

CR03AM-12

Thyristor

Low Power Use

REJ03G0352-0200

Rev.2.00

Mar.01.2005

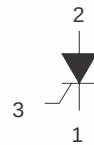
Features

- $I_T(AV)$: 0.3 A
- V_{DRM} : 600 V
- I_{GT} : 100 μ A

- Non-Insulated Type
- Glass Passivation Type

Outline

PRSS0003EA-A
(Package name:TO-92)



1. Cathode
2. Anode
3. Gate

Applications

Leakage protector, timer, and gas igniter

Maximum Ratings

Parameter	Symbol	Voltage class	Unit
		12	
Repetitive peak reverse voltage	V_{RRM}	600	V
Non-repetitive peak reverse voltage	V_{RSM}	800	V
DC reverse voltage	$V_{R(DC)}$	480	V
Repetitive peak off-state voltage ^{Note1}	V_{DRM}	600	V
Non-repetitive peak off-state voltage ^{Note1}	V_{DSM}	800	V
DC off-state voltage ^{Note1}	$V_{D(DC)}$	480	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, $T_a = 47^\circ\text{C}$
Surge on-state current	I_{TSM}	20	A	60Hz sine half wave 1 full cycle, peak value, non-repetitive
I^2t for fusing	I^2t	1.6	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 +110	$^\circ\text{C}$	
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

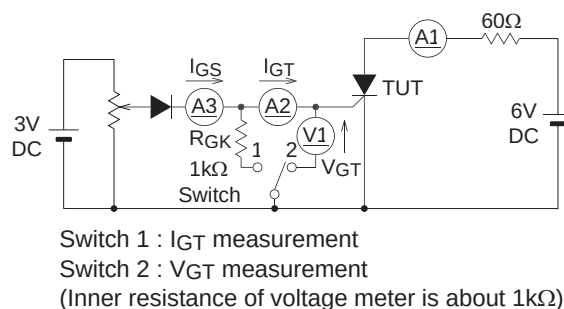
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak reverse current	I_{RRM}	—	—	0.1	mA	$T_j = 110^\circ\text{C}$, V_{RRM} applied
Repetitive peak off-state current	I_{DRM}	—	—	0.1	mA	$T_j = 110^\circ\text{C}$, V_{DRM} applied, $R_{GK} = 1\text{ k}\Omega$
On-state voltage	V_{TM}	—	—	1.8	V	$T_a = 25^\circ\text{C}$, $I_{TM} = 4\text{ A}$, 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	$T_j = 110^\circ\text{C}$, $V_D = 1/2 V_{DRM}$, $R_{GK} = 1\text{ k}\Omega$
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	—	1.5	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} (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 $1\text{ k}\Omega$ resistance between the gate and cathode.

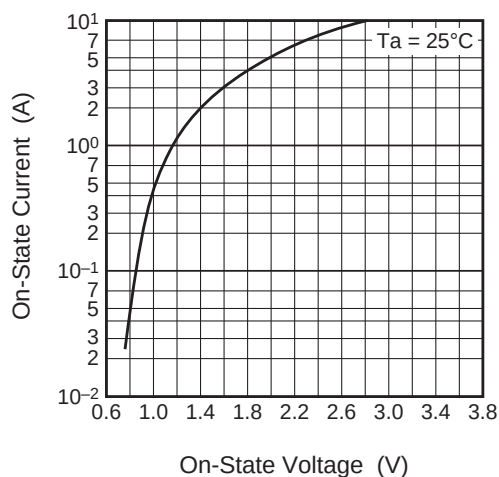
3 I_{GT} , V_{GT} measurement circuit.



