



SENSITIVE 0.8A SCRS

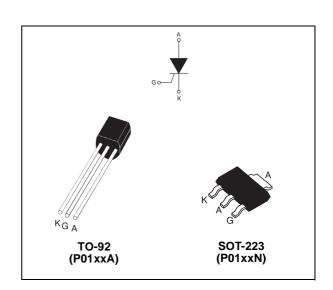
MAIN FEATURES:

Symbol	Value	Unit
I _{T(RMS)}	0.8	А
V _{DRM} /V _{RRM}	400 and 600	V
I _{GT}	5 to 200	μΑ

DESCRIPTION

Thanks to highly sensitive triggering levels, the P01 SCR series is suitable for all applications where available gate current is limited, such as ground fault circuit interruptors, pilot circuits in solid state relays, stand-by mode power supplies, smoke and alarm detectors.

Available in through-hole or surface mount packages, the voltage capability of this series has been upgrated since its introduction, to reach 600 V.



ABSOLUTE RATINGS (limiting values)

Symbol	Parame	Value	Unit			
I _{T(RMS)}	RMS on-state current	TO-92	TI = 55°C	0.8	Α	
	(180° conduction angle)	SOT-223	Tamb = 70°C	0.6	A	
IT _(AV)	Average on-state current	TO-92	TI = 55°C	0.5	Α	
	(180° conduction angle)	SOT-223	Tamb = 70°C	0.5	Α .	
I _{TSM}	Non repetitive surge peak on-state	tp = 8.3 ms	Tj = 25°C	8	Α	
	current	tp = 10 ms	1) = 23 0	7	^	
l ² t	I ² t Value for fusing	tp = 10ms	Tj = 25°C	0.24	A ² s	
dl/dt	Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$, tr $\leq 100 \text{ ns}$	F = 60 Hz	Tj = 125°C	50	A/µs	
I _{GM}	Peak gate current	tp = 20 μs	Tj = 125°C	1	Α	
P _{G(AV)}	Average gate power dissipation		Tj = 125°C	0.1	W	
T _{stg} Tj	Storage junction temperature range Operating junction temperature range			- 40 to + 150 - 40 to + 125	°C	

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P01 Series

ELECTRICAL CHARACTERISTICS (Tj = 25°C, unless otherwise specified)

Symbol	bol Test Conditions			P01xx			Unit
				02	11	18	Oilit
I _{GT}		MIN.	-	4	0.5		
	$V_D = 12 \text{ V}$ $R_L = 140 \Omega$			200	25	5	μA
V _{GT}			MAX.		0.8		V
$V_{\sf GD}$	$V_D = V_{DRM}$ $R_L = 3.3 \text{ k}\Omega$ $R_{GK} = 1 \text{ k}\Omega$	MIN.		0.1		V	
V _{RG}	I _{RG} = 10 μA		MIN.	8		V	
Ι _Η	$I_T = 50 \text{ mA}$ $R_{GK} = 1 \text{ k}\Omega$	MAX.	5		mA		
ΙL	$I_G = 1 \text{ mA}$ $R_{GK} = 1 \text{ k}\Omega$		MAX.	6		mA	
dV/dt	$V_D = 67 \% V_{DRM} R_{GK} = 1 k\Omega$ $T_j = 125 °C$		MIN.	75	80	75	V/µs
V _{TM}	I _{TM} = 1.6 A tp = 380 μs Tj = 25°C		MAX.	1.95		V	
V _{t0}	Threshold voltage Tj = 125°C		MAX.	0.95		V	
R _d	Dynamic resistance Tj = 125°C		MAX.	600		mΩ	
I _{DRM}	$V_{DRM} = V_{RRM} = 400 \text{ V}$ $R_{GK} = 1 \text{ k}\Omega$		MAX.	1		μA	
I _{RRM}	$V_{DRM} = V_{RRM} = 600 \text{ V}$ $R_{GK} = 1 \text{ k}\Omega$ $Tj = 25^{\circ}\text{C}$			10		μΑ	
	$V_{DRM} = V_{RRM}$ $R_{GK} = 1 \text{ k}\Omega$ $Tj = 125 ^{\circ}\text{C}$		MAX.		100		μΑ

