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Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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CR02AM-8

Thyristor

Low Power Use

REJ03G0351-0200

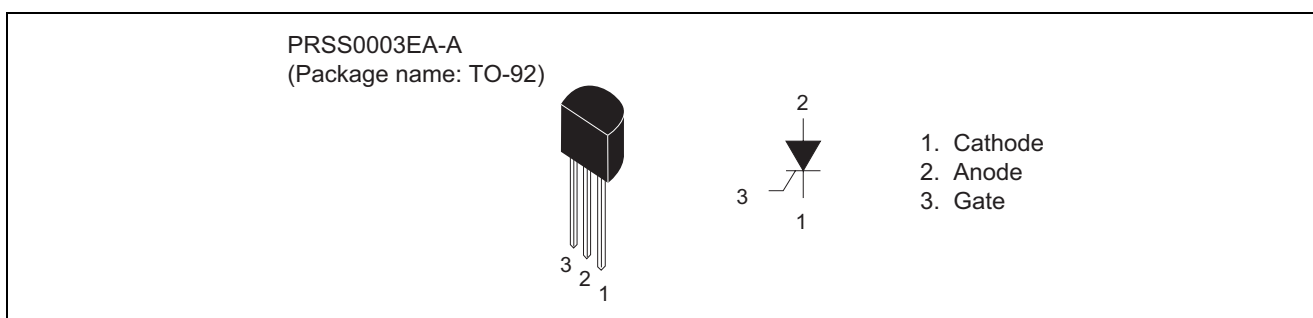
Rev.2.00

Mar.01.05

Features

- $I_{T(AV)}$: 0.3 A
- V_{DRM} : 400 V
- I_{GT} : 100 μ A
- Planar Passivation Type

Outline



Applications

Solid state relay, leakage protector, fire alarm, timer, ring counter, electric blanket, protective circuit for acoustic equipment, strobe flasher, and other general purpose control applications

Maximum Ratings

Parameter	Symbol	Voltage class	Unit
		8	
Repetitive peak reverse voltage	V_{RRM}	400	V
Non-repetitive peak reverse voltage	V_{RSM}	500	V
DC reverse voltage	$V_{R(DC)}$	320	V
Repetitive peak off-state voltage ^{Note1}	V_{DRM}	400	V
DC off-state voltage ^{Note1}	$V_{D(DC)}$	320	V

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_T (RMS)$	0.47	A	
Average on-state current	$I_T (AV)$	0.3	A	Commercial frequency, sine half wave 180° conduction, $T_a = 30^\circ\text{C}$
Surge on-state current	I_{TSM}	10	A	60Hz sine half wave 1 full cycle, peak value, non-repetitive
I^2t for fusing	I^2t	0.4	A^2s	Value corresponding to 1 cycle of half wave 60Hz, surge on-state current
Peak gate power dissipation	P_{GM}	0.1	W	
Average gate power dissipation	$P_{G(AV)}$	0.01	W	
Peak gate forward voltage	V_{FGM}	6	V	
Peak gate reverse voltage	V_{RGM}	6	V	
Peak gate forward current	I_{FGM}	0.1	A	
Junction temperature	T_j	- 40 to +125	$^\circ\text{C}$	
Storage temperature	T_{stg}	- 40 to +125	$^\circ\text{C}$	
Mass	—	0.23	g	Typical value

