CR02AM-8

400V - 0.2A - Thyristor

Low Power Use

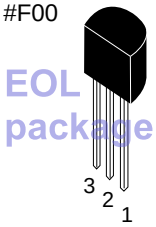
R07DS1423EJ0400
Rev.4.00
Feb. 22, 2022

Features

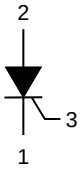
- $I_{T\,(AV)}$: 0.3 A
- V_{DRM}: 400 V
- I_{GT}: 100 µA
- RoHS Compliant
- Planar Passivation Type
- Halogen-free (PRSS0003DJ-A)
- Completely Pb-free (PRSS0003DJ-A)

Outline

RENESAS Package code: PRSS0003EA-A (Package name: TO-92*) Ordering code: #F00



PRSS0003DJ-A (Package name: TO-92) #BD0



1. Cathode
2. Anode
3. Gate

Application

Solid state relay, leakage protector, timer, electric blanket, strobe flasher, and other general purpose 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
Repetitive peak off-state voltage Note1	V_{DRM}	400	V

Notes: 1. With gate to cathode resistance R_{GK}=1 kΩ

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, Ta = 30°C
Surge on-state current	I_{TSM}	10	A	60 Hz sinewave 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 60 Hz, 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	Tj	–40 to +125	°C	
Storage temperature	Tstg	–40 to +125	°C	

Electrical Characteristics

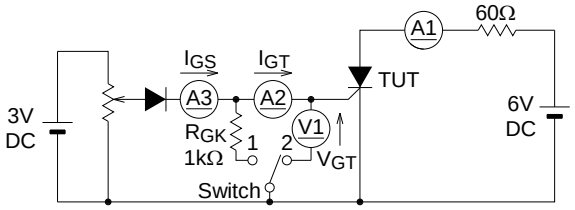
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak reverse current	I_{RRM}	—	—	0.1	mA	Tj = 125°C, V_{RRM} applied
Repetitive peak off-state current	I_{DRM}	—	—	0.1	mA	Tj = 125°C, V_{DRM} applied R_{GK}=1 kΩ
On-state voltage	V_{TM}	—	—	1.6	V	Tc = 25°C, I_{TM} = 0.6 A, instantaneous value
Gate trigger voltage	V_{GT}	—	—	0.8	V	Tj = 25°C, V_D = 6 V, I_T = 0.1 A Note3
Gate non-trigger voltage	V_{GD}	0.2	—	—	V	Tj = 125°C, V_D = 1/2 V_{DRM} R_{GK}=1 kΩ
Gate trigger current	I_{GT}	1	—	100 Note2	μA	Tj = 25°C, V_D = 6 V, I_T = 0.1 A Note3
Holding current	I_H	—	—	3	mA	Tj = 25°C, V_D = 12 V, R_{GK}=1 kΩ
Thermal resistance	$R_{th\ (j-a)}$	—	—	180	°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 kΩ resistance between the gate and cathode.

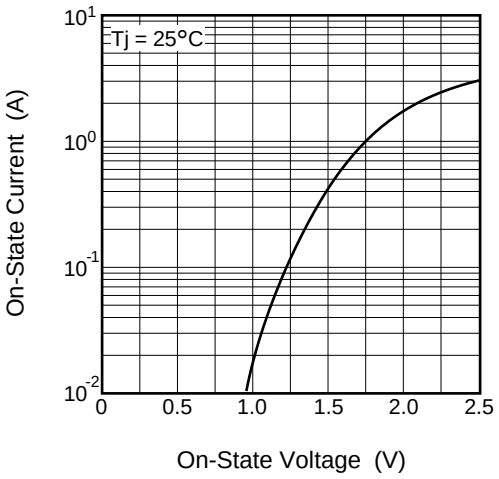
3. I_{GT}, V_{GT} measurement circuit.



