

CR5AS-12

Thyristor

Medium Power Use

REJ03G0346-0200

Rev.2.00

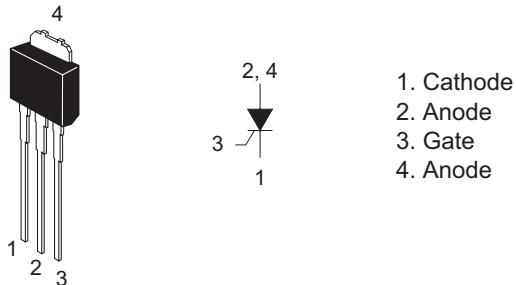
Apr.05.2005

Features

- $I_{T(AV)}$: 5 A
- V_{DRM} : 600 V
- I_{GT} : 100 μ A
- Lead Mounted Type
- Non-Insulated Type
- Glass Passivation Type

Outline

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



Applications

Switching mode power supply, regulator for autocycle, protective circuit for TV sets, VCRs, and printers, igniter for autocycle, electric tool, strobe flasher, and other general purpose control applications

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

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, $T_c = 88^\circ\text{C}$
Surge on-state current	I_{TSM}	90	A	60Hz 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 60Hz, 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	$^\circ\text{C}$	
Mass	—	0.26	g	Typical value

Notes: 1. With gate to cathode resistance $R_{GK} = 220 \Omega$.

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak reverse current	I_{RRM}	—	—	2.0	mA	$T_j = 125^\circ\text{C}$, V_{RRM} applied, $R_{GK} = 220 \Omega$
Repetitive peak off-state current	I_{DRM}	—	—	2.0	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	—	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	$^\circ\text{C/W}$	Junction to case ^{Note2}