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

Electrical Characteristics

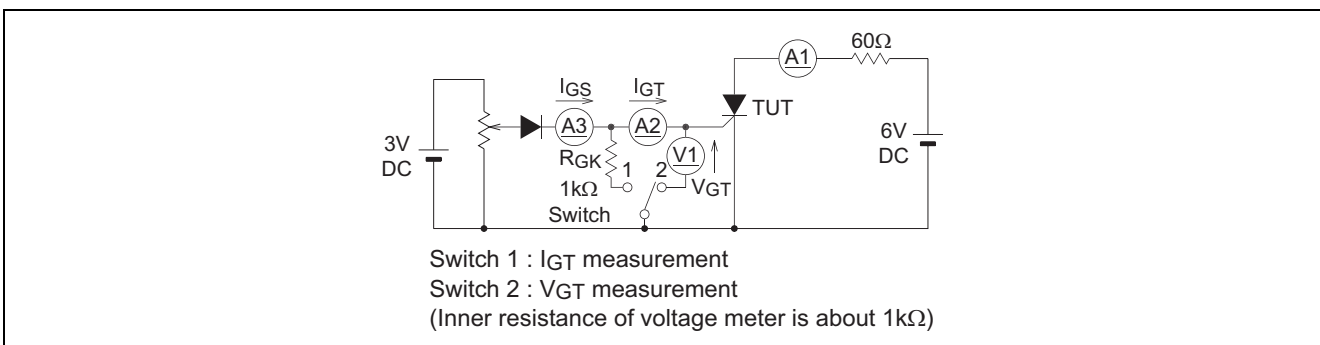
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak reverse current	I_{RRM}	—	—	0.1	mA	$T_j = 125^\circ\text{C}$, V_{RRM} applied
Repetitive peak off-state current	I_{DRM}	—	—	0.1	mA	$T_j = 125^\circ\text{C}$, V_{DRM} applied, $R_{GK} = 1 \text{ k}\Omega$
On-state voltage	V_{TM}	—	—	1.6	V	$T_a = 25^\circ\text{C}$, $I_{TM} = 0.6 \text{ A}$, instantaneous value
Gate trigger voltage	V_{GT}	—	—	0.8	V	$T_j = 25^\circ\text{C}$, $V_D = 6 \text{ V}$, $I_T = 0.1 \text{ A}$ ^{Note3}
Gate non-trigger voltage	V_{GD}	0.2	—	—	V	$T_j = 125^\circ\text{C}$, $V_D = 1/2 V_{DRM}$, $R_{GK} = 1 \text{ k}\Omega$
Gate trigger current	I_{GT}	1	—	100 ^{Note2}	μA	$T_j = 25^\circ\text{C}$, $V_D = 6 \text{ V}$, $I_T = 0.1 \text{ A}$ ^{Note3}
Holding current	I_H	—	—	3	mA	$T_j = 25^\circ\text{C}$, $V_D = 12 \text{ V}$, $R_{GK} = 1 \text{ k}\Omega$
Thermal resistance	$R_{th(j-a)}$	—	—	180	$^\circ\text{C/W}$	Junction to ambient

Notes: 2. If special values of I_{GT} are required, choose item D or E from those listed in the table below if possible.

