

CR04AM-12A

600V - 0.4A - Thyristor

Low Power Use

R07DS0636EJ0400

Rev.4.00

Feb. 22, 2022

Features

- $I_T(AV)$: 0.4 A
- V_{DRM} : 600 V
- I_{GT} : 100 μ A
- RoHS Compliant
- Planar Passivation Type
- Halogen-free (PRSS0003DJ-A)
- Completely Pb-free (PRSS0003DJ-A)

Outline

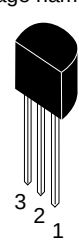
RENESAS Package code: PRSS0003EA-A
(Package name: TO-92*)

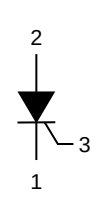
Ordering code: #B00



PRSS0003DJ-A
(Package name: TO-92)

#BD0





1. Cathode
2. Anode
3. Gate

Application

Igniter, solid state relay, strobe flasher, circuit breaker, and other general purpose 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

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

Parameter	Symbol	Ratings	Unit	Conditions
RMS on-state current	$I_T(RMS)$	0.63	A	
Average on-state current	$I_T(AV)$	0.4	A	Commercial frequency, sine half wave 180°conduction, $T_a = 54^\circ\text{C}$
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 ² 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

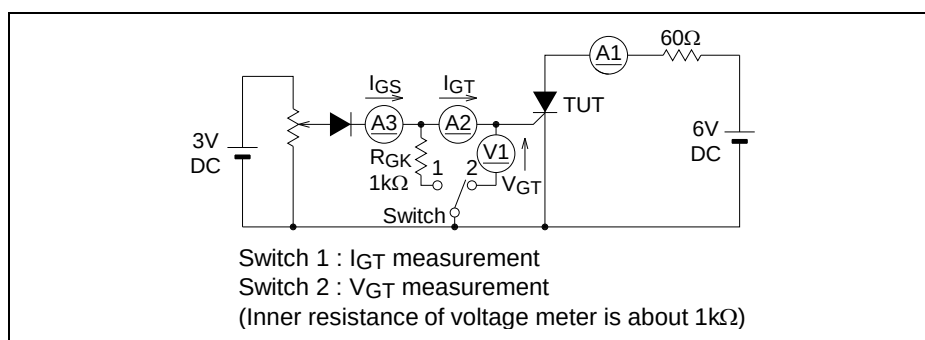
Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Repetitive peak reverse current	I_{RRM}	—	—	0.5	mA	$T_j = 125^\circ\text{C}$, V_{RRM} applied
Repetitive peak off-state current	I_{DRM}	—	—	0.5	mA	$T_j = 125^\circ\text{C}$, V_{DRM} applied $R_{GK}=1\text{ k}\Omega$
On-state voltage	V_{TM}	—	—	1.2	V	$T_c = 25^\circ\text{C}$, $I_{TM} = 1.2\text{ A}$, 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 ^{Note2}	—	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	$R_{th(j-a)}$	—	—	150	$^\circ\text{C/W}$	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	D	E
$I_{GT} (\mu\text{A})$	1 to 30	20 to 50	1 to 50	20 to 100

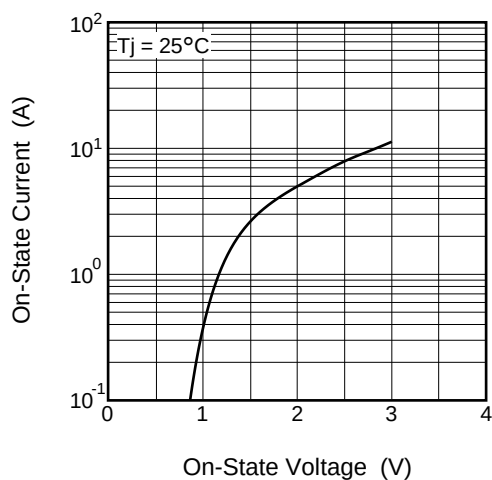
The above values do not include the current flowing through the $1\text{ k}\Omega$ resistance between the gate and cathode.

