



Jiangsu Weida Semiconductor Co., Ltd.

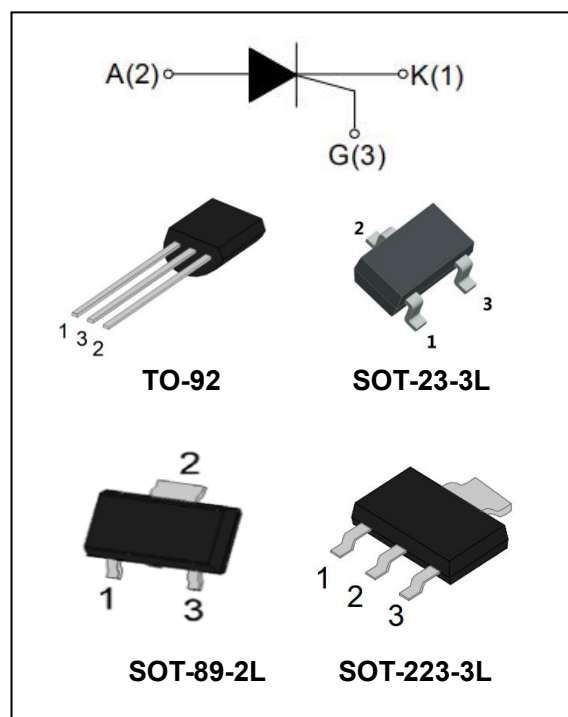
BT169 Series 1A Sensitive SCRs

DESCRIPTION:

The BT169 SCR series provide high dv/dt rate with strong resistance to electromagnetic interference. 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}	600	V
V_{TM}	≤ 1.5	V



ABSOLUTE MAXIMUM RATINGS:

Parameter	Symbol	Value	Unit
Storage junction temperature range	T_{stg}	-40~150	°C
Operating junction temperature range	T_j	-40~110	°C
Repetitive peak off-state voltage ($T_j=25^\circ\text{C}$)	V_{DRM}	600	V
Repetitive peak reverse voltage ($T_j=25^\circ\text{C}$)	V_{RRM}	600	V
RMS on-state current	$I_{T(RMS)}$	1	A
Non repetitive surge peak on-state current (full cycle, $F=50\text{Hz}$)	I_{TSM}	10	A
I^2t value for fusing ($t_p=10\text{ms}$)	I^2t	0.50	A^2s
Critical rate of rise of on-state current ($I_G=2\times I_{GT}$)	di/dt	50	$\text{A}/\mu\text{s}$
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** ($T_j=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Test Condition	Value			Unit
		MIN	TYPE	MAX	
I_{GT}	$V_D=12\text{V}, R_L=33\Omega$	-	20	200	μA
V_{GT}		-	0.6	0.8	V
V_{GD}	$V_D=V_{DRM} \quad T_j=110^{\circ}\text{C}$ $R_L=3.3\text{k}\Omega$	0.2	-	-	V
I_H	$I_T=50\text{mA}$	-	-	5	mA
I_L	$I_G=1.2I_{GT}$	-	-	6	mA
dV/dt	$V_D=0.66 \times V_{DRM} \quad T_j=110^{\circ}\text{C}$ G 极开路 $R_{GK}=1\text{k}\Omega$	10	-	-	V/ μs

STATIC CHARACTERISTICS

Symbol	Test Condition			Value	Unit
V_{TM}	$I_{TM}=1.5\text{A} \quad t_p=380\mu\text{s}$	$T_j=25^{\circ}\text{C}$	MAX	1.5	V
I_{DRM}	$V_{DRM}=V_{RRM}$ $R_{GK}=1\text{k}\Omega$	$T_j=25^{\circ}\text{C}$	MAX	5	μA
I_{RRM}		$T_j=110^{\circ}\text{C}$		100	μA