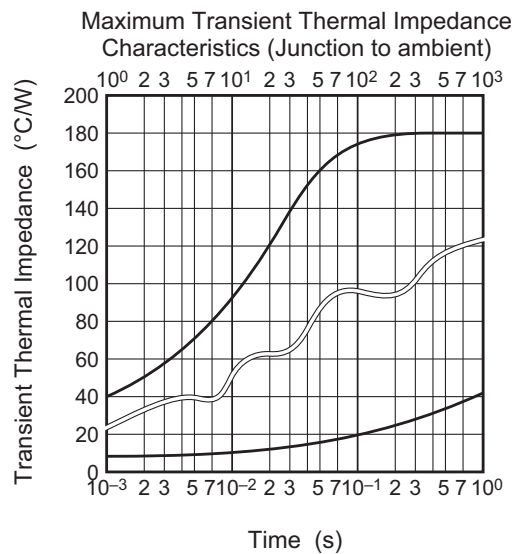
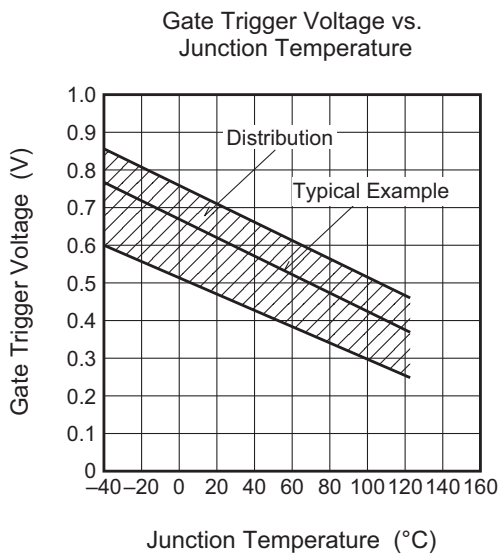
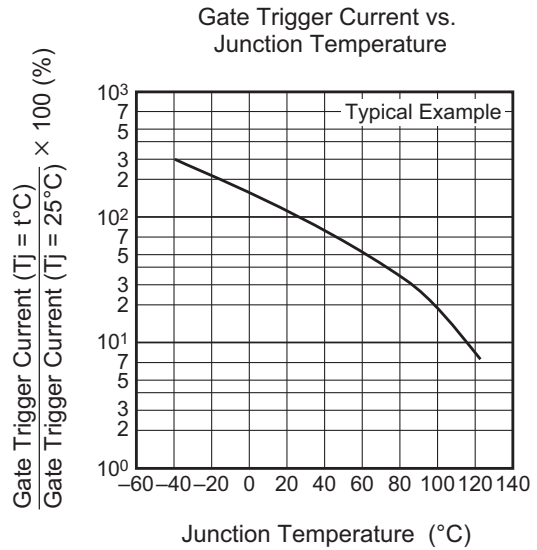
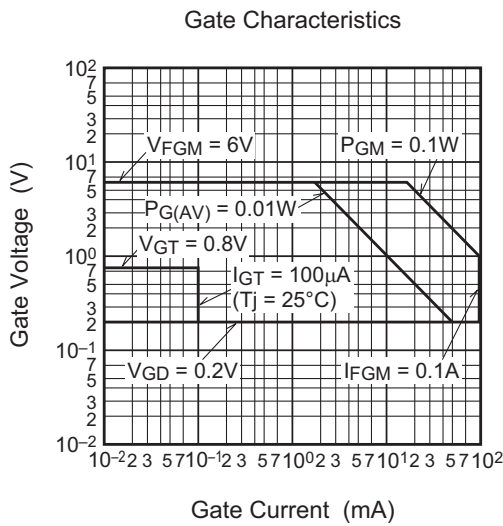
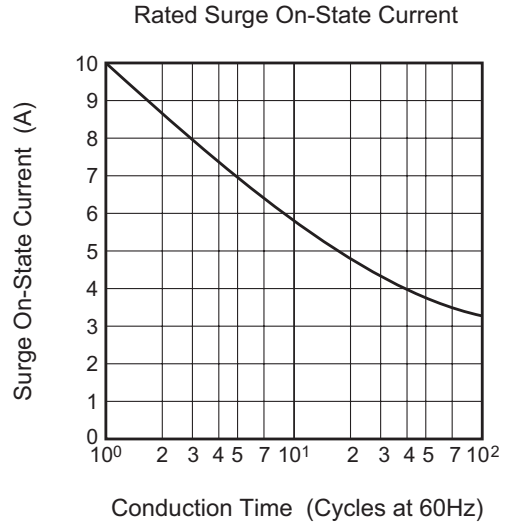
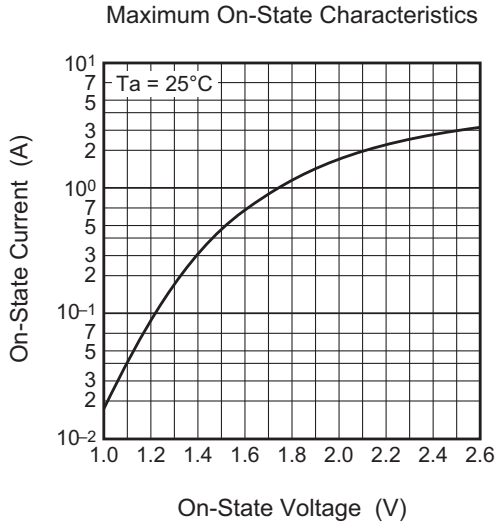
Item	A	B	C	D	E
$I_{GT} (\mu\text{A})$	1 to 30	20 to 50	40 to 100	1 to 50	20 to 100

