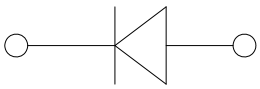
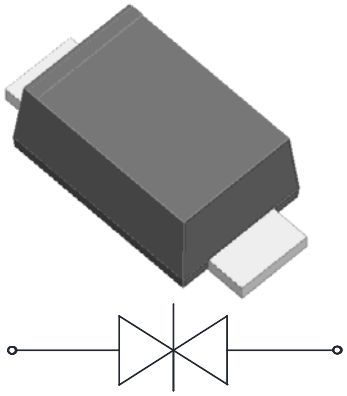
RoHS COMPLIANT

Surface Mount Transient Voltage Suppressor

Uni-directional



Bi-directional



Features

- For surface mounted applications
- Low-profile package
- Ideal for automated placement
- Available in Unidirectional and Bidirectional
- 200 W peak pulse power capability with a 10/1000 μs waveform
- Low incremental surge resistance, excellent clamping capability
- Very fast response time
- High temperature soldering guaranteed: 260 °C/10 s at terminals
- Meets MSL level 1
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

Typical Applications

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, telecommunication.

Mechanical Date

- **Package**: SOD-123FL
  Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant, halogen-free
- **Terminals**: Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Polarity:** For uni-directional types the band denotes cathode end, no marking on bi-directional types

■Maximum Ratings (T_a=25℃ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	Conditions	Max
Peak power dissipation(1) (2) (Fig.1)	P_{PPM}	W	with a 10/1000us waveform	200
Peak pulse current(1)	I_{PPM}	A	with a 10/1000us waveform	(See Next Table)
Power dissipation, on infinite heat sink	P_D	W	TL=75℃	0.4
Peak forward surge current, 8.3 ms single half sine-wave unidirectional only (3)	I_{FSM}	A		20
Operating junction and storage temperature range	T_J,T_{STG}	℃		-55 to +150
Thermal resistance	$R_{\theta JL}$	℃/W	Between junction and lead	26
	$R_{\theta JA}$		Between junction and Ambient	300
	$R_{\theta JC}$		Between junction and Curve	40

Notes:

(1). Non-repetitive current pulse at T_A=25℃, per waveform of Figure 2.

(2). T_L=30℃ unless otherwise noted , V_F ≤1.25V@200mA.

(3). Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum

■ Electrical Characteristics (TA=25℃ unless otherwise noted)

Part Number		Marking		Breakdown Voltage V_{BR}@I_T			Maximum Reverse Leakage I_R(3) @ V_{RWM} (μA)	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Reverse Surge Current I_{PP}(2) (A)	Maximum Clamping Voltage Vc @ I_{PP} (V)
(Uni)	(Bi)	(Uni)	(Bi)	Min(V)	Max (V)	I_T(1)(mA)				
SMF5.0A	SMF5.0CA	AE	NE	6.40	7.07	10	400.0	5.0	21.74	9.2
SMF6.0A	SMF6.0CA	AG	NG	6.67	7.37	10	400.0	6.0	19.42	10.3
SMF6.5A	SMF6.5CA	AK	NK	7.22	7.98	10	250.0	6.5	17.86	11.2
SMF7.0A	SMF7.0CA	AM	NM	7.78	8.60	10	100.0	7.0	16.67	12.0
SMF7.5A	SMF7.5CA	AP	NP	8.33	9.21	1	50.0	7.5	15.50	12.9
SMF8.0A	SMF8.0CA	AR	NR	8.89	9.83	1	25.0	8.0	14.71	13.6
SMF8.5A	SMF8.5CA	AT	NT	9.44	10.40	1	10.0	8.5	13.89	14.4
SMF9.0A	SMF9.0CA	AV	NV	10.00	11.10	1	5.0	9.0	12.99	15.4
SMF10A	SMF10CA	AX	NX	11.10	12.30	1	2.5	10.0	11.76	17.0
SMF11A	SMF11CA	AZ	NZ	12.20	13.50	1	2.5	11.0	10.99	18.2
SMF12A	SMF12CA	BE	OE	13.30	14.70	1	2.5	12.0	10.05	19.9
SMF13A	SMF13CA	BG	OG	14.40	15.90	1	1.0	13.0	9.30	21.5
SMF14A	SMF14CA	BK	OK	15.60	17.20	1	1.0	14.0	8.62	23.2
SMF15A	SMF15CA	BM	OM	16.70	18.50	1	1.0	15.0	8.20	24.4
SMF16A	SMF16CA	BP	OP	17.80	19.70	1	1.0	16.0	7.69	26.0
SMF17A	SMF17CA	BR	OR	18.90	20.90	1	1.0	17.0	7.25	27.6
SMF18A	SMF18CA	BT	OT	20.00	22.10	1	1.0	18.0	6.85	29.2
SMF20A	SMF20CA	BV	OV	22.20	24.50	1	1.0	20.0	6.17	32.4
SMF22A	SMF22CA	BX	OX	24.40	26.90	1	1.0	22.0	5.63	35.5
SMF24A	SMF24CA	BZ	OZ	26.70	29.50	1	1.0	24.0	5.14	38.9
SMF26A	SMF26CA	CE	PE	28.90	31.90	1	1.0	26.0	4.75	42.1
SMF28A	SMF28CA	CG	PG	31.10	34.40	1	1.0	28.0	4.41	45.4
SMF30A	SMF30CA	CK	PK	33.30	36.80	1	1.0	30.0	4.13	48.4
SMF33A	SMF33CA	CM	PM	36.70	40.60	1	1.0	33.0	3.75	53.3
SMF36A	SMF36CA	CP	PP	40.00	44.20	1	1.0	36.0	3.44	58.1
SMF40A	SMF40CA	CR	PR	44.40	49.10	1	1.0	40.0	3.10	64.5
SMF43A	SMF43CA	CT	PT	47.80	52.80	1	1.0	43.0	2.88	69.4
SMF45A	SMF45CA	CV	PV	50.00	55.30	1	1.0	45.0	2.75	72.7
SMF48A	SMF48CA	CX	PX	53.30	58.90	1	1.0	48.0	2.58	77.4
SMF51A	SMF51CA	CZ	PZ	56.70	62.70	1	1.0	51.0	2.43	82.4
SMF54A	SMF54CA	DE	PA	60.00	66.30	1	1.0	54.0	2.30	87.1
SMF58A	SMF58CA	DG	PC	64.40	71.20	1	1.0	58.0	2.14	93.6