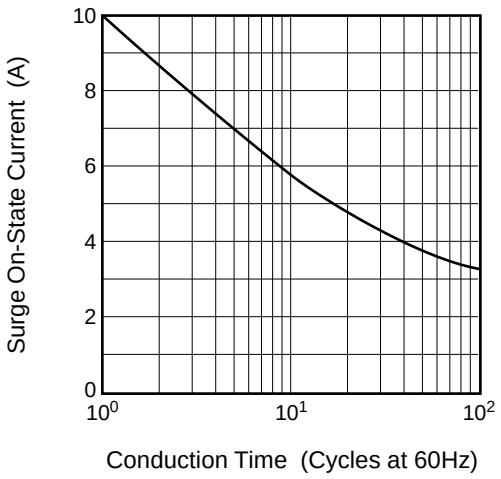
Switch 1 : I_{GT} measurement
Switch 2 : V_{GT} measurement
(Inner resistance of voltage meter is about 1kΩ)

Performance Curves

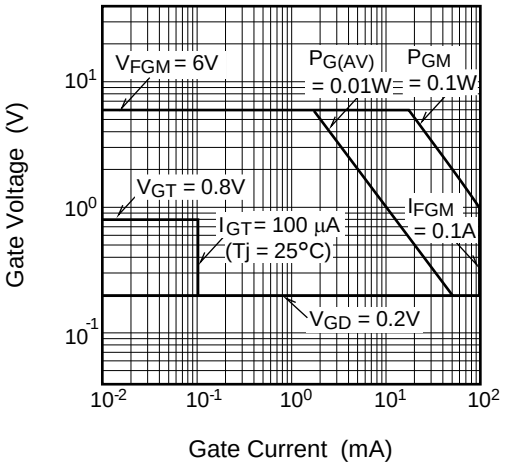
Maximum On-State Characteristics



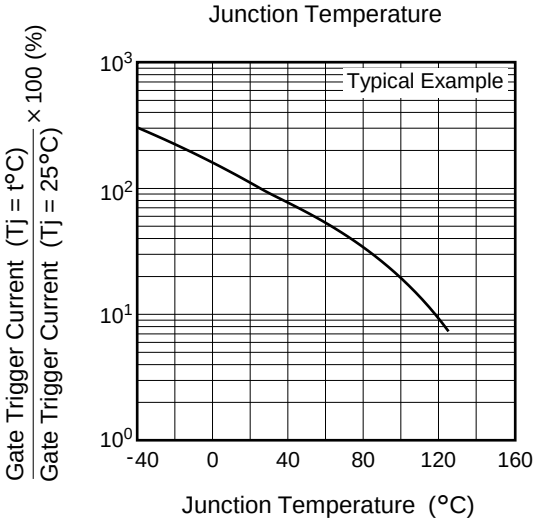
Rated Surge On-State Current



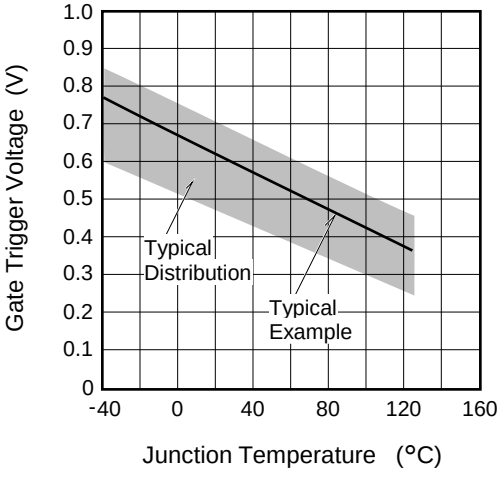
Gate Characteristics



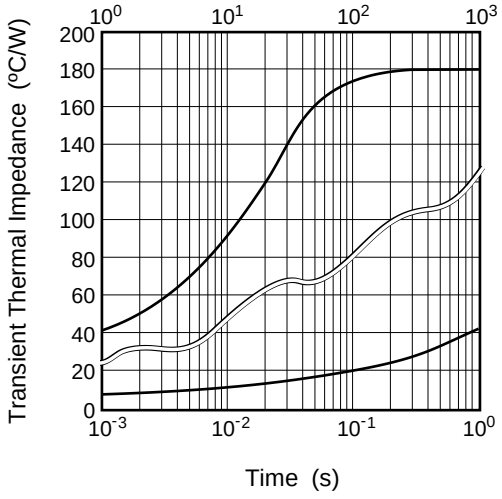
Gate Trigger Current vs. Junction Temperature



