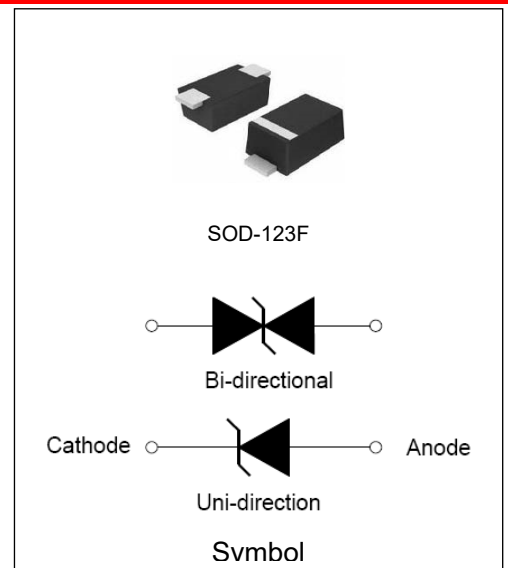


### DESCRIPTION:

TVS diodes can be used in a wide range of applications which like consumer electronic products, automotive industries, munitions, telecommunications, aerospace industries, and intelligent control systems.

### FEATURES:

- ✧ Glass passivated or planar junction
- ✧ Excellent clamping capability
- ✧ Repetition rate (duty cycle): 0.01%
- ✧ Typical  $I_R$  less than  $1\mu A$  above 10V.
- ✧ Low profile package and low inductance
- ✧ 200W Peak Pulse power capability at  $10 \times 1000\mu s$  waveform.
- ✧ Fast response time: typically less than 1.0ps from 0V to  $V_{BR}$  min.
- ✧ High temperature soldering:  $260^\circ C/10s$  at terminals.
- ✧ Plastic package has Underwriters Laboratory Flammability 94V-0.
- ✧ For surface mounted applications in order to optimize board space



### ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ C$ , RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Storage temperature range	$T_{stg}$	-55 to +150	$^\circ C$
Operating junction temperature range	$T_j$	-55 to +150	$^\circ C$
Steady state power dissipation at $T_L=75^\circ C$	$P_{M(AV)}$	2.0	W
Peak pulse power dissipation on 10/1000 $\mu s$ waveform	$P_{PP}$	200	W
Maximum Instantaneous Forward Voltage at 30A for Unidirectional	$V_F$	5.0	V

### MARKING



KE : Device Marking Code

### ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C)

Part Number		Marking		V <sub>R</sub>	I <sub>R</sub> @ V <sub>R</sub>	V <sub>BR</sub> @I <sub>T</sub>		I <sub>T</sub>	V <sub>C</sub> @I <sub>PP</sub> ①	I <sub>PP</sub> ① Surge
Uni-Polar	Bi-Polar	Uni	Bi	V	μA	min(V)	max(V)	mA	max(V) <sub>waveform</sub>	A
SMF5.0A	SMF5.0CA	KE	5C	5.0	2	6.40	7.00	10	9.2	21.7
SMF6.0A	SMF6.0CA	KG	6C	6.0	2	6.67	7.37	10	10.3	19.4
SMF6.5A	SMF6.5CA	KK	6VC	6.5	2	7.22	7.98	10	11.2	17.9
SMF7.0A	SMF7.0CA	KM	7C	7.0	50	7.78	8.60	10	12.0	16.7
SMF7.5A	SMF7.5CA	KP	7VC	7.5	50	8.33	9.21	1	12.9	15.5
SMF8.0A	SMF8.0CA	KR	8C	8.0	20	8.89	9.83	1	13.6	14.7
SMF9.0A	SMF9.0CA	KV	9C	9.0	5	10.00	11.10	1	15.4	13.0
SMF10A	SMF10CA	KX	10C	10.0	2	11.10	12.30	1	17.0	11.8
SMF11A	SMF11CA	KZ	11C	11.0	1	12.20	13.50	1	18.2	11.0
SMF12A	SMF12CA	LE	12C	12.0	1	13.30	14.70	1	19.9	10.1
SMF13A	SMF13CA	LG	13C	13.0	1	14.40	15.90	1	21.5	9.3
SMF14A	SMF14CA	LK	14C	14.0	1	15.60	17.20	1	23.2	8.6
SMF15A	SMF15CA	LM	15C	15.0	1	16.70	18.50	1	24.4	8.2
SMF18A	SMF18CA	LT	18C	18.0	1	20.00	22.10	1	29.2	6.8
SMF20A	SMF20CA	LV	20C	20.0	1	22.20	24.50	1	32.4	6.2
SMF22A	SMF22CA	LX	22C	22.0	1	24.40	26.90	1	35.5	5.6
SMF24A	SMF24CA	LZ	24C	24.0	1	26.70	29.50	1	38.9	5.1
SMF26A	SMF26CA	ME	26C	26.0	1	28.90	31.90	1	42.1	4.8
SMF28A	SMF28CA	MG	28C	28.0	1	31.10	34.40	1	45.4	4.4
SMF30A	SMF30CA	MK	30C	30.0	1	33.30	36.80	1	48.4	4.1
SMF33A	SMF33CA	MM	33C	33.0	1	36.70	40.60	1	53.3	3.8
SMF36A	SMF36CA	MP	36C	36.0	1	40.00	44.20	1	58.1	3.4
SMF48A	SMF48CA	MX	48C	48.0	1	53.30	58.90	1	77.4	2.6
SMF51A	SMF51CA	MZ	51C	51.0	1	56.70	62.70	1	82.4	2.4
SMF58A	SMF58CA	NG	58C	58.0	1	64.40	71.20	1	93.6	2.1