THERMAL RESISTANCES

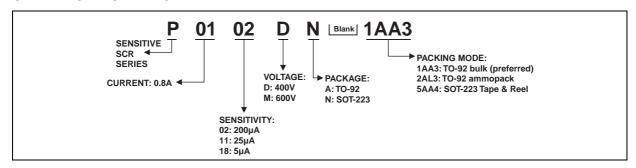
Symbol	Parameter				Unit
R _{th(j-i)}	Junction to case (DC)		TO-92	80	°C/W
R _{th(j-t)}	Junction to tab (DC)		SOT-223	30	
R _{th(j-a)}	Junction to ambient		TO-92	150	°C/W
		$S = 5 \text{ cm}^2$	SOT-223	60	

S = Copper surface under tab

PRODUCT SELECTOR

Part Number	Voltage		Sensitivity	Package	
	400 V	600 V	Censitivity	Fackage	
P0102DA	Х		200 μΑ	TO-92	
P0102DN	X		200 μΑ	SOT-223	
P0102MA		X	200 μΑ	TO-92	
P0102MN		X	200 μΑ	SOT-223	
P0111DA	X		25 μΑ	TO-92	
P0111DN	X		25 μΑ	SOT-223	
P0111MA		X	25 μΑ	TO-92	
P0111MN		X	25 μΑ	SOT-223	
P0118DA	X		5 μΑ	TO-92	
P0118DN	Х		5 μΑ	SOT-223	
P0118MA		X	5 μΑ	TO-92	
P0118MN		Х	5 μΑ	SOT-223	

ORDERING INFORMATION



OTHER INFORMATION

Part Number	Marking	Weight	Base Quantity	Packing mode
P01xxyA 1AA3	P01xxyA	0.2 g	2500	Bulk
P01xxyA 2AL3	P01xxyA	0.2 g	2000	Ammopack
P0102yN 5AA4	P2y	0.12 g	1000	Tape & reel
P0111yN 5AA4	P1y	0.12 g	1000	Tape & reel
P0118yN 5AA4	P8y	0.12 g	1000	Tape & reel

Note: xx = sensitivity, y = voltage

Fig. 1: Maximum average power dissipation versus average on-state current.

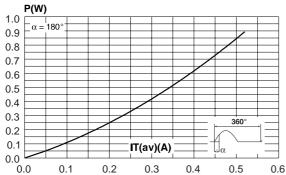
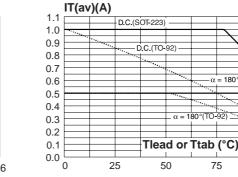


Fig. 2-2: Average and D.C. on-state current versus ambient temperature (device mounted on FR4 with recommended pad layout for SOT-223).



versus lead temperature.

Fig. 3: Relative variation of thermal impedance junction to ambient versus pulse duration.

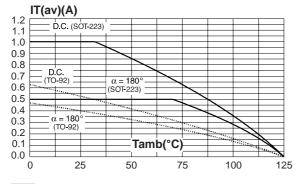
Fig. 2-1: Average and D.C. on-state current

-α = 180°(SOT-22

100

125

75



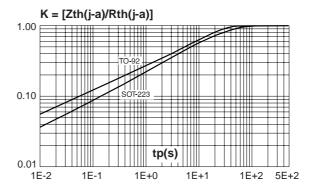


Fig. 4: Relative variation of gate trigger current, holding current and latching current versus junction temperature (typical values).

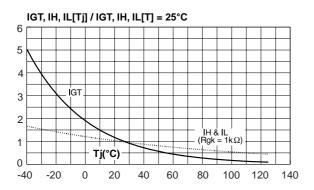


Fig. 6: Relative variation of dV/dt immunity versus gate-cathode resistance (typical values).