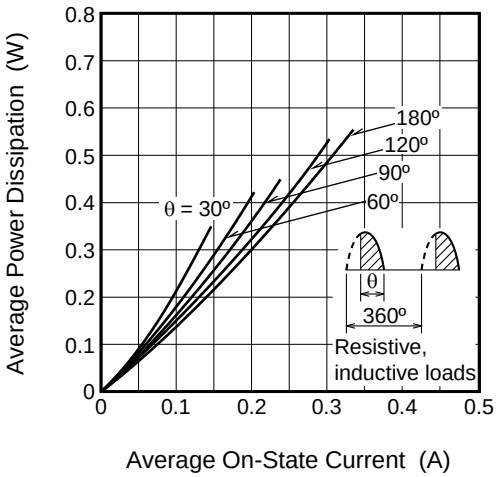
Gate Trigger Voltage vs. Junction Temperature



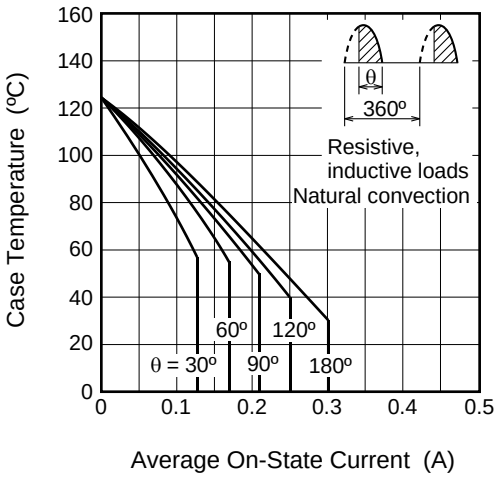
Maximum Transient Thermal Impedance Characteristics (Junction to ambient)



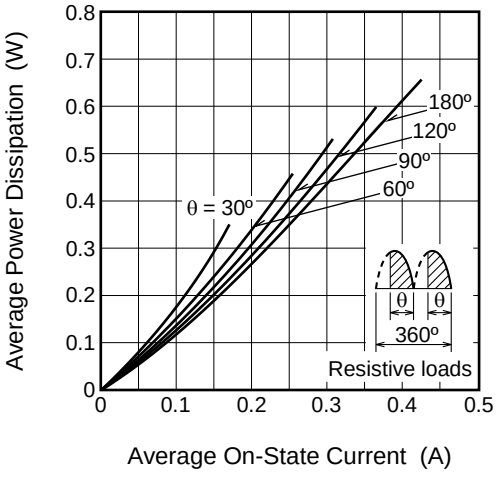
Maximum Average Power Dissipation
(Single-Phase Half Wave)



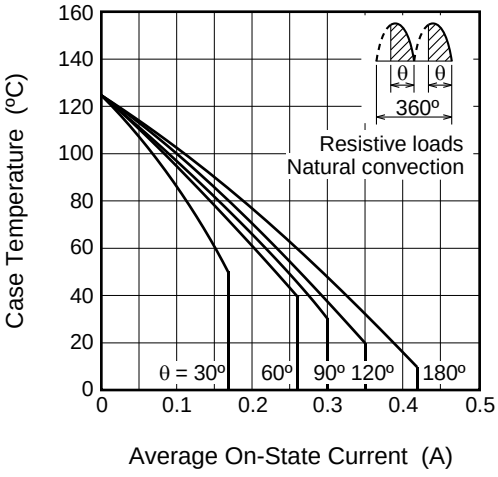
Allowable Case Temperature vs.
Average On-State Current
(Single-Phase Half Wave)



