

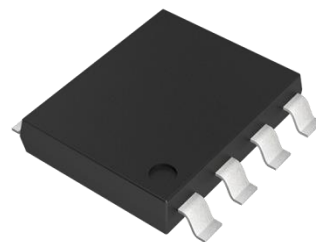
Thyristor Surge Suppressor

Version: A4 2019-12-11

Features

- Dual Voltage-Programmable transient suppressor
- Wide programming range -20V to -155V
- Low Gate Triggering Current:5mA MAX.
- Holding current:150mA MIN.
- Moisture sensitivity level: Level 1

Exterior

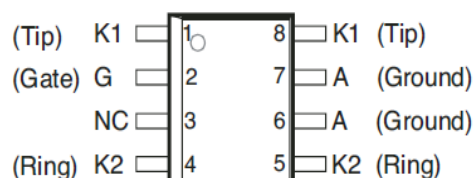


SOP-8

Application information

- SLIC

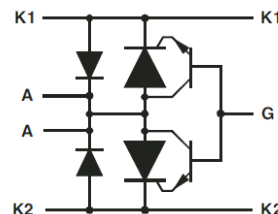
Package (top view)



Agency Approvals

Icon	Description
RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003

Schematic Symbol



Absolute Maximum Ratings

Rating	Symbol	Value	Unit
Repetitive peak off-state voltage , $V_{GK=0}$	V_{DRM}	-170	V
Repetitive peak gate-cathode voltage , $V_{KA=0}$	V_{GKRM}	-167	V
Storage temperature range	T_{stg}	-40 to 150	°C
Operating junction temperature	T_j	-40 to 150	°C
Non-repetitive peak on-state pulse current 5/320uS(ITU-TK.20/21/45,YD/T950,open-circuit voltage wave shape 10/700uS)	I_{TSP}	40	A
Non-repetitive peak on-state current ,60HZ 0.1S 1S 5S 300S	I_{TSM}	6.5 3.6 2.2 0.9	A

Electrical parameters

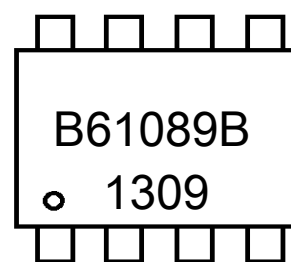
Symbol	Parameter	Test conditions	Value			Unit
			Min	Typ	Max	
Parameters Related to The Diode						
V _F	Forward voltage	IF=5A,tw=200uS			3	V
V _{FRM}	Peak forward recovery voltage	2/10uS, IF=100A, Rs=50 Ω , di/dt=80A/uS			10	V
Parameters Related to The Diode						
I _{DRM}	Off-state current	V _{DRM} =-170V,V _{GK} =0,Tj=25℃			-5	uA
V _S	Switching voltage	2/10uS,I _{TM} =-100A,Rs=50 Ω , di/dt=-80A/uS, V _{GG} =-100V			-112	V
I _H	Holding current	IT=-1A,di/dt=1A/mS, V _{GG} =-100V	-150			mA
I _{GAS}	Gate reverse current	V _{GG} =V _{GK} =-167V,V _{KA} =0, Tj=25℃			-5	uA
I _{GT}	Gate trigger current	IT=-3A,tp(g)≥20uS,V _{GG} =-100V			5	mA
V _{GT}	Gate trigger voltage	IT=-3A,tp(g)≥20uS,V _{GG} =-100V			2.5	V
C _{AK}	Anode-cathode off-state capacitance	F=1MHz,Vd=1V, I _G =0, V _D =-3V			100	pF

Part Numbering System

BS 61089 B 8
(1) (2) (3) (4)

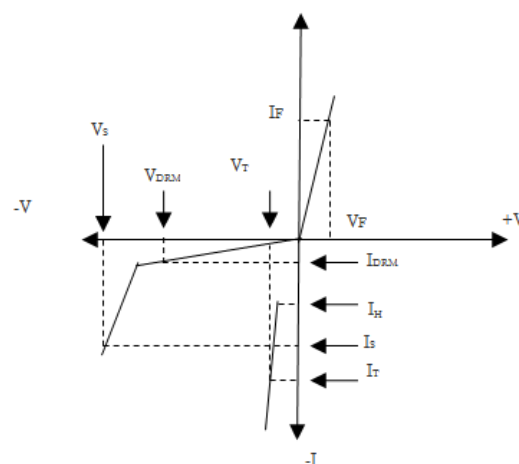
- (1)Bencent Semiconductor Surge Arrester
- (2)Product coder: 61089
- (3) Peak Off-state voltage level : 170V
- (4)8: 8 pins of the package

