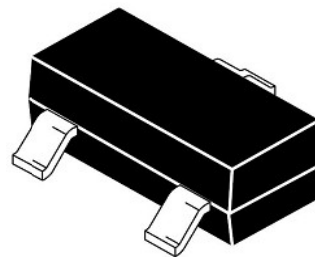


## Transient Voltage Suppressor

### Features

- 400 Watts peak pulse power per Line(tp=8/20μS)
- Protects two lines(+12V, -7V)
- Low clamping voltage
- RoHS Compliant
- Moisture sensitivity level: Level 1
- Weight 8 mg

### Exterior

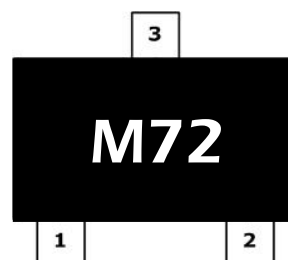


SOT-23


### Application Information

- Protection of RS-485 transceivers with extended common-mode range
- Security systems
- Automatic Teller Machines
- HFC systems
- Networks

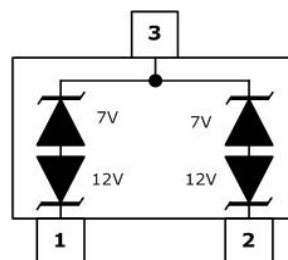
### Package (top view)



### Agency Approvals

Icon	Description
<b>RoHS</b>	Compliance with 2011/65/EU
<b>HF</b>	Compliance with IEC61249-2-21:2003
	Mean lead free

### Schematic



### Part Number and Electrical Parameter

Part Number	Mark	Direction	$I_{DRM}@ V_{DRM}$		$V_{BR}^{①}@ I_R$		$V_c@I_{pp}^{②}$		$C_o^{③}$
			μA	V	V	mA	V	A	pF
			MAX		MIN		MAX		MAX
BV_SM712	M72	Pin 3 to Pin 1 / Pin2	10	7	7.5	1	22	17	55
		Pin 1 / Pin 2 to Pin 3	2	12	13.3	1	26	12	55

Absolute maximum ratings measured at  $T_A=25^{\circ}C$  RH = 45%-75% (unless otherwise noted).

①  $V_{BR}$  is measured at  $I_R=1mA$

② Surge Waveform: 8/20 μ S.

③ Off-state capacitance is measured in  $V_{DC}=0V, V_{RMS}=1V, f=1MHz$ .

## Transient Voltage Suppressor

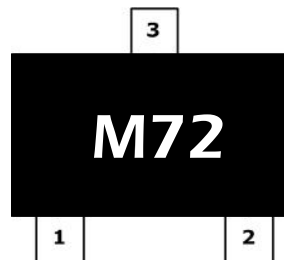
Version: A0 2013-12-26

Part Numbering System

Mark

BV SM712  
(1) (2)

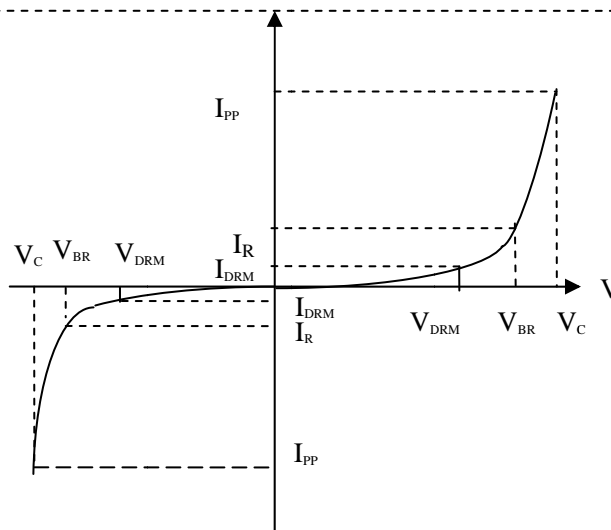
- (1) Bencent Transient Voltage Suppressor
- (2) Series: SM712 etc



BC: Part Number

### V-I Curve

Parameters	Definition
$V_C$	Clamping voltage
$I_{PP}$	Surge waveform 8/20 $\mu$ s
$V_{DRM}$	Stand-off Voltage
$V_{BR}$	Breakdown Voltage
$I_{DRM}$	Reverse Leakage Current
$I_R$	Test current
$P_{pp}$	Peak Pulse Power Dissipation