THERMAL RESISTANCES

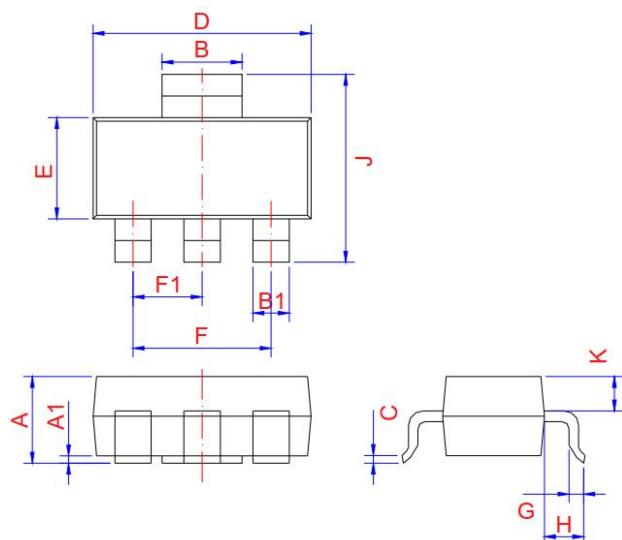
Symbol	Test Condition		Value	Unit
R _{th(j-c)}	结到外壳(AC)	SOT-223	31	°C/W
		TO-92	75	
		SOT-23-3L		
		SOT-89-2L	45	



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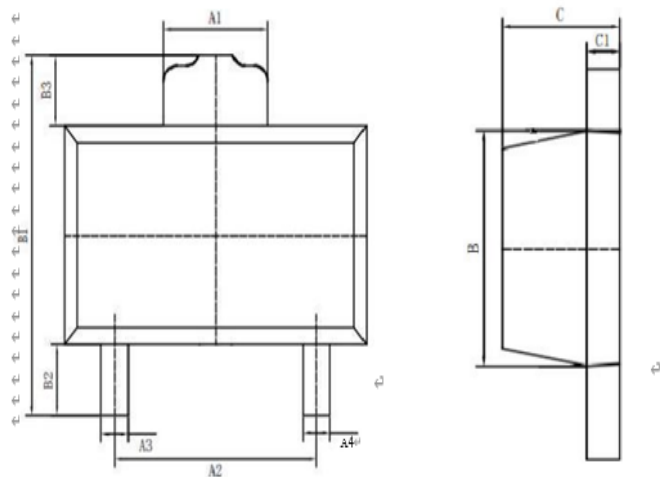
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PACKAGE MECHANICAL DATA



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



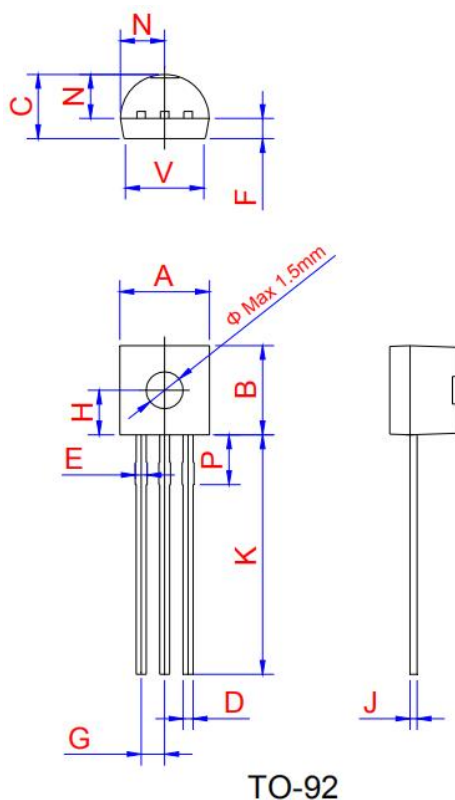
SOT-89-2L

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.4		4.5	0.173		0.177
A1	1.5		1.6	0.059		0.063
A2	2.95		3.05	0.116		0.120
A3	0.3		0.5	0.012		0.019
A4	0.3		0.5	0.012		0.019
B	2.3		2.6	0.09		0.102
B1	3.9		4.3	0.153		0.169
B2	0.9		1.2	0.035		0.047
B3	0.45		0.75	0.017		0.029
C	1.4		1.6	0.055		0.063
C1	0.35		0.44	0.013		0.017