SMF SERIES

Part Number		Marking		Breakdown Voltage V_{BR}@I_T			Maximum Reverse Leakage I_R[3] @ V_{RWM} (μA)	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Reverse Surge Current I_{PP}[2] (A)	Maximum Clamping Voltage Vc @ I_{PP} (V)
(Uni)	(Bi)	(Uni)	(Bi)	Min(V)	Max (V)	I_T[1](mA)				
SMF60A	SMF60CA	DK	CDK	66.70	73.70	1	1.0	60.0	2.07	96.8
SMF64A	SMF64CA	DM	CDM	71.10	78.60	1	1.0	64.0	1.94	103.0
SMF70A	SMF70CA	DP	CDP	77.80	86.00	1	1.0	70.0	1.77	113.0
SMF75A	SMF75CA	DR	CDR	83.30	92.10	1	1.0	75.0	1.65	121.0
SMF78A	SMF78CA	DT	CDT	86.70	95.80	1	1.0	78.0	1.59	126.0
SMF85A	SMF85CA	DV	CDV	94.40	104.00	1	1.0	85.0	1.46	137.0
SMF90A	SMF90CA	DX	CDX	100.00	111.00	1	1.0	90.0	1.37	146.0
SMF100A	SMF100CA	DZ	CDZ	111.00	123.00	1	1.0	100.0	1.23	162.0
SMF110A	SMF110CA	EE	CEE	122.00	135.00	1	1.0	110.0	1.13	177.0
SMF120A	SMF120CA	EG	CEG	133.00	147.00	1	1.0	120.0	1.04	193.0
SMF130A	SMF130CA	EK	CEK	144.00	159.00	1	1.0	130.0	0.96	209.0
SMF150A	SMF150CA	EM	CEM	167.00	185.00	1	1.0	150.0	0.82	243.0
SMF160A	SMF160CA	EP	CEP	178.00	197.00	1	1.0	160.0	0.77	259.0
SMF170A	SMF170CA	ER	CER	189.00	209.00	1	1.0	170.0	0.73	275.0
SMF180A	SMF180CA	ET	CET	200.00	220.00	1	1.0	180.0	0.68	292.0
SMF190A	SMF190CA	EV	CEV	211.00	232.00	1	1.0	190.0	0.65	308.0
SMF200A	SMF200CA	EX	CEX	224.00	247.00	1	1.0	200.0	0.62	324.0
SMF220A	SMF220CA	E22	CE22	246.00	272.00	1	1.0	220.0	0.5	356.0
SMF250A	SMF250CA	E25	CE25	279.00	309.00	1	1.0	250.0	0.5	405.0
SMF300A	SMF300CA	E30	CE30	335.00	371.00	1	1.0	300.0	0.45	486.0
SMF350A	SMF350CA	E35	CE35	391.00	432.00	1	1.0	350.0	0.4	567.0
SMF400A	SMF400CA	E40	CE40	447.00	494.00	1	1.0	400.0	0.35	648.0
SMF440A	SMF440CA	E44	CE44	492.00	543.00	1	1.0	440.0	0.3	713.0

. Characteristics(Typical)

