

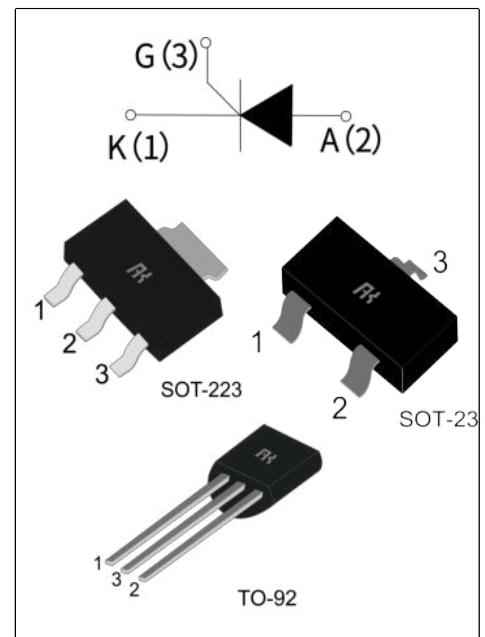
## MCR100 Serial Sensitive gate SCRs

### GENERAL DESCRIPTION :

The MCR100 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:

$I_{T(RMS)}$	$V_{DRM}/V_{RRM}$	$I_{GT}$
1A	600/800 V	$\leq 200\mu A$



### Absolute Ratings(limiting values) :

Symbol	Parameter		Value	Unit
$T_{stg}$	Storage junction temperature range		- 40 to + 150	$^{\circ}C$
$T_j$	Operating junction temperature range		- 40 to + 125	$^{\circ}C$
$I_{T(RMS)}$	RMS on-state current	TO-92 (TC=50 $^{\circ}C$ )	1	A
		SOT-23 (TC=80 $^{\circ}C$ )		
		SOT-223 (TC=75 $^{\circ}C$ )		
$I_{TSM}$	Non repetitive surge peak on-state current (tp=10ms)		9	A
$V_{DRM}$	Repetitive peak off-state voltage(Tj =25 $^{\circ}C$ )		600/800	V
$V_{RRM}$	Repetitive peak reverse voltage(Tj =25 $^{\circ}C$ )		600/800	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		0.415	A <sup>2</sup> s
$dI/dt$	Critical rate of rise of on-state current		50	A/ $\mu s$

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

**Electrical Characteristics : (Tj=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	--	--	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 Tj=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> Tj=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> = 2A tp= 380μs	Tj=25°C	1.7	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>	Tj=25°C	5	μ A
		Tj=110°C	100	μ A

**Thermal Resistances :**

Symbol	Parameter		Value	Unit
<b>R<sub>th(j-c)</sub></b>	junction to base(AC)	TO-92	75	°C/W
		SOT-23	55	
		SOT-223	60	