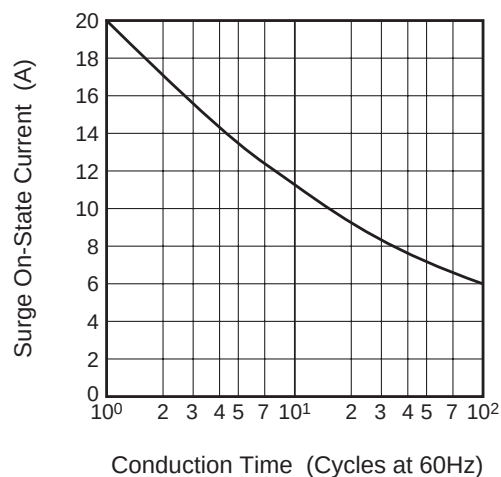
Performance Curves

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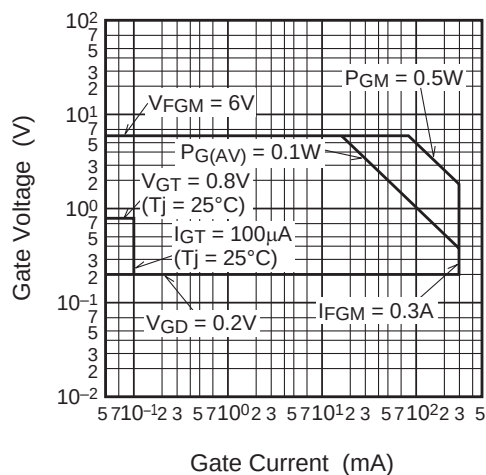
Maximum On-State Characteristics



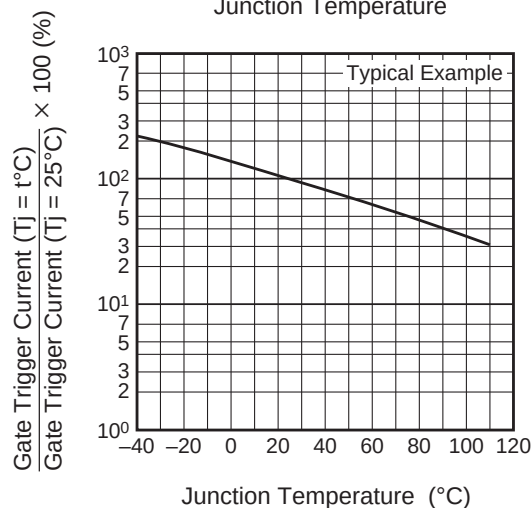
Rated Surge On-State Current



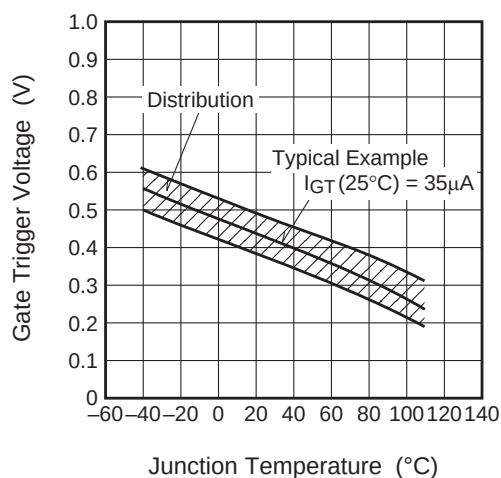
Gate Characteristics



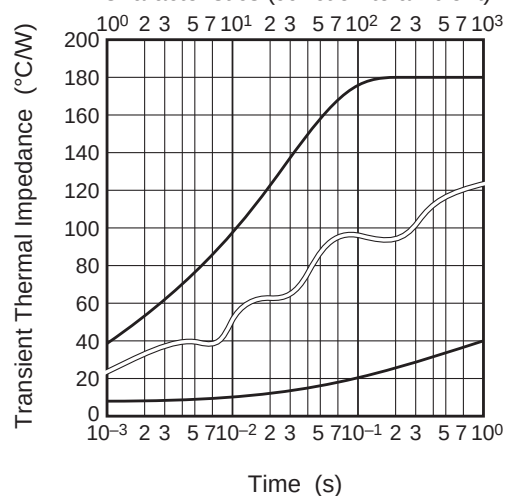
Gate Trigger Current vs. Junction Temperature



