

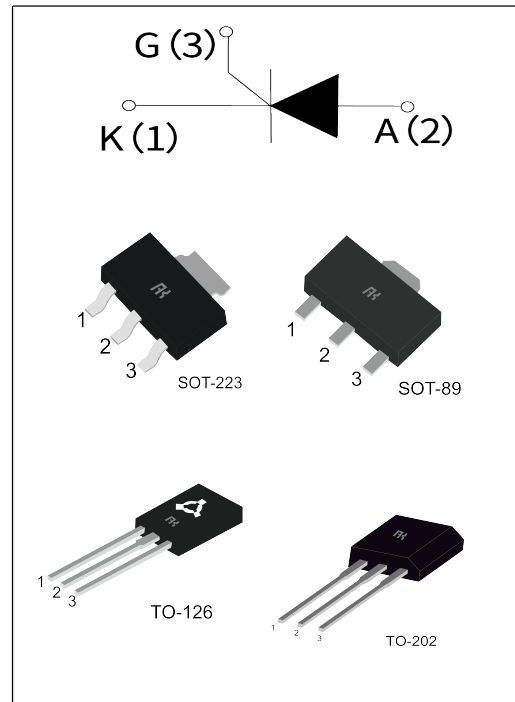
## 2P4M Serial Sensitive Gate SCRS

### GENERAL DESCRIPTION :

The 2P4M SCR series provide high dv/dt rate with strong resistance to electromagnetic interface. They are especially recommended for use on residual current circuit breaker, straight hair, igniter etc.

### Main Features:

$I_{T(RMS)}$	$V_{DRM}/V_{RRM}$	$I_{GT}$
2A	400/600 V	$\leq 200\mu A$



### Absolute Ratings(limiting values) :

Symbol	Parameter		Value	Unit
$T_{stg}$	Storage junction temperature range		- 40 to + 150	°C
$T_j$	Operating junction temperature range		- 40 to + 110	°C
$I_{T(RMS)}$	RMS on-state current	TO-202 (TC=90°C)	2	A
		SOT-89/SOT-223 (TC=70°C)		
		TO-126 (TC=80°C)		
$I_{TSM}$	Non repetitive surge peak on-state current (tp=10ms)		20	A
$V_{DRM}$	Repetitive peak off-state voltage(Tj =25°C)		400/600	V
$V_{RRM}$	Repetitive peak reverse voltage(Tj =25°C)		400/600	V
$V_{DSM}$	Non repetitive surge peak Off-state voltage		$V_{DRM} + 100$	V
$V_{RSM}$	Non repetitive peak reverse voltage		$V_{RRM} + 100$	V
$I^2t$	$I^2t$ value for fusing tp = 10 ms		2	A <sup>2</sup> s
$dI/dt$	Critical rate of rise of on-state current		50	A/μs

<b>I<sub>GM</sub></b>	Peak gate current (tp=20 μ s, T <sub>j</sub> =110°C)	0.2	A
<b>P<sub>G(AV)</sub></b>	Average gate power dissipation (tp=20 μ s, T <sub>j</sub> =110°C)	0.1	W
<b>P<sub>GM</sub></b>	Peak gate power (T <sub>j</sub> =110°C)	0.5	W

**Electrical Characteristics : (T<sub>j</sub>=25°C unless otherwise specified)**

Symbol	Test Condition	Value			Unit
		MIN	TYP	MAX	
<b>I<sub>GT</sub></b>	V <sub>D</sub> =12V R <sub>L</sub> =33Ω	--	50	200	μA
<b>V<sub>GT</sub></b>		--	0.6	0.8	V
<b>V<sub>GD</sub></b>	V <sub>D</sub> =V <sub>DRM</sub> R <sub>L</sub> =3.3kΩ T <sub>j</sub> =110°C	0.2	--	--	V
<b>I<sub>L</sub></b>	I <sub>G</sub> =1.2 I <sub>GT</sub>	--	--	6	mA
<b>I<sub>H</sub></b>	I <sub>T</sub> = 50mA	--	--	5	mA
<b>dV/dt</b>	V <sub>D</sub> =2/3V <sub>DRM</sub> T <sub>j</sub> =110°C R <sub>GK</sub> =1kΩ	10	--	--	V/μs