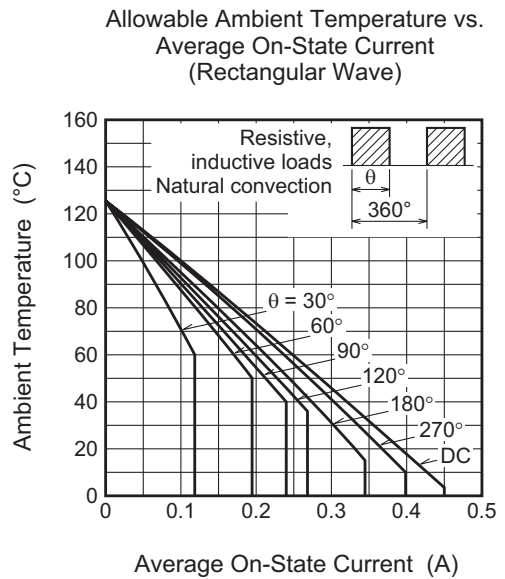
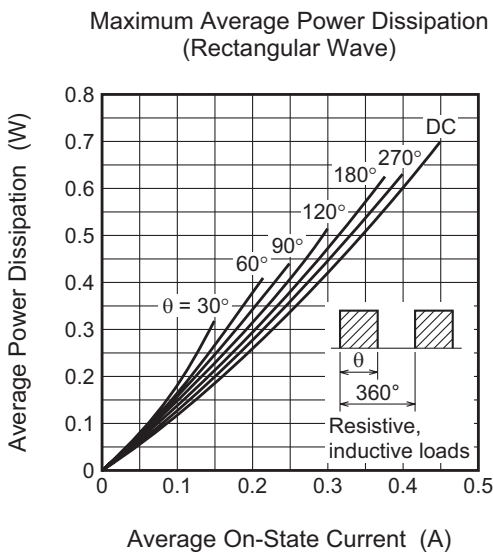
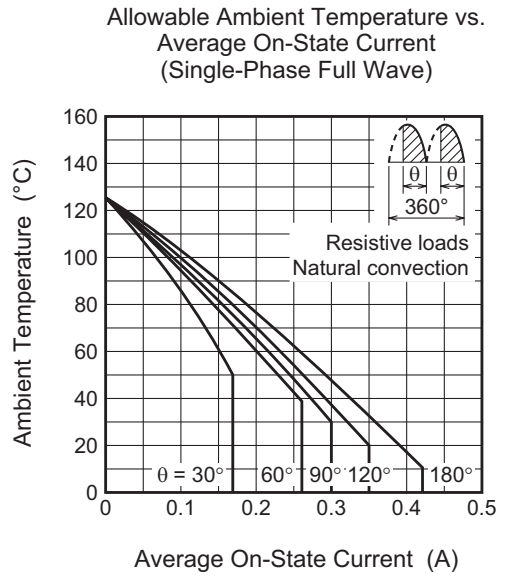
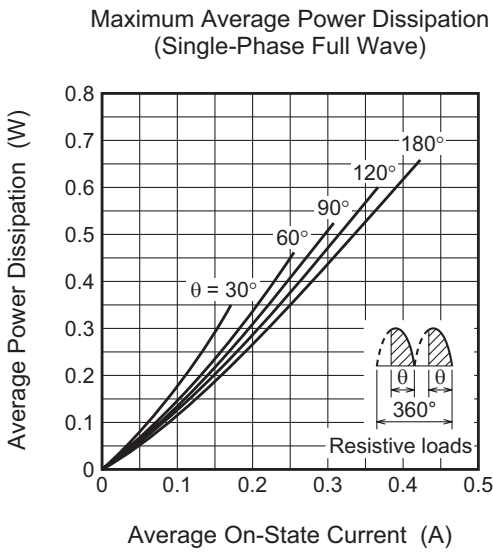
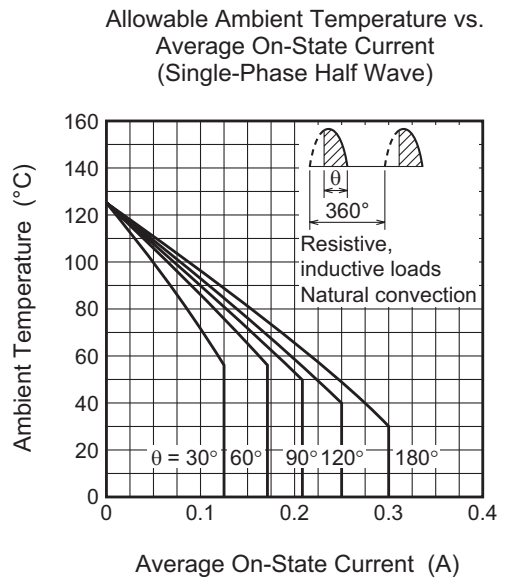
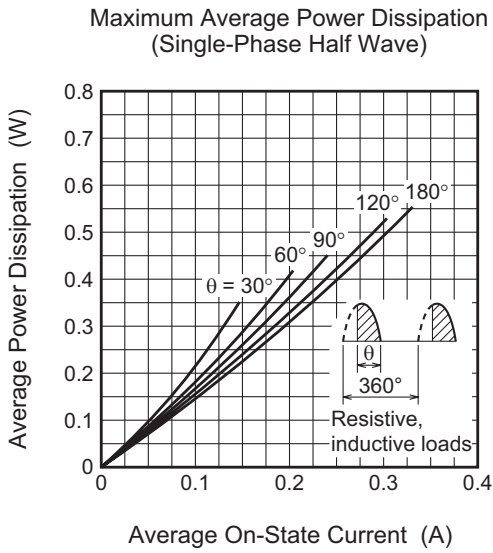
The above values do not include the current flowing through the 1 k Ω resistance between the gate and cathode.