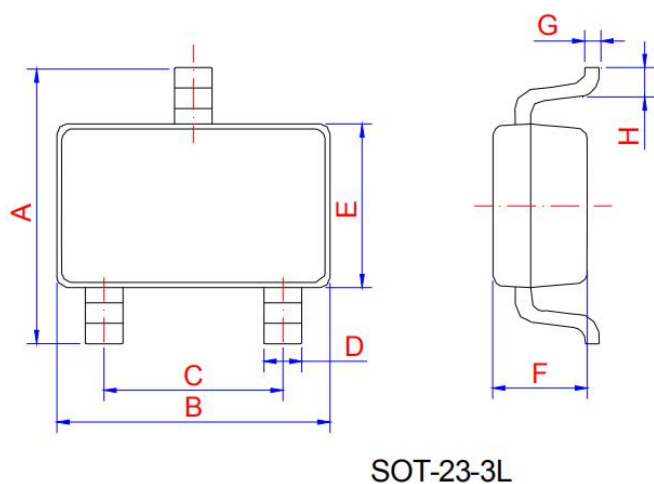


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Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.45	4.6	5.2	0.175	0.181	0.205
B	4.32	4.6	5.33	0.17	0.181	0.21
C	3.18	3.55	4.19	0.125	0.14	0.165
D	0.407		0.533	0.016		0.021
E	0.6		0.8	0.024	0	0.031
F	-	1.1	-	-	0.043	-
G	-	1.27	-	-	0.05	-
H	-	2.3	-	-	0.091	-
J	0.36	0.38	0.5	0.014	0.015	0.02
K	12.7		15	0.5		0.591
N	2.04	2.3	2.66	0.08	0.091	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	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