**Static Characteristics**

Symbol	Parameter		Value(MAX)	Unit
<b>V<sub>TM</sub></b>	I <sub>TM</sub> = 4A tp= 380μs	T <sub>j</sub> =25°C	1.5	V
<b>I<sub>DRM</sub></b> <b>I<sub>RRM</sub></b>	V <sub>D</sub> =V <sub>DRM</sub> , V <sub>R</sub> =V <sub>RRM</sub>	T <sub>j</sub> =25°C	5	μ A
		T <sub>j</sub> =110°C	100	μ A

**Thermal Resistances :**

Symbol	Parameter		Value	Unit
<b>R<sub>th(j-c)</sub></b>	junction to case(AC)	TO-126\TO-202	6.5	°C/W
		SOT-223	20	
		SOT-89	25	

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

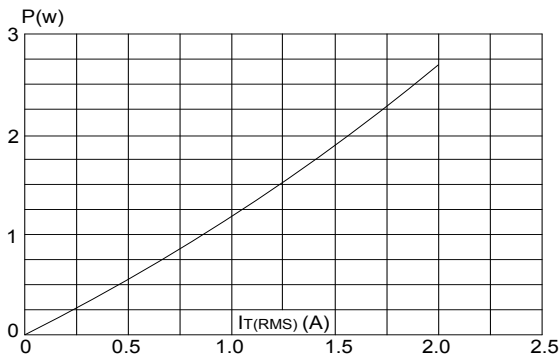


Fig.2 : RMS on-state current versus case temperature

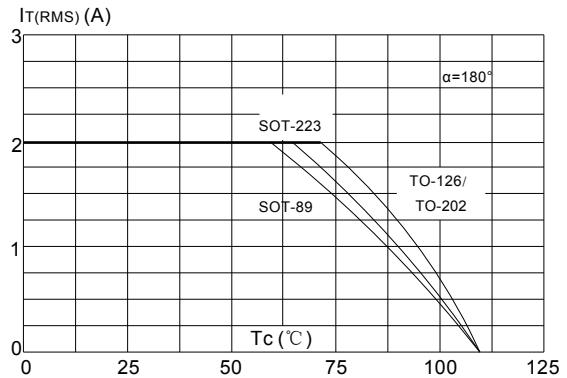


Fig.3 : Surge peak on-state current versus number of cycles

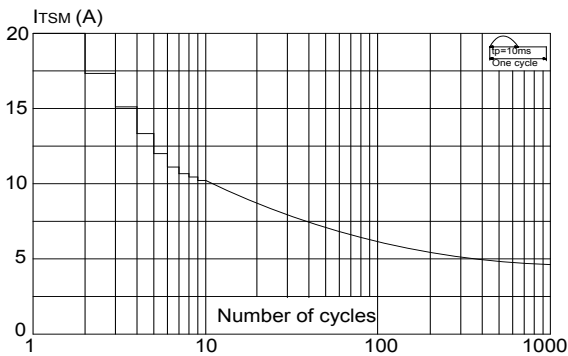


Fig.4 : On-state characteristics (maximum values)

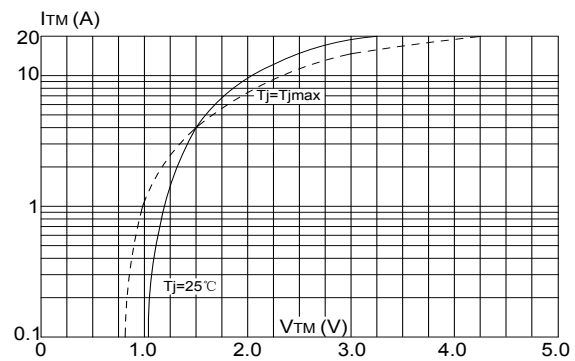


Fig.5 : Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10ms$  and corresponding value of  $I^2 t$  ( $di/dt < 50A/\mu s$ )

