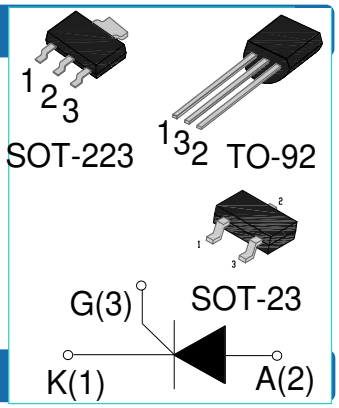
Sensitive gate SCRs

MCR100 Serial

Main Features:

$I_{T(RMS)}$	V_{DRM}/V_{RRM}	I_{GT}
1A	600/800 V	≤200μA



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.

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 + 125	°C
$I_{T(RMS)}$	RMS on-state current	TO-92 (TC=50℃)	1	A
		SOT-23 (TC=80℃)		
		SOT-223 (TC=75℃)		
I_{TSM}	Non repetitive surge peak on-state current (tp=10ms)		9	A
V_{DRM}	Repetitive peak off-state voltage(Tj =25℃)		600/800	V
V_{RRM}	Repetitive peak reverse voltage(Tj =25℃)		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^2s
dI/dt	Critical rate of rise of on-state current		50	A/μs

I_{GM}	Peak gate current (tp=20μs, Tj=110℃)	0.2	A
$P_{G(AV)}$	Average gate power dissipation (tp=20μs, Tj=110℃)	0.1	W
P_{GM}	Peak gate power (Tj=110℃)	0.5	W

Electrical Characteristics : (Tj=25℃ unless otherwise specified)

Symbol	Test Condition	Value			Unit
		MIN	TYP	MAX	
I_{GT}	V_D=12V R_L=33Ω	--	--	200	μA
V_{GT}		--	0.6	0.8	V
V_{GD}	V_D=V_{DRM} R_L=3.3kΩ T_j=110°C	0.2	--	--	V
I_L	I_G=1.2 I_{GT}	--	--	6	mA
I_H	I_T= 50mA	--	--	5	mA
$d_{V/dt}$	V_D=2/3V_{DRM} Tj=110℃ R_{GK}=1kΩ	10	--	--	V/μs

Static Characteristics

Symbol	Parameter		Value(MAX)	Unit
V_{TM}	I_{TM}= 2A tp= 380μs	T_j=25°C	1.7	V
I_{DRM} I_{RRM}	V_D=V_{DRM} ,V_R=V_{RRM}	T_j=25°C	5	μA
		T_j=110°C	100	μA

Thermal Resistances :

Symbol	Parameter		Value	Unit
$R_{th\ (j-c)}$	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

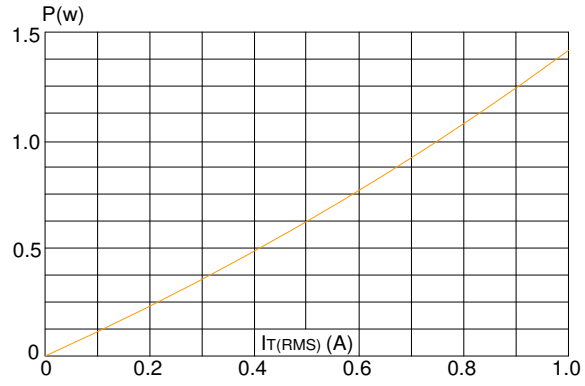


Fig.2 : RMS on-state current versus case temperature

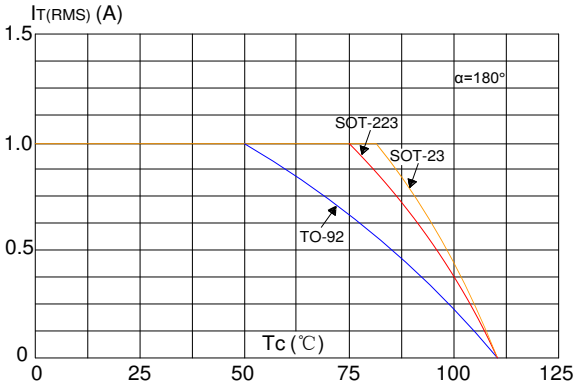


Fig.3 : Surge peak on-state current versus number of cycles

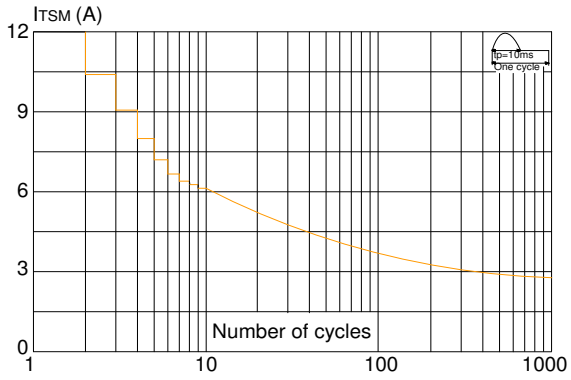


Fig.4 : On-state characteristics (maximum values)

