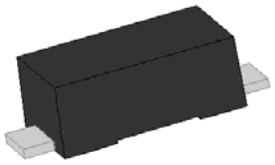
SMFxxH Series 200W Transient Voltage Suppressor

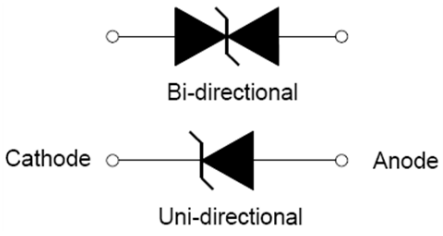
Rev.1.2

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.



SOD-123FL



Symbol

FEATURES:

- ✧ Low profile package.
- ✧ Low inductance.
- ✧ Excellent clamping capability.
- ✧ 200W peak pulse power capability at 10/1000μs waveform.
- ✧ Typical I_R less than 1μA.
- ✧ Fast response time: typically less than 1.0ps from 0V to V_{BR} min.
- ✧ High temperature reflow soldering: 260℃/40s at terminals.
- ✧ Plastic package has underwriters laboratory flammability 94V-0.
- ✧ Meets MSL level 1, per J-STD-020, LF maximum peak of 260℃.
- ✧ Terminal: solder plated, solderable per J-STD-002.
- ✧ For surface mounted applications in order to optimize board space.
- ✧ High reliability application and automotive grade (AEC-Q101 qualified).

ABSOLUTE MAXIMUM RATINGS(T_A=25℃, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Storage and operating junction temperature range	T_{STG}/ T_J	-55 to +150	℃
Peak pulse power dissipation at 10/1000μs waveform	P_{PP}	200	W
Maximum instantaneous forward voltage at 20A for unidirectional	V_F	3.5	V
Typical thermal resistance junction to lead	$R_{\theta JL}$	100	℃/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	220	℃/W

MARKING

10CH : Device Marking Code

ELECTRICAL CHARACTERISTICS(T_A=25℃)

Part Number		Marking		V_R	I_R@V_R	V_{BR}@I_T		I_T	V_C@I_{PP}	I_{PP}①
Uni-Polar	Bi-Polar	Uni	Bi	V	max(μA)	min(V)	max(V)	mA	max(V)	A
SMF10AH	SMF10CAH	KXH	10CH	10.0	1	11.10	12.30	1	17.0	11.8
SMF11AH	SMF11CAH	KZH	11CH	11.0	1	12.20	13.50	1	18.2	11.0
SMF12AH	SMF12CAH	LEH	12CH	12.0	1	13.30	14.70	1	19.9	10.1
SMF13AH	SMF13CAH	LGH	13CH	13.0	1	14.40	15.90	1	21.5	9.3
SMF14AH	SMF14CAH	LKH	14CH	14.0	1	15.60	17.20	1	23.2	8.6
SMF15AH	SMF15CAH	LMH	15CH	15.0	1	16.70	18.50	1	24.4	8.2
SMF16AH	SMF16CAH	LPH	16CH	16.0	1	17.80	19.70	1	26.0	7.7
SMF17AH	SMF17CAH	LRH	17CH	17.0	1	18.90	20.90	1	27.6	7.2
SMF18AH	SMF18CAH	LTH	18CH	18.0	1	20.00	22.10	1	29.2	6.8
SMF20AH	SMF20CAH	LVH	20CH	20.0	1	22.20	24.50	1	32.4	6.2
SMF22AH	SMF22CAH	LXH	22CH	22.0	1	24.40	26.90	1	35.5	5.6
SMF24AH	SMF24CAH	LZH	24CH	24.0	1	26.70	29.50	1	38.9	5.1
SMF26AH	SMF26CAH	MEH	26CH	26.0	1	28.90	31.90	1	42.1	4.8
SMF28AH	SMF28CAH	MGH	28CH	28.0	1	31.10	34.40	1	45.4	4.4
SMF30AH	SMF30CAH	MKH	30CH	30.0	1	33.30	36.80	1	48.4	4.1
SMF33AH	SMF33CAH	MMH	33CH	33.0	1	36.70	40.60	1	53.3	3.8
SMF36AH	SMF36CAH	MPH	36CH	36.0	1	40.00	44.20	1	58.1	3.4
SMF40AH	SMF40CAH	MRH	40CH	40.0	1	44.40	49.10	1	64.5	3.1
SMF43AH	SMF43CAH	MTH	43CH	43.0	1	47.80	52.80	1	69.4	2.8
SMF45AH	SMF45CAH	MVH	45CH	45.0	1	50.00	55.30	1	72.7	2.7
SMF48AH	SMF48CAH	MXH	48CH	48.0	1	53.30	58.90	1	77.4	2.6
SMF51AH	SMF51CAH	MZH	51CH	51.0	1	56.70	62.70	1	82.4	2.4
SMF54AH	SMF54CAH	NEH	54CH	54.0	1	60.00	66.30	1	87.1	2.3
SMF58AH	SMF58CAH	NGH	58CH	58.0	1	64.40	71.20	1	93.6	2.1

ELECTRICAL CHARACTERISTICS(T_A=25℃,continued)

Part Number		Marking		V_R	I_R@V_R	V_{BR}@I_T		I_T	V_C@I_{PP}	I_{PP}①
Uni-Polar	Bi-Polar	Uni	Bi	V	max(μA)	min(V)	max(V)	mA	max(V)	A
SMF60AH	SMF60CAH	NKH	60CH	60.0	1	66.70	73.70	1	96.8	2.0
SMF64AH	SMF64CAH	NMH	64CH	64.0	1	71.10	78.60	1	103.0	1.9
SMF70AH	SMF70CAH	NPH	70CH	70.0	1	77.80	86.00	1	113.0	1.8
SMF75AH	SMF75CAH	NRH	75CH	75.0	1	83.30	92.10	1	121.0	1.7
SMF78AH	SMF78CAH	NVH	78CH	78.0	1	86.70	95.80	1	126.0	1.6
SMF85AH	SMF85CAH	NXH	85CH	85.0	1	94.40	104.0	1	137.0	1.5
SMF90AH	SMF90CAH	NZH	90CH	90.0	1	100.0	111.0	1	146.0	1.4
SMF100AH	SMF100CAH	PEH	100CH	100.0	1	111.0	123.0	1	162.0	1.2
SMF110AH	SMF110CAH	PGH	110CH	110.0	1	122.0	135.0	1	177.0	1.1
SMF120AH	SMF120CAH	PKH	120CH	120.0	1	133.0	147.0	1	193.0	1.0
SMF130AH	SMF130CAH	PMH	130CH	130.0	1	144.0	159.0	1	209.0	0.9
SMF150AH	SMF150CAH	PRH	150CH	150.0	1	167.0	185.0	1	243.0	0.8
SMF160AH	SMF160CAH	PVH	160CH	160.0	1	178.0	197.0	1	259.0	0.8
SMF170AH	SMF170CAH	PXH	170CH	170.0	1	189.0	209.0	1	275.0	0.7
SMF180AH	SMF180CAH	PZH	180CH	180.0	1	201.0	222.0	1	292.0	0.7
SMF200AH	SMF200CAH	QEH	200CH	200.0	1	224.0	247.0	1	324.0	0.6
SMF220AH	SMF220CAH	QRH	220CH	220.0	1	246.0	272.0	1	356.0	0.5

① Surge waveform:10/1000μs

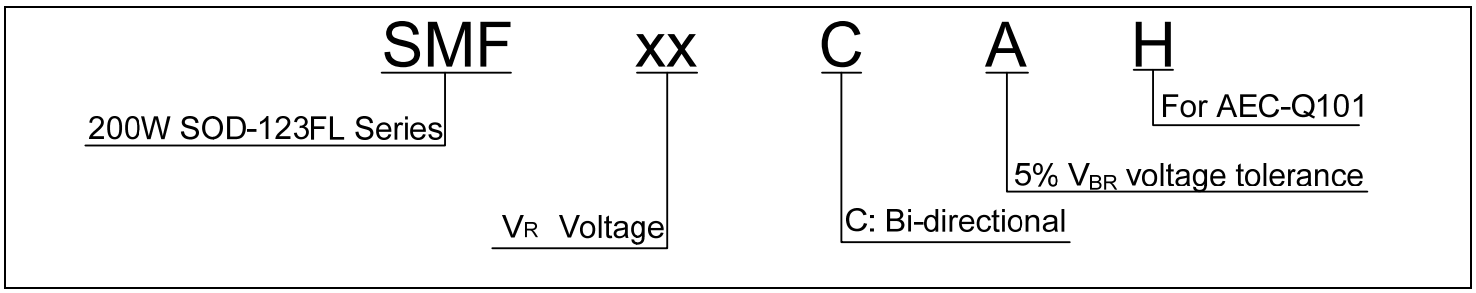
V_R: Stand-off voltage -- maximum voltage that can be applied