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

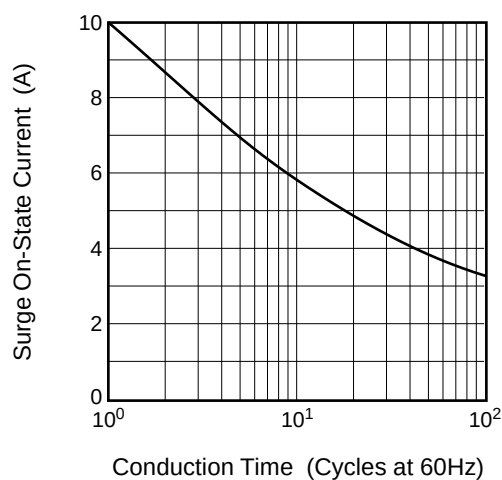


Performance Curves

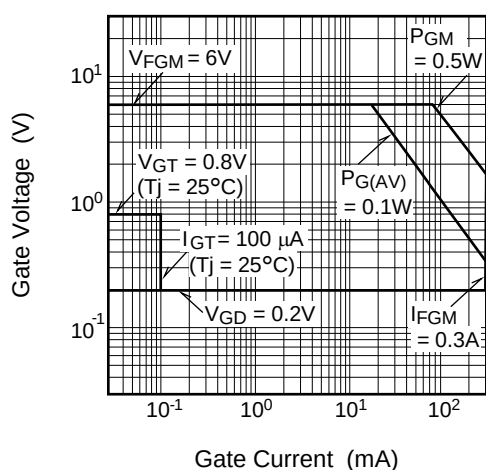
Maximum On-State Characteristics



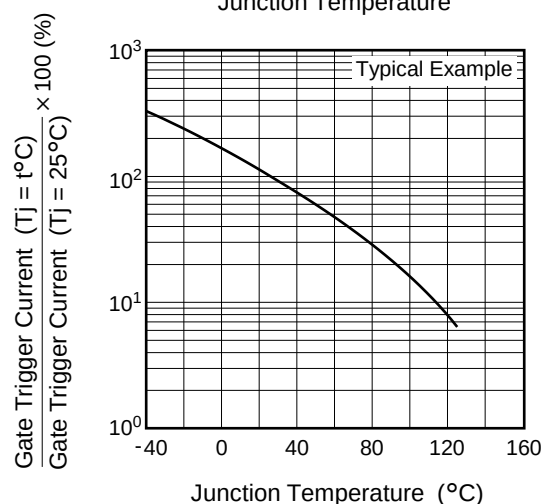
Rated Surge On-State Current



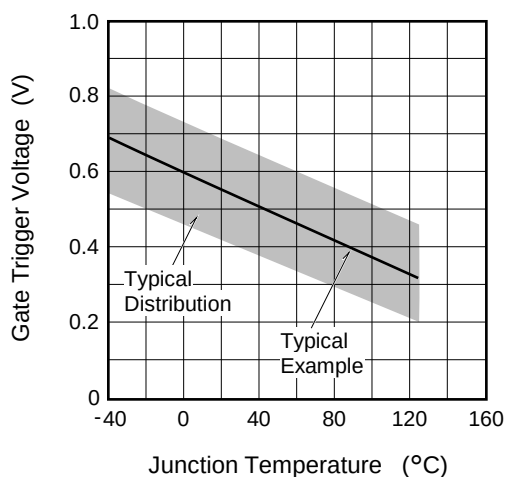
Gate Characteristics



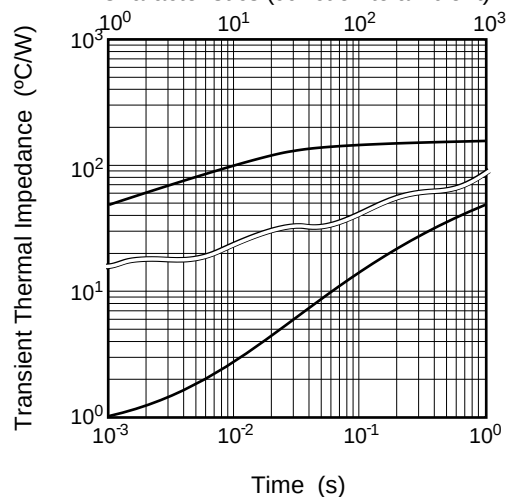
Gate Trigger Current vs. Junction Temperature



