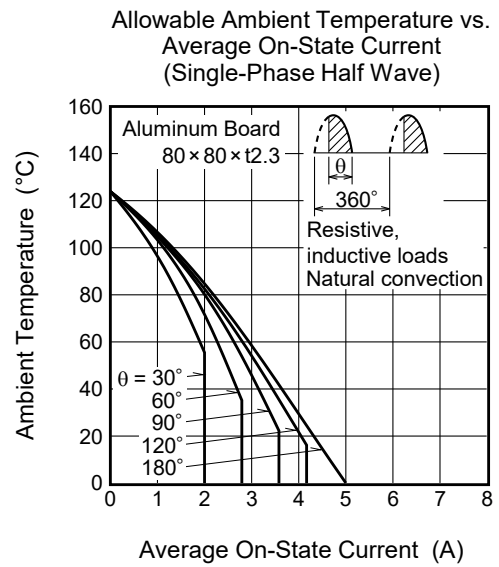
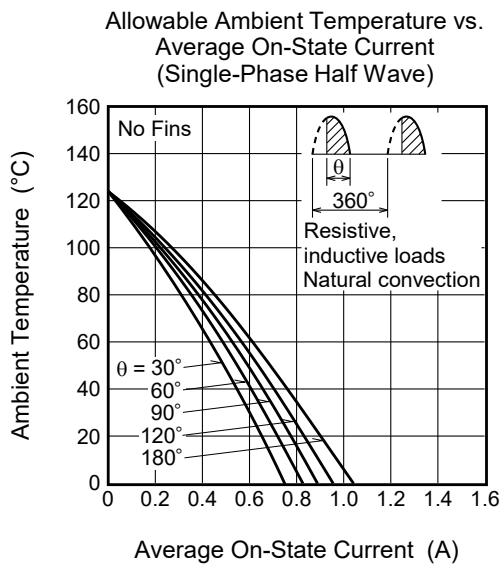
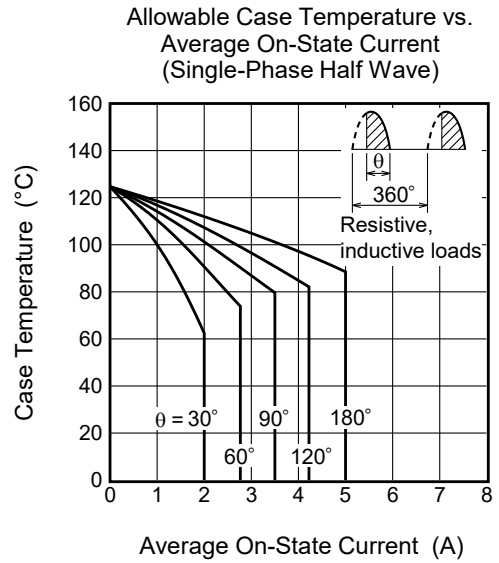
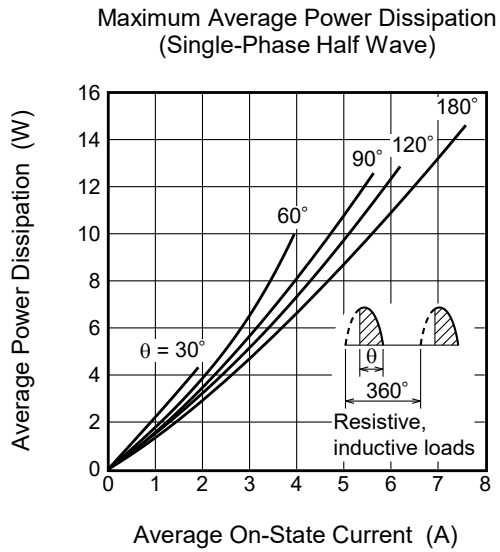
Notes: 2. The measurement point for case temperature is at anode tab.

