Applications

- Transient voltage suppression diodes, also known as TVS diodes, are protective electronic parts that protect electrical equipment from voltage spikes introduced by wires.

Description

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Mechanical Data

- Package：SMF/SOD-123FL
- Case Material：Molded Plastic. UL Flammability Classification Rating 94V-0. RoHS compliant
- Moisture Sensitivity：Meet MSL 1
- Terminal：Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity：Color band denotes cathode except bi-directional models
- Weight：0.017g(approximate)

Features

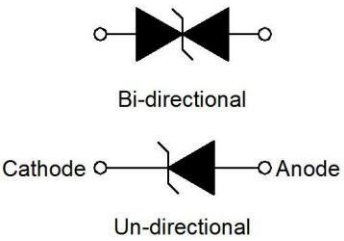
- For surface mounted applications
- Excellent clamping capability
- 400 W peak pulse power capability with a 10/1000μs Waveform.
- VRWM 5.0 ~ 75V
- Low profile package and low inductance
- Typical IR less than 1uA above 12V
- Fast response time: typically less than 1.0ps from 0V to VBR min.
- AEC-Q101 Qualified

Product and Packing Information

Part Number	QTY/Reel	Reel Size
P4SMFTxx(C)A-AT	3,000	7 inch

SOD-123FL(SMF)

SOD-123FL



Product and Packing Information

EX :

EHET : P4SMFT5.0A-AT Marking code

ETET : P4SMFT5.0CA-AT Marking code

Electrical Characteristics (T=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	μA	min(V)	max(V)	mA	max(V)	A
P4SMFT5.0A-AT	P4SMFT5.0CA-AT	EHET	ETET	5.0	400	6.40	7.00	10	9.2	43.48
P4SMFT6.0A-AT	P4SMFT6.0CA-AT	EHGT	ETGT	6.0	400	6.67	7.37	10	10.3	38.84
P4SMFT6.5A-AT	P4SMFT6.5CA-AT	EHKT	ETKT	6.5	250	7.22	7.98	10	11.2	35.72
P4SMFT7.0A-AT	P4SMFT7.0CA-AT	EHMT	ETMT	7.0	100	7.78	8.60	10	12.0	33.34
P4SMFT7.5A-AT	P4SMFT7.5CA-AT	EHPT	ETPT	7.5	50	8.33	9.21	1	12.9	31.01
P4SMFT8.0A-AT	P4SMFT8.0CA-AT	HERT	ETRT	8.0	25	8.89	9.83	1	13.6	29.42
P4SMFT8.5A-AT	P4SMFT8.5CA-AT	EHTT	ETTT	8.5	10	9.44	10.40	1	14.4	27.78
P4SMFT9.0A-AT	P4SMFT9.0CA-AT	EHVT	ETVT	9.0	5	10.00	11.10	1	15.4	25.98
P4SMFT10A-AT	P4SMFT10CA-AT	EHXT	ETXT	10.0	2.5	11.10	12.30	1	17.0	23.53
P4SMFT11A-AT	P4SMFT11CA-AT	EHZT	ETZT	11.0	2.5	12.20	13.50	1	18.2	21.98
P4SMFT12A-AT	P4SMFT12CA-AT	EIET	EUET	12.0	2.5	13.30	14.70	1	19.9	20.11
P4SMFT13A-AT	P4SMFT13CA-AT	EIGT	EUGT	13.0	1	14.40	15.90	1	21.5	18.61
P4SMFT14A-AT	P4SMFT14CA-AT	EIKT	EUKT	14.0	1	15.60	17.20	1	23.2	17.25
P4SMFT15A-AT	P4SMFT15CA-AT	EIMT	EUMT	15.0	1	16.70	18.50	1	24.4	16.40
P4SMFT16A-AT	P4SMFT16CA-AT	EIPT	EUPT	16.0	1	17.80	19.70	1	26.0	15.39
P4SMFT17A-AT	P4SMFT17CA-AT	EIRT	EURT	17.0	1	18.90	20.90	1	27.6	14.50
P4SMFT18A-AT	P4SMFT18CA-AT	EITT	EUTT	18.0	1	20.00	22.10	1	29.2	13.70
P4SMFT20A-AT	P4SMFT20CA-AT	EIVT	EUVT	20.0	1	22.20	24.50	1	32.4	12.35
P4SMFT22A-AT	P4SMFT22CA-AT	EIXT	EUXT	22.0	1	24.40	26.90	1	35.5	11.27
P4SMFT24A-AT	P4SMFT24CA-AT	EIZT	EUZT	24.0	1	26.70	29.50	1	38.9	10.29
P4SMFT26A-AT	P4SMFT26CA-AT	EJET	EVET	26.0	1	28.90	31.90	1	42.1	9.51
P4SMFT28A-AT	P4SMFT28CA-AT	EJGT	EVGT	28.0	1	31.10	34.40	1	45.4	8.82
P4SMFT30A-AT	P4SMFT30CA-AT	EJKT	EVKT	30.0	1	33.30	36.80	1	48.4	8.27
P4SMFT33A-AT	P4SMFT33CA-AT	EJMT	EVMT	33.0	1	36.70	40.60	1	53.3	7.51
P4SMFT36A-AT	P4SMFT36CA-AT	EJPT	EVPT	36.0	1	40.00	44.20	1	58.1	6.89
P4SMFT40A-AT	P4SMFT40CA-AT	EJRT	EVRT	40.0	1	44.40	49.10	1	64.5	6.21
P4SMFT43A-AT	P4SMFT43CA-AT	EJTT	EVTT	43.0	1	47.80	52.80	1	69.4	5.77
P4SMFT45A-AT	P4SMFT45CA-AT	EJVT	EVVT	45.0	1	50.00	55.30	1	72.7	5.51
P4SMFT48A-AT	P4SMFT48CA-AT	EJXT	EVXT	48.0	1	53.30	58.90	1	77.4	5.17
P4SMFT51A-AT	P4SMFT51CA-AT	EJZT	EVZT	51.0	1	56.70	62.70	1	82.4	4.86
P4SMFT54A-AT	P4SMFT54CA-AT	ERET	EWET	54.0	1	60.00	66.30	1	87.1	4.60

