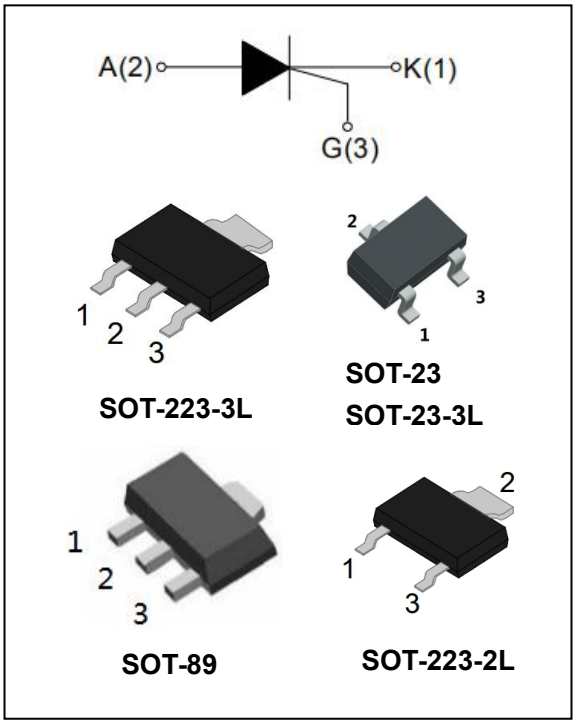
MCR18 Series 1A Sensitive SCRs

DESCRIPTION:

The MCR18 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:

symbol	value	unit
$I_{T(RMS)}$	1	A
V_{DRM}/V_{RRM}	800	V
V_{TM}	≤1.5	V

ABSOLUTE MAXIMUM RATINGS:

Parameter	Symbol	Value	Unit
Storage junction temperature range	T_{stg}	-40~150	℃
Operating junction temperature range	T_j	-40~110	℃
Repetitive peak off-state voltage (T_j=25℃)	V_{DRM}	800	V
Repetitive peak reverse voltage (T_j=25℃)	V_{RRM}	800	V
RMS on-state current (T_C=80℃)	$I_{T(RMS)}$	1	A
Non repetitive surge peak on-state current (full cycle, F=50Hz)	I_{TSM}	10	A
I^2t value for fusing (t_p=10ms)	I^2t	0.5	A^2s
Critical rate of rise of on-state current (I_G=2×I_{GT})	dI/dt	50	A/μs
Peak gate current	I_{GM}	0.2	A
Average gate power dissipation	$P_{G(AV)}$	0.1	W
Peak gate power	P_{GM}	0.5	W

ELECTRICAL CHARACTERISTICS (T_j=25℃ unless otherwise specified)

Symbol	Test Condition	Value			Unit
		MIN	TYPE	MAX	
I_{GT}	V_D=12V, R_L=33Ω	-	20	200	μA
V_{GT}		-	0.5	1.0	V
V_{GD}	V_D=V_{DRM} T_j=110℃ R_L=3.3kΩ	0.2	-	-	V
I_H	I_T=50mA	-	-	2	mA
I_L	I_G=1.2I_{GT}	-	-	3	mA
dV/dt	V_D=0.66×V_{DRM} T_j=110℃ G 极开路 R_{GK}=1KΩ	20	-	-	V/μs

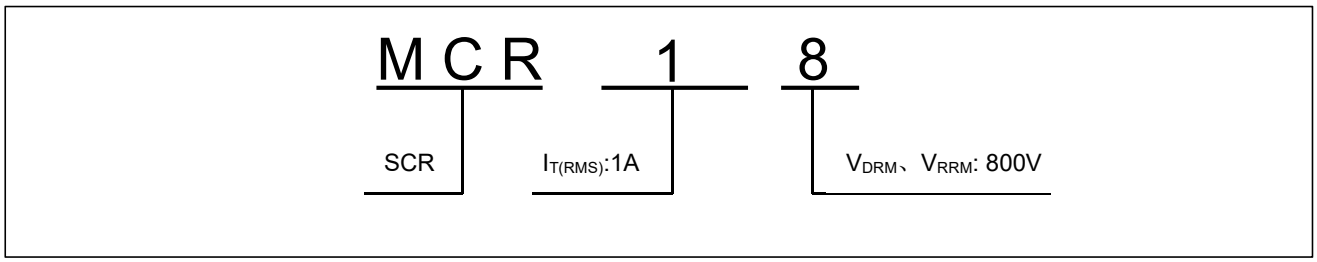
STATIC CHARACTERISTICS

Symbol	Test Condition			Value	Unit
V_{TM}	I_{TM}=2A t_p=380μs	T_j=25℃	MAX	1.5	V
I_{DRM} I_{RRM}	V_{DRM}= V_{RRM} R_{GK}=1KΩ	T_j=25℃	MAX	5	μA
		T_j=110℃		100	μA