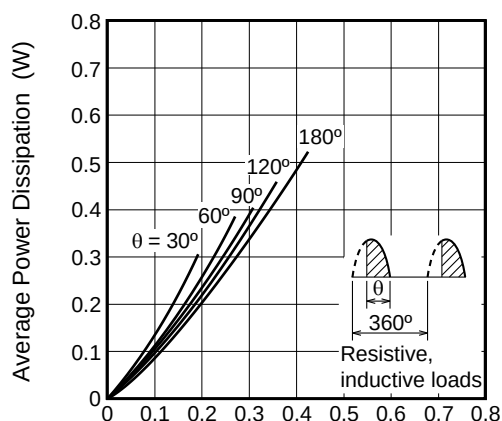
Gate Trigger Voltage vs. Junction Temperature



Maximum Transient Thermal Impedance Characteristics (Junction to ambient)

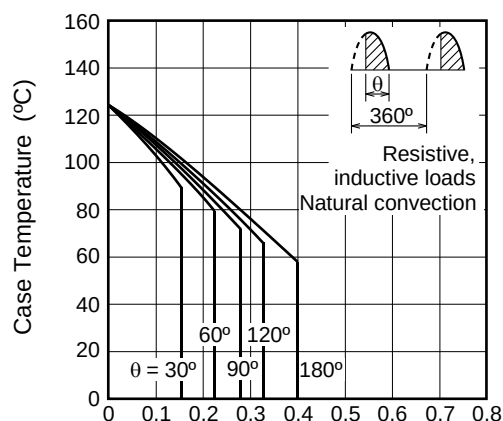


Maximum Average Power Dissipation
(Single-Phase Half Wave)



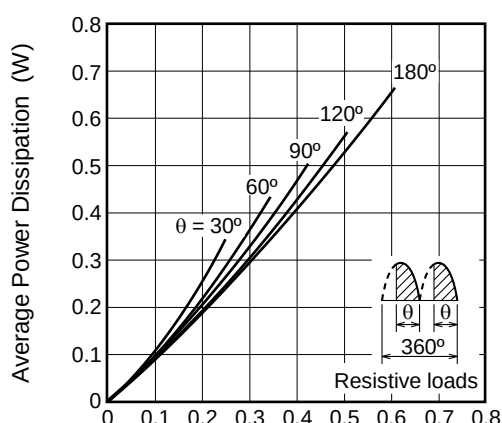
Average On-State Current (A)

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



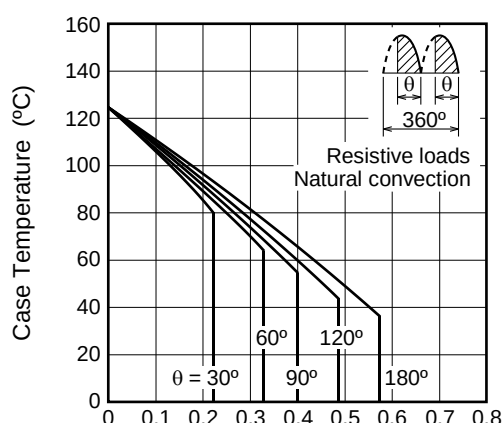
Average On-State Current (A)

Maximum Average Power Dissipation
(Single-Phase Full Wave)



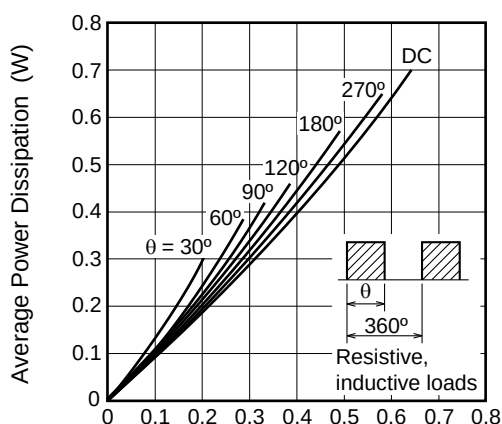
Average On-State Current (A)

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



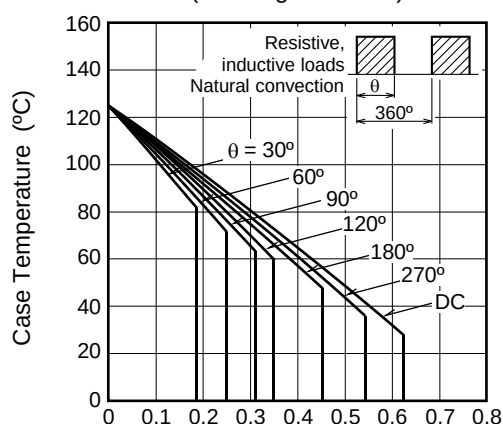
Average On-State Current (A)