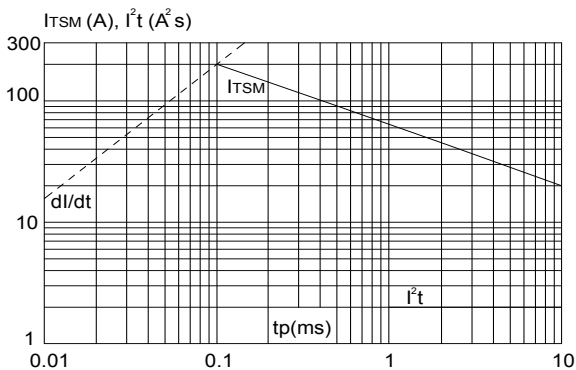
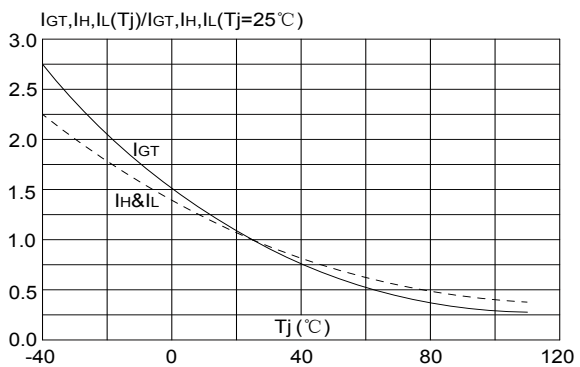
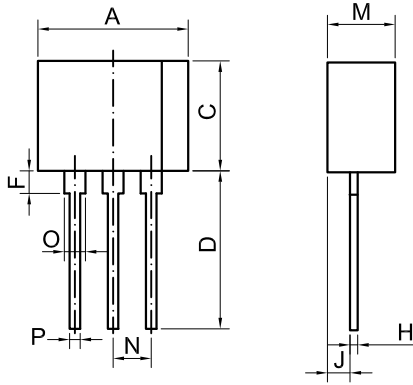


