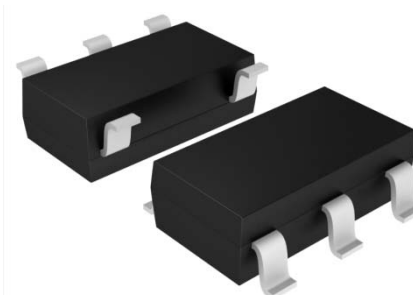


## Thyristor Surge Suppressor

### Features

- Small package (SOT23-5)
- Low Capacitance (<10pF)
- Excellent capability of absorbing transient surge
- Weight: 15mg
- Non degenerative
- Bi-directional

### Exterior

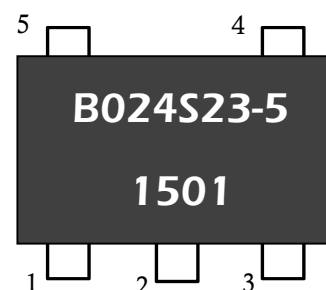


SOT23-5

### Application Information

- xDSL

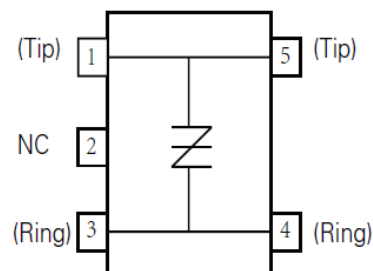
### Package (top view)



### Agency Approvals

Icon	Description
<b>RoHS</b>	Compliance with 2011/65/EU

### Schematic Symbol



### Part Number and Electrical Parameter

Part Number	I <sub>DRM</sub> @ V <sub>DRM</sub>		V <sub>s</sub> <sup>①</sup> @ I <sub>s</sub>		V <sub>T</sub> @ I <sub>T</sub>		I <sub>H</sub>	Co <sup>②</sup>
	μA	V	V	mA	V	A	mA	pF
	MAX		MAX		MAX		MIN	MAX
BS0240S23-5	5	24	35	500	4	1	20	10

Absolute maximum ratings measured at T<sub>A</sub>= 25°C RH = 45%-75% (unless otherwise noted).

① V<sub>s</sub> is measured at 100KV/S

② Off-state Capacitance is measured at V<sub>DC</sub>=2V, V<sub>RMS</sub>=1V,f=1MHz

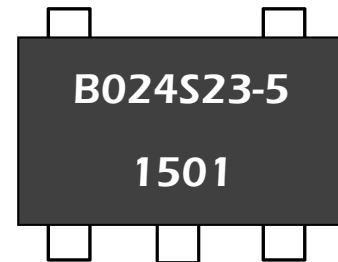
## Thyristor Surge Suppressor

### Part Numbering System

BS 0240 S23-5  
(1) (2) (3)

- (1) Bencent Semiconductor Surge Arrester  
(2) Off-state Voltage, e.g. 0180=24×10<sup>0</sup>=24V  
(3) Package: SOT23-5

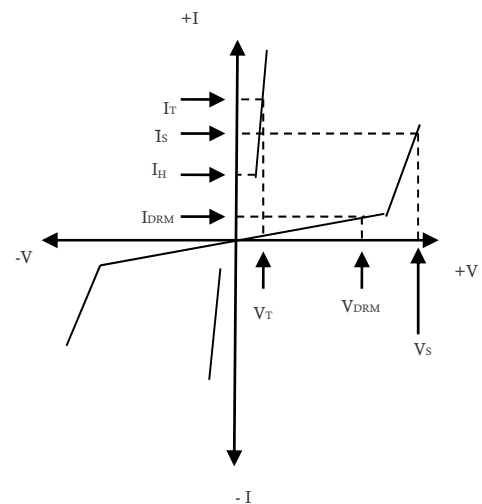
### Mark



B024S23-5: Part Number  
1501: January, 2015

### V-I Curve

Parameters	Definition
V <sub>DRM</sub>	Peak Off-state Voltage
I <sub>DRM</sub>	Off-state Current
V <sub>S</sub>	Switching Voltage
I <sub>S</sub>	Switching Current
I <sub>H</sub>	Holding Current
V <sub>T</sub>	On-state Voltage
I <sub>T</sub>	On-state Current
C <sub>o</sub>	Off-state Capacitance



### Surge Ratings

Current Waveform	8/20μs
Voltage Waveform	1.2/50μs
I <sub>pp</sub>	50A

- Peak pulse current rating (I<sub>pp</sub>) is repetitive and guaranteed for the life of the product;
- Bencent only makes the test for 8/20μs @50A(1.2/50μs 2Ω 100V).

### Thermal Considerations

Symbol	Parameter	Value	Unit
T <sub>J</sub>	Operating Junction Temperature Range	-40 to +125	°C
T <sub>S</sub>	Storage Temperature Range	-60 to +125	°C