Maximum Average Power Dissipation
(Rectangular Wave)

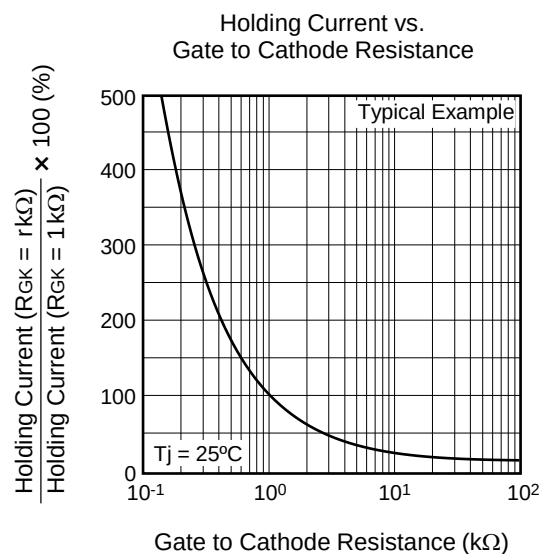
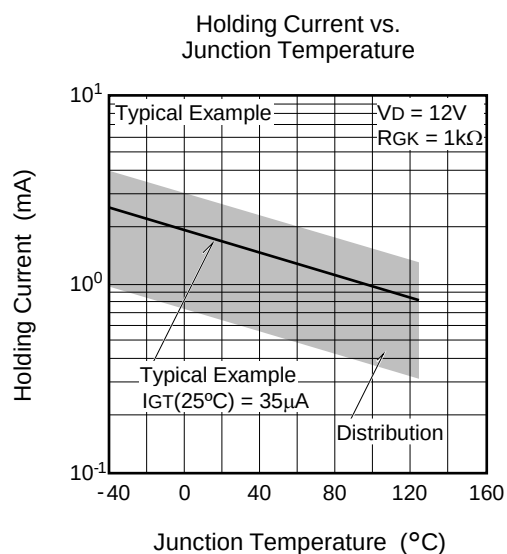
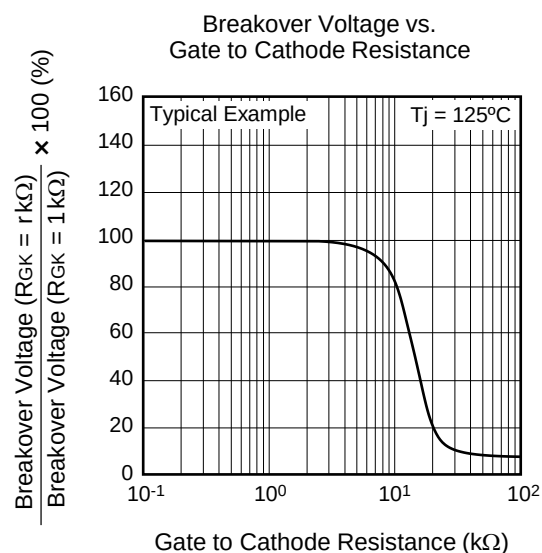
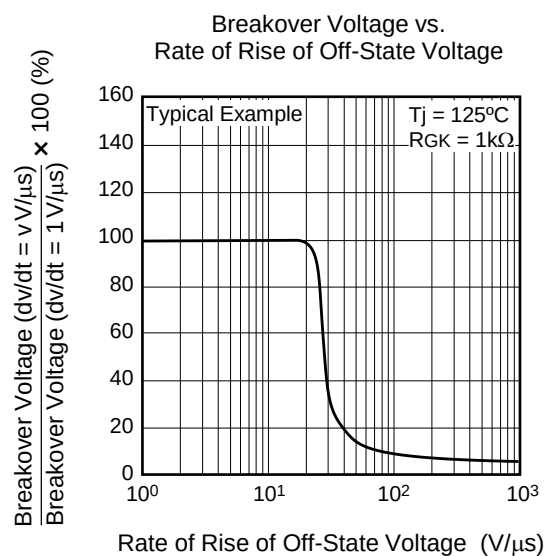
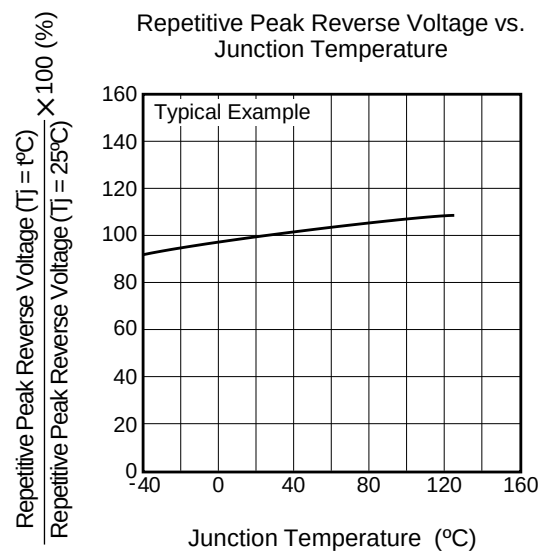
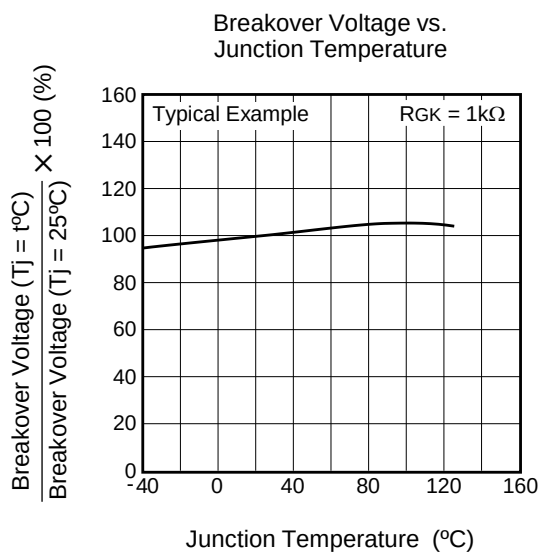