10/1000μs

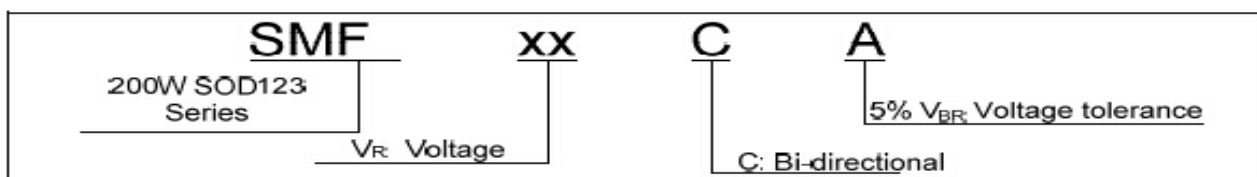
V<sub>R</sub> : Stand-off Voltage -- Maximum voltage that can be applied

V<sub>BR</sub>: Breakdown Voltage

V<sub>C</sub>: Clamping Voltage -- Peak voltage measured across the suppressor at a specified I<sub>pp</sub>

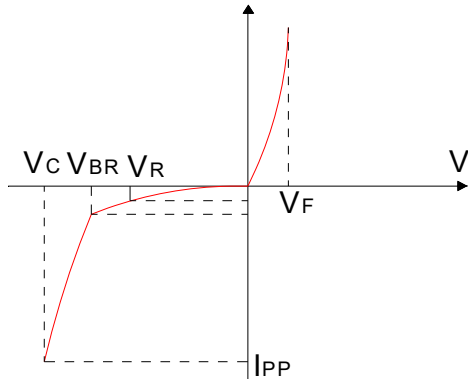
I<sub>R</sub>: Reverse Leakage Current

### ORDERING INFORMATION

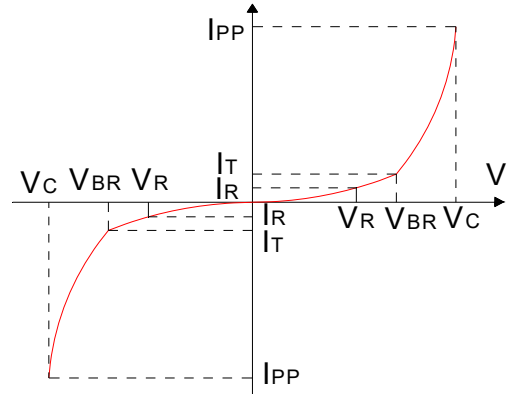


### RATINGS AND V-I CHARACTERISTICS CURVES ( $T_A=25^\circ\text{C}$ , unless otherwise noted)

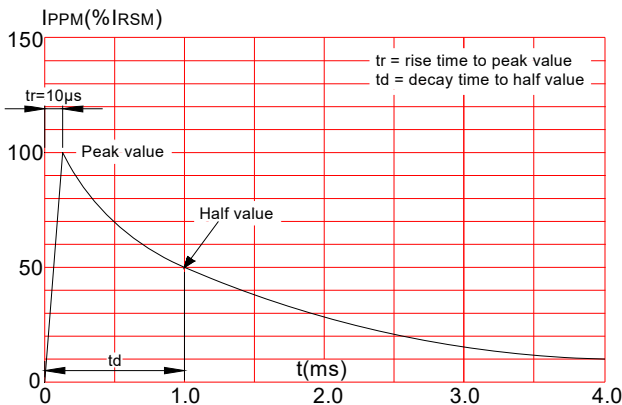
**FIG.1:V- I curve characteristics (Uni-directional)**



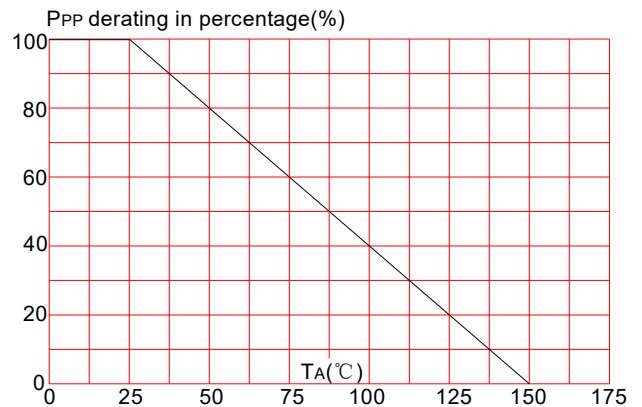
**FIG.2:V- I curve characteristics (Bi-directional)**