Gate Trigger Voltage vs. Junction Temperature

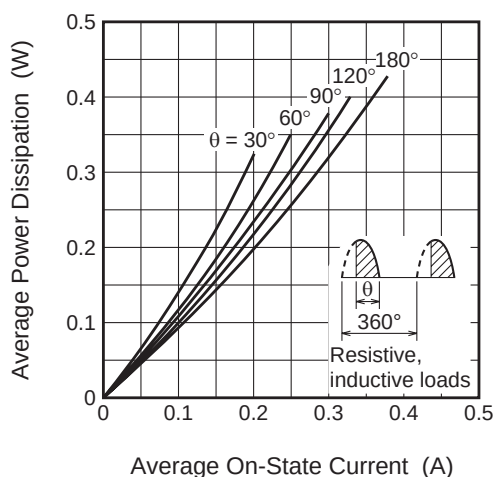


Maximum Transient Thermal Impedance Characteristics (Junction to ambient)

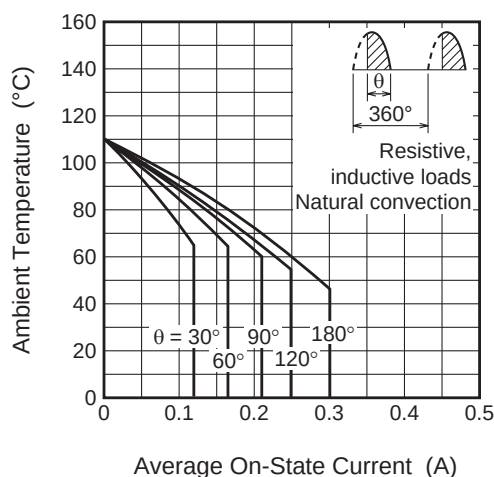


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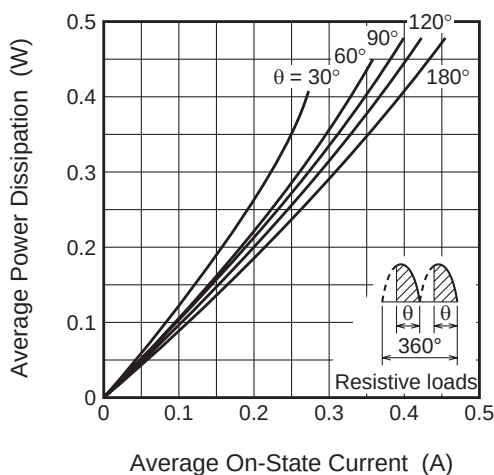
Maximum Average Power Dissipation
(Single-Phase Half Wave)



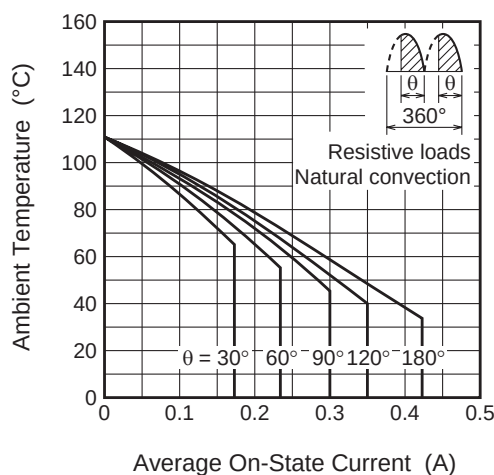
Allowable Ambient Temperature vs.
Average On-State Current
(Single-Phase Half Wave)



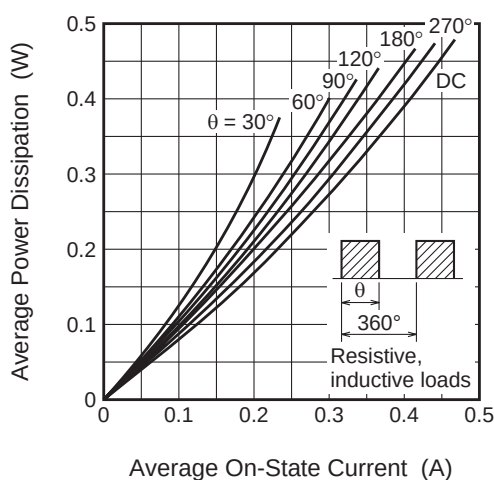
Maximum Average Power Dissipation
(Single-Phase Full Wave)