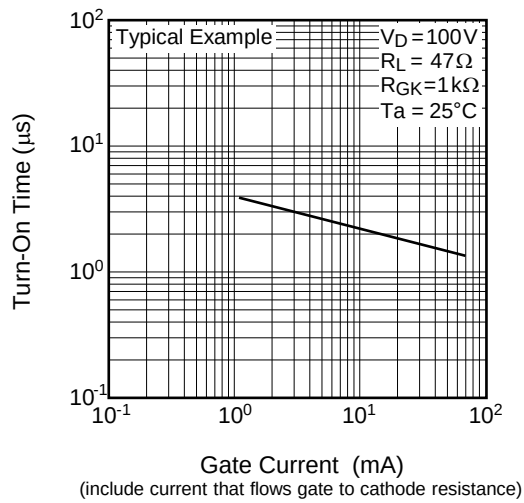
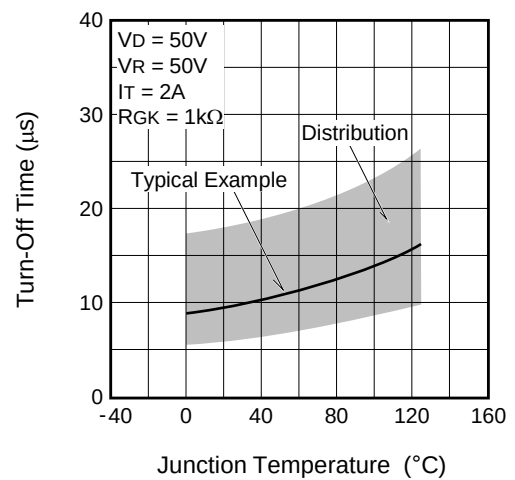
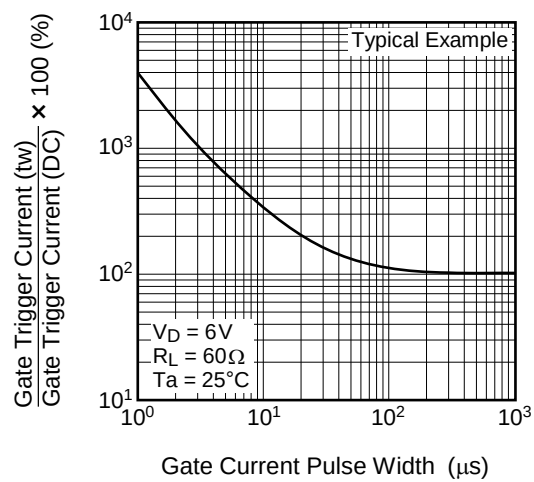
Average On-State Current (A)