Electrical Characteristics (T=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	μA	min(V)	max(V)	mA	max(V)	A
P4SMFT58A-AT	P4SMFT58CA-AT	ERGT	EWGT	58.0	1	64.4	71.20	1	93.6	4.28
P4SMFT60A-AT	P4SMFT60CA-AT	ERKT	EWKT	60.0	1	66.7	73.70	1	96.8	4.14
P4SMFT64A-AT	P4SMFT64CA-AT	ERMT	EWMT	64.0	1	71.10	78.60	1	103.0	3.89
P4SMFT70A-AT	P4SMFT70CA-AT	ERPT	EWPT	70.0	1	77.8	86.00	1	113.0	3.54
P4SMFT75A-AT	P4SMFT75CA-AT	ERRT	EWRT	75.0	1	83.3	92.10	1	121.0	3.31
P4SMFT43A-AT	P4SMFT43CA-AT	EJTT	EVTT	43.0	1	47.8	52.80	1	69.4	5.77
P4SMFT45A-AT	P4SMFT45CA-AT	EJVT	EVVT	45.0	1	50.00	55.30	1	72.7	5.51
P4SMFT48A-AT	P4SMFT48CA-AT	EJXT	EVXT	48.0	1	53.30	58.90	1	77.4	5.17
P4SMFT51A-AT	P4SMFT51CA-AT	EJZT	EVZT	51.0	1	56.70	62.70	1	82.4	4.86
P4SMFT54A-AT	P4SMFT54CA-AT	ERET	EWET	54.0	1	60.00	66.30	1	87.1	4.60
P4SMFT58A-AT	P4SMFT58CA-AT	ERGT	EWGT	58.0	1	64.4	71.20	1	93.6	4.28
P4SMFT60A-AT	P4SMFT60CA-AT	ERKT	EWKT	60.0	1	66.7	73.70	1	96.8	4.14
P4SMFT64A-AT	P4SMFT64CA-AT	ERMT	EWMT	64.0	1	71.10	78.60	1	103.0	3.89
P4SMFT70A-AT	P4SMFT70CA-AT	ERPT	EWPT	70.0	1	77.80	86.00	1	113.0	3.54
P4SMFT75A-AT	P4SMFT75CA-AT	ERRT	EWRT	75.0	1	83.30	92.10	1	121.0	3.31

