

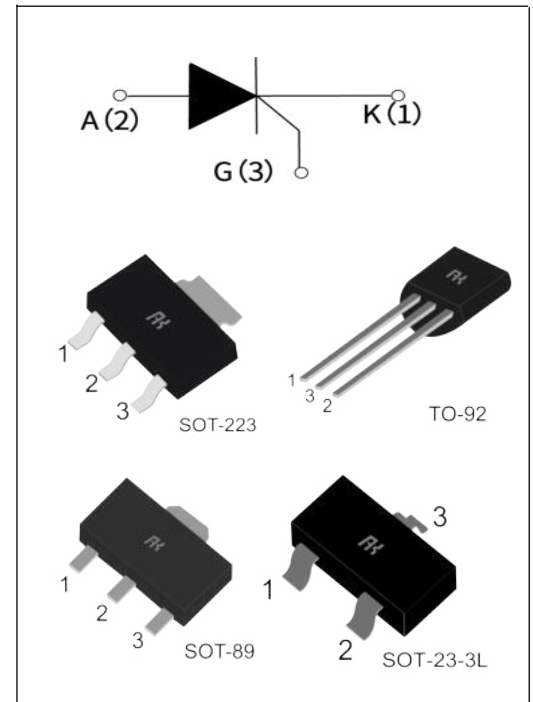
## BT169 Serial 0.8A SCRs

### GENERAL DESCRIPTION

High sensitive triggering levels. The BT169 Series SCRs is suitable for all applications where the available gate current is limited, such as capacitive discharge ignitions, motor control in kitchen aids, overvoltage crowbar protection in low power supplies, etc.

### Main Features:

$I_T(RMS)$	VDRM/VRRM	IGT
0.8A	600 V	$\leq 200\mu A$



### Absolute Ratings (limiting values) :

Symbol	Parameter		value	Unit
$I_T(RMS)$	on-state RMS current (180°C conduction angle)	SOT-23-3L/TO-92 (TC=50°C)	0.8	A
		SOT-223(TC=70°C)		
		SOT-89-2L(TC=61°C)		
$I_{TSM}$	Non repetitive surge peak on-state current ( $T_j = 25^\circ C$ )	$t_p = 8.3 \text{ ms}$	9	A
		$t_p = 10 \text{ ms}$	8	
$V_{DRM}$	Repetitive peak off-state voltage( $T_j = 25^\circ C$ )		600	V
$V_{RRM}$	Repetitive peak reverse voltage( $T_j = 25^\circ C$ )		600	V
$T_{stg}$ $T_j$	Storage and operating junction temperature range		- 40 to + 150 - 40 to + 110	°C
$I^2t$	$I^2t$ value for fusing $T_j = 125^\circ C$	$t_p = 10 \text{ ms}$	0.32	A <sup>2</sup> s
$dI/dt$	Critical rate of rise of on-state current $I_G = 2 \times I_{GT}$ , $t_r \leq 100 \text{ ns}$		50	A/ $\mu s$
IGM	Peak gate current $t_p = 20 \mu s$ $T_j = 125^\circ C$		0.2	A
PGM	Peak gate power $t_p = 20 \mu s$ $T_j = 125^\circ C$		-	W
PG(av)	Average gate power dissipation $T_j = 125^\circ C$		0.1	W

**Electrical Characteristics :**

Symbol	Test Condition	range	Value	Unit	
<b>I<sub>GT</sub></b>	V <sub>D</sub> =6V      R <sub>L</sub> =100Ω	T <sub>j</sub> =25°C	MAX	200	uA
<b>V<sub>GT</sub></b>		T <sub>j</sub> =25°C	MAX	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> =125°C	MIN	0.2	V
<b>t<sub>gt</sub></b>	V <sub>D</sub> =V <sub>DRM</sub> I <sub>G</sub> = 500uA    dIG/dt = 0.2A/μs	T <sub>j</sub> =25°C	TYP	-	μs
<b>I<sub>L</sub></b>	RGK= 1KΩ    I <sub>GT</sub> = 1 mA	T <sub>j</sub> =25°C	MAX	6	mA
<b>I<sub>H</sub></b>	I <sub>T</sub> = 50mA    RGK= 1KΩ	T <sub>j</sub> =25°C	MAX	5	mA
<b>V<sub>TM</sub></b>	I <sub>T</sub> = 1 A    tp=380μs	T <sub>j</sub> =25°C	MAX	1.35	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> =110°C	MAX	0.1	μA
		T <sub>j</sub> =110°C	MAX	0.1	mA
<b>dV<sub>D</sub>/dt</b>	V <sub>D</sub> =67%V <sub>DR</sub> exponential waveform; R <sub>GK</sub> = 100 Ω	T <sub>j</sub> =125°C	MIN	10	V/μs

**Thermal Resistances :**

Symbol	Parameter	Value	Unit
<b>R<sub>th(j-c)</sub></b>	junction to mounting base	SOT-89	45
		SOT-223	31
		SOT-23-3L/TO-92	75