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

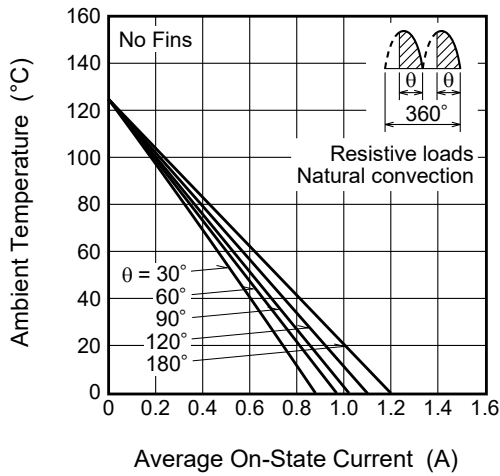
The above values do not include the current flowing through the  $220\ \Omega$  resistance between the gate and cathode.

Performance Curves

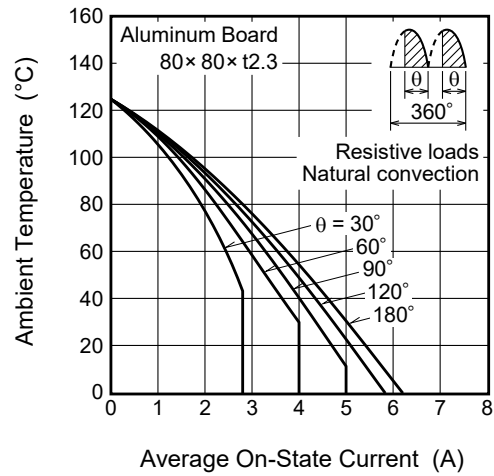




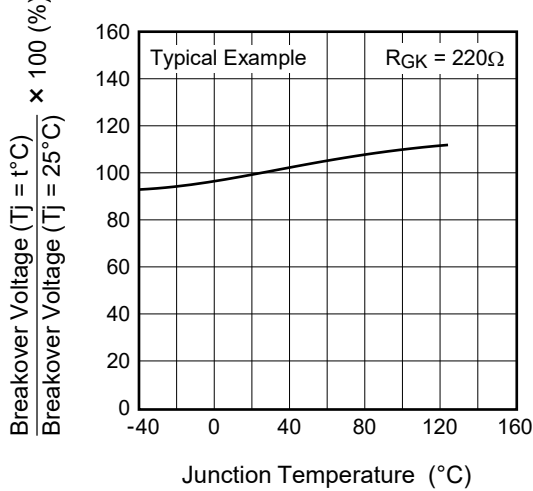
Allowable Ambient Temperature vs. Average On-State Current (Single-Phase Full Wave)



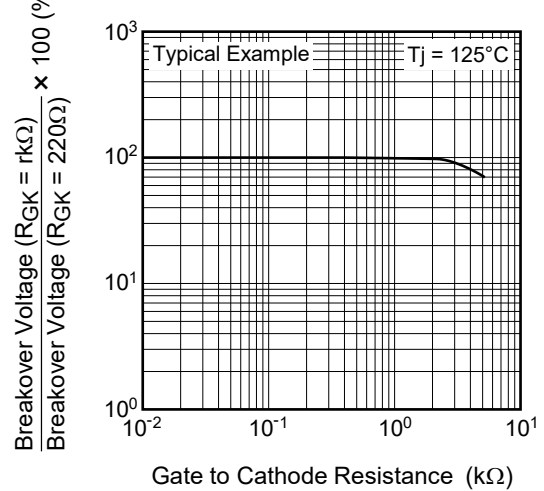
Allowable Ambient Temperature vs. Average On-State Current (Single-Phase Full Wave)



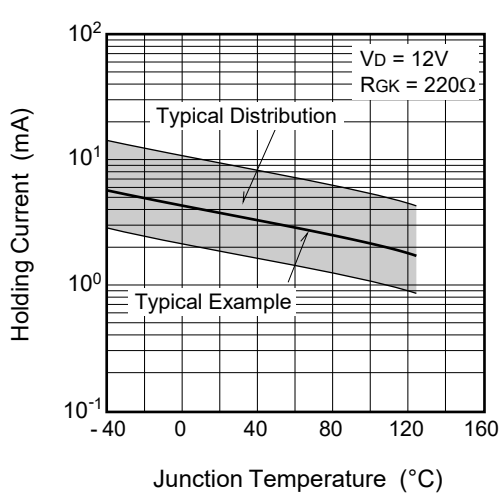
Breakover Voltage vs. Junction Temperature