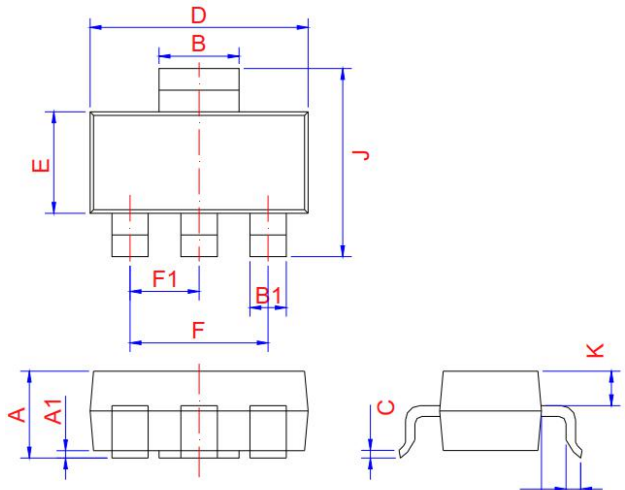
THERMAL RESISTANCES

Symbol	Test Condition		Value	Unit
$R_{th(j-c)}$	结到外壳(AC)	SOT-223	25	℃/W
		SOT-23 SOT-23-3L	50	
		SOT-89	28	

ORDERING INFORMATION

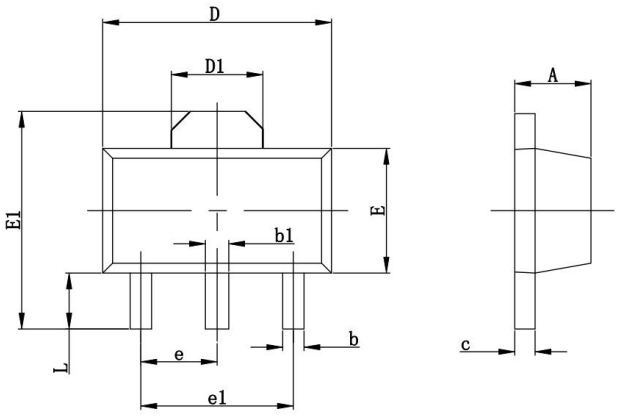


PACKAGE MECHANICAL DATA



SOT-223-3L

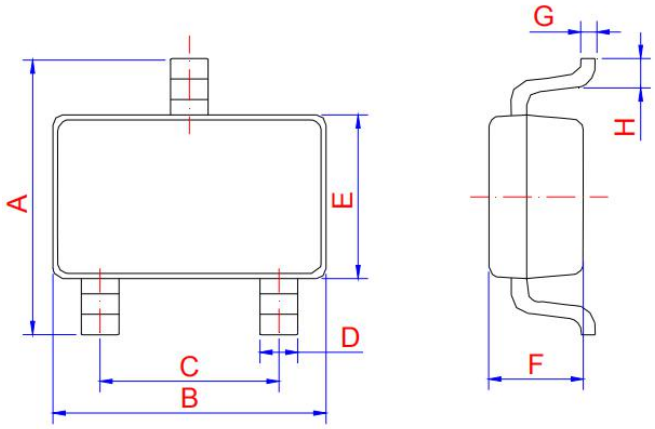
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	1.5	1.6	1.8	0.059	0.063	0.071
A1	0.01	0.06	0.10	0.001	0.002	0.004
B	2.9	3.0	3.1	0.114	0.118	0.122
B1	0.6	0.7	0.8	0.024	0.028	0.031
C	0.22	0.25	0.32	0.009	0.010	0.013
D	6.3	6.5	6.7	0.248	0.256	0.264
E	3.3	3.5	3.7	0.130	0.138	0.146
F		4.6	6.8	0.252	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-89-3L