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

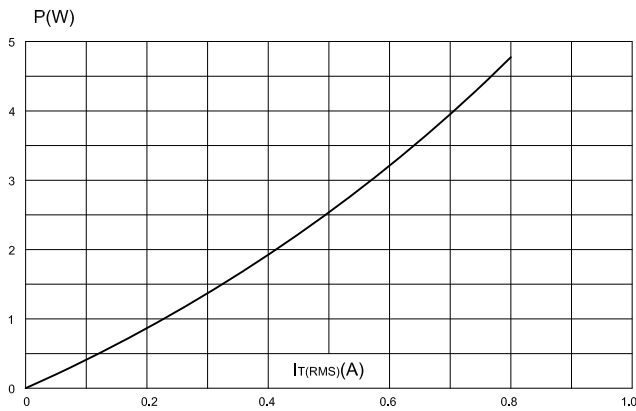


Fig.2 : RMS on-state current versus case temperature

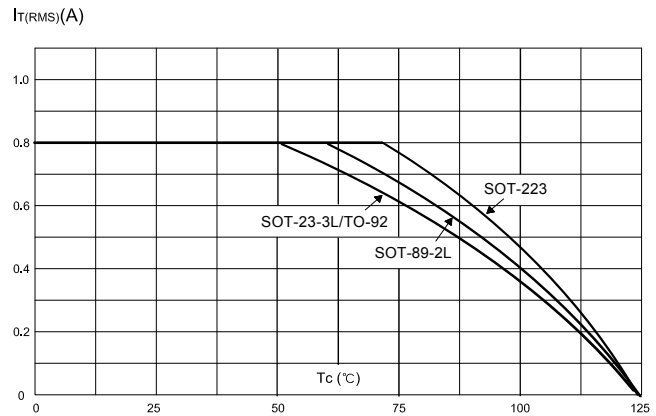


Fig.3 : On-state characteristics

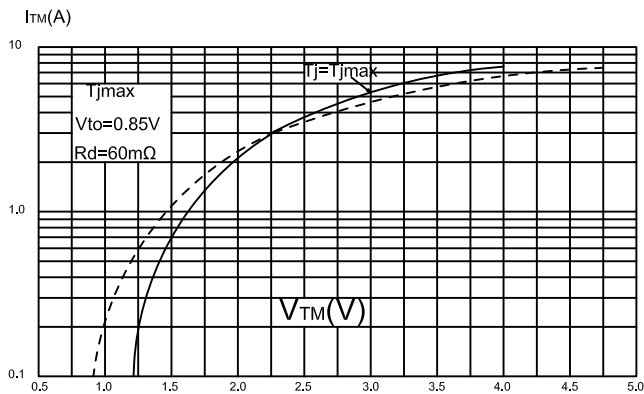


Fig.4 : Surge peak on-state current versus number of cycles

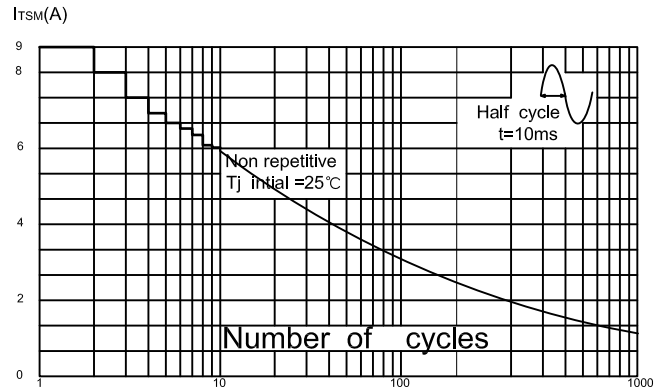


Fig.5 : Non repetitive surge peak on-state current for a sinusoidal pulse with width :  $t_p \leq 10ms$ , and corresponding value of  $I^2 t$ .