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

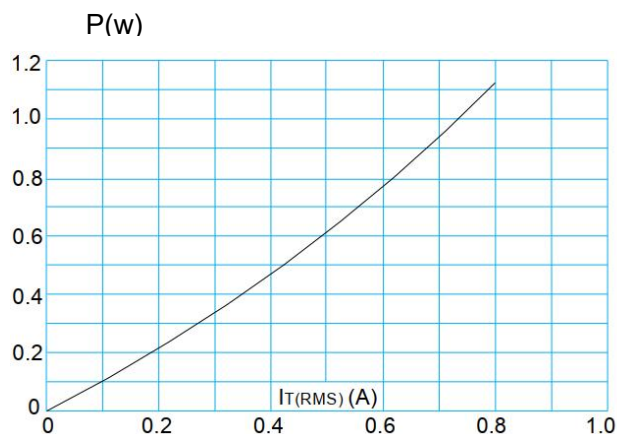


FIG.2: RMS on-state current versus case temperature

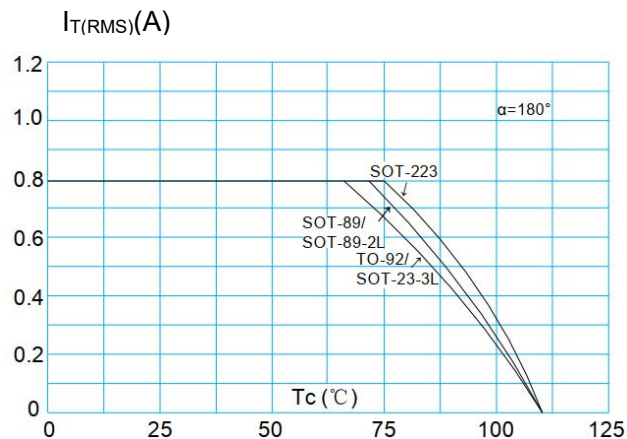


FIG.3: Surge peak on-state current versus number of cycles

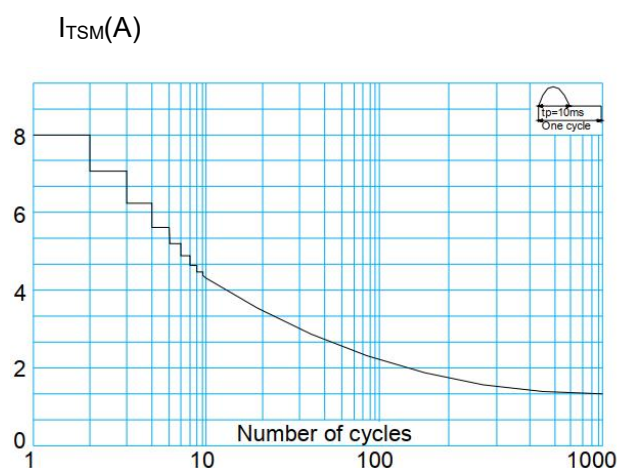


FIG.4: On-state characteristics (maximum values)

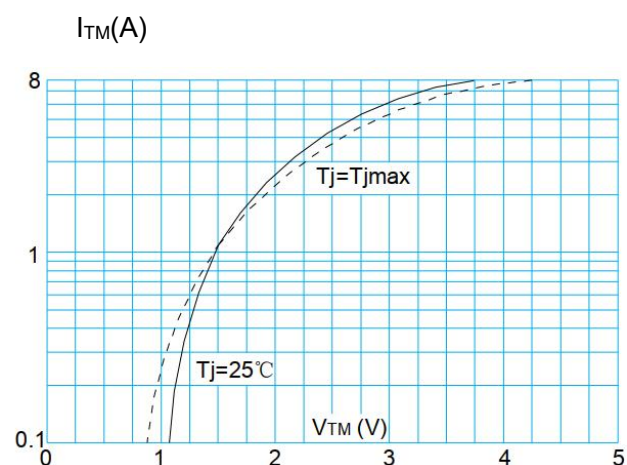


FIG.5: Non-repetitive surge peak on-state current for a sinusoidal pulse with width $t_p < 20\text{ms}$, and corresponding value of $I^2 t$ ($di/dt < 50\text{A}/\mu\text{s}$)

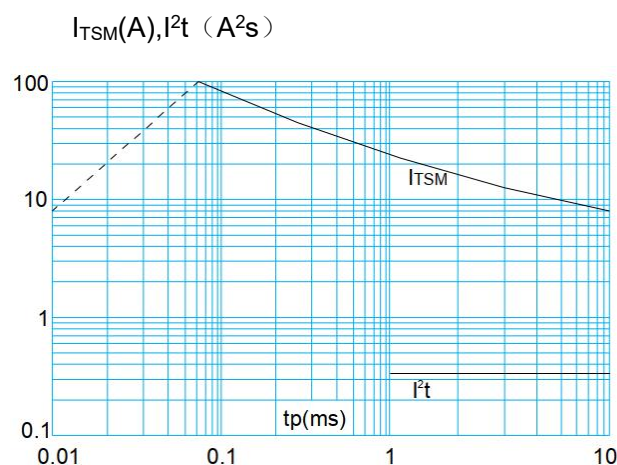
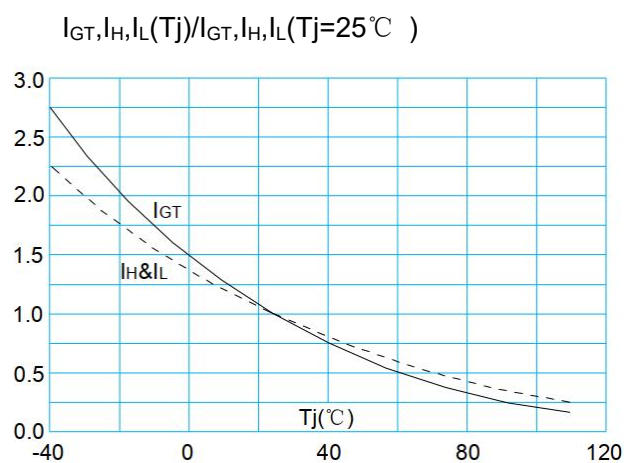


FIG.6: Relative variations of gate trigger current, holding current and latching current versus junction temperature





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