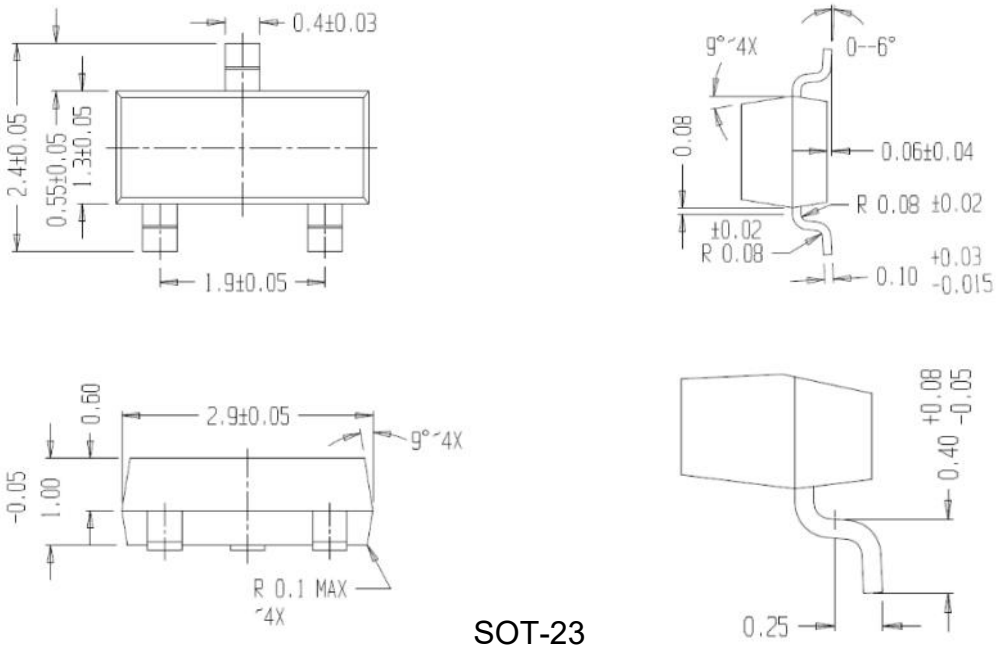
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	1.4		1.6	0.055		0.063
b	0.35		0.52	0.013		0.197
b1	0.4		0.58	0.016		0.023
c	0.35		0.44	0.014		0.017
D	4.4		4.6	0.173		0.181
D1		1.55			0.061	
E	2.35		2.55	0.091		0.102
E1	3.94		4.25	0.155		0.167
e		1.500			0.060	
e1		3.000			0.118	
L	0.9		1.1	0.035		0.047

MCR18 Series 1A Sensitive SCRs

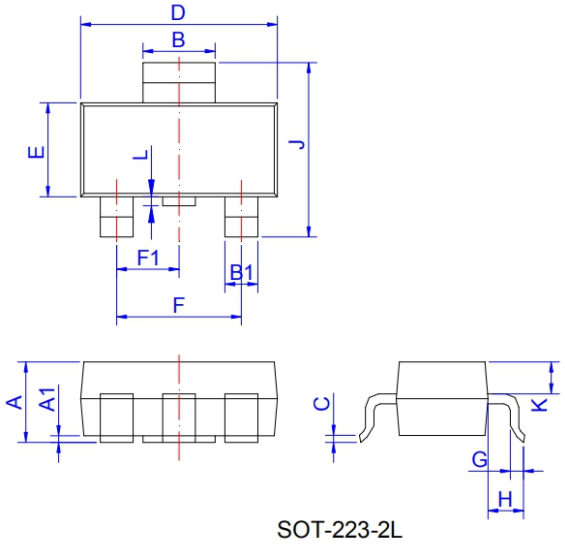


SOT-23-3L

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.65	2.8	2.95	0.104	0.11	0.116
B	2.82	2.92	3.02	0.111	0.115	0.119
C	1.8	1.9	2	0.071	0.075	0.079
D	0.3	0.35	0.5	0.012	0.014	0.02
E	1.5	1.6	1.7	0.059	0.063	0.067
F	1.07	1.17	1.27	0.042	0.046	0.05
G	0.05	0.15	0.25	0.002	0.006	0.01
H	0.25	0.4	0.55	0.01	0.016	0.022