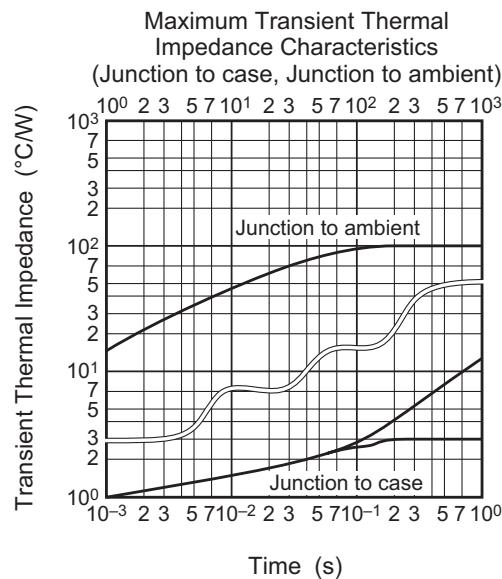
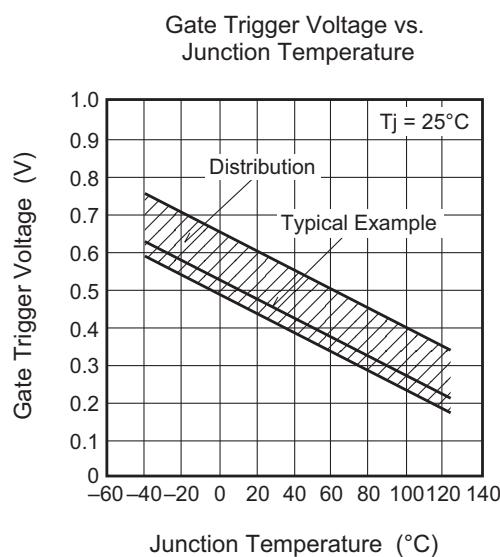
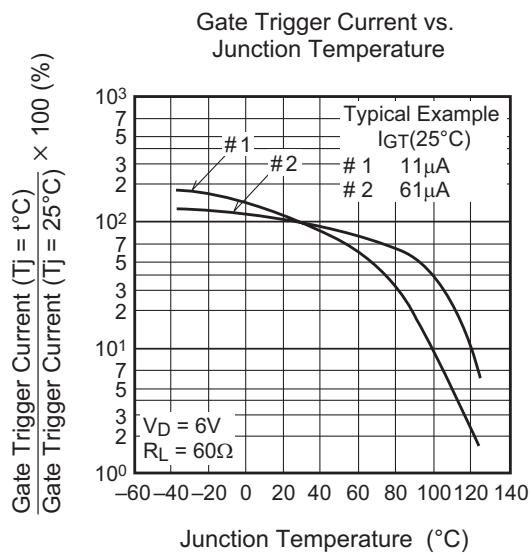
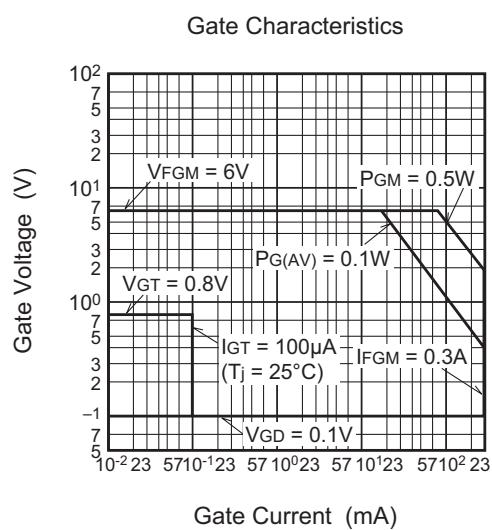
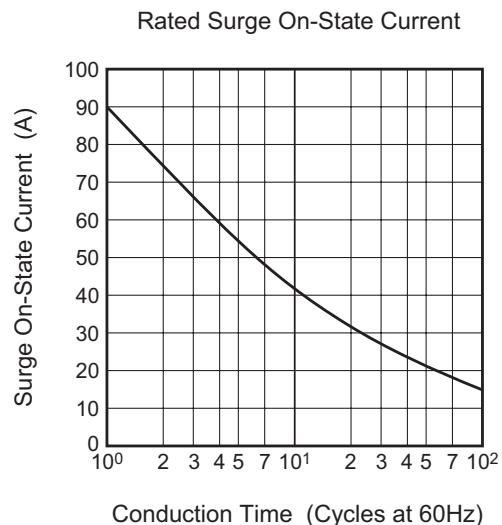
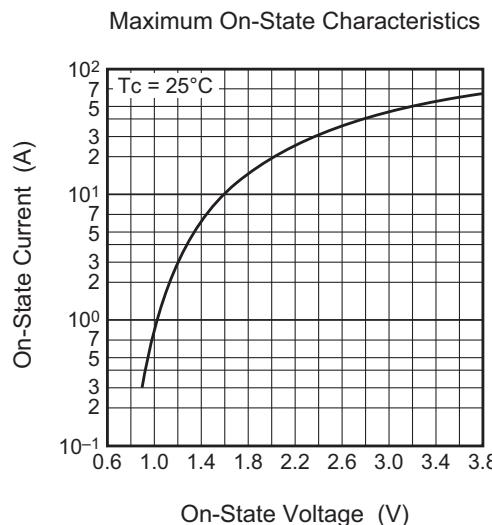
Notes: 2. The measurement point for case temperature is at anode tab.