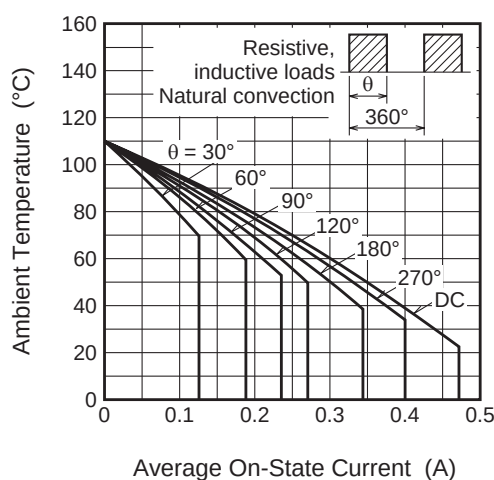
Allowable Ambient Temperature vs.
Average On-State Current
(Single-Phase Full Wave)



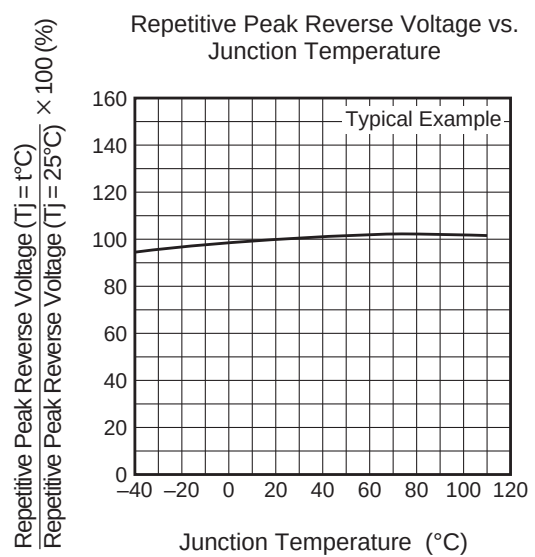
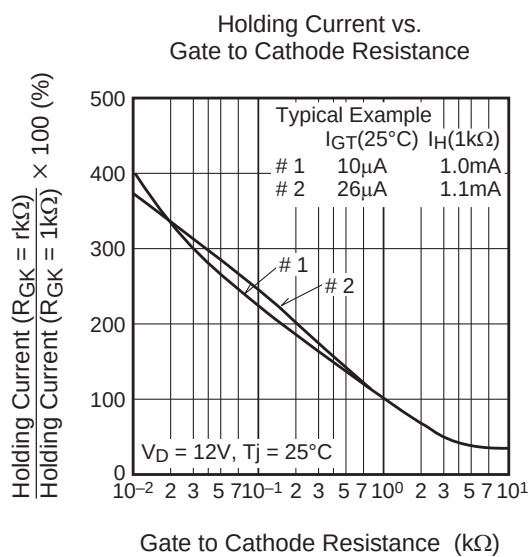
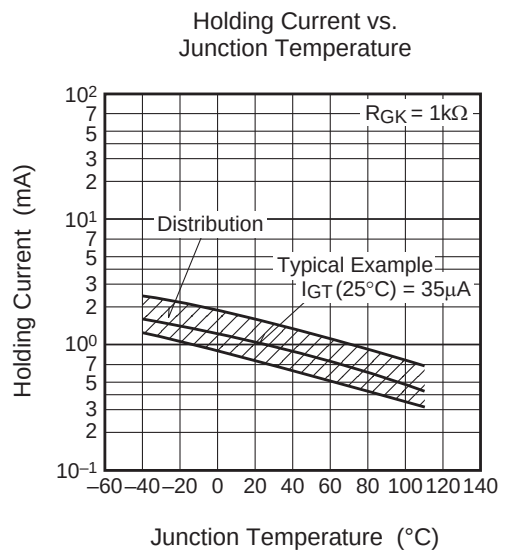
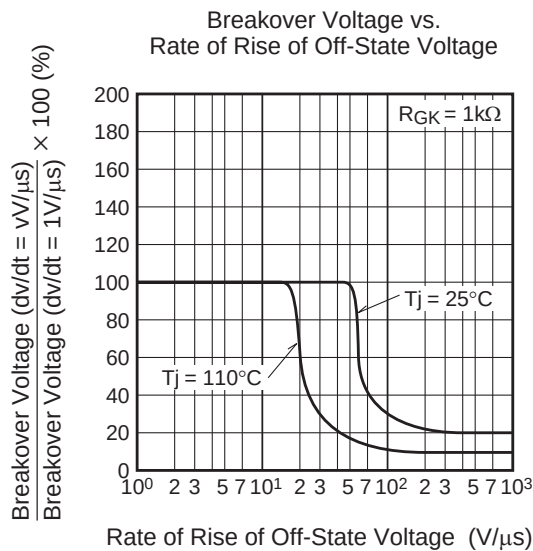