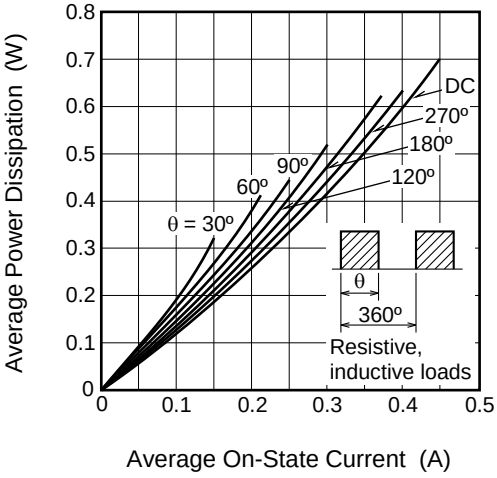
Maximum Average Power Dissipation
(Single-Phase Full Wave)



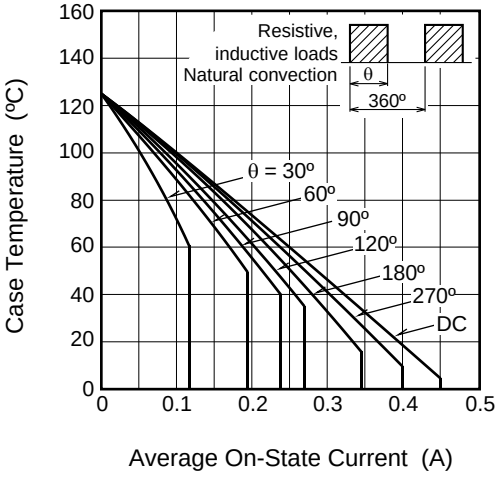
Allowable Case Temperature vs.
Average On-State Current
(Single-Phase Full Wave)



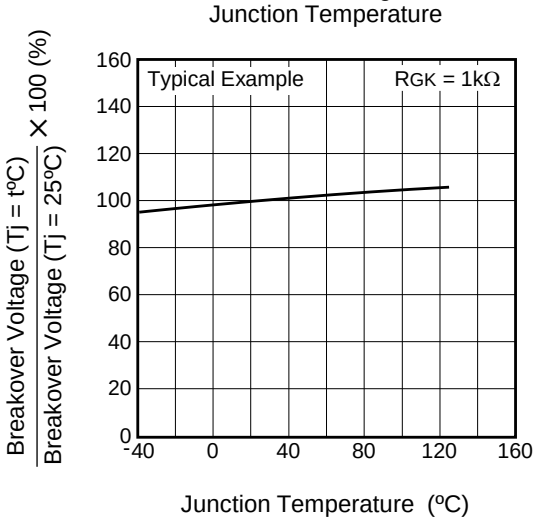
Maximum Average Power Dissipation
(Rectangular Wave)



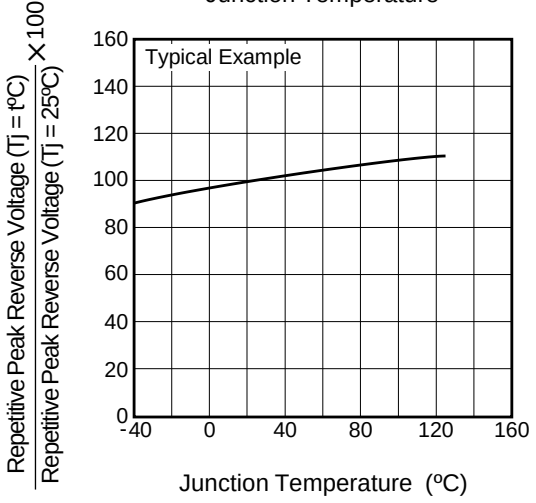
Allowable Case Temperature vs.
Average On-State Current
(Rectangular Wave)