FIG1:Peak Pulse Power Rating Curve

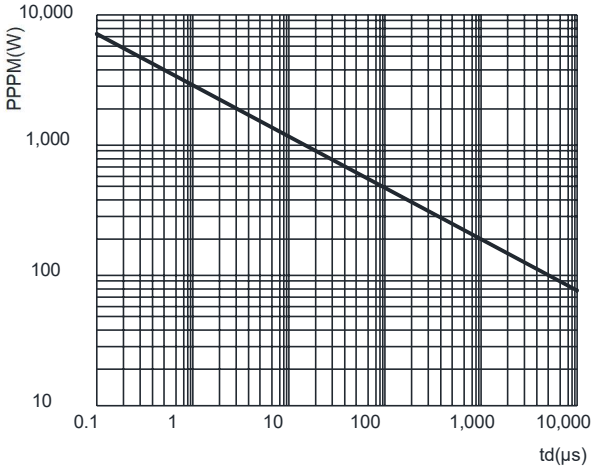


FIG2: Pulse Waveform

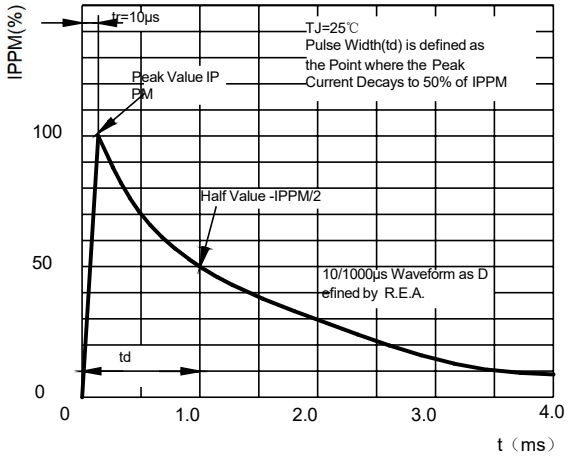


FIG3: Pulse Power or Current vs. Initial Junction Temperature

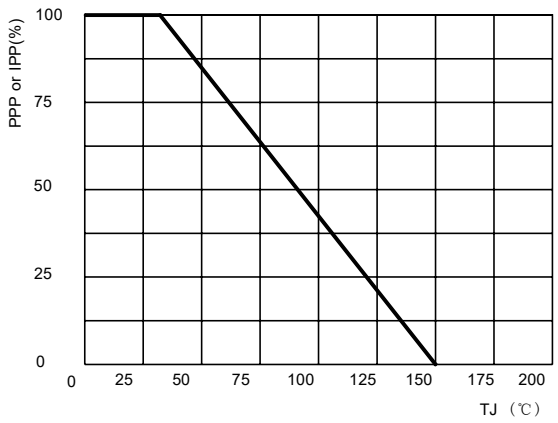
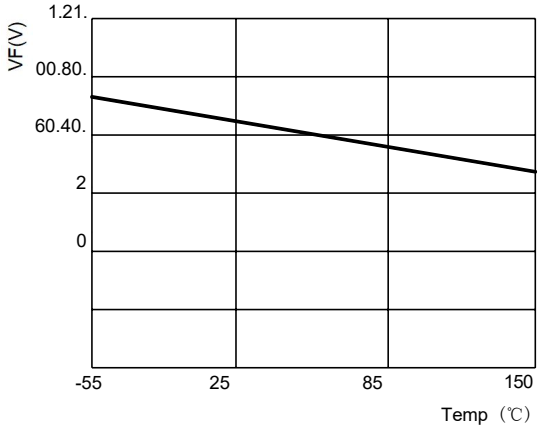


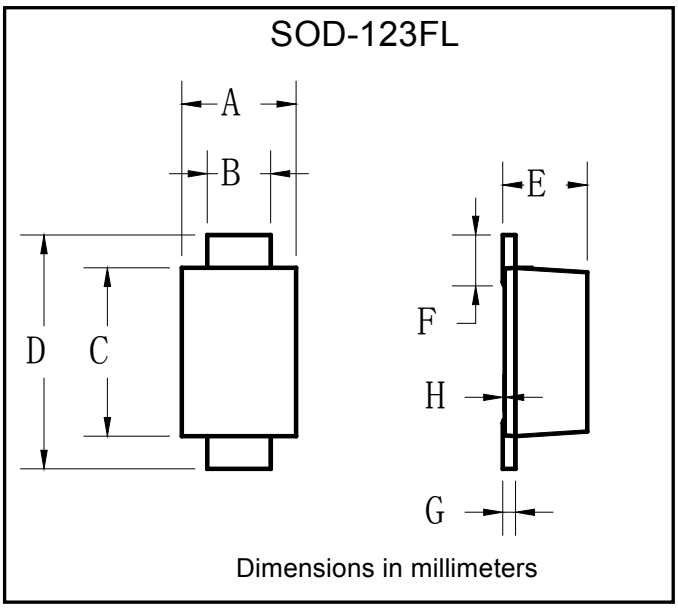
FIG4: Forward Voltage Curve



■Ordering Information (Example)

P/N	PKG	QTY
SMFXXXA(CA)	SOD123FL	3000

■ Outline Dimensions



SOD-123FL		
Dim	Min	Max
A	1.60	1.90
B	0.90	1.10
C	2.55	2.85
D	3.60	3.90
E	1.00	1.20
F	0.40	0.90
G	0.10	0.25
H	0.02	0.05