3. I_{GT} , V_{GT} measurement circuit.

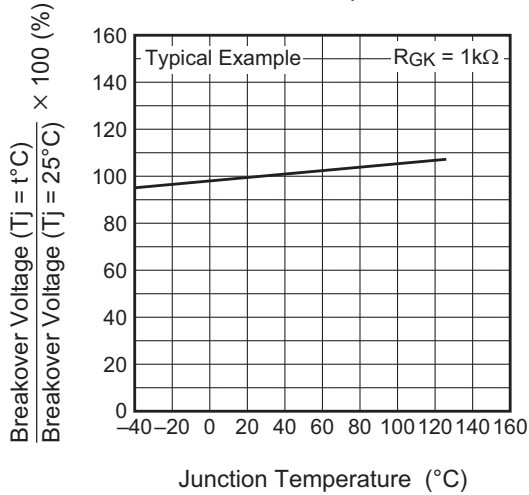


Performance Curves

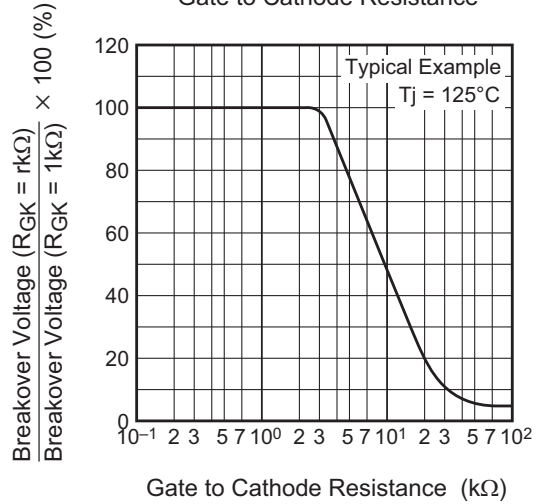




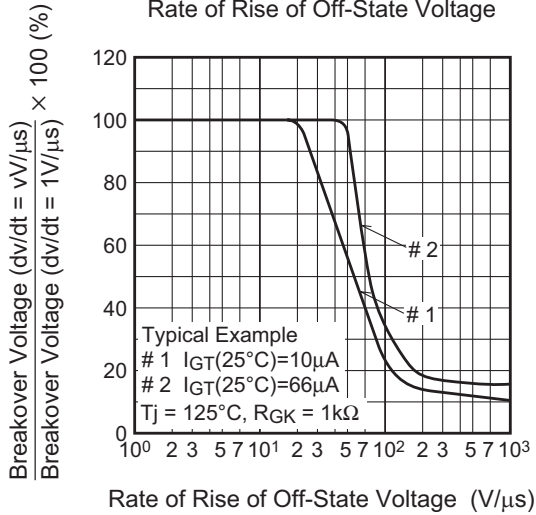
Breakover Voltage vs. Junction Temperature



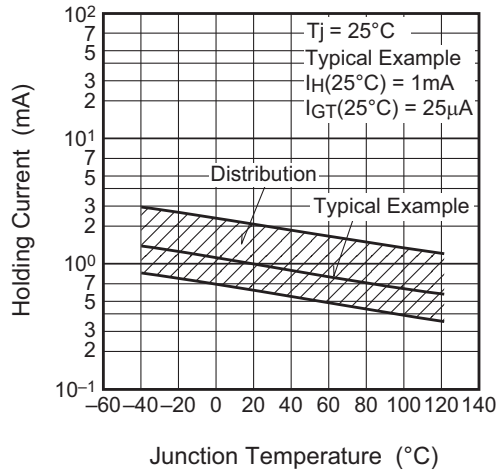
Breakover Voltage vs. Gate to Cathode Resistance