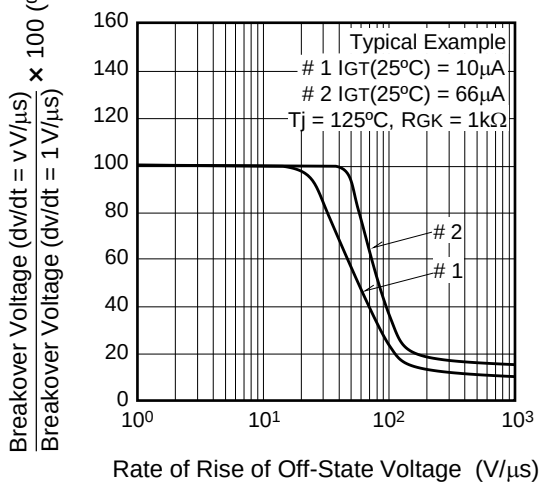
Breakover Voltage vs.
Junction Temperature



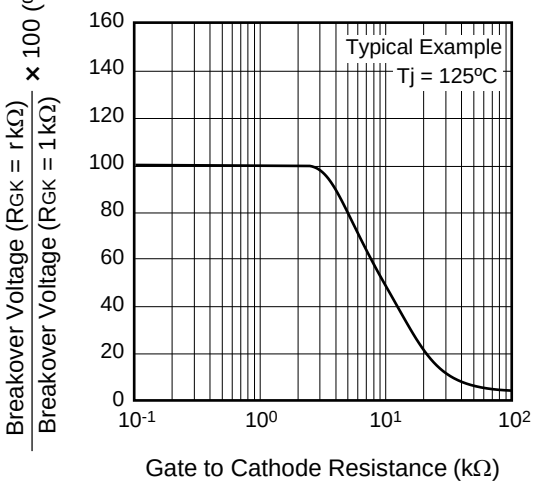
Repetitive Peak Reverse Voltage vs.
Junction Temperature



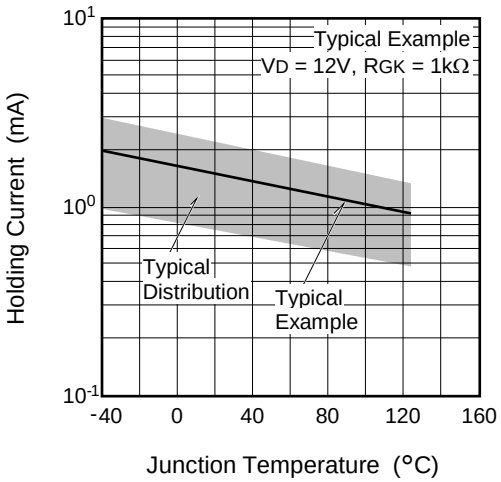
Breakover Voltage vs.
Rate of Rise of Off-State Voltage



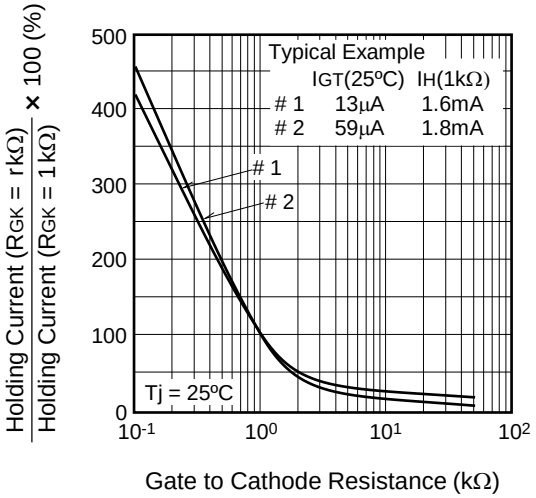
Breakover Voltage vs.
Gate to Cathode Resistance



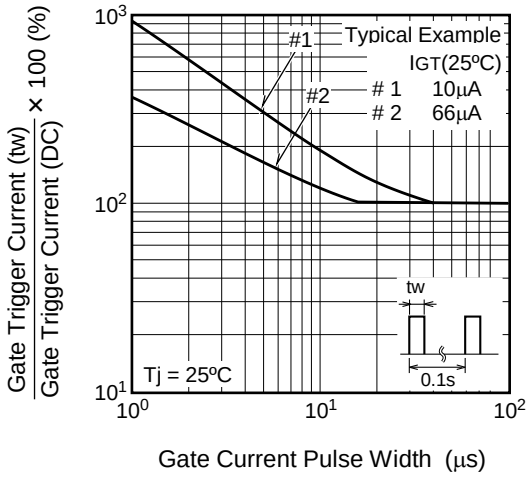
Holding Current vs.
Junction Temperature