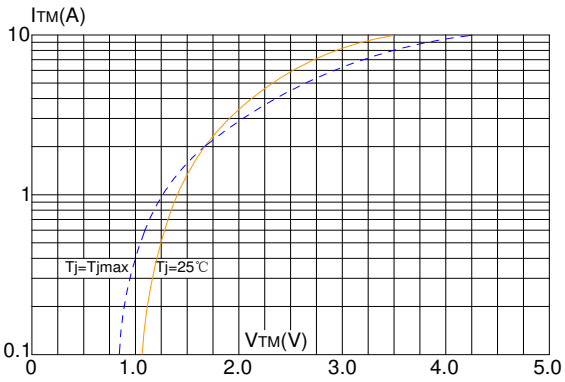


Fig.5 : Non-repetitive surge peak on-state current for a sinusoidal pulse with widthtp<10ms and corresponding value of I^2t (dI/dt < 50A/μs)

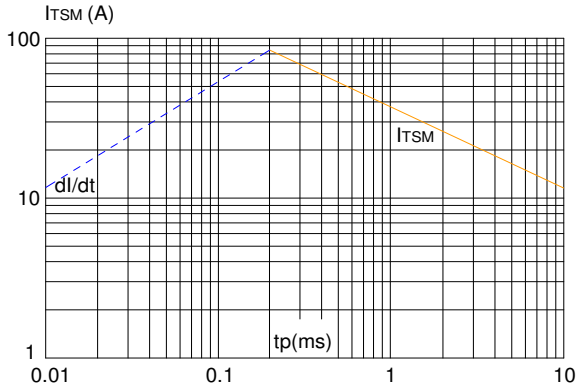
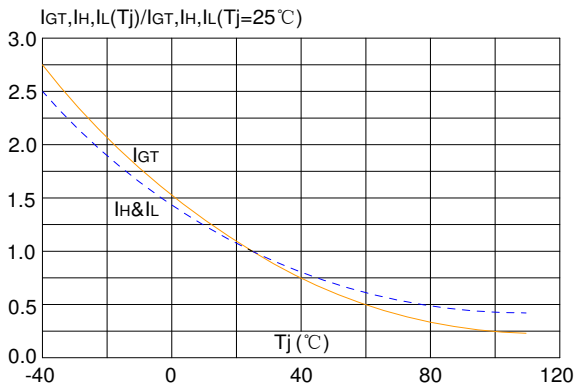


Fig.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature



Ordering Information:

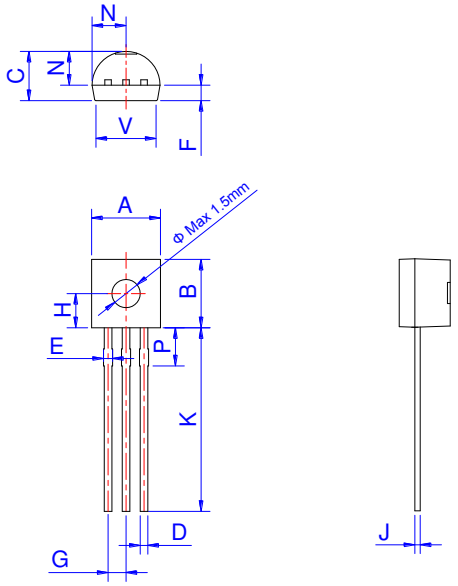
MCR 100 - 6

6 :600
8 :800

Sensitive gate SCRs

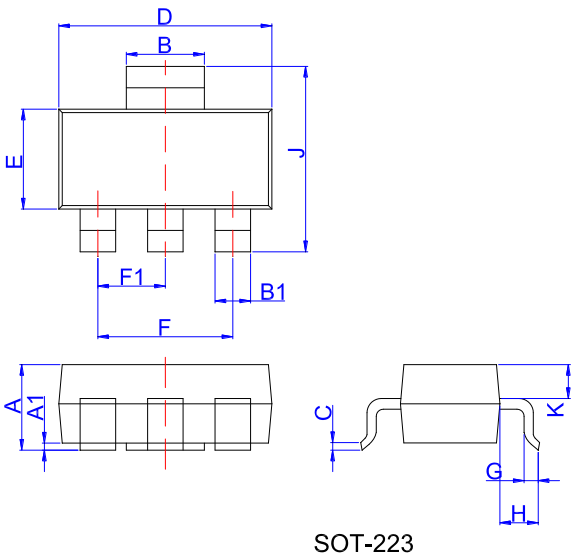
IT(RMS):1A

Package Mechanical Data :



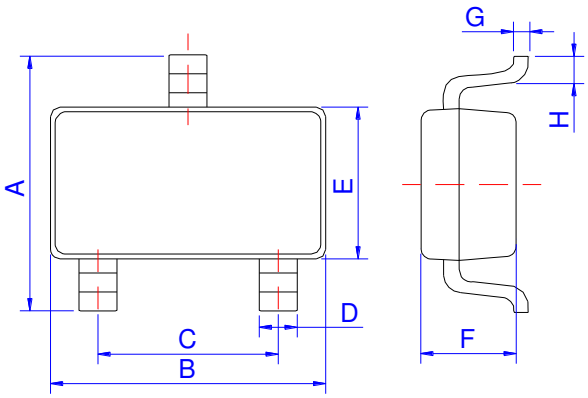
TO-92

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



SOT-223

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