Fig.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature

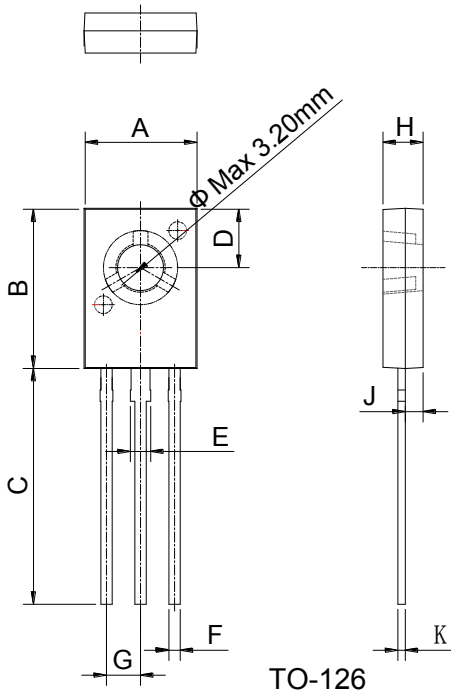


**Package Mechanical Data :**

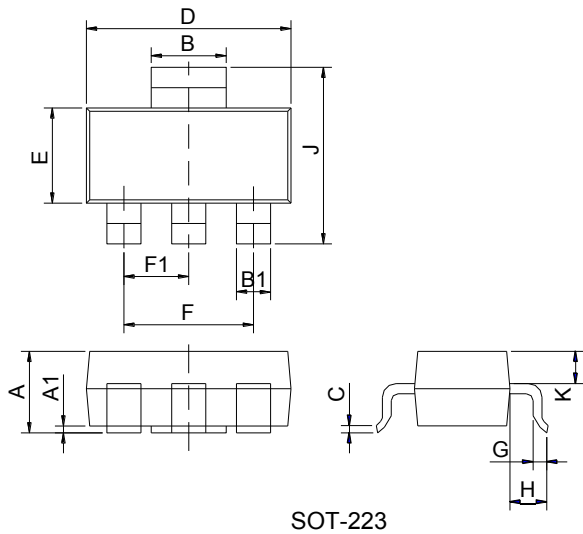
**TO-202-3**



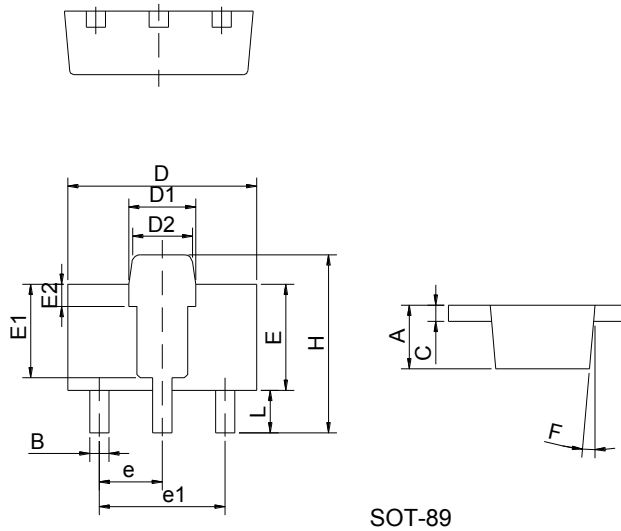
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.30		9.90	0.366		0.390
C	7.0		7.6	0.276		0.299
D	10.5		11.5	0.413		0.453
F	1.50		2.50	0.059		0.098
H	0.45		0.55	0.018		0.022
J	1.50		1.90	0.059		0.075
M	4.40		4.70	0.173		0.185
N		2.54			0.100	
O	1.20		1.50	0.047		0.059
P	0.60		0.80	0.024		0.031



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	7.40		7.80	0.291		0.307
B	10.6		11.2	0.417		0.441
C	15.3		16.3	0.602		0.642
D	3.90		4.10	0.154		0.161
E	1.17		1.47	0.046		0.058
F	0.66		0.86	0.026		0.034
G		2.29			0.090	
H	2.50		2.90	0.098		0.114
J	1.10		1.50	0.043		0.059
K	0.45		0.60	0.018		0.024



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	1.5	1.6	1.8	0.059	0.063	0.071
A1	0.01	0.06	0.10	0.001	0.002	0.004
B	2.9	3.0	3.1	0.114	0.118	0.122
B1	0.6	0.7	0.8	0.024	0.028	0.031
C	0.22	0.26	0.32	0.009	0.010	0.013
D	6.3	6.5	6.7	0.248	0.256	0.264
E	3.3	3.5	3.7	0.130	0.138	0.146
F		4.6			0.181	
F1		2.3			0.091	
G	0.7	0.9	1.1	0.028	0.035	0.043
H	1.5	1.75	2	0.059	0.069	0.079
J	6.7	7.0	7.3	0.264	0.276	0.287
K		0.9			0.035	



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	1.40		1.60	0.055		0.063
B	0.40		0.52	0.016		0.020
C	0.35		0.41	0.014		0.016
D	4.40		4.60	0.173		0.181
D1	1.50		1.70	0.059		0.067
D2	1.30		1.50	0.051		0.059
E	2.40		2.60	0.094		0.102
E1		2.20			0.087	
E2		0.52			0.020	
e		1.50			0.059	
e1		3.00			0.118	
F		5°			0.197°	
H	4.05		4.25	0.159		0.167
L	0.89		1.20	0.035		0.047