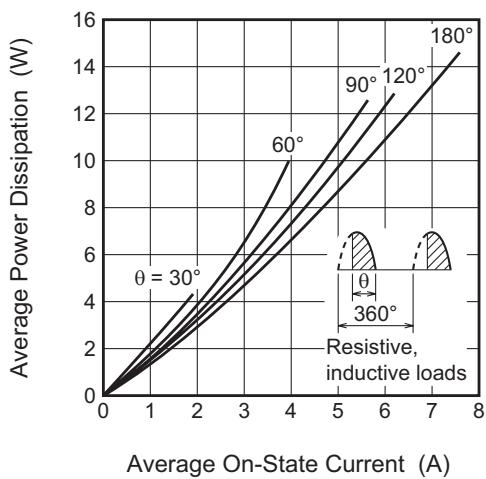
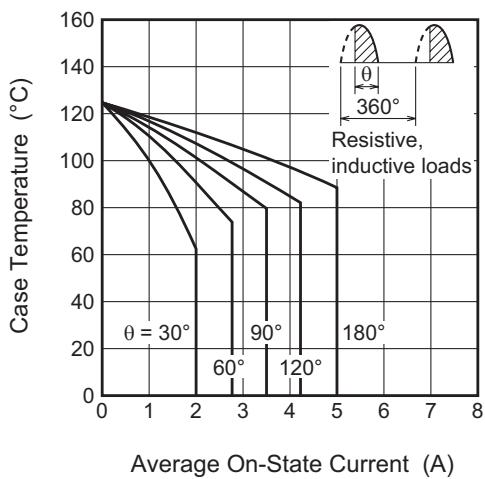
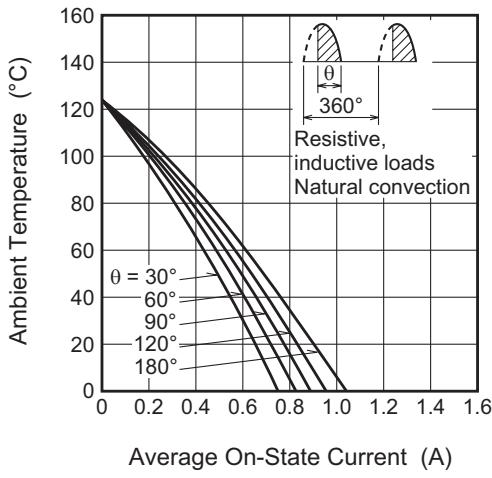
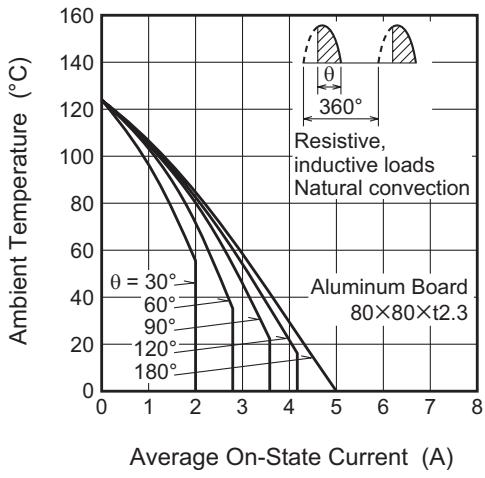
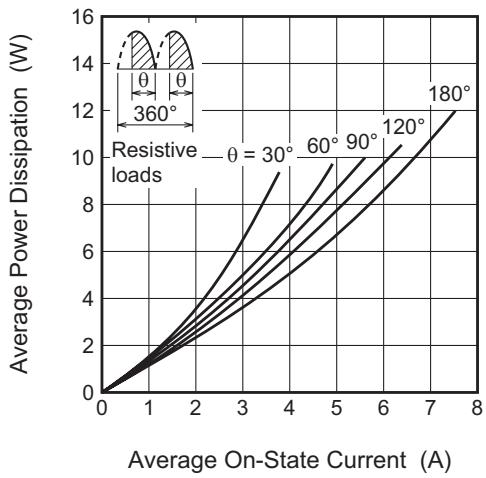
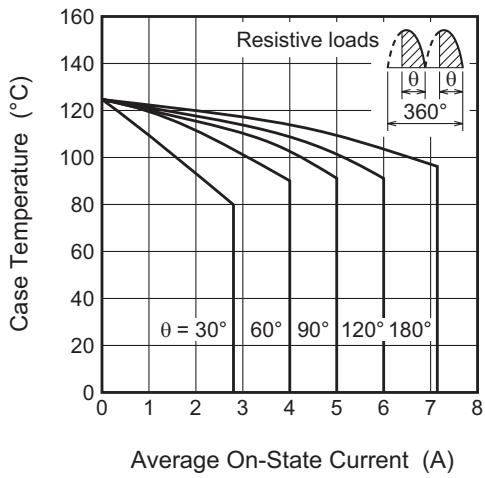
3. If special values of I_{GT} are required, choose item D or E from those listed in the table below if possible.

Item	A	B	C	D	E
I_{GT} (μA)	1 to 30	20 to 50	40 to 100	1 to 50	20 to 100

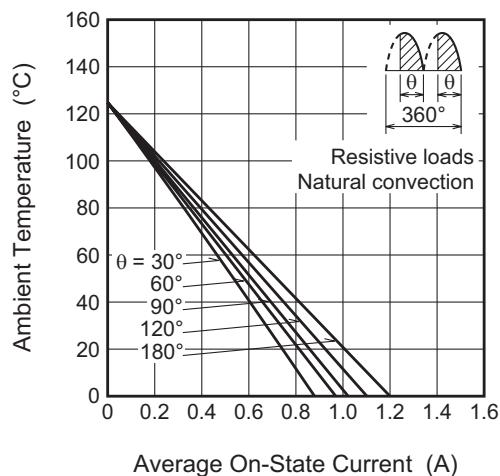
The above values do not include the current flowing through the 220Ω resistance between the gate and cathode.