### Physical Characteristics

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

## Thyristor Surge Suppressor

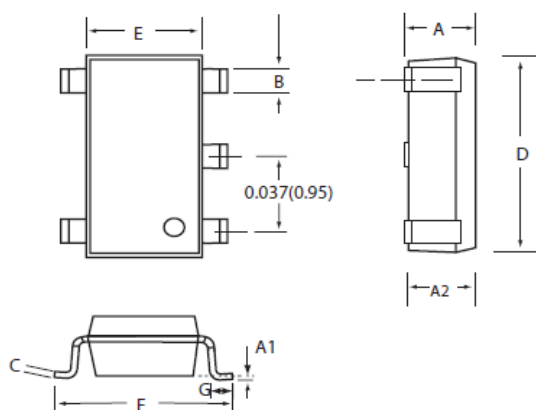
Version: A0 2016-3-10

## Environmental Characteristics

Testing Items	Technical Standards
High Temperature Reverse Bias Test	Temperature: $125\pm 3^{\circ}\text{C}$ , Bias= $80\%V_{\text{DRM}}$ Time: 168H
High Temperature Life Test	Temperature: $150^{\circ}\text{C}$ Time: 168H
High-low Temperature Cycle Test	Temperature: From $-40^{\circ}\text{C}$ to $125^{\circ}\text{C}$ Dwell time: 30min, 10-100 cycles
High Temperature & High Humidity Test	Temperature: $85^{\circ}\text{C}$ Humidity: 60% Test time: 168H
Pressure Cooker Test	Temperature: $121^{\circ}\text{C}$ , 2atm. Humidity: 100% Test time: 24H to 168H
Resistance of Soldering Heat	Temperature: $245\pm 5^{\circ}\text{C}$ Time of dip soldering: 10s, 3times

Note: The above testing items can be specified by customers by contacting Bencent service

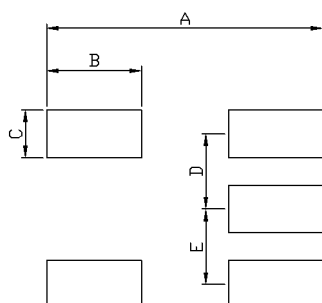
## Product Dimensions



SOT23-5

REF.	mm	inch
A	0.90-1.45	0.035-0.057
B	0.35-0.50	0.014-0.020
C	0.09-0.20	0.004-0.008
D	2.80-3.20	0.110-0.126
E	1.50-1.75	0.059-0.069
F	2.60-3.00	0.102-0.118
G	0.10-0.60	0.004-0.024
A1	0.00-0.10	0.000-0.004
A2	0.90-1.30	0.035-0.051

## Recommended Soldering Pad



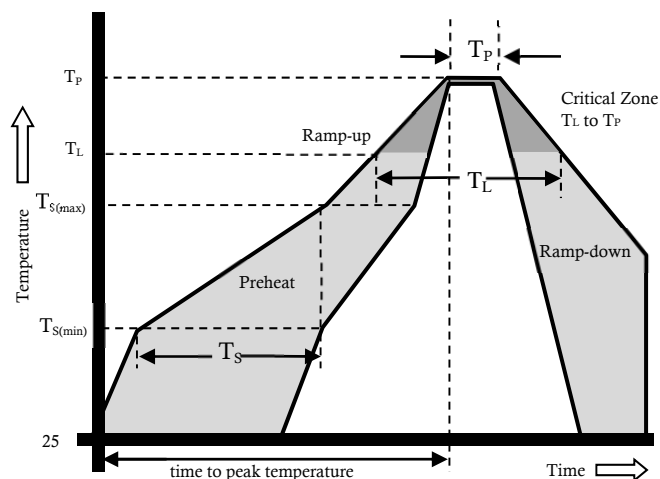
REF	mm	inch
A	3.50	0.138
B	1.20	0.047
C	0.60	0.024
D	0.95	0.037
E	0.95	0.037

Specifications are subject to change without notice.

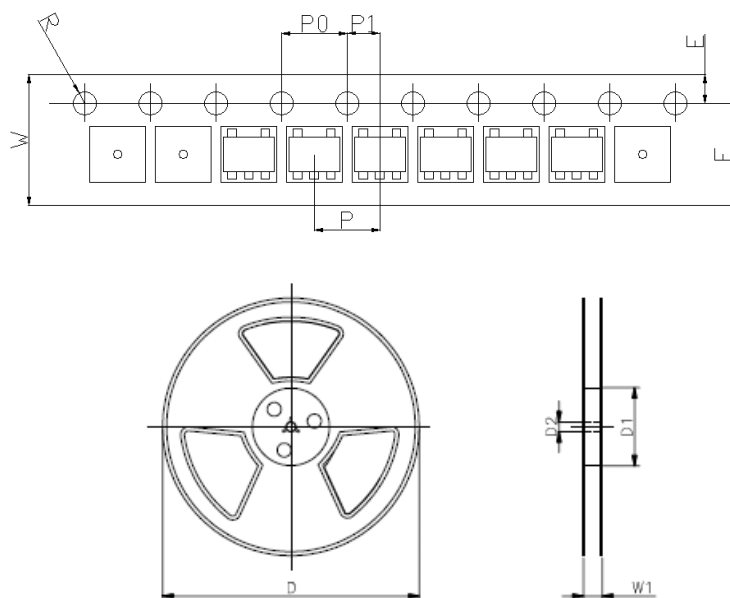
Customers should verify actual device performance in their specific applications

## 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
R	0.75+/-0.05	0.029+/-0.002
D	178.0	7.0
D1	60+/-3	2.362+/-0.118
D2	13+/-0.3	0.512+/-0.012
E	1.75+/-0.2	0.069+/-0.008
F	6.25+/-0.2	0.246+/-0.008
P	4.0+/-0.2	0.157+/-0.008
P0	4.0+/-0.2	0.157+/-0.008
P1	2.0+/-0.2	0.079+/-0.008
W	8.0+/-0.2	0.315+/-0.008
W1	8.4+/-0.5	0.331+/-0.020

Outline	Reel (pcs)	Per Carton (pcs)	Reel Diameters (mm)	Carton Size(mm)		
				L	W	H
Taping	3000	90,000	177	390	370	220