Mark



B61089B: Part Number
1309:September,2013

V-I Curve



Parameters	Definition
V_{DRM}	Peak Off-state Voltage
I_{DRM}	Off-state Current
V_S	Switching Voltage
I_S	Switching Current
I_H	Holding Current
V_T	On-state Voltage
I_T	On-state Current
V_F	Forward voltage
C_O	Off-state Capacitance

Thyristor Surge Suppressor
Surge Ratings

Version: A4 2019-12-11

Current Waveform	5/320μs	10/1000μs
Voltage Waveform	10/700μs	10/1000μs
Ipp	40A	30A

-Peak pulse current rating (I_{pp}) is repetitive and guaranteed for the life of the product;

-Bencent only makes the test for 10/700μs@1.6KV 40Ω* (5/320μs@40A 40Ω), but for other IPP value derived from experience is just for reference only. Bencent will not take any obligation for these parameters, so before applying our parts, please make sure to verify the parameters listed in the above table.

Thermal Considerations

Symbol	Parameter	Value	Unit
T _J	Operating Junction Temperature Range	-40 to +150	℃
T _s	Storage Temperature Range	-60 to +150	℃

Product Characteristics

Lead Material	Copper Alloy
Body Material	UL recognized epoxy meeting flammability classification 94V-0
Terminal Finish	100% Matte-Tin Plated

Environmental Characteristics

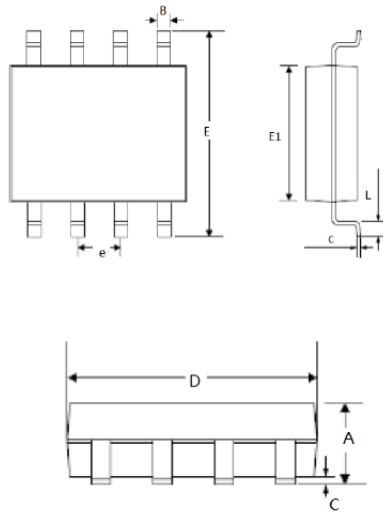
Testing items	Technical standards
High Temperature Reverse Bias Test	Temperature: 125±3℃, Bias=80%V _{DRM} Time:168H
High Temperature Life Test	Temperature: 150℃ Time:168H
High-low Temperature Cycle Test	Temperature:From -40℃ to125℃ Dwell time: 30min, 10-100 cycles
High Temperature &High Humidity Test	Temperature: 85℃ Humidity:85% Test time:168H
Pressure Cooker Test	Temperature: 121℃, 2atm. Humidity:100% Test time: 24H to 168H
Resistance of Soldering Heat	Temperature: 260±5℃ Time of dip soldering: 10s, 3times

Note: The above testing items can be specified by customer's special request

Thyristor Surge Suppressor

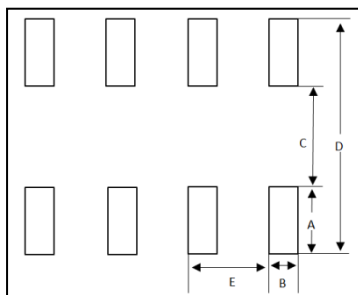
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Product Dimensions



REF	mm	inch
A	1.35~1.75	0.053~0.069
B	0.33~0.53	0.013~0.021
C	0.05~0.25	0.002~0.010
D	4.60~5.20	0.181~0.25
E	5.70~6.30	0.224~0.248
E1	3.80~4.00	0.150~0.157
e	1.27BSC	0.050BSC
c	0.15~0.25	0.006~0.010
L	0.30~1.30	0.012~0.051