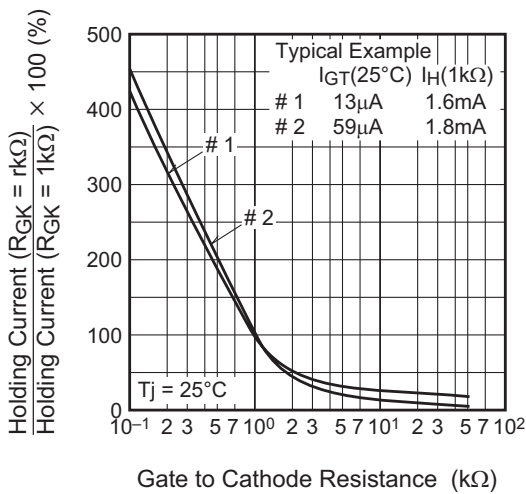
Breakover Voltage vs. Rate of Rise of Off-State Voltage



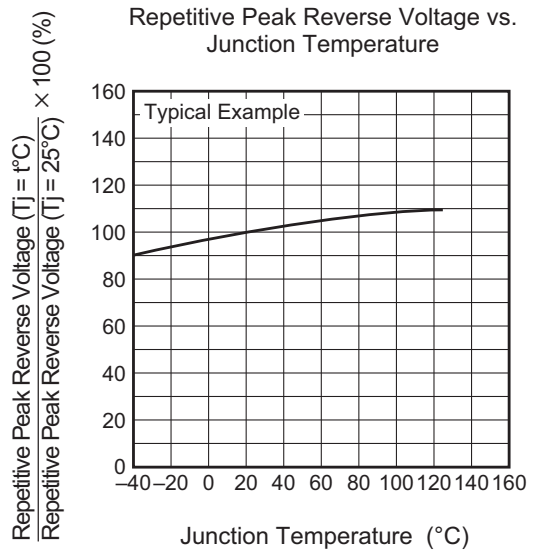
Holding Current vs. Junction Temperature