Note: 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}

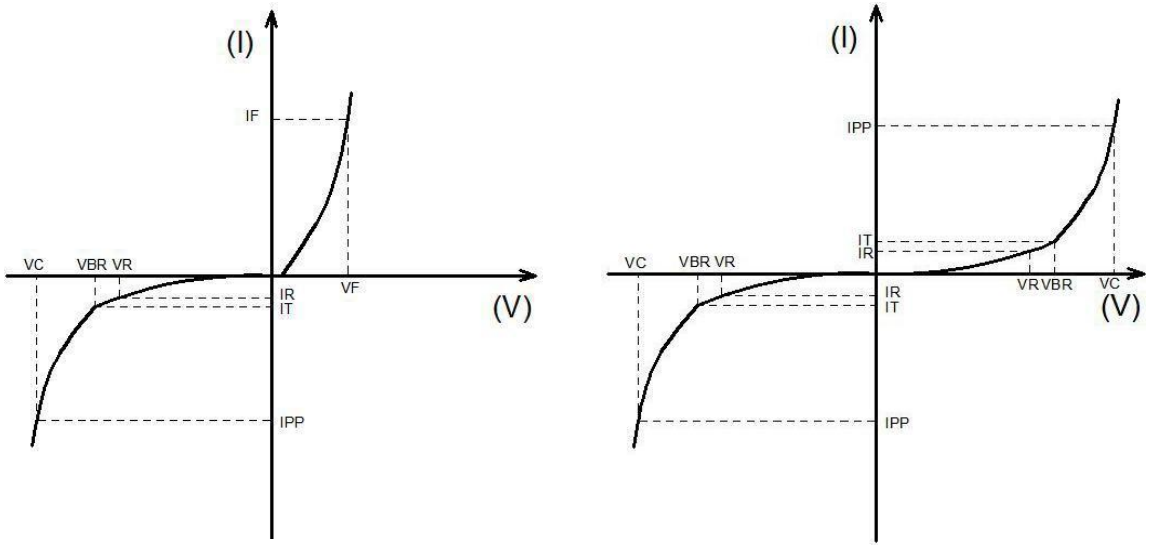
I_R: Reverse leakage current

I_T: Test current

Maximum Ratings (T=25°C, RH=45% ~ 75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak pulse power dissipation on 10/1000μs waveform	P_{PP}	400	W
Steady state power dissipation at T_L=75℃	$P_{M(AV)}$	1.0	W
Operating junction temperature range	T_j	-55 to +175	℃
Storage temperature range	T_{stg}	-55 to +175	℃

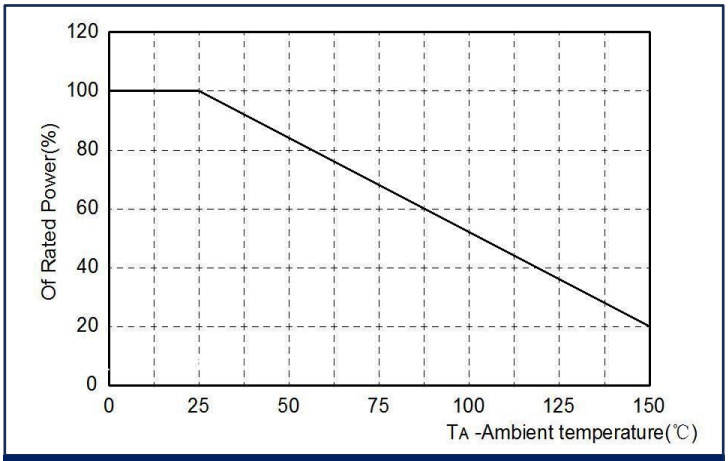
Ratings And V-I Characteristics Curves (T=25ºC, unless otherwise noted)