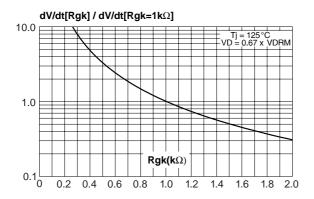


Fig. 8: Surge peak on-state current versus number of cycles.

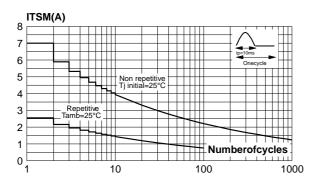


Fig. 5:Relative variation of holding current versus gate-cathode resistance (typical values).

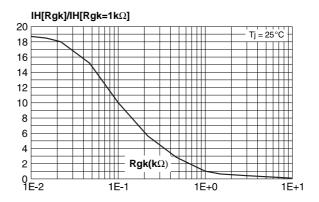


Fig. 7: Relative variation of dV/dt immunity versus gate-cathode capacitance (typical values).

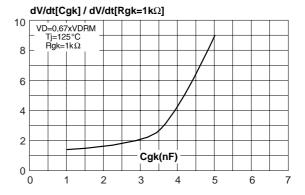
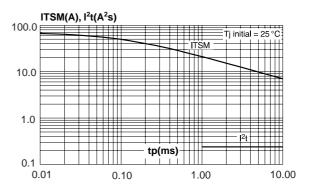


Fig. 9: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp < 10 ms, and corresponding value of I²t.



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Fig. 10: On-state characteristics (maximum values).

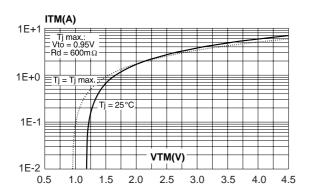
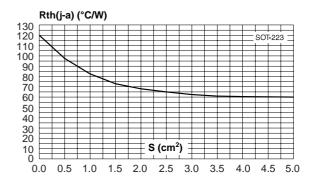
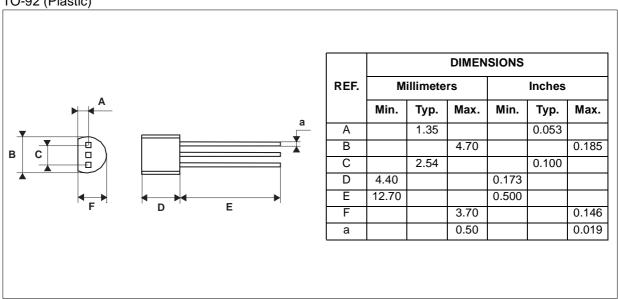


Fig. 11: SOT-223 Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: $35 \,\mu m$).



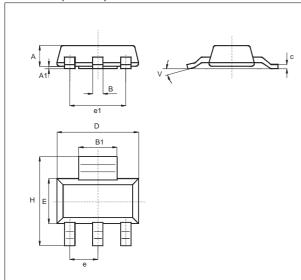
PACKAGE MECHANICAL DATA

TO-92 (Plastic)



PACKAGE MECHANICAL DATA

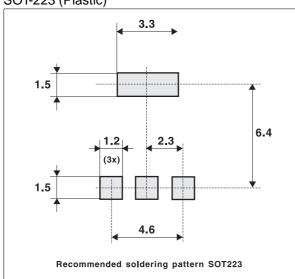
SOT-223 (Plastic)



	DIMENSIONS					
REF.	Millimeters			Inches		
	Min.	Тур.	Max.	Min.	Тур.	Max.
Α			1.80			0.071
A1	0.02		0.1	0.0008		0.004
В	0.60	0.70	0.85	0.024	0.027	0.034
B1	2.90	3.00	3.15	0.114	0.118	0.124
С	0.24	0.26	0.35	0.009	0.010	0.014
D	6.30	6.50	6.70	0.248	0.256	0.264
е		2.3			0.090	
e1		4.6			0.181	
Е	3.30	3.50	3.70	0.130	0.138	0.146
Н	6.70	7.00	7.30	0.264	0.276	0.287
V	10° max					

FOOTPRINT DIMENSIONS (in millimeters)

SOT-223 (Plastic)



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