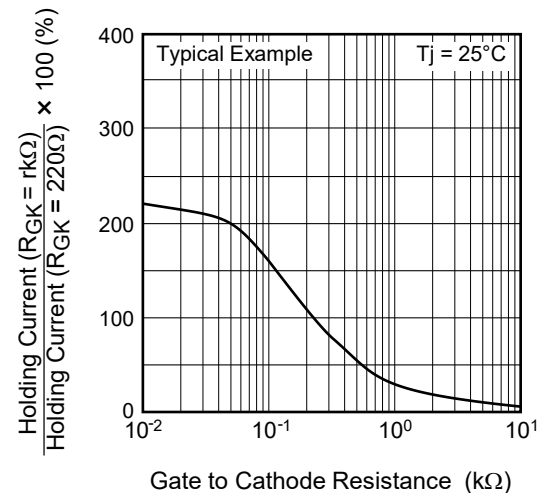
Breakover Voltage vs. Gate to Cathode Resistance

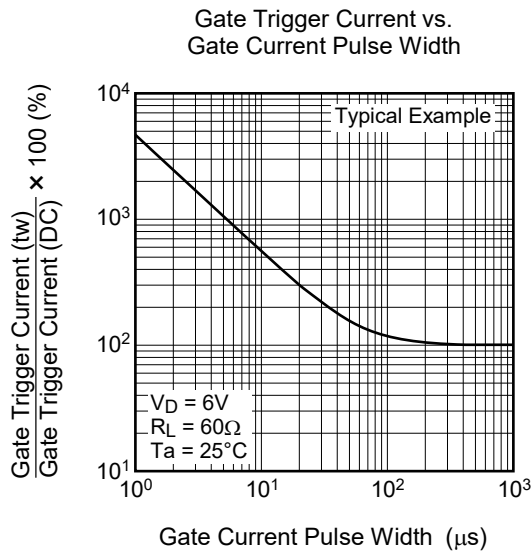
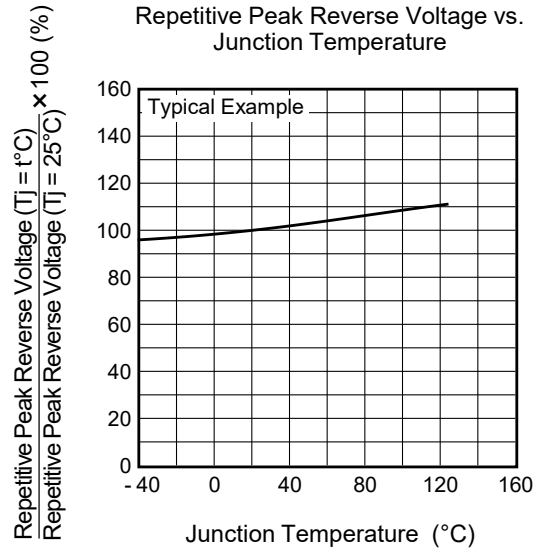
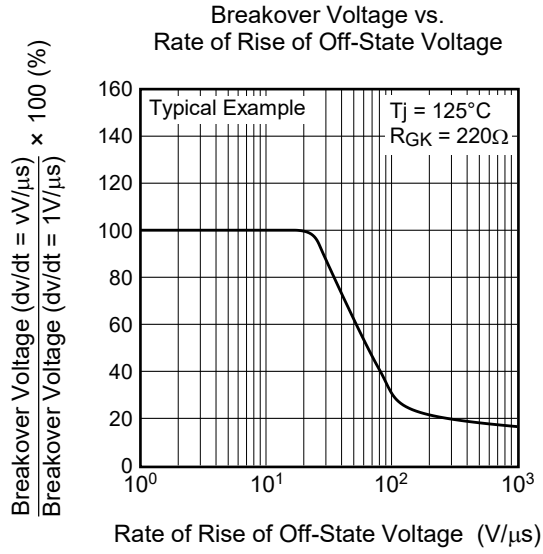