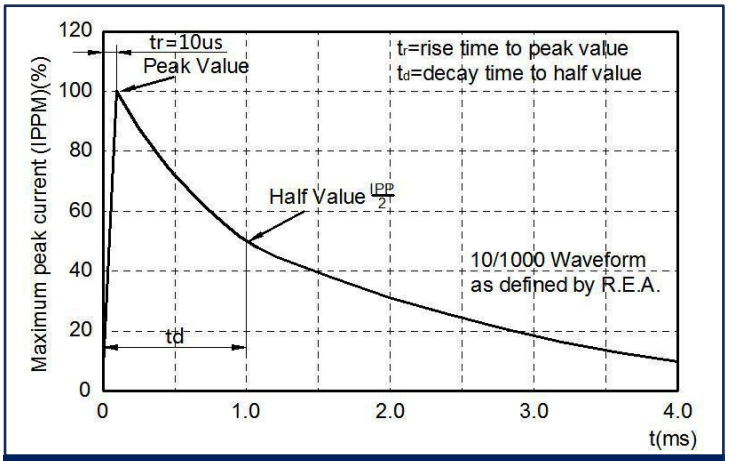
V-I cure characteristics

Symbol	Parameter
I_F	Mean Forward Current
V_F	Maximum Forward Voltage @I_F
V_R	Peak Reverse Working Voltage
I_R	Reverse Leakage Current @ V_R
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}