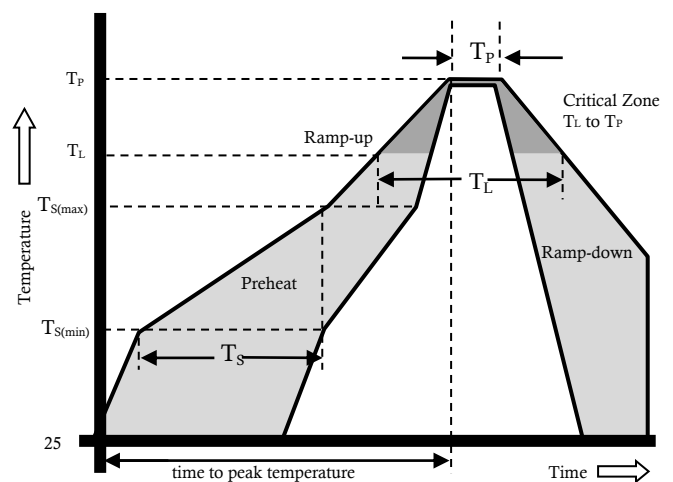
Recommended Soldering Pad



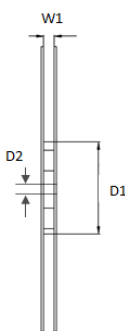
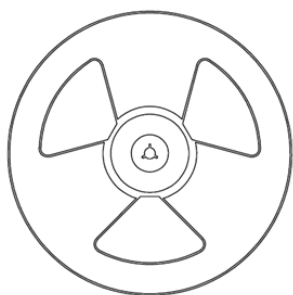
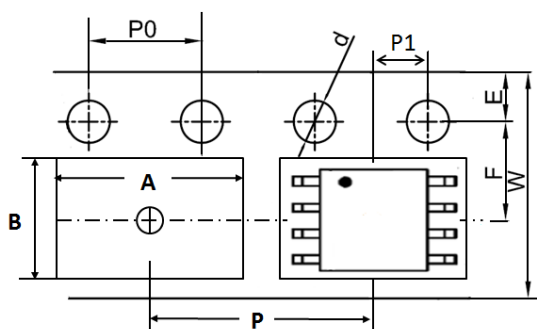
REF	mm	inch
A	1.52	0.060
B	0.6	0.024
C	4	0.157
D	7	0.276
E	1.27	0.050

Reflow Profile

Reflow Condition		Pb-Free Assembly
Pre Heat	Temperature Min.	+150°C
	Temperature Max.	+200°C
	Time(Min to Max)	60 – 180 secs.
Average ramp up rate(Liquidus Temp(T_L) to peak)		3°C/sec. Max.
T_S (max) to T_L - Ramp-up Rate		3°C/sec. Max.
Reflow	- Temperature (T_L) (Liquidus)	+217°C
	- Temperature (T_L)	60 – 150 secs.
Peak Temp (T_P)		+(260+0/-5)°C
Time within 5°C of actual Peak Temp (T_P)		30 secs.
Ramp-down Rate		6°C/sec. Max.
Time 25°C to peak Temp (T_P)		8 min. Max.
Do not exceed		+260°C



Package Reel Information



REF	mm	inch
A	6.40+/-0.20	0.252+/-0.008
B	5.40+/-0.20	0.213+/-0.008
d	1.50+0.1/-0	0.059+0.004/-0
C	1.80+/-0.1	0.71+/-0.004
D	330.00+/-2.00	12.992+/-0.079
D1	100.00+/-3.00	3.937+/-0.118
D2	13.00+/-0.50	0.512+/-0.020
E	1.75+/-0.10	0.069+/-0.004
F	5.50+/-0.20	0.217+/-0.008
P	8.00+/-0.20	0.315+/-0.008
P0	4.00+/-0.20	0.157+/-0.008
P1	2.00+/-0.20	0.079+/-0.008
W	12.00+/-0.20	0.472+/-0.008
W1	12.50+/-1.00	0.492+/-0.039

OUTLINE	REEL (PCS)	PER CARTON (PCS)	REEL DIAMETERS (mm)	CARTON SIZE(mm)		
				L	W	H
TAPING	4000	64000	330	360	360	380