**FIG.3: Pulse waveform**

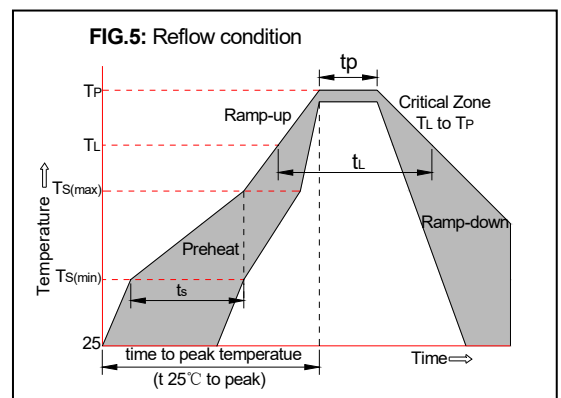


**FIG.4: Pulse derating curve**

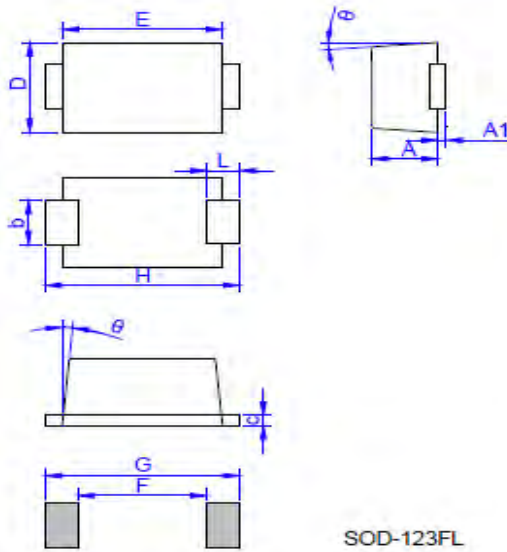


### SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see FIG.5)
Pre Heat	-Temperature Min ( $T_{s(\min)}$ )	+150°C
	-Temperature Max( $T_{s(\max)}$ )	+200°C
	-Time (Min to Max) ( $t_s$ )	60-180 secs.
Average ramp up rate (Liquid us Temp ( $T_L$ ) to peak)		3°C/sec. Max
$T_{s(\max)}$ to $T_L$ - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature( $T_L$ )(Liquid us)	+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. Max
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp ( $T_p$ )		8 min. Max
Do not exceed		+260°C

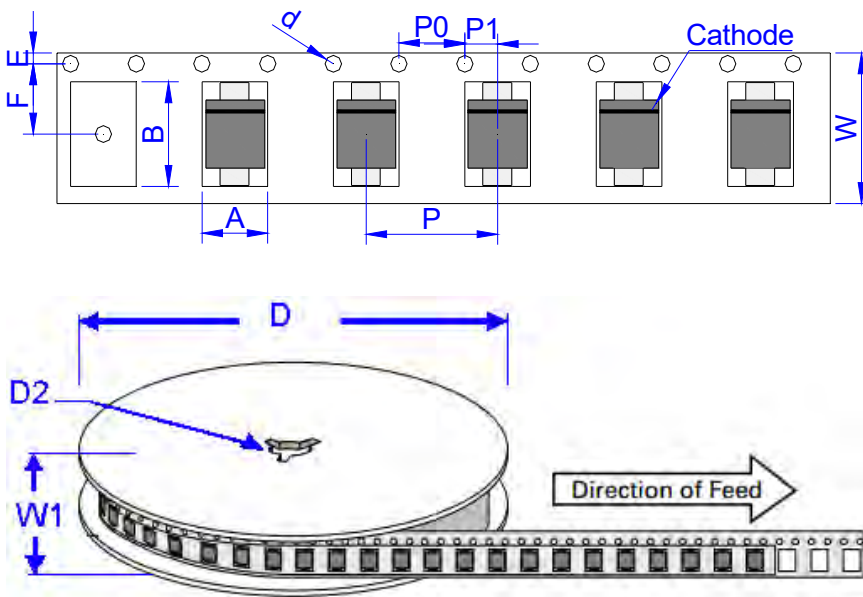


### PACKAGE MECHANICAL DATA



Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.00	0.035	0.039
A1	0	0.10	0	0.004
b	0.70	1.10	0.028	0.043
c	0.10	0.20	0.004	0.008
D	1.50	1.80	0.059	0.071
E	2.50	2.90	0.098	0.114
F	2.38	-	0.093	-
G	4.19	-	0.165	-
H	3.40	3.80	0.134	0.150
L	0.55	0.95	0.022	0.037
θ	0	8°	0	8°

### TAPE AND REEL SPECIFICATION-SMF



Ref.	Dimensions	
	Millimeters	Inches
	A	2.79 ± 0.3
B	5.33 ± 0.3	0.210 ± 0.012
d	1.5 ± 0.1	0.059 ± 0.004
D	330.0	13.0
D2	13 ± 1	0.512 ± 0.039
E	1.5 ± 0.2	0.059 ± 0.008
F	5.65 ± 0.2	0.222 ± 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	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)
TAPING	3,000	60,000	330

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