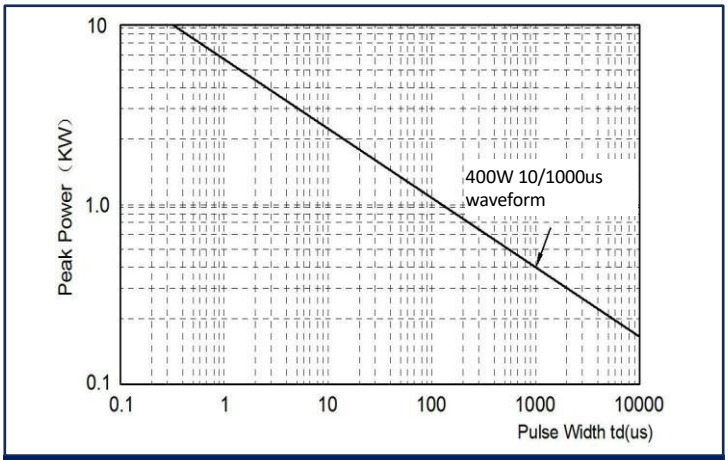
Typical Characteristics



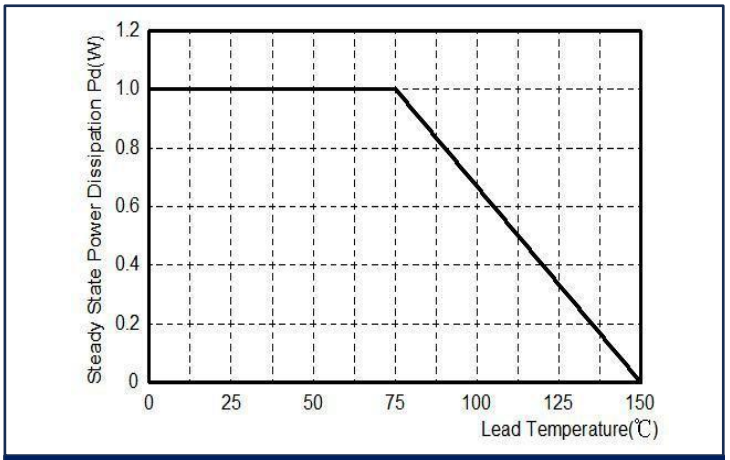
Pulse Derating Curve



Pulse Waveform



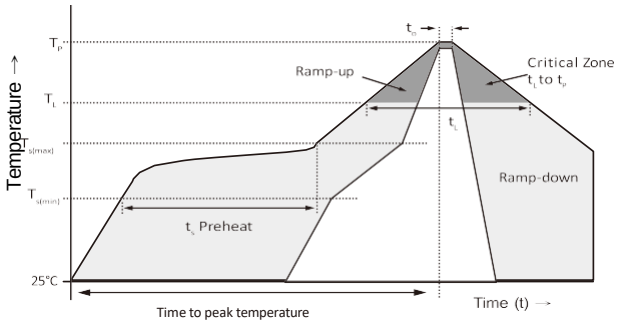
Peak Pulse Power Rating Curve



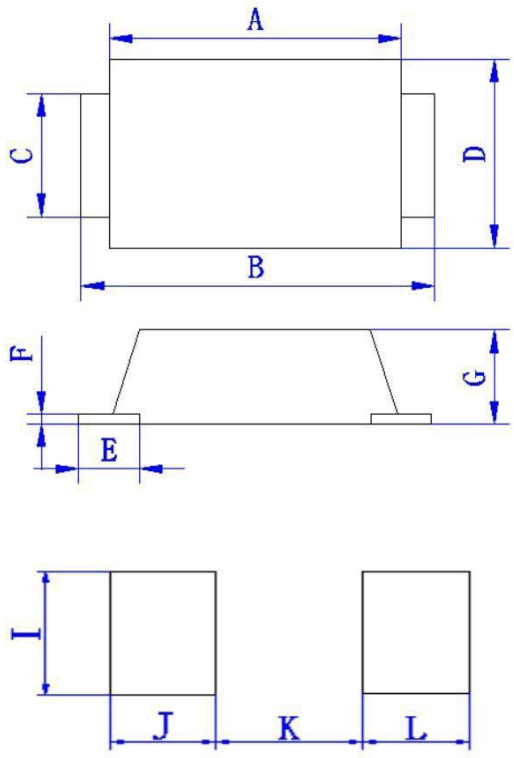
Steady State Power Dissipation

Soldering Parameters

Reflow Condition		Lead–free assembly
Pre Heat	Temperature Max ($T_{s(min)}$)	150°C
	Temperature Max ($T_{s(max)}$)	200°C
	Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp (T_L) to peak		3°C/second max
$T_{S(max)}$to T_L - Ramp-up Rate		3°C/second max
Reflow	Temperature (T_L) (Liquidus)	217°C
	Time (min to max) (t_L)	60 – 150 seconds
Peak Temperature (T_P)		260°C (+0/-5)
Time within 5°C of actual peak Temperature (t_p)		30 seconds Max
Ramp-down Rate		6°C/second Max
Time 25°C to peak Temperature (T_P)		8 minutes Max.
Do not exceed		260°C

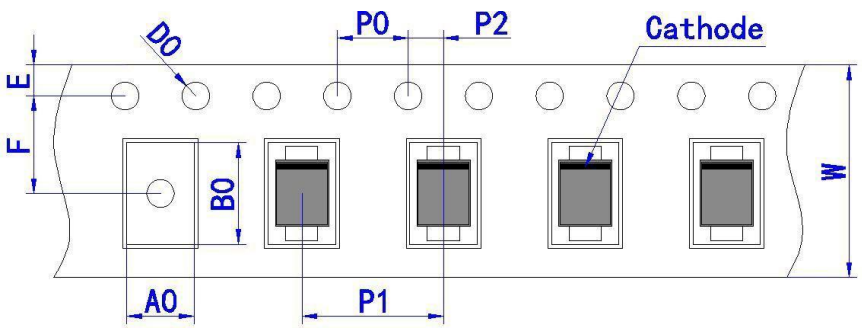


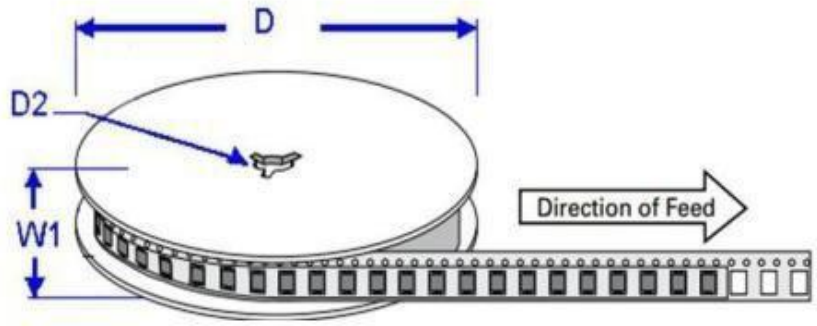
Package mechanical data & Suggested Land



Ref. (mm)	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	0.9	1.1
I	1.2	
J	0.85	
K		2.3
L	0.85	

Tape And Reel Specification SOD-123FL





Ref.	Millimeters
A0	2.15±0.20
B0	3.95±0.20
C	178.00
D0	1.55±0.10
E	1.75±0.20
E1	13.50±1.00
F	3.50±0.10
P0	4.00±0.20
P1	4.00±0.20
P2	2.00±0.20
W	8.00±0.30
W1	9.00±4.00
D	177.8±4.00
D2	13.5±0.2