### Thermal Considerations

symbol	Parameter	Value	Unit
$T_J$	Operating Junction Temperature Range	-55 to +150	$^{\circ}$ C
$T_S$	Storage Temperature Range	-55 to +150	$^{\circ}$ C

### Environmental Characteristics

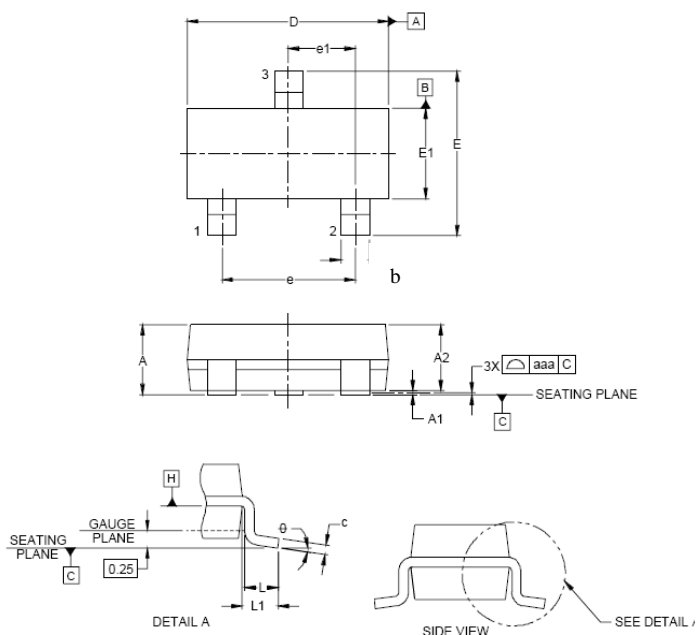
Testing items	Technical standards
High temperature Reverse Bias Test	Temperature: 150 $\pm$ 3 $^{\circ}$ C Bias=80% $V_{DRM}$ Time:168H
High Temperature Life Test	Temperature: 150 $^{\circ}$ C Time:168H
High-low Temperature Cycle test	Temperature: From -40 $^{\circ}$ C to125 $^{\circ}$ C Dwell time : 30min,10cycles
High Temperature &High Humidity Test	Temperature: 85 $^{\circ}$ C Humidity:85% Time:168H
Pressure cooker Test	Temperature: 121 $^{\circ}$ C, 2atm. Humidity:100% Time:24H
Resistance of soldering heat	Temperature: 260 $\pm$ 5 $^{\circ}$ C Time of dip soldering: 10s, 3times

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

Transient Voltage Suppressor

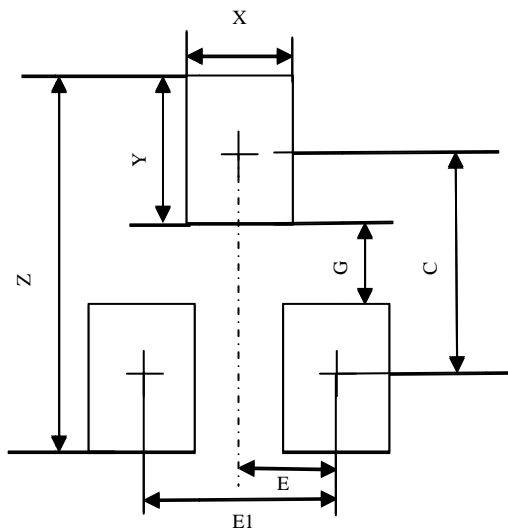
Version: A0 2013-12-26

Product Dimensions



REF	mm	inch
A	1.005 ± 0.12	0.04 ± 0.005
A1	0.1 (max)	0.004 (max)
A2	0.95 ± 0.07	0.037 ± 0.003
b	0.4 ± 0.1	0.016 ± 0.04
c	0.13 ± 0.05	0.005 ± 0.02
D	2.9 ± 0.14	0.114 ± 0.005
E	2.37 ± 0.27	0.093 ± 0.011
E1	1.3 ± 0.1	0.051 ± 0.004
L	0.5 ± 0.1	0.02 ± 0.005
L1	0.55(Max)	0.022(Max)
e	1.9	0.075
e1	0.95	0.037
θ	8 degree(Max)	