SOT-23



SOT-223-2L

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	
L	0	0.1	0.2	0	0.004	0.008

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

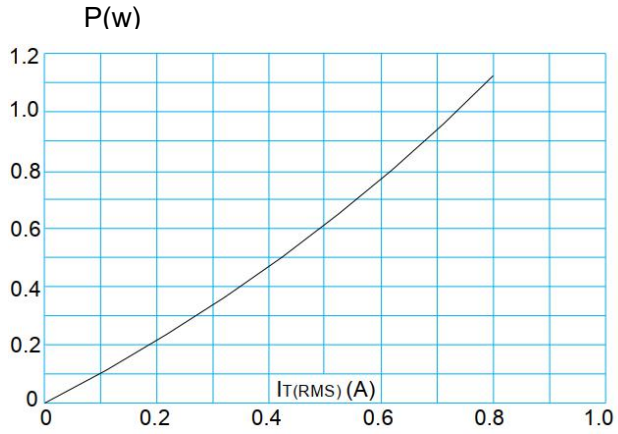


FIG.2: RMS on-state current versus case temperature

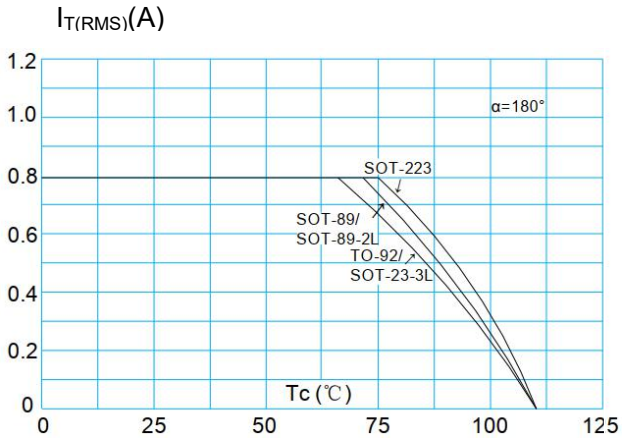


FIG.3: Surge peak on-state current versus number of cycles

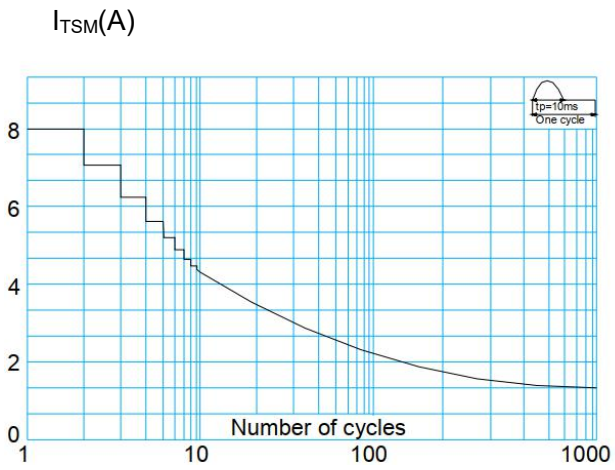


FIG.4: On-state characteristics (maximum values)

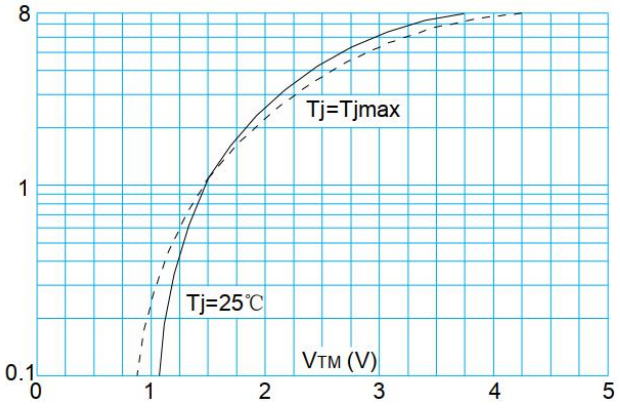


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width tp<20ms, and corresponging value of I^2t (dI/dt < 50A/μs)

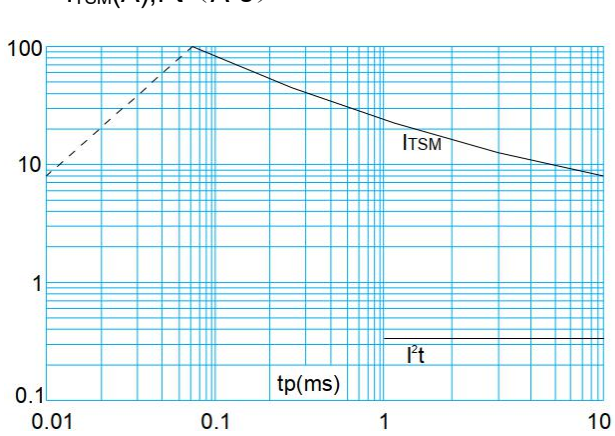


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature