

**Transient Voltage Suppressor**
**Features**

- IEC 61000-4-2(ESD)  $\pm 15\text{KV}$ (air),  $\pm 8\text{KV}$ (contact)
- 400Watts peak pulse power ( $t_p=10/1000 \mu\text{S}$ )
- Quick response to surge voltage
- Low clamping voltage
- Moisture sensitivity level: Level 1

**Exterior**

**SMA**
**Application Information**

- DC Port
- RS485/232/422
- I/O Port

**Agency Approvals**

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

**Schematic Symbol**


BI-directiona



UNI-directional

**Part Number and Electrical Parameter**

Part Number		Marking		$V_R$ (V)	$V_{BR}$ min.(V)	$V_{BR}$ max.(V)	$I_t$ (mA)	$V_c@I_{PP}^{\textcircled{1}}$ (V)	$I_{PP}^{\textcircled{1}}$ (A)	$I_R@V_R$ ( $\mu\text{A}$ )
BI	UNI	BI	UNI							
BV-SMAJ5CA	BV-SMAJ5A	A5C	A5	5	6.4	7	10	9.2	43.5	800
BV-SMAJ6CA	BV-SMAJ6A	A6C	A6	6	6.67	7.37	10	10.3	38.8	800
BV-SMAJ6.5CA	BV-SMAJ6.5A	A6.5C	A6.5	6.5	7.22	7.98	10	11.2	35.7	500
BV-SMAJ7CA	BV-SMAJ7A	A7C	A7	7	7.78	8.6	10	12	33.3	200
BV-SMAJ7.5CA	BV-SMAJ7.5A	A7.5C	A7.5	7.5	8.33	9.21	1	12.9	31	100
BV-SMAJ8CA	BV-SMAJ8A	A8C	A8	8	8.89	9.83	1	13.6	29.4	50
BV-SMAJ8.5CA	BV-SMAJ8.5A	A8.5C	A8.5	8.5	9.44	10.4	1	14.4	27.8	20
BV-SMAJ9CA	BV-SMAJ9A	A9C	A9	9	10	11.1	1	15.4	26	10
BV-SMAJ10CA	BV-SMAJ10A	A10C	A10	10	11.1	12.3	1	17	23.5	5
BV-SMAJ11CA	BV-SMAJ11A	A11C	A11	11	12.2	13.5	1	18.2	22	1
BV-SMAJ12CA	BV-SMAJ12A	A12C	A12	12	13.3	14.7	1	19.9	20.1	1
BV-SMAJ13CA	BV-SMAJ13A	A13C	A13	13	14.4	15.9	1	21.5	18.6	1
BV-SMAJ14CA	BV-SMAJ14A	A14C	A14	14	15.6	17.2	1	23.2	17.2	1
BV-SMAJ15CA	BV-SMAJ15A	A15C	A15	15	16.7	18.5	1	24.4	16.4	1

Part Number		Marking		V <sub>R</sub> (V)	V <sub>BR</sub> min.(V)	V <sub>BR</sub> max.(V)	I <sub>t</sub> (mA)	V <sub>c@I<sub>pp</sub></sub> <sup>①</sup> (V)	I <sub>pp</sub> <sup>①</sup> (A)	I <sub>R@V<sub>R</sub></sub> (uA)
BI	UNI	BI	UNI							
BV-SMAJ16CA	BV-SMAJ16A	A16C	A16	16	17.8	19.7	1	26	15.4	1
BV-SMAJ17CA	BV-SMAJ17A	A17C	A17	17	18.9	20.9	1	27.6	14.5	1
BV-SMAJ18CA	BV-SMAJ18A	A18C	A18	18	20	22.1	1	29.2	13.7	1
BV-SMAJ20CA	BV-SMAJ20A	A20C	A20	20	22.2	24.5	1	32.4	12.3	1
BV-SMAJ22CA	BV-SMAJ22A	A22C	A22	22	24.4	26.9	1	35.5	11.3	1
BV-SMAJ24CA	BV-SMAJ24A	A24C	A24	24	26.7	29.5	1	38.9	10.3	1
BV-SMAJ26CA	BV-SMAJ26A	A26C	A26	26	28.9	31.9	1	42.1	9.5	1
BV-SMAJ28CA	BV-SMAJ28A	A28C	A28	28	31.1	34.4	1	45.4	8.8	1
BV-SMAJ30CA	BV-SMAJ30A	A30C	A30	30	33.3	36.8	1	48.4	8.3	1
BV-SMAJ33CA	BV-SMAJ33A	A33C	A33	33	36.7	40.6	1	53.3	7.5	1
BV-SMAJ36CA	BV-SMAJ36A	A36C	A36	36	40	44.2	1	58.1	6.9	1
BV-SMAJ40CA	BV-SMAJ40A	A40C	A40	40	44.4	49.1	1	64.5	6.2	1
BV-SMAJ43CA	BV-SMAJ43A	A43C	A43	43	47.8	52.8	1	69.4	5.8	1
BV-SMAJ45CA	BV-SMAJ45A	A45C	A45	45	50	55.3	1	72.7	5.5	1
BV-SMAJ48CA	BV-SMAJ48A	A48C	A48	48	53.3	58.9	1	77.4	5.2	1
BV-SMAJ51CA	BV-SMAJ51A	A51C	A51	51	56.7	62.7	1	82.4	4.9	1
BV-SMAJ54CA	BV-SMAJ54A	A54C	A54	54	60	66.3	1	87.1	4.6	1
BV-SMAJ58CA	BV-SMAJ58A	A58C	A58	58	64.4	71.2	1	93.6	4.3	1
BV-SMAJ60CA	BV-SMAJ60A	A60C	A60	60	66.7	73.7	1	96.8	4.1	1
BV-SMAJ64CA	BV-SMAJ64A	A64C	A64	64	71.1	78.6	1	103	3.9	1
BV-SMAJ70CA	BV-SMAJ70A	A70C	A70	70	77.8	86	1	113	3.5	1
BV-SMAJ75CA	BV-SMAJ75A	A75C	A75	75	83.3	92.1	1	121	3.3	1
BV-SMAJ78CA	BV-SMAJ78A	A78C	A78	78	86.7	95.8	1	126	3.2	1
BV-SMAJ85CA	BV-SMAJ85A	A85C	A85	85	94.4	104	1	137	2.9	1
BV-SMAJ90CA	BV-SMAJ90A	A90C	A90	90	100	111	1	146	2.7	1
BV-SMAJ100CA	BV-SMAJ100A	A100C	A100	100	111	123	1	162	2.5	1
BV-SMAJ110CA	BV-SMAJ110A	A110C	A110	110	122	135	1	177	2.3	1

Note: Absolute maximum ratings measured at T= 25°C RH = 45%-75% (unless otherwise noted).

①Surge Waveform: 10/1000 μ S

### Mark



BI:AXXC

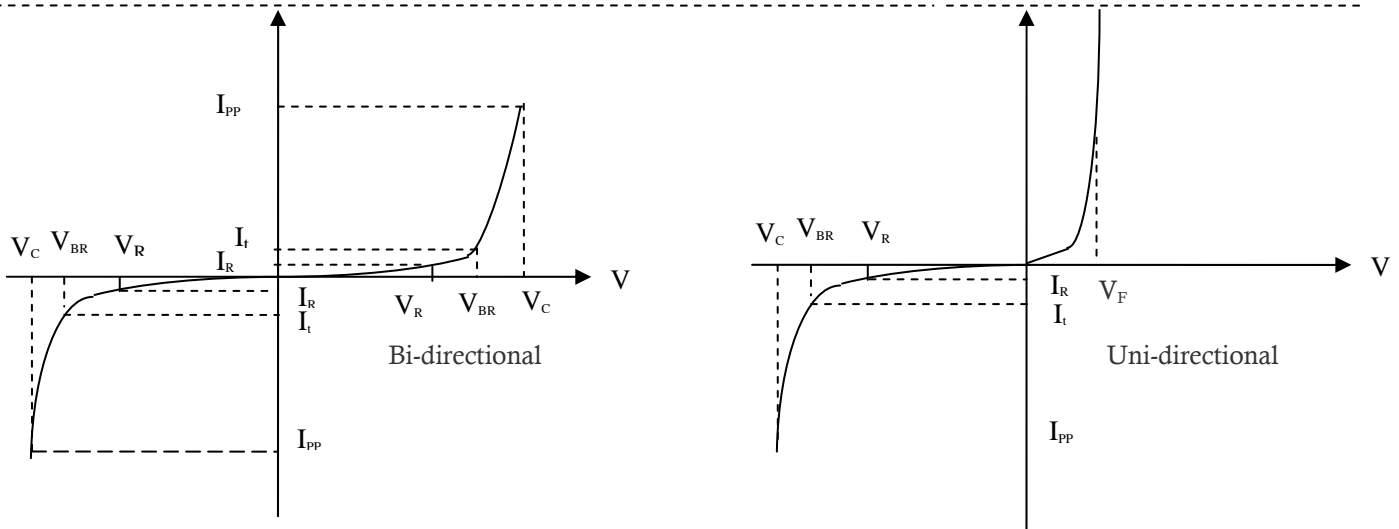


UNI:AXX

Transient Voltage Suppressor

Version: A1 2016-9-9

V-I Curve



Parameters	Definition
$V_F$	Forward Voltage drop for UNI-directional
$V_C$	Clamping Voltage
$I_{PP}$	Surge Waveform 10/1000 $\mu$ s
$V_R$	Stand-off Voltage
$V_{BR}$	Breakdown Voltage
$I_R$	Reverse Leakage Current
$I_t$	Test Current
$P_{pp}$	Peak Pulse Power Dissipation

Thermal Considerations

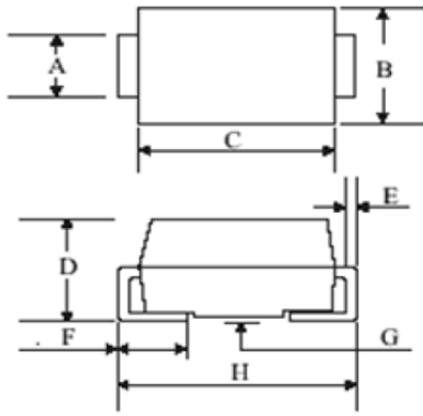
symbol	Parameter	Value	Unit
$T_j$	Operating Junction Temperature Range	-55 to +150	$^{\circ}$ C
$T_s$	Storage Temperature Range	-55 to +150	$^{\circ}$ C

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 to $125^{\circ}$ 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

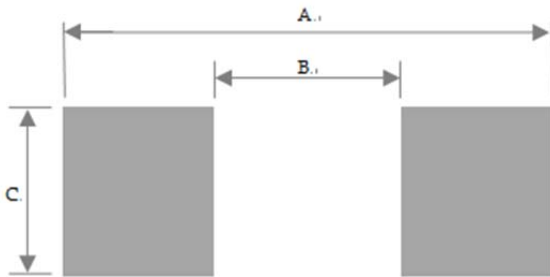
Product Dimensions



SMA

REF.	mm	inch
A	1.25--1.65	0.049--0.065
B	2.55--2.90	0.100--0.114
C	3.99--4.65	0.157--0.183
D	1.98--2.50	0.078--0.098
E	0.15--0.31	0.006--0.012
F	0.76--1.55	0.030--0.061
G	0.10--0.20	0.004--0.008
H	4.75--5.25	0.187--0.207

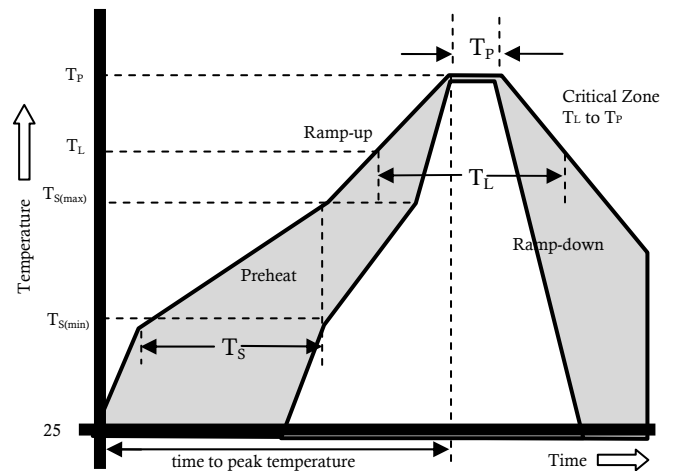
Recommended Soldering Pad

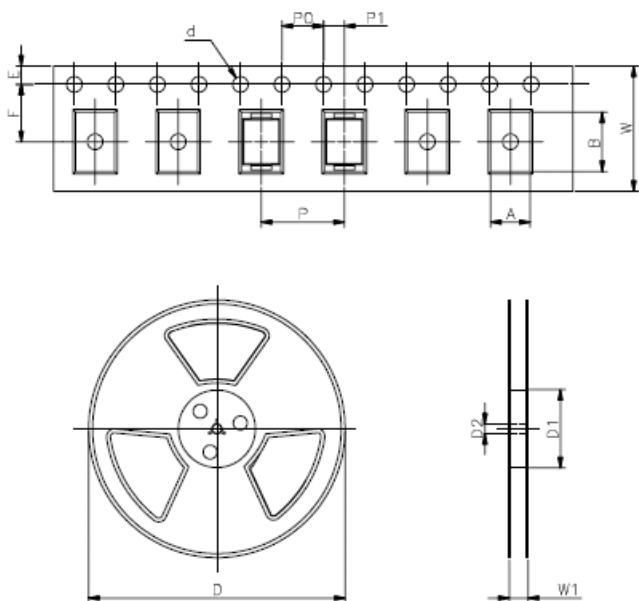


REF	mm	inch
A	5.25	0.207
B	2.15	0.085
C	1.5	0.038

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) 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> ) (Liquidus)	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> )		30secs
Ramp-down Rate		6°C/s max
Time 25°C to peak Temperature (T <sub>P</sub> )		8 min max.
Do not exceed		260°C



**Package Reel Information**


REF.	mm	inch
A	2.79+/-0.3	0.110+/-0.012
B	5.33+/-0.3	0.210+/-0.012
d	1.5+/-0.1	0.059+/-0.004
D	330+/-10	13+/-0.394
D1	72+/-3	2.835+/-0.118
D2	13+/-0.3	0.512+/-0.012
E	1.5+/-0.3	0.059+/-0.012
F	5.5+/-0.4	0.217+/-0.016
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	12.0+/-0.2	0.472+/-0.008
W1	16.8+/-2.0	0.661+/-0.079

Outline	Reel (pcs)	Per Carton (pcs)	Reel Diameters (mm)	Carton Size(mm)		
				L	W	H
Taping	5,000	40,000	330	360	360	380

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