V_{BR}: Breakdown voltage

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

I_R: Reverse leakage current

ORDERING INFORMATION



RATINGS AND V-I CHARACTERISTICS CURVES (T_A=25℃, unless otherwise noted)

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

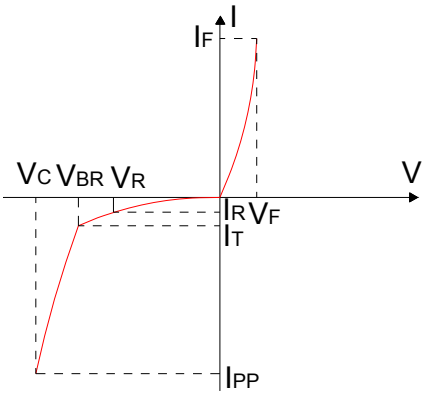


FIG.2:V- I curve characteristics (Bi-directional)

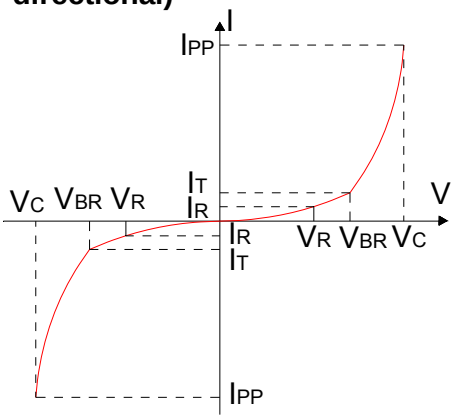


FIG.3: Pulse waveform

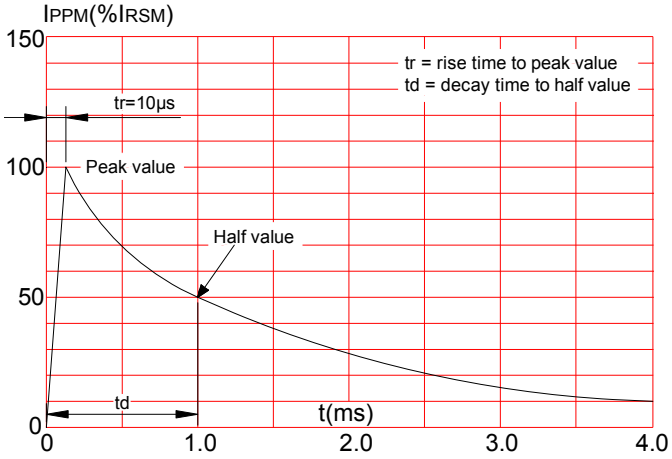
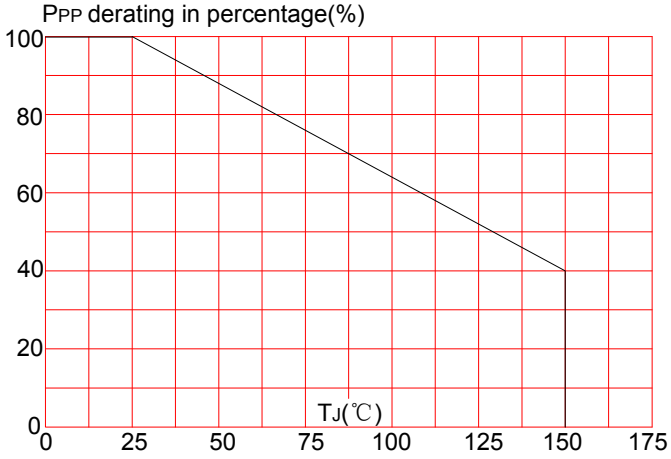
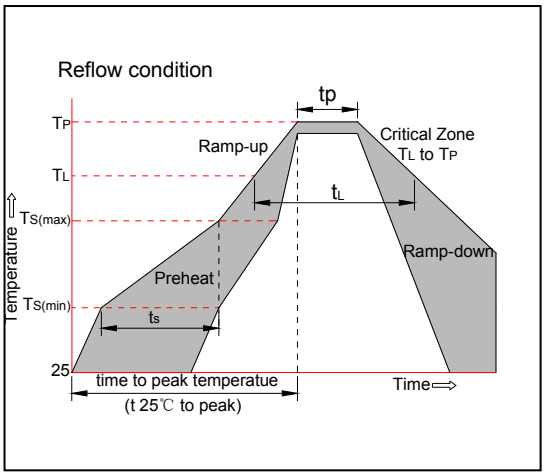