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



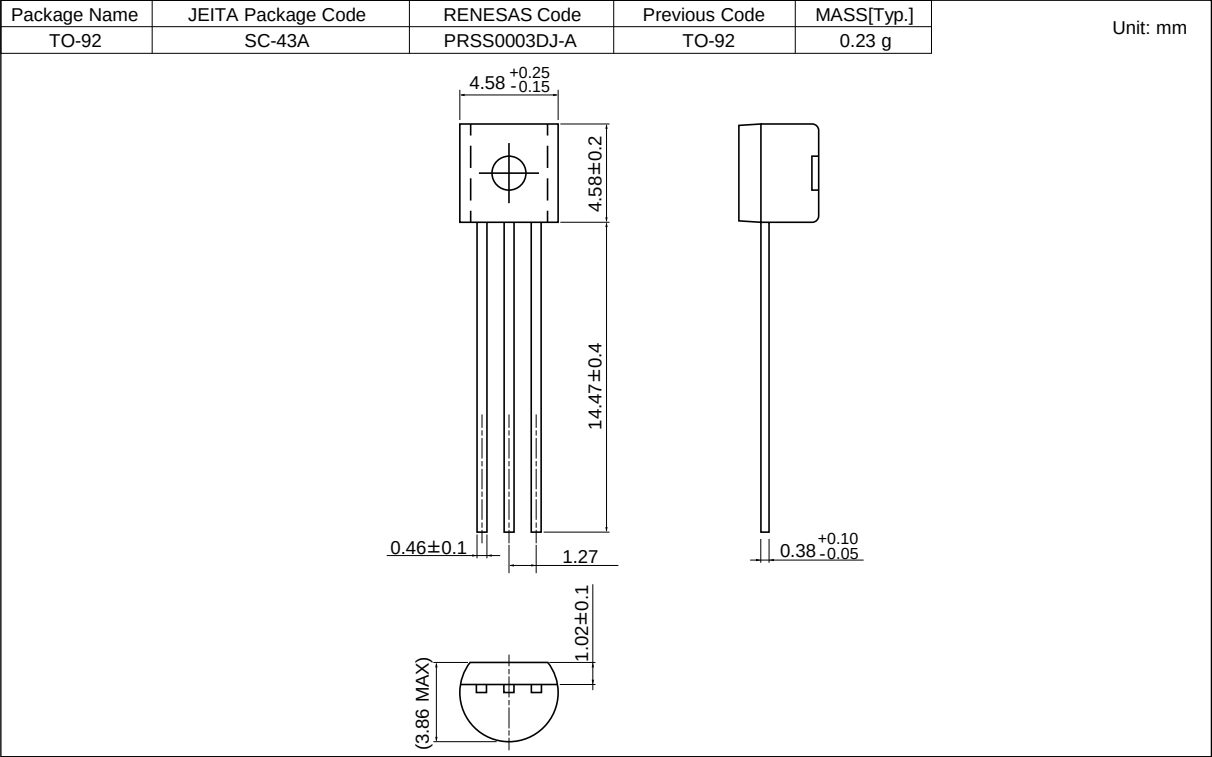
Average On-State Current (A)