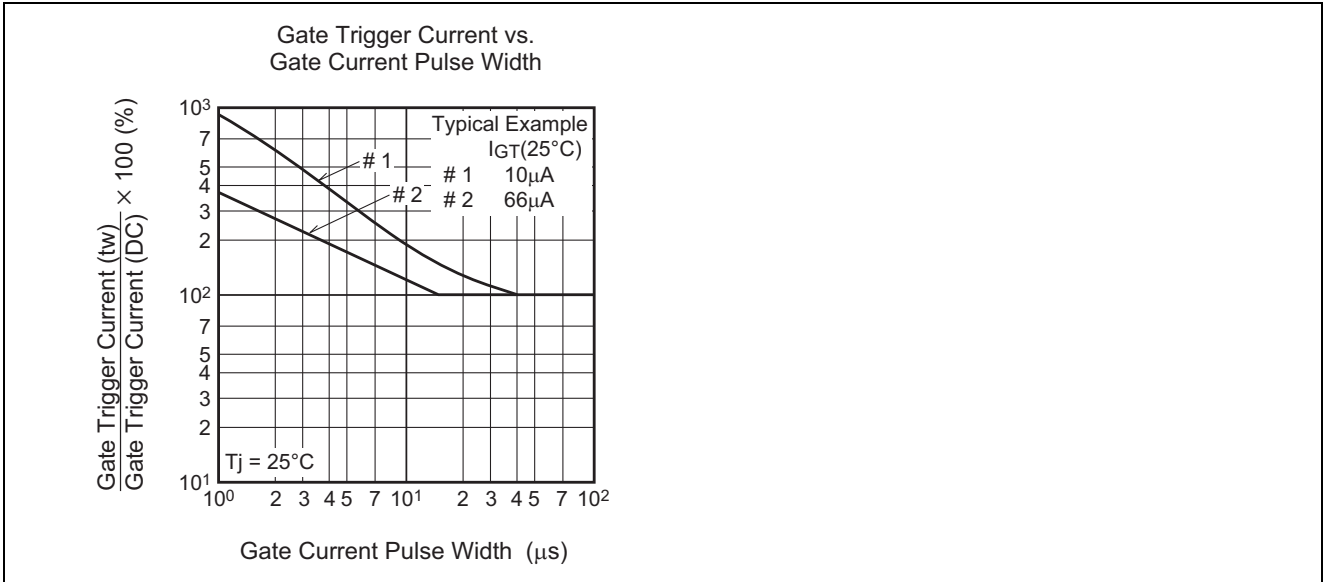


Holding Current vs. Gate to Cathode Resistance

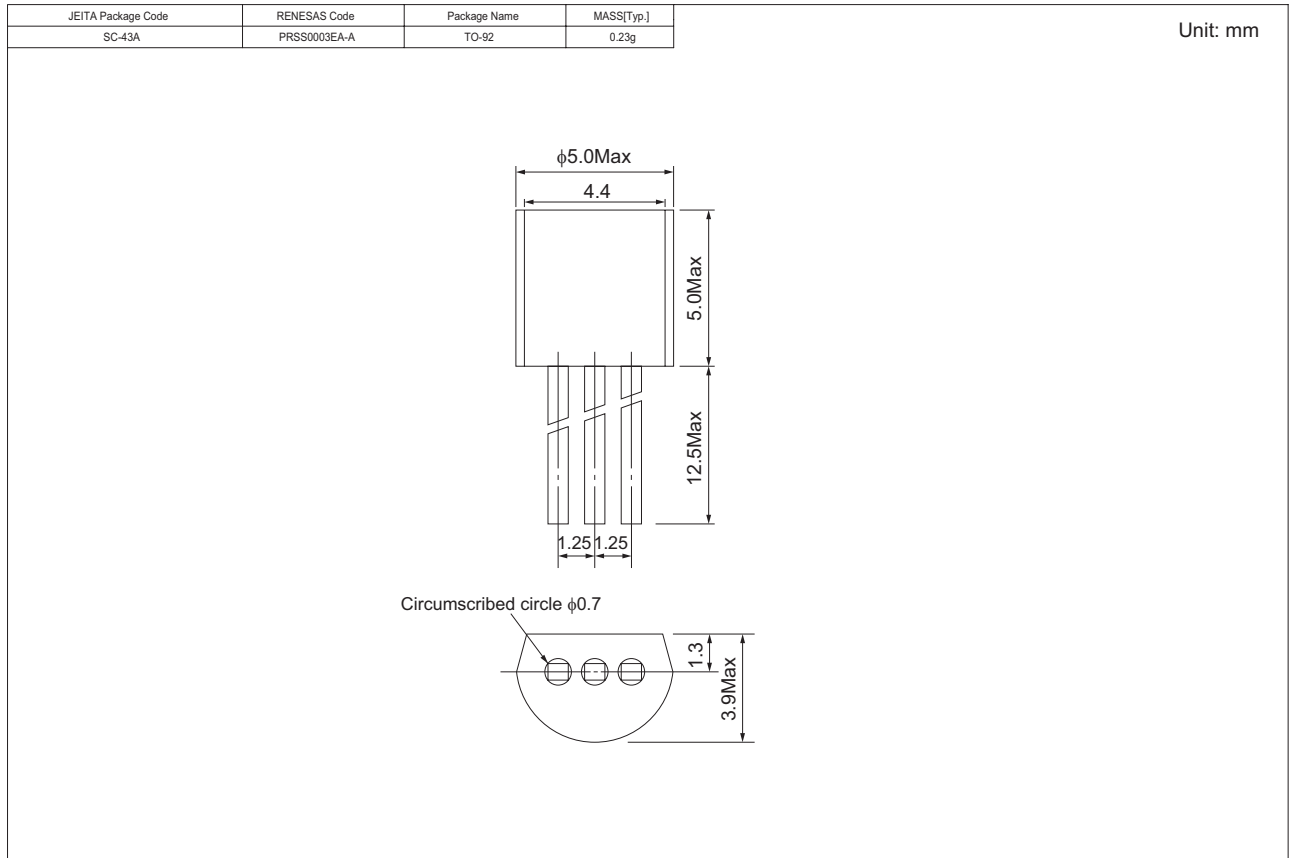


Repetitive Peak Reverse Voltage vs. Junction Temperature





Package Dimensions



Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Straight type	Vinyl sack	500	Type name	CR02AM-8
Lead form	Vinyl sack	500	Type name – Lead forming code	CR02AM-8-A6
Form A8	Taping	2000	Type name – TB	CR02AM-8-TB

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