

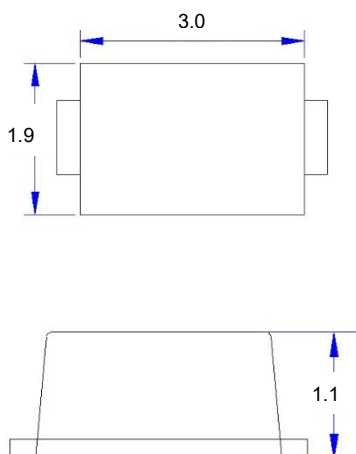
Description

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%
- Low profile package and low inductance
- 200W Peak Pulse power capability at 10×1000μs waveform.
- Fast response time: typically less than 1.0ps from 0V to V_{BR} min.
- High temperature soldering: 260°C/10s at terminals.
- Plastic package has Underwriters Laboratory Flammability 94V-0.
- For surface mounted applications in order to optimize board space.

Dimensions & Symbol (Unit: mm Max)



Mechanical Characteristics

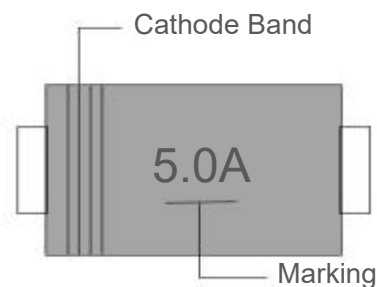
Package: SMF/SOD-123FL

- Case Material: "Green" Molding Compound.
- UL Flammability Classification Rating 94V-0
- Polarity: Color band denotes cathode except bi-directional models
- Standard Packaging: 12mm tape (EIA STD RS-481)
- Weight: 0.017g
- Terminal Connections: See Diagram Below
- Marking Information: See Below

Applications

- I/O Interface.
- AC/DC Power supply
- Low frequency signal transmission line (RS232, RS485, etc.)

Marking Information



Ordering Information

Out line	Reel (pcs)	Reel diameters
Taping	3K	7inch

Electrical Characteristics ($T_A=25^{\circ}\text{C}$)