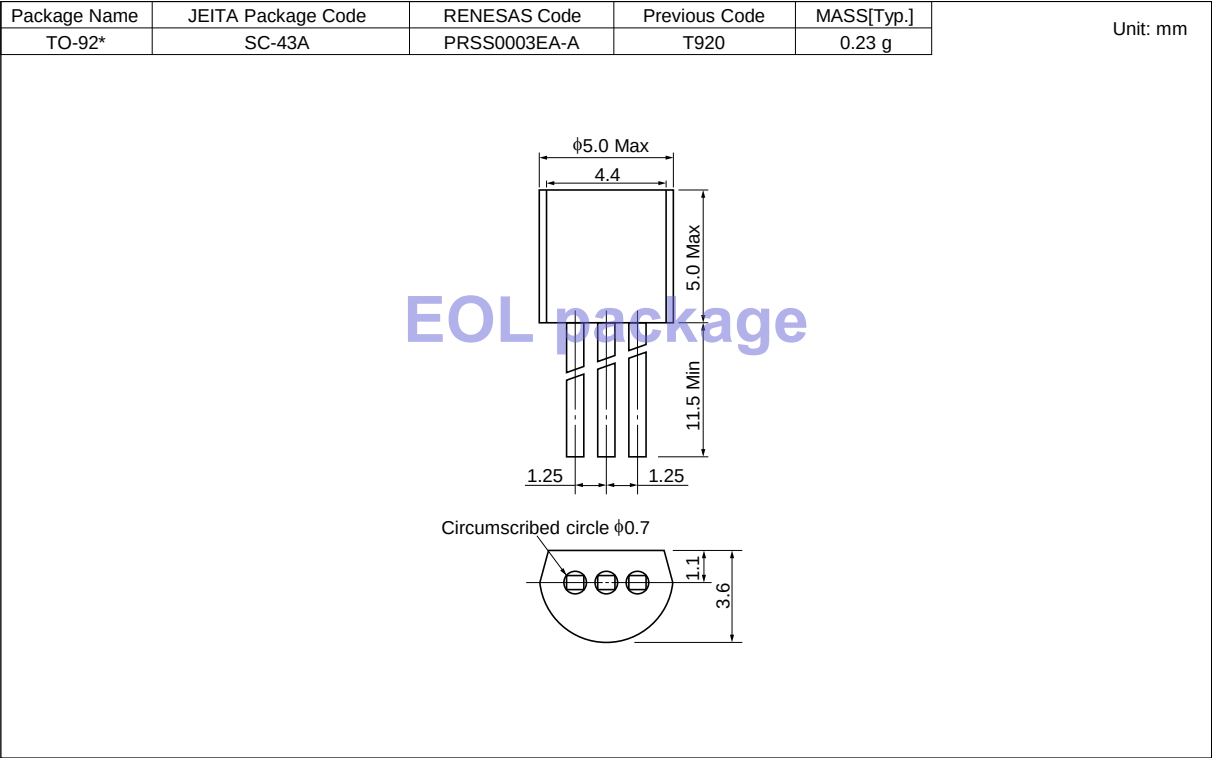
Turn-On Time vs.
Gate CurrentTurn-Off Time vs.
Junction TemperatureGate Trigger Current vs.
Gate Current Pulse Width

Package Dimensions

Ordering code: #BD0 <Active>



Ordering code: #B00 <Obsolete>



Ordering Information

Orderable Part Number	Package	Packing ^{Note4}	Quantity	Remark	Status
CR04AM-12A#BD0	TO-92	Plastic Bag	1000 pcs.	Straight type	Active
CR04AM-12A-□#BD0	TO-92	Plastic Bag	1000 pcs.	Straight type, □:I _{GT} item	
CR04AM-12A-A6#BD0	TO-92	Plastic Bag	1000 pcs.	A6 Lead form	
CR04AM-12A-□A6#BD0	TO-92	Plastic Bag	1000 pcs.	A6 Lead form, □:I _{GT} item	
CR04AM-12A-TB#BD0	TO-92	Adhesive Tape	2000 pcs.	A8 Lead form	
CR04AM-12A-□TB#BD0	TO-92	Adhesive Tape	2000 pcs.	A8 Lead form, □:I _{GT} item	
CR04AM-12A#B00	TO-92*	Plastic Bag	500 pcs.	Straight type	Obsolete
CR04AM-12A-□#B00	TO-92*	Plastic Bag	500 pcs.	Straight type, □:I _{GT} item	
CR04AM-12A-A6#B00	TO-92*	Plastic Bag	500 pcs.	A6 Lead form	
CR04AM-12A-□A6#B00	TO-92*	Plastic Bag	500 pcs.	A6 Lead form, □:I _{GT} item	
CR04AM-12A-TB#B00	TO-92*	Adhesive Tape	2000 pcs.	A8 Lead form	
CR04AM-12A-□TB#B00	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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