Performance Curves

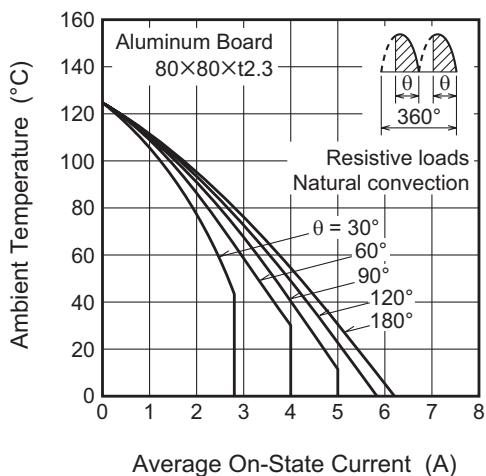


Maximum Average Power Dissipation
(Single-Phase Half Wave)Allowable Case Temperature vs.
Average On-State Current
(Single-Phase Half Wave)Allowable Ambient Temperature vs.
Average On-State Current
(Single-Phase Half Wave)Allowable Ambient Temperature vs.
Average On-State Current
(Single-Phase Half Wave)Maximum Average Power Dissipation
(Single-Phase Full Wave)Allowable Case Temperature vs.
Average On-State Current
(Single-Phase Full Wave)

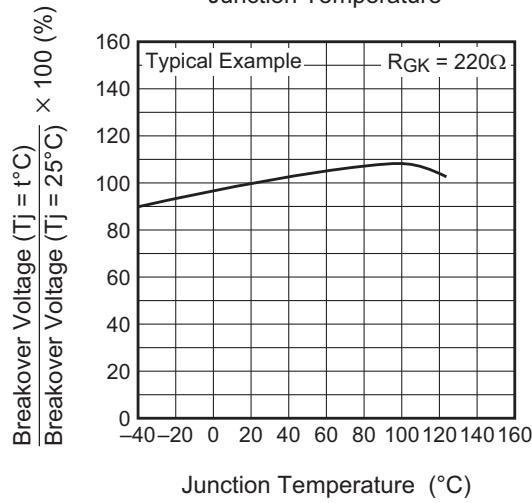
Allowable Ambient Temperature vs.
Average On-State Current
(Single-Phase Full Wave)



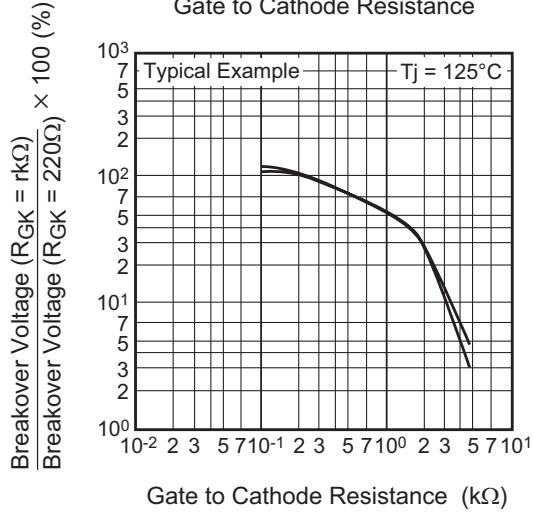
Allowable Ambient Temperature vs.
Average On-State Current
(Single-Phase Full Wave)



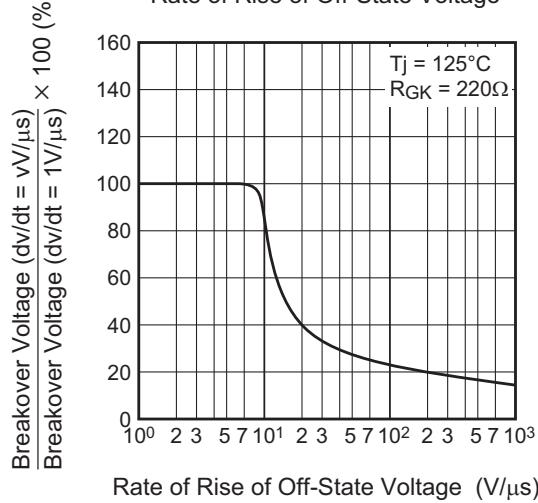
Breakover Voltage vs.
Junction Temperature