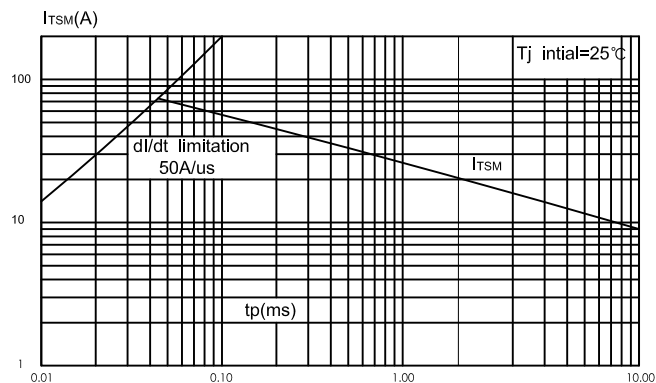
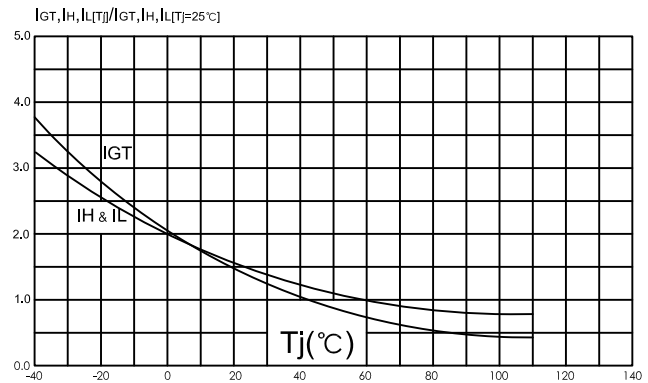
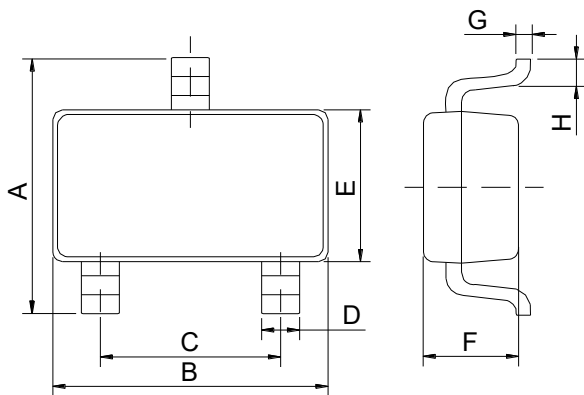


Fig.6 :Relative variation of gate trigger current and holding current and latching current versus junction temperature

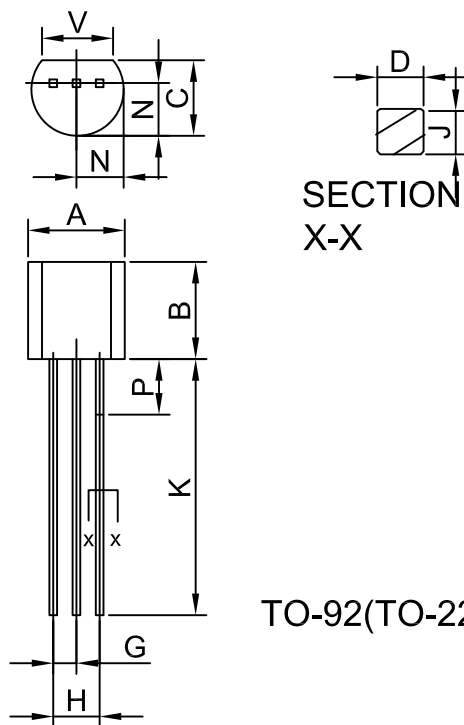


**Package Mechanical Data :**



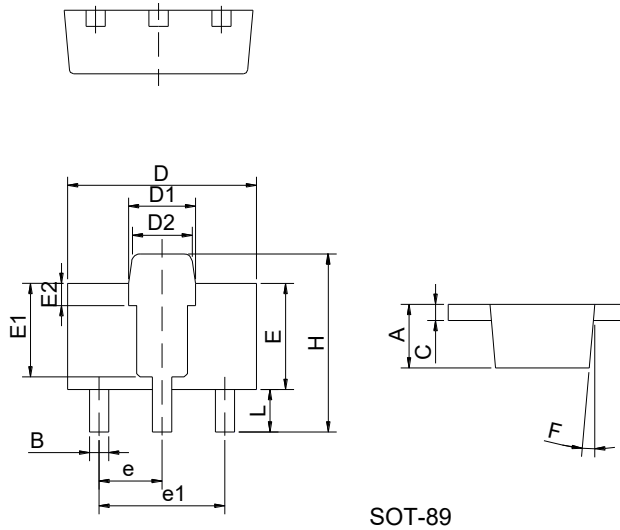
SOT-23-3L

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

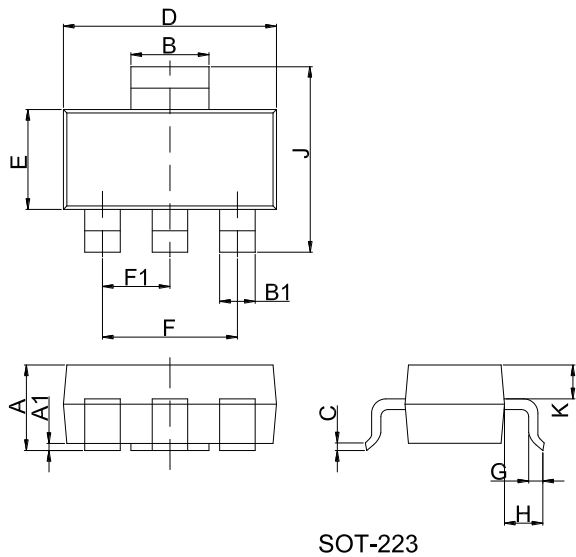


TO-92(TO-226A)

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.45	5.2	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
G	1.15	1.39	0.045	0.055
H	2.42	2.66	0.095	0.105
J	0.39	0.50	0.015	0.020
K	12.70	-	0.500	-
N	2.04	2.66	0.080	0.105
P	-	2.54	-	0.100
V	3.43	-	0.135	-



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



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