Recommended Soldering Pad

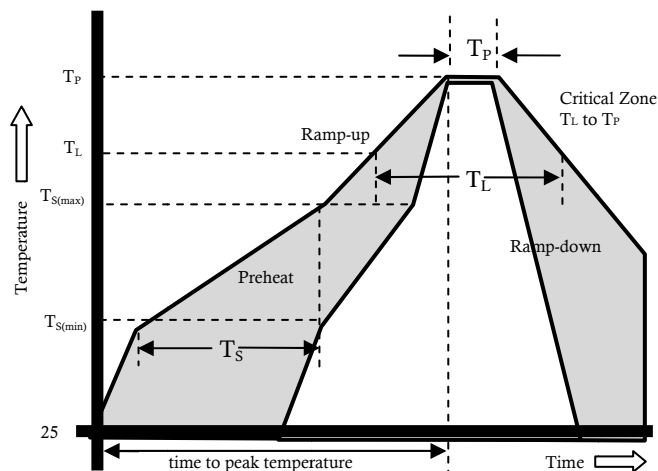


REF	mm	inch
C	2.20	0.087
E	0.95	0.037
E1	1.90	0.075
G	0.80	0.031
X	1.00	0.039
Y	1.40	0.055
Z	3.60	0.141

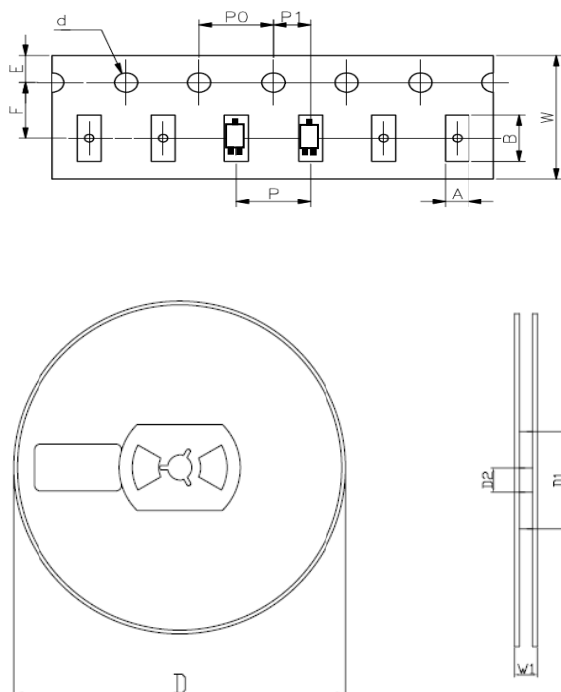
### Transient Voltage Suppressor

#### 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 (Liquid) T <sub>amp</sub> (T <sub>L</sub> ) to peak		3°C/s max
T <sub>S</sub> (max) to T <sub>L</sub> - Ramp-up Rate		3°C/s max
Reflow	- Temperature (T <sub>L</sub> ) (Liquid)	217°C
	- Temperature (T <sub>L</sub> )	60 – 150 secs
Peak Temperature (T <sub>P</sub> )		260±0/-5 °C
Time within 5°C of actual peak Temperature (T <sub>P</sub> )		8– 15secs
Ramp-down Rate		6°C/s max
Time 25°C to peak Temperature (T <sub>P</sub> )		8 mins Max.
Do not exceed		260°C



#### Package Reel Information



REF	mm	inch
A	3.50+/-0.1	0.138+/-0.004
B	2.9+/-0.1	0.114+/-0.004
d	1.25+/-0.1	0.049+/-0.004
D	178+/-1.0	7.01+/-0.039
D1	55+/-3	2.165+/-0.118
D2	13+/-0.5	0.512+/-0.020
E	1.75+/-0.1	0.069+/-0.004
F	3.5+/-0.2	0.138+/-0.008
P	4.0+/-0.2	0.158+/-0.008
PO	4.0+/-0.2	0.158+/-0.008
P1	2.0+/-0.2	0.079+/-0.008
W	8.0+/-0.2	0.315+/-0.008
W1	14.4+/-0.5	0.567+/-0.020

Outline	Reel (pcs)	Per Carton (pcs)	Reel Diameters (mm)	Carton Size(mm)		
				L	W	H
Taping	3,000	90,000	177	390	370	220