Part Number		Marking		V_R	$I_R@V_R$	$V_{BR}@I_T$		I_T	$V_C@I_{PP}$	I_{PP}°
Uni-Polar	Bi-Polar	Uni	Bi	V	μA	min(V)	max(V)	mA	max(V)	A
SMFJ3.3A	SMFJ3.3CA	3.3A	3.3CA	3.3	400	4.10	4.75	10	7.3	27.40
SMFJ5.0A	SMFJ5.0CA	5.0A	5.0CA	5.0	400	6.40	7.00	10	9.2	21.70
SMFJ6.0A	SMFJ6.0CA	6.0A	6.0CA	6.0	400	6.67	7.37	10	10.3	19.40
SMFJ 6.5A	SMFJ6.5CA	6.5A	6.5CA	6.5	250	7.22	7.98	10	11.2	17.90
SMFJ7.0 A	SMFJ7.0CA	7.0A	7.0CA	7.0	100	7.78	8.60	10	12.0	16.70
SMFJ 7.5A	SMFJ7.5CA	7.5A	7.5CA	7.5	50	8.33	9.21	1	12.9	15.50
SMFJ 8.0A	SMFJ8.0CA	8.0A	8.0CA	8.0	25	8.89	9.83	1	13.6	14.70
SMFJ8.5 A	SMFJ8.5CA	8.5A	8.5CA	8.5	10	9.44	10.40	1	14.4	13.90
SMFJ9.0 A	SMFJ9.0CA	9.0A	9.0CA	9.0	5	10.00	11.10	1	15.4	13.00
SMFJ10A	SMFJ10CA	10A	10CA	10.0	2.5	11.10	12.30	1	17.0	11.80
SMFJ11A	SMFJ11CA	11A	11CA	11.0	2.5	12.20	13.50	1	18.2	11.00
SMFJ12A	SMFJ12CA	12A	12CA	12.0	2.5	13.30	14.70	1	19.9	10.10
SMFJ13A	SMFJ13CA	13A	13CA	13.0	1	14.40	15.90	1	21.5	9.30
SMFJ14A	SMFJ14CA	14A	14CA	14.0	1	15.60	17.20	1	23.2	8.6
SMFJ15A	SMFJ15CA	15A	15CA	15.0	1	16.70	18.50	1	24.4	8.2
SMFJ16A	SMFJ16CA	16A	16CA	16.0	1	17.80	19.70	1	26.0	7.7
SMFJ17A	SMFJ17CA	17A	17CA	17.0	1	18.90	20.90	1	27.6	7.2
SMFJ18A	SMFJ18CA	18A	18CA	18.0	1	20.00	22.10	1	29.2	6.8
SMFJ20A	SMFJ20CA	20A	20CA	20.0	1	22.20	24.50	1	32.4	6.2
SMFJ22A	SMFJ22CA	22A	22CA	22.0	1	24.40	26.90	1	35.5	5.6
SMFJ24A	SMFJ24CA	24A	24CA	24.0	1	26.70	29.50	1	38.9	5.1
SMFJ26A	SMFJ26CA	26A	26CA	26.0	1	28.90	31.90	1	42.1	4.8
SMFJ28A	SMFJ28CA	28A	28CA	28.0	1	31.10	34.40	1	45.4	4.4
SMFJ30A	SMFJ30CA	30A	30CA	30.0	1	33.30	36.80	1	48.4	4.1
SMFJ33A	SMFJ33CA	33A	33CA	33.0	1	36.70	40.60	1	53.3	3.8
SMFJ36A	SMFJ36CA	36A	36CA	36.0	1	40.00	44.20	1	58.1	3.4
SMFJ40A	SMFJ40CA	40A	40CA	40.0	1	44.40	49.10	1	64.5	3.1
SMFJ43A	SMFJ43CA	43A	43CA	43.0	1	47.8	52.80	1	69.4	2.9
SMFJ45A	SMFJ45CA	45A	45CA	45.0	1	50.00	55.30	1	72.7	2.8
SMFJ48A	SMFJ48CA	48A	48CA	48.0	1	53.30	58.90	1	77.4	2.6

Electrical Characteristics ($T_A=25^{\circ}\text{C}$)

Part Number		Marking		V_R	$I_R@V_R$	$V_{BR@I_T}$		I_T	$V_C@I_{PP}$	$I_{PP}^{\textcircled{1}}$
Uni-Polar	Bi-Polar	Uni	Bi	V	μA	min(V)	max(V)	mA	max(V)	A
SMFJ51A	SMFJ51CA	51A	51CA	51.0	1	56.70	62.70	1	82.4	2.4
SMFJ54A	SMFJ54CA	54A	54CA	54.0	1	60.00	66.30	1	87.1	2.3
SMFJ58A	SMFJ58CA	58A	58CA	58.0	1	64.4	71.20	1	93.6	2.1
SMFJ60A	SMFJ60CA	60A	60CA	60.0	1	66.7	73.70	1	96.8	1.8
SMFJ64A	SMFJ64CA	64A	64CA	64.0	1	71.10	78.60	1	103.0	1.7
SMFJ70A	SMFJ70CA	70A	70CA	70.0	1	77.8	86.00	1	113.0	1.5
SMFJ75A	SMFJ75CA	75A	75CA	75.0	1	83.3	92.10	1	121.0	1.4
SMFJ78A	SMFJ78CA	78A	78CA	78.0	1	86.70	95.8	1	126.0	3.2
SMFJ85A	SMFJ85CA	85A	85CA	85.0	1	94.40	104.0	1	137.0	2.9
SMFJ90A	SMFJ90CA	90A	90CA	90.0	1	100.0	111.0	1	146.0	2.8
SMFJ100A	SMFJ100CA	100A	100CA	100.0	1	111.0	123.0	1	162.0	2.5
SMFJ110A	SMFJ110CA	110A	110CA	110.0	1	122.0	135.0	1	177.0	2.3
SMFJ120A	SMFJ120CA	120A	120CA	120.0	1	133.0	147.0	1	193.0	2.1
SMFJ130A	SMFJ130CA	130A	130CA	130.0	1	144.0	159.0	1	209.0	1.9
SMFJ150A	SMFJ150CA	150A	150CA	150.0	1	167.0	185.0	1	243.0	1.7
SMFJ160A	SMFJ160CA	160A	160CA	160.0	1	178.0	197.00	1	259.0	1.6
SMFJ170A	SMFJ170CA	170A	170CA	170.0	1	189.0	209.0	1	275.0	1.5
SMFJ180A	SMFJ180CA	180A	180CA	180.0	1	201.1	222.0	1	292.0	1.4
SMFJ190A	SMFJ190CA	200A	200CA	200.0	1	211.0	243.0	1	308.0	1.3