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

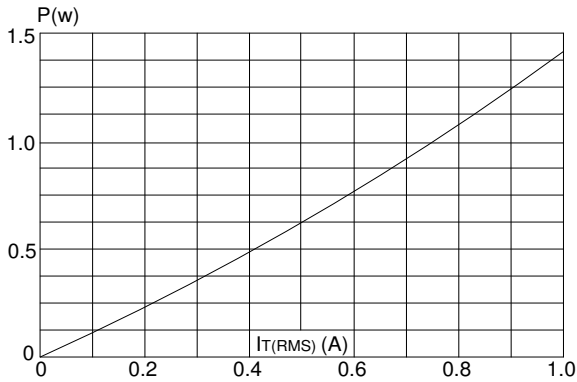


Fig.2 : RMS on-state current versus case temperature

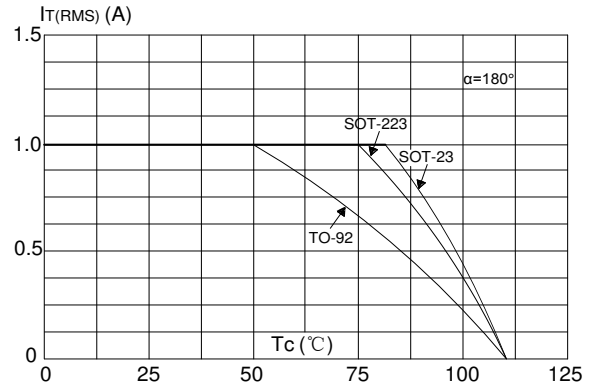


Fig.3 : Surge peak on-state current versus number of cycles

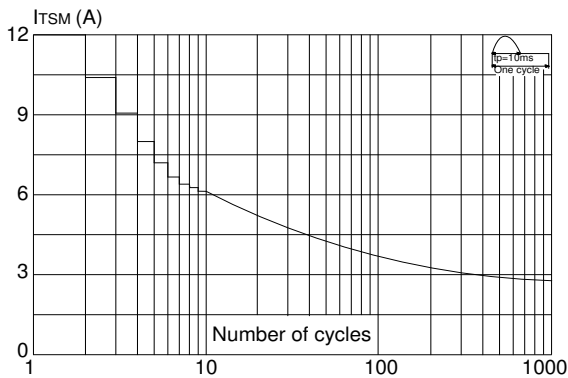


Fig.4 : On-state characteristics (maximum values)

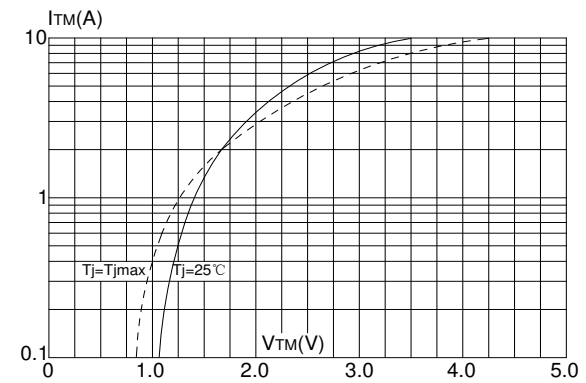


Fig.5 : Non-repetitive surge peak on-state current for a sinusoidal pulse with width  $t_p < 10ms$  and corresponding value of  $I^2 t$  ( $di/dt < 50A/\mu s$ )

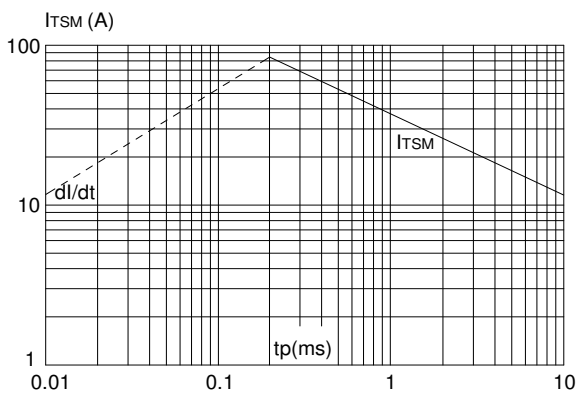
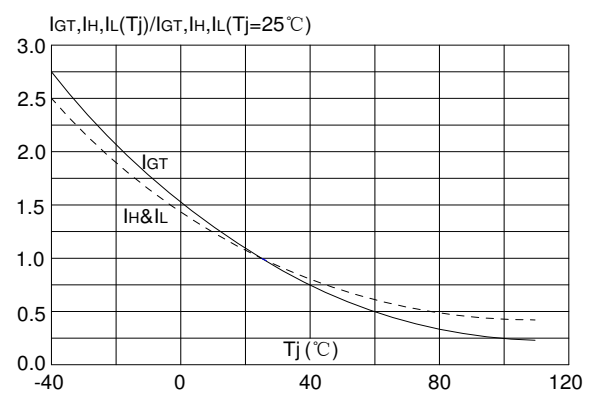