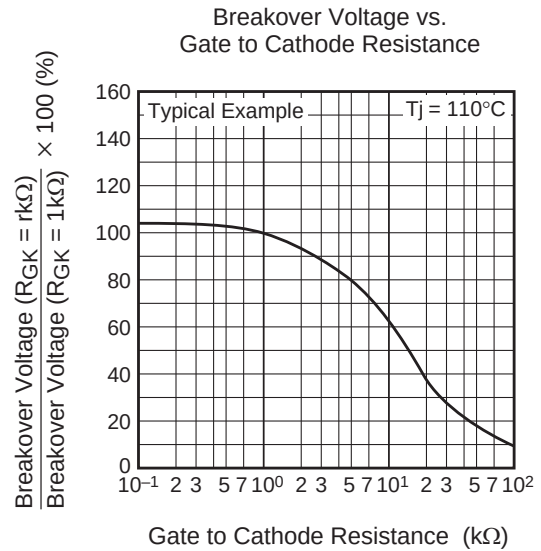
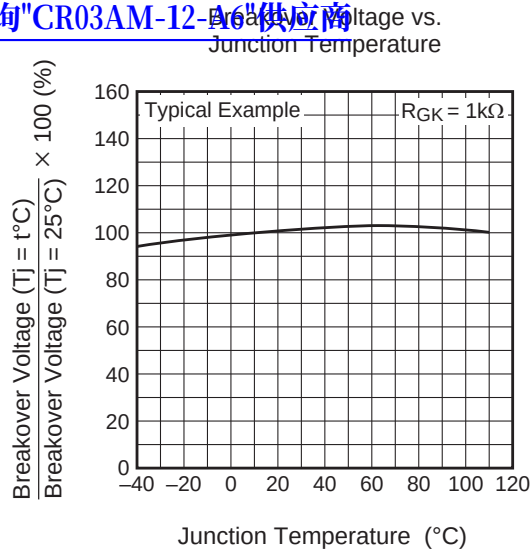
Maximum Average Power Dissipation
(Rectangular Wave)



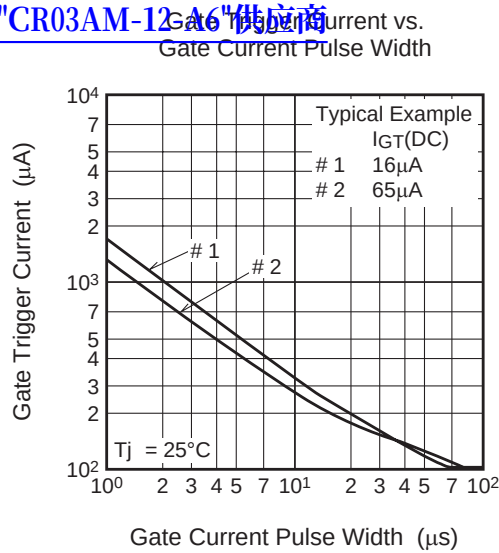
Allowable Ambient Temperature vs.
Average On-State Current
(Rectangular Wave)