$\textcircled{1}$ Surge waveform: 10/1000 μs

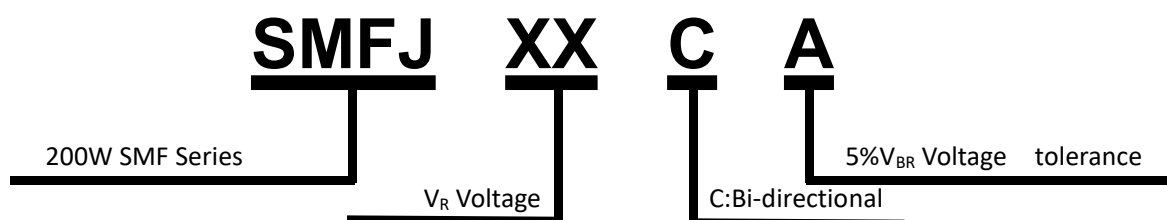
V_R : Stand-off Voltage -- Maximum voltage that can be applied

V_{BR} : Breakdown Voltage

V_C : Clamping Voltage -- Peak voltage measured across the suppressor at a specified I_{PP}

I_R : Reverse Leakage Current

Part Number Code



Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Storage temperature range	T_{stg}	-55 to +150	$^{\circ}\text{C}$
Operating junction temperature range	T_j	-55 to +150	$^{\circ}\text{C}$
Steady state power dissipation at $T_L=75^{\circ}\text{C}$	$P_{M(AV)}$	2.8	W
Peak pulse power dissipation on 10/1000 μs waveform	P_{PP}	200	W
Maximum Instantaneous Forward Voltage at 30A for Unidirectional	V_F	5.0	V

Ratings And V-I Characteristics Curves ($T_A=25^{\circ}\text{C}$, unless otherwise noted)

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

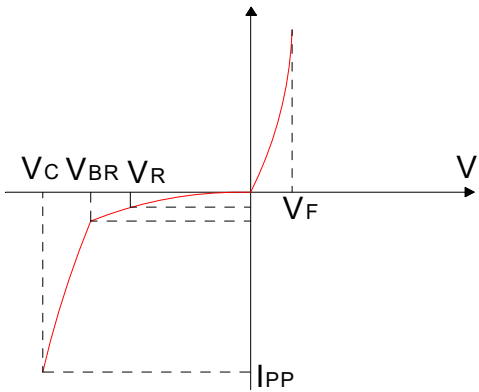
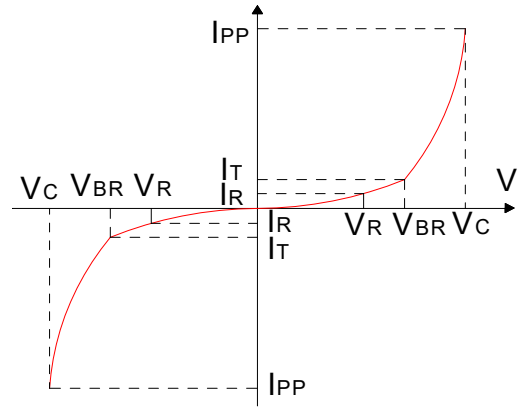


FIG.2:V- I curve characteristics (Bi-directional)