FIG.4: Pulse derating curve

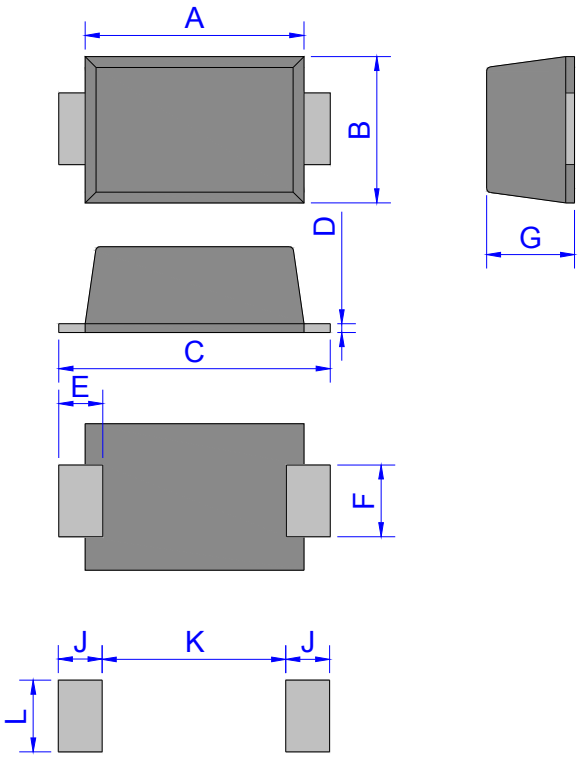


SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquidus Temp (T_L)to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquidus)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃ of actual Peak Temp (t_p)		20-40secs.
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃



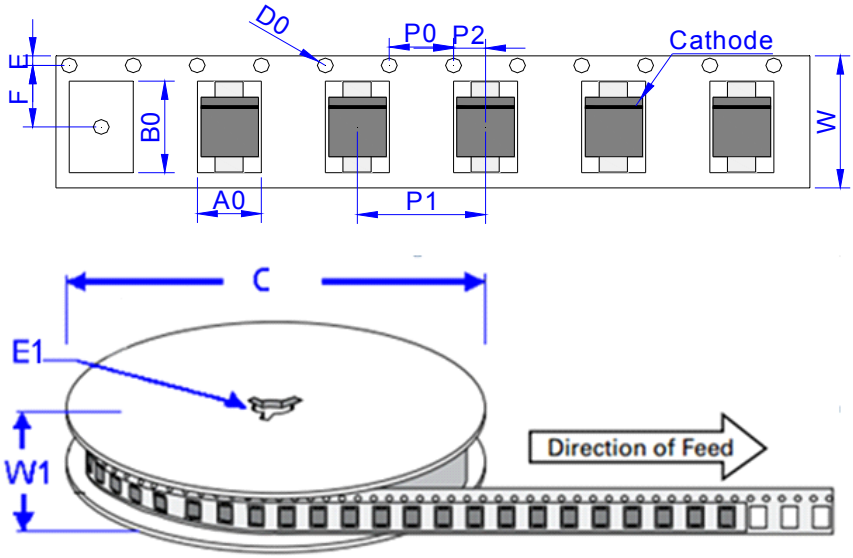
PACKAGE MECHANICAL DATA



SOD-123FL

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.60	3.00	0.102	0.118
B	1.60	2.00	0.063	0.079
C	3.45	3.95	0.136	0.156
D	0.10	0.25	0.004	0.01
E	0.3	0.9	0.012	0.035
F	0.80	1.20	0.031	0.047
G	0.95	1.35	0.037	0.053
J	1.30		0.051	
K		1.70		0.067
L	1.30		0.051	

TAPE AND REEL SPECIFICATION-SOD-123FL



Ref.	Dimensions	
	Millimeters	Inches
A0	1.95 ± 0.3	0.077± 0.012
B0	3.95 ± 0.3	0.156 ± 0.012
C	178	7.0
D0	1.55 ± 0.1	0.061 ± 0.004
E	1.75 ± 0.2	0.069 ± 0.008
E1	13.3 ± 0.3	0.524± 0.012
F	3.50 ± 0.2	0.138 ± 0.008
P0	4.00 ± 0.2	0.157 ± 0.008
P1	4.00 ± 0.2	0.157 ± 0.008
P2	2.00 ± 0.2	0.079 ± 0.008
W	8.0± 0.2	0.315 ± 0.008
W1	11.5 ± 1.0	0.453 ± 0.039

PART No.	UNIT WEIGHT (g/PCS) typ.	PACKAGE	REEL (PCS)	DESCRIPTION
SMFxxAH/CAH	0.0136	SOD-123FL	3000	7 inch reel pack