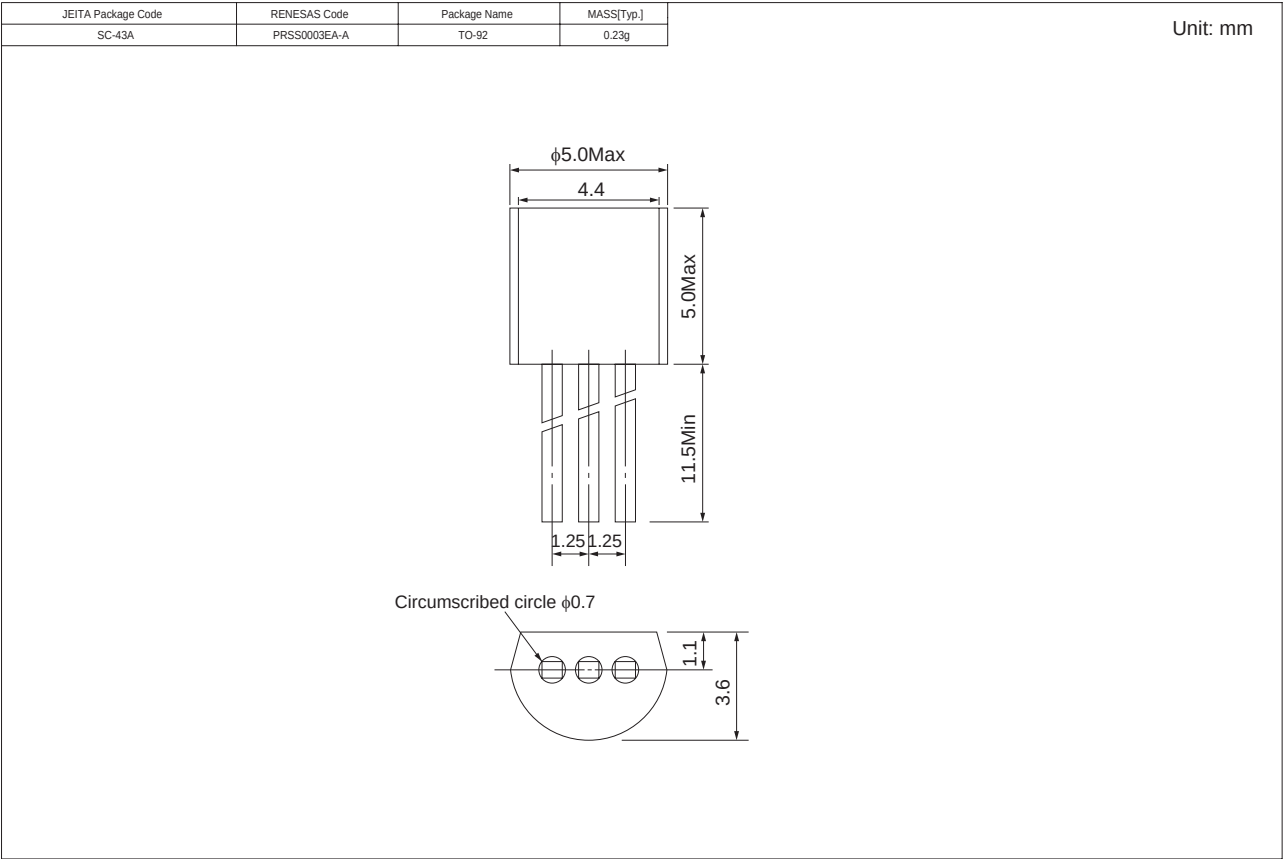
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Package Dimensions



Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Straight type	Vinyl sack	500	Type name	CR03AM-12
Lead form	Vinyl sack	500	Type name – Lead forming code	CR03AM-12-A6
Form A8	Taping	2000	Type name – TB	CR03AM-12-TB

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

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