Holding Current vs.
Gate to Cathode Resistance



Gate Trigger Current vs.
Gate Current Pulse Width

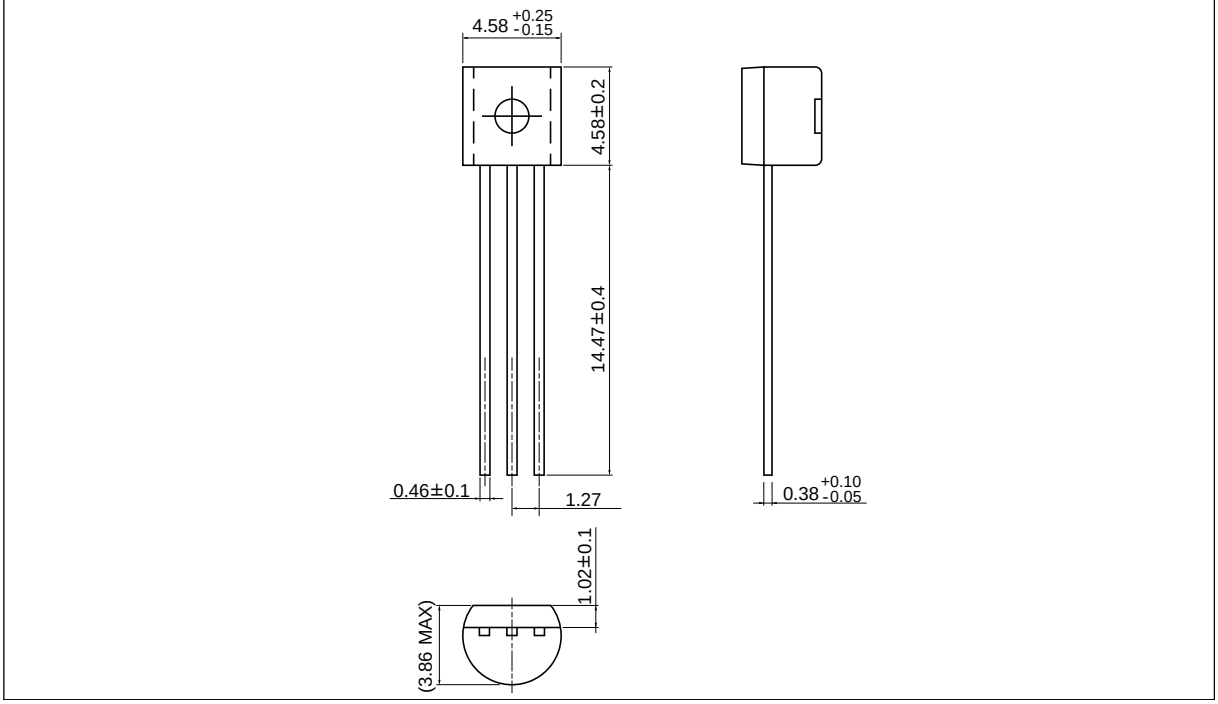


Package Dimensions

Ordering code: #BD0 <Active>

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
TO-92	SC-43A	PRSS0003DJ-A	TO-92	0.23 g