Holding Current vs. Junction Temperature



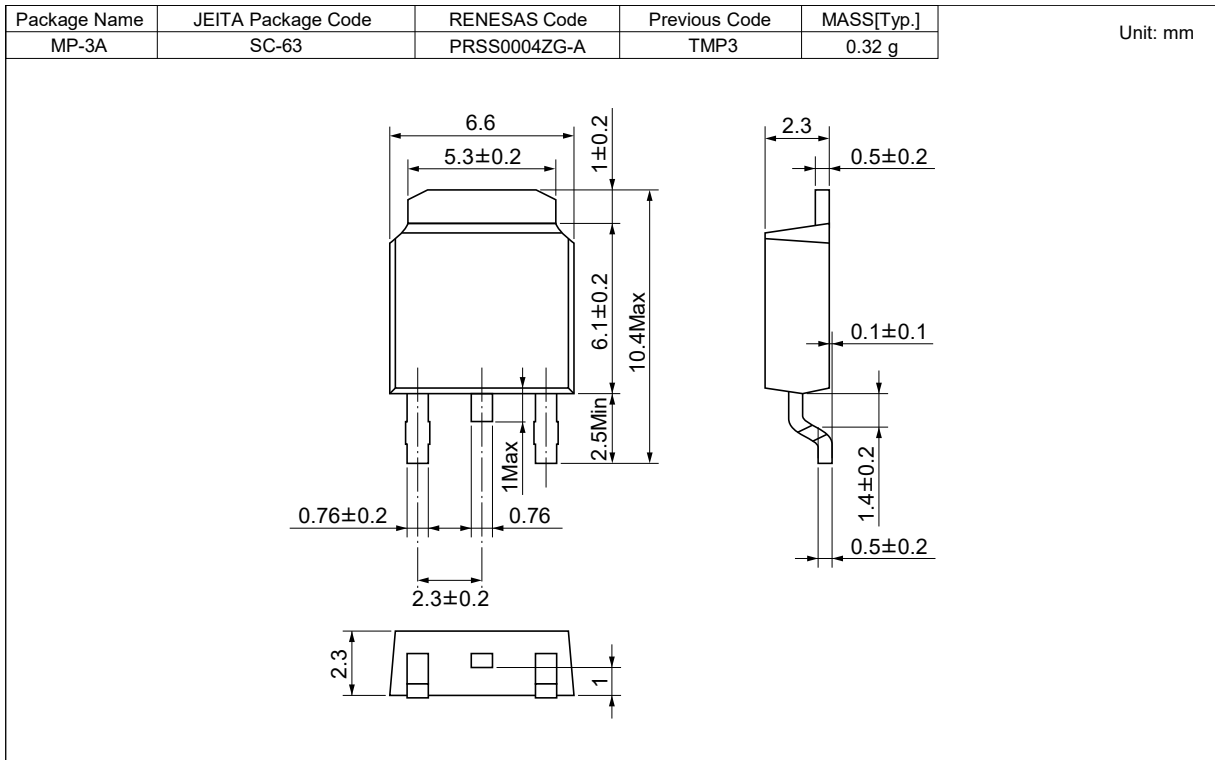
Holding Current vs. Gate to Cathode Resistance