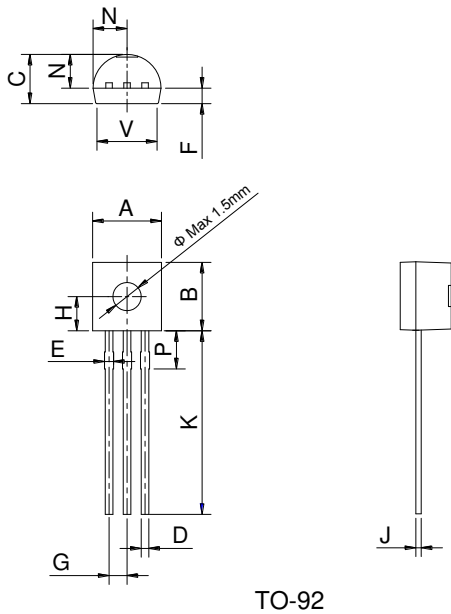
Fig.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature



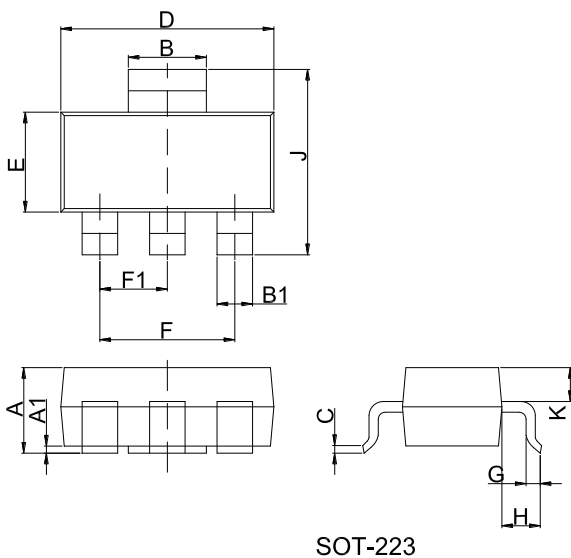
**Ordering Information:**

MCR 100 - 6	
Sensitive gate SCRs	IT(RMS):1A 6 :600 8 :800

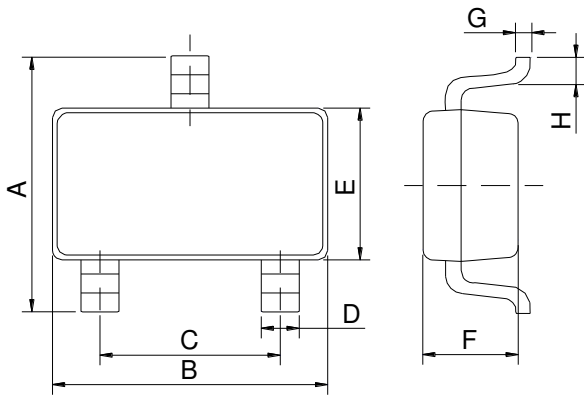
**Package Mechanical Data :**



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.45		5.20	0.175		0.205
B	4.32		5.33	0.170		0.210
C	3.18		4.19	0.125		0.165
D	0.407		0.533	0.016		0.021
E	0.60		0.80	0.024		0.031
F	-	1.1	-	-	0.043	-
G	-	1.27	-	-	0.050	-
H	-	2.30	-	-	0.091	-
J	0.36		0.50	0.014		0.020
K	12.70		15.0	0.500		0.591
N	2.04		2.66	0.080		0.105
P	1.86		2.06	0.073		0.081
V	-		4.3	-		0.169



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	0.06	0.10	0	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	0.059	0.069	0.079
J	6.7	7.0	7.3	0.264	0.276	0.287
K	0.8	0.9	1.0	0.031	0.035	0.039



SOT-23

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.65		2.95	0.104		0.116
B		2.92			0.115	
C		1.90			0.075	
D	0.34		0.36	0.013		0.014
E		1.60			0.063	
F		1.17			0.046	
G		0.15			0.006	
H	0.25		0.55	0.010		0.022