Typical Characteristics

Figure 1: Peak Pulse Power Rating Curve

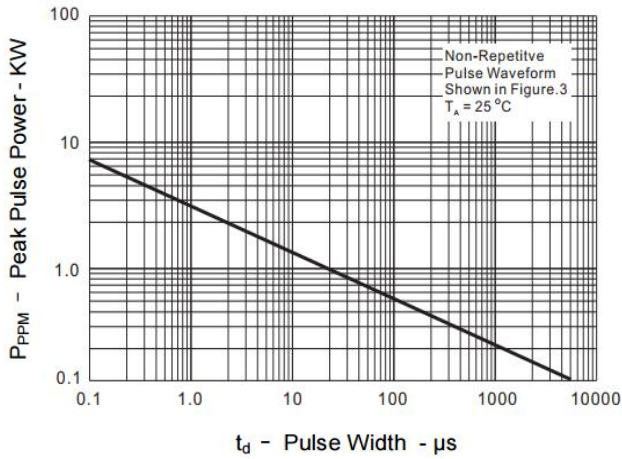


Figure 2: Pulse Derating Curve

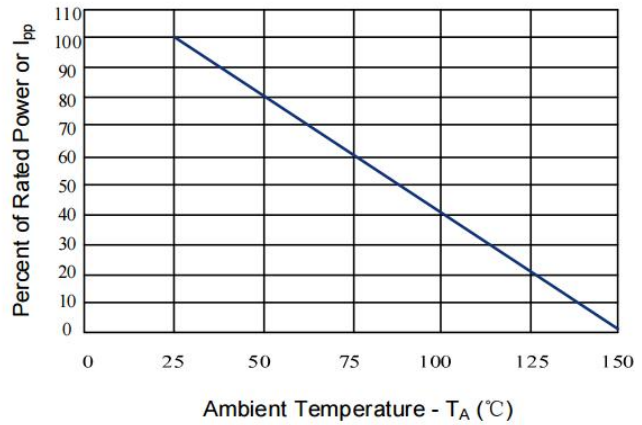


Figure 3: Pulse Waveform

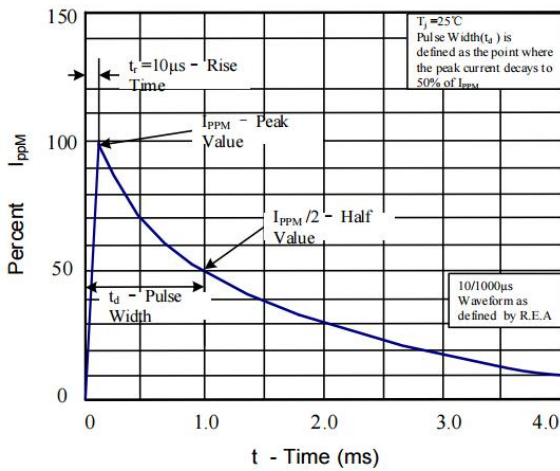


Figure 4: Typical Junction Capacitance

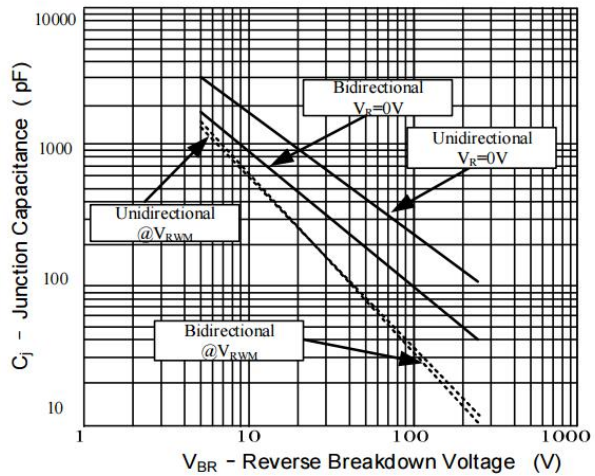


Figure 5: Steady State Power Dissipation Derating Curve

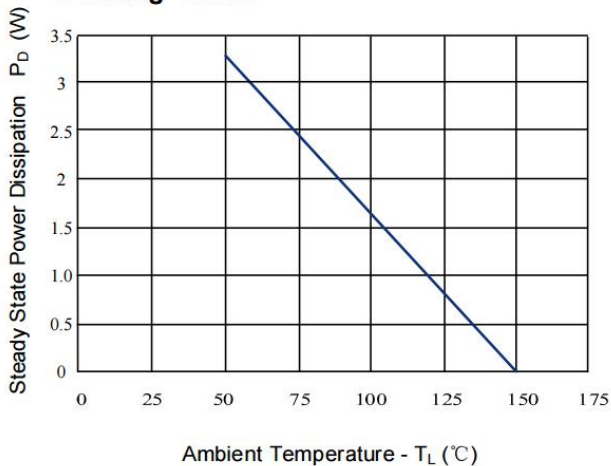
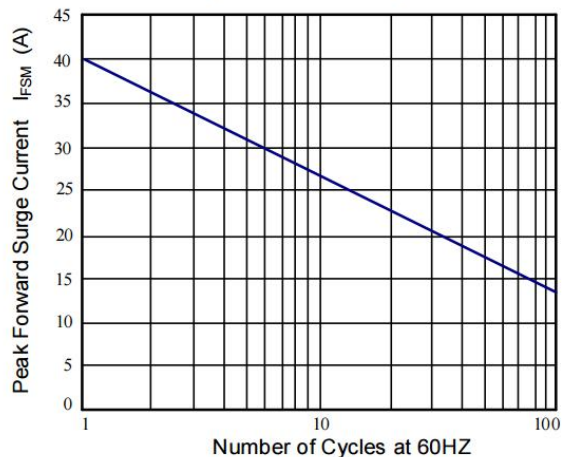
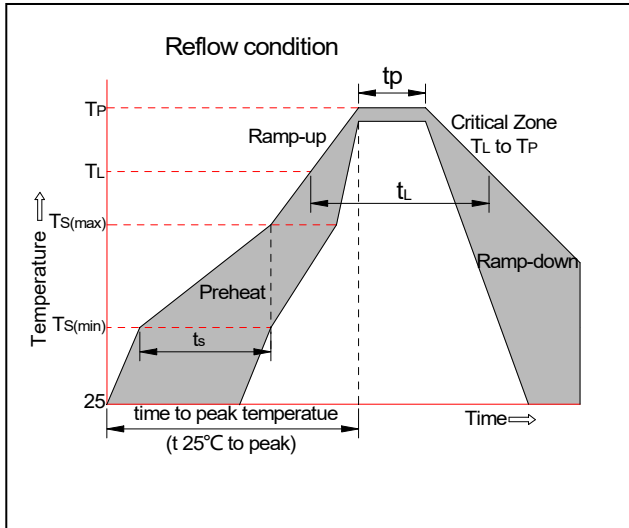


Figure 6: Maximum Non-Repetitive Forward Surge Current Only Unidirectional

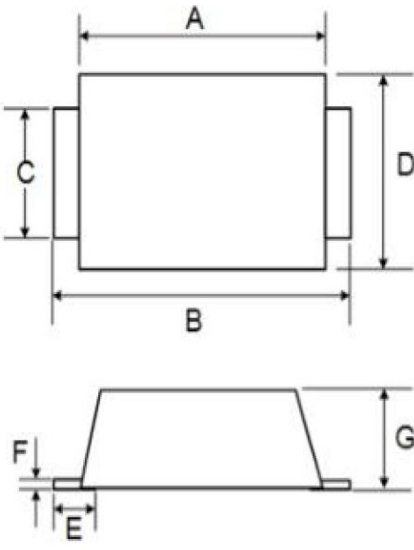


Soldering Parameters

Reflow Condition		Pb-Free assembly (see as below)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (ts)	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



Dimension	Millimeters	
	Min	Max
A	2.5	3.0
B	3.4	4.0
C	0.7	1.1
D	1.5	1.9
E	0.45	0.95
F	0.05	0.26
G	0.8	1.1

Contact Information

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