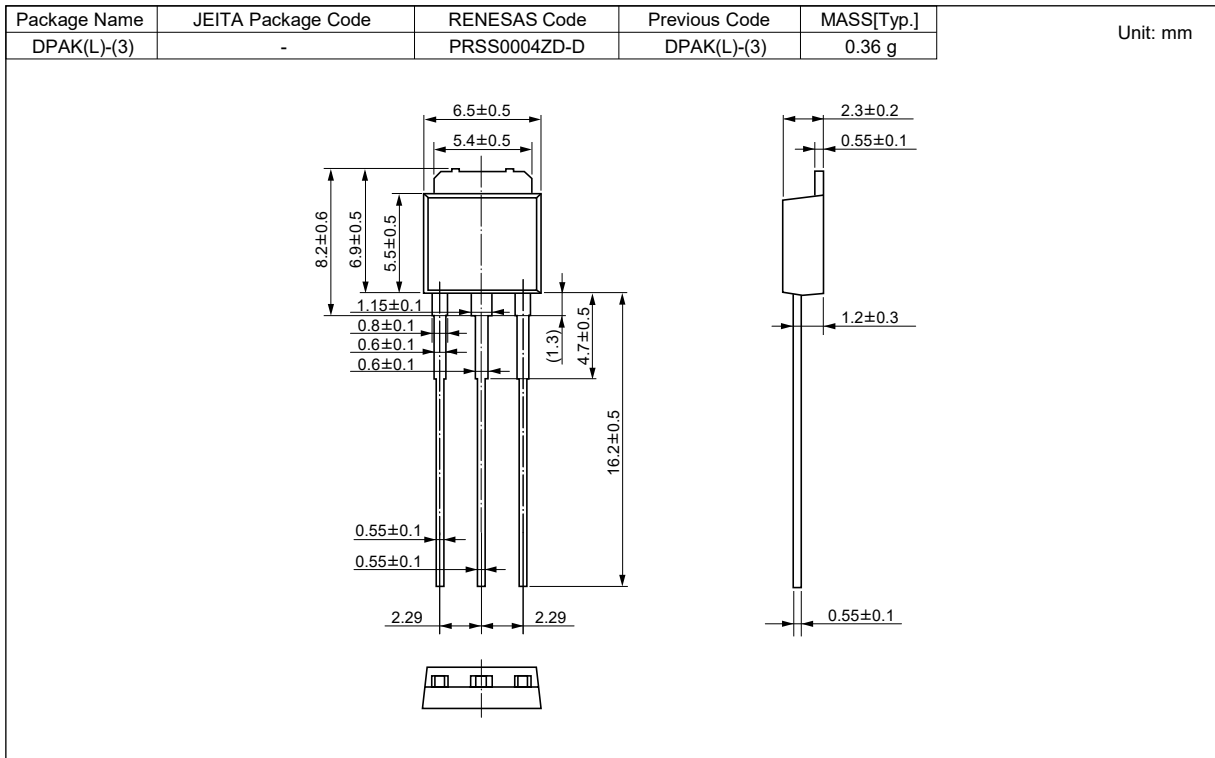


### Package Dimensions

#### Package Name: MP-3A



#### Package Name: DPAK(L)-(3)



## Ordering Information

Orderable Part Number	Package	Packing <sup>Note4</sup>	Quantity	Remark	I <sub>GT</sub> <sup>Note3</sup>
CR5AS-12A-T13#B01	MP-3A	Embossed tape	3000 pcs.		1-100 $\mu$ A
CR5AS-12A-T13#C04	MP-3A	Embossed tape	3000 pcs.		20-50 $\mu$ A
CR5AS-12A-T13#C05	MP-3A	Embossed tape	3000 pcs.		20-100 $\mu$ A
CR5AS-12A#B01	MP-3A	Tube	75 pcs.	Tube packing is to be abolished.	1-100 $\mu$ A
CR5AS-12A#C04	MP-3A	Tube	75 pcs.	Tube packing is to be abolished.	20-50 $\mu$ A
CR5AS-12A#C05	MP-3A	Tube	75 pcs.	Tube packing is to be abolished.	20-100 $\mu$ A
CR5AS-12A-A1#B00	DPAK(L)-(3)	Tube	80 pcs.		1-100 $\mu$ A
CR5AS-12A-BA1#B00	DPAK(L)-(3)	Tube	80 pcs.		20-50 $\mu$ A
CR5AS-12A-EA1#B00	DPAK(L)-(3)	Tube	80 pcs.		20-100 $\mu$ A

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



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