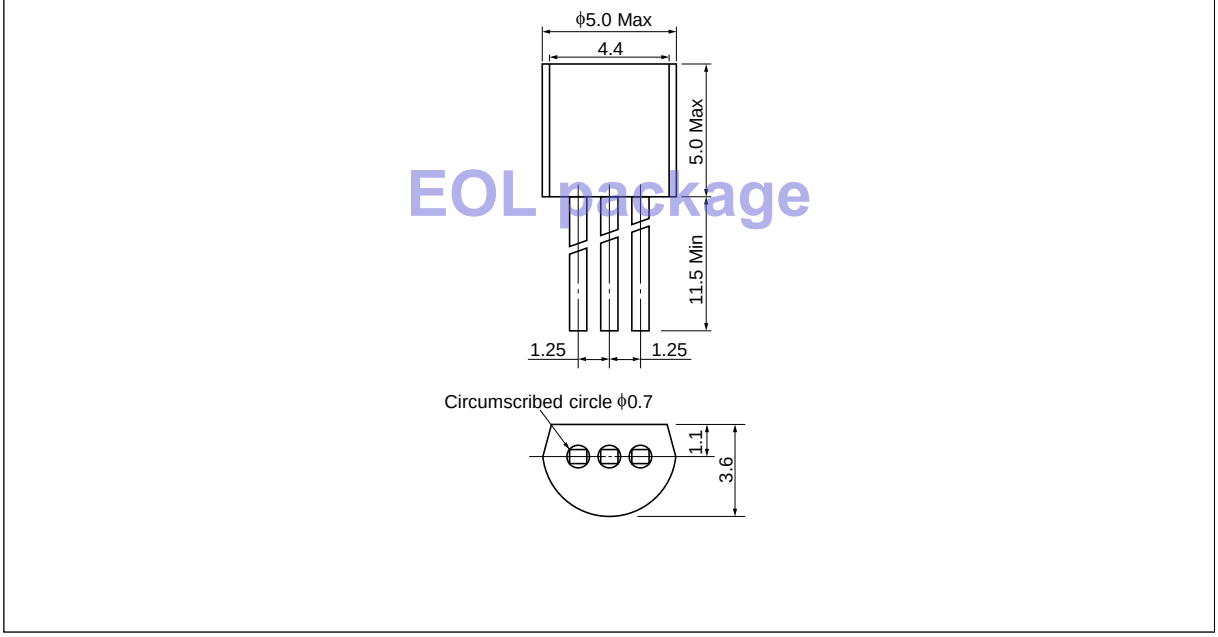
Unit: mm



Ordering code: #F00 <Obsolete>

Package Name	JEITA Package Code	RENESAS Code	Previous Code	MASS[Typ.]
TO-92*	SC-43A	PRSS0003EA-A	T920	0.23 g

Unit: mm



Ordering Information

Orderable Part Number	Package	Packing Note4	Quantity	Remark	Status
CR02AM-8#BD0	TO-92	Plastic Bag	1000 pcs.	Straight type	Active
CR02AM-8-☐#BD0	TO-92	Plastic Bag	1000 pcs.	Straight type, ☐:I_{GT} item	
CR02AM-8-A6#BD0	TO-92	Plastic Bag	1000 pcs.	A6 Lead form	
CR02AM-8-☐A6#BD0	TO-92	Plastic Bag	1000 pcs.	A6 Lead form, ☐:I_{GT} item	
CR02AM-8-TB#BD0	TO-92	Adhesive Tape	2000 pcs.	A8 Lead form	
CR02AM-8-☐TB#BD0	TO-92	Adhesive Tape	2000 pcs.	A8 Lead form, ☐:I_{GT} item	
CR02AM-8#F00	TO-92*	Plastic Bag	500 pcs.	Straight type	Obsolete
CR02AM-8-☐#F00	TO-92*	Plastic Bag	500 pcs.	Straight type, ☐:I_{GT} item	
CR02AM-8-A6#F00	TO-92*	Plastic Bag	500 pcs.	A6 Lead form	
CR02AM-8-☐A6#F00	TO-92*	Plastic Bag	500 pcs.	A6 Lead form, ☐:I_{GT} item	
CR02AM-8-TB#F00	TO-92*	Adhesive Tape	2000 pcs.	A8 Lead form	
CR02AM-8-☐TB#F00	TO-92*	Adhesive Tape	2000 pcs.	A8 Lead form, ☐:I_{GT} item	

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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