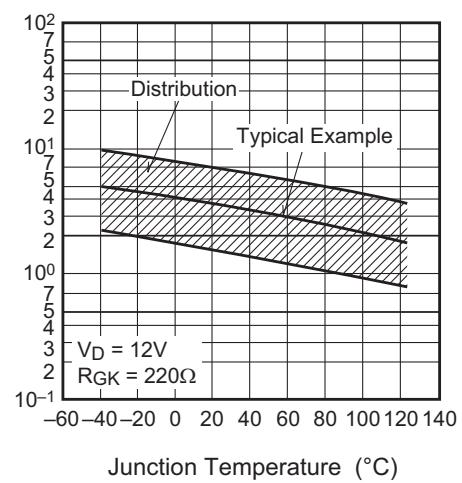
Breakover Voltage vs.
Gate to Cathode Resistance

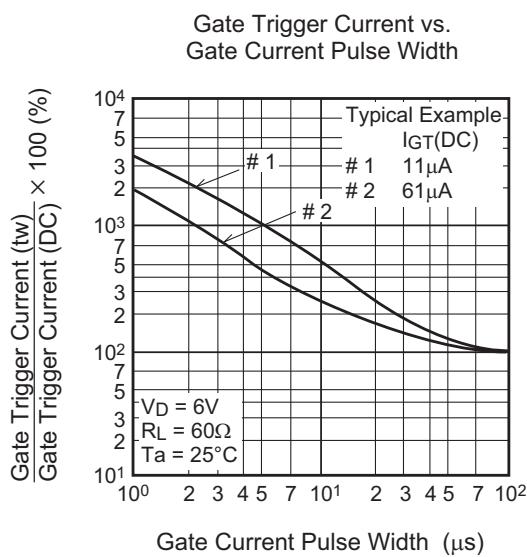
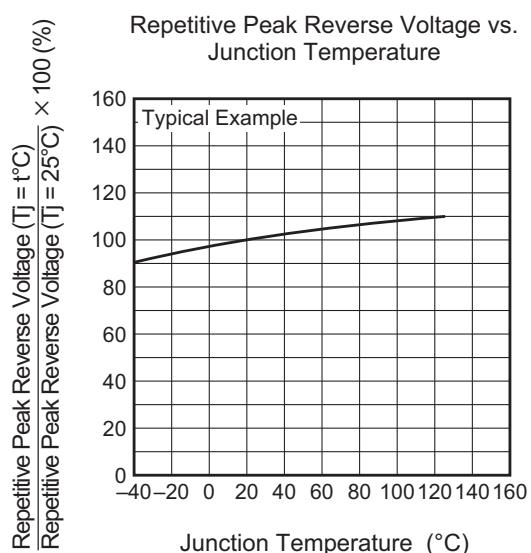
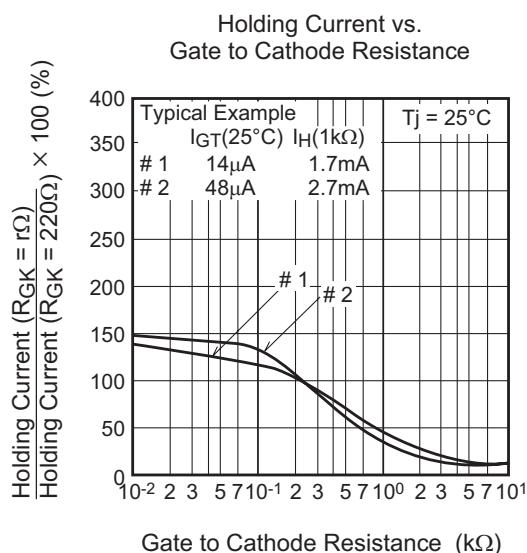


Breakover Voltage vs.
Rate of Rise of Off-State Voltage



Holding Current vs.
Junction Temperature





Package Dimensions

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

Unit: mm

The figure consists of two parts: a top view and a side view of the package. The top view shows the overall footprint and internal structure with dimensions: total width 6.5 ± 0.5, total height 8.2 ± 0.6, and internal height segments of 6.9 ± 0.5, 5.5 ± 0.5, 1.15 ± 0.1, 0.8 ± 0.1, 0.6 ± 0.1, and 0.6 ± 0.1. The side view shows the height of the leads (1.3), the lead pitch (4.7 ± 0.5), and the total height of the package (16.2 ± 0.5). The bottom view shows the lead pitch as 2.29 and the distance between the lead groups as 2.29. A small detail view at the bottom shows the lead cross-section with a width of 0.55 ± 0.1.

Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Straight type	Vinyl sack	100	Type name – A1	CR5AS-12-A1

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

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