JS-SMF5V0A to SMF58A

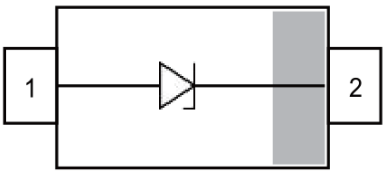
SOD-123FL Surface Mount ESD Protection Diodes

Features

- For surface mounted applications
- Low-profile package
- Optimized for LAN protection applications
- Ideal for ESD protection of data lines in accordance with IEC 61000-4-2 (IEC801-2)
- Ideal for EFT protection of data lines in accordance with IEC 61000-4-4 (IEC801-4)
- ESD-protection acc. IEC 61000-4-2
  ± 30 kV contact discharge
  ± 30 kV air discharge
- Low incremental surge resistance, excellent clamping capability
- 200 W peak pulse power capability with a 10/1000 μs waveform, repetition rate (duty cycle): 0.01 %
- “Low-Noise” technology - very fast response time
- High temperature soldering guaranteed: 260 °C/10 s at terminals

Schematic diagram of package die

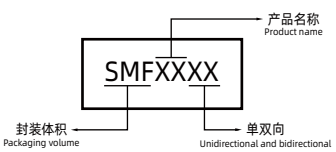
SOD-123FL



Equivalent Circuit

Bar = cathode marking
XX = date code

Ordering information

Product ID	Pack	Naming rule	voltage	Qty(PCS)
SMFXXXX	SOD-123FL		5V0-58V	3000

ABSOLUTE MAXIMUM RATINGS(T_{amb}=25℃, unless otherwise noted)

SYMBOL	PARAMETER	TEST CONDITIONS	VALUE	UNIT
I_{PPM}	Peak pulse current	t_p = 10/1000 μs waveform	see "Electrical Characteristics"	A
P_{PP}	Peak pulse power	t_p = 8/20 μs waveform acc. IEC 61000-4-5	1000	W
		t_p = 10/1000 μs waveform	200	
I_{FSM}	Peak forward surge current	8.3 ms single half sine-wave	50	A
V_{ESD}	ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses	± 30	kV
		Air discharge acc. IEC 61000-4-2; 10 pulses	± 30	
R_{thJA}	Thermal resistance	Mounted on epoxy glass PCB with 3 mm x 3 mm, Cu pads (≥40 μm thick)	180	K/W
V_F	Forward clamping voltage	I_F = 50A, t_p = 400 μs	2.5	V
V_F	Operating temperature	Junction temperature	- 55 to + 150	℃
T_{STG}	Storage temperature		- 55 to + 150	℃

ELECTRICAL CHARACTERISTICS(T_{amb}=25℃, unless otherwise noted)

PART NUMBER	TYPE COD		REVERSE BREAKDOWN VOLTAGE at IT, tp = 5 ms	TEST CURRENT	REVERSE WORKING VOLTAGE	REVERSE CURRENT atVRWM	PEAK PULSE CURRENT tp=10/1000μs	REVERSE CLAMPING VOLTAGE atIPPM	CAPACITANCE at VR = 0 V, f=1MHz	PROTECTION PATHS
	STD.	HALOGEN-FREE	V_{BR} MIN. (V)	I_T (mA)	V_{RWM} (V)	I_R (μA)	I_{PPM} (A)	V_C MAX. (V)	C_D TYP. (pF)	$N_{channel}$
SMF5V0A	AE	NE	6.40	10	5	5	21.7	9.2	1120	1
SMF6V0A	AG	NG	6.67	10	6	26	19.4	10.3	1063	1
SMF6V5A	AK	NK	7.22	10	6.5	20	17.9	11.2	938	1
SMF7V0A	AM	NM	7.78	10	7	3	16.7	12	843	1
SMF7V5A	AP	NP	8.33	1	7.5	0.1	15.5	12.9	773	1
SMF8V0A	AR	NR	8.89	1	8	0.1	14.7	13.6	706	1
SMF8V5A	AT	NT	9.44	1	8.5	0.1	13.9	14.4	674	1
SMF9V0A	AV	NV	10	1	9	0.1	13.5	15.4	640	1
SMF10A	AX	NX	11.1	1	10	0.1	11.8	17	562	1
SMF11A	AZ	NZ	12.2	1	11	0.1	11	18.2	509	1
SMF12A	BE	OE	13.3	1	12	0.1	10.1	19.9	483	1
SMF13A	BG	OG	14.4	1	13	0.1	9.3	21.5	423	1
SMF14A	BK	OK	15.6	1	14	0.1	8.6	23.2	392	1
SMF15A	BM	OM	16.7	1	15	0.1	8.2	24.4	367	1
SMF16A	BP	OP	17.8	1	16	0.1	7.7	26	343	1
SMF17A	BR	OR	18.9	1	17	0.1	7.2	27.6	324	1
SMF18A	BT	OT	20	1	18	0.1	6.8	29.2	320	1
SMF20A	BV	OV	22.2	1	20	0.1	6.2	32.4	283	1
SMF22A	BX	OX	24.4	1	22	0.1	5.6	35.5	271	1
SMF24A	BZ	OZ	26.7	1	24	0.1	5.1	38.9	244	1
SMF26A	CE	PE	28.9	1	26	0.1	4.8	42.1	230	1
SMF28A	CG	PG	31.1	1	28	0.1	4.4	45.4	227	1
SMF30A	CK	PK	33.3	1	30	0.1	4.1	48.4	207	1
SMF33A	CM	PM	36.7	1	33	0.1	3.8	53.3	198	1
SMF36A	CP	PP	40	1	36	0.1	3.4	58.1	178	1
SMF40A	CR	PR	44.4	1	40	0.1	3.1	64.5	172	1
SMF43A	CT	PT	47.8	1	43	0.1	2.9	69.4	165	1
SMF45A	CV	PV	50	1	45	0.1	2.8	72.7	162	1
SMF48A	CX	PX	53.3	1	48	0.1	2.6	77.4	161	1
SMF51A	CZ	PZ	56.7	1	51	0.1	2.4	82.4	151	1
SMF54A	CA	PA	60	1	54	0.1	2.25	88	148	1
SMF58A	CC	PC	64.4	1	58	0.1	2.1	95	144	1

Typical Characteristics(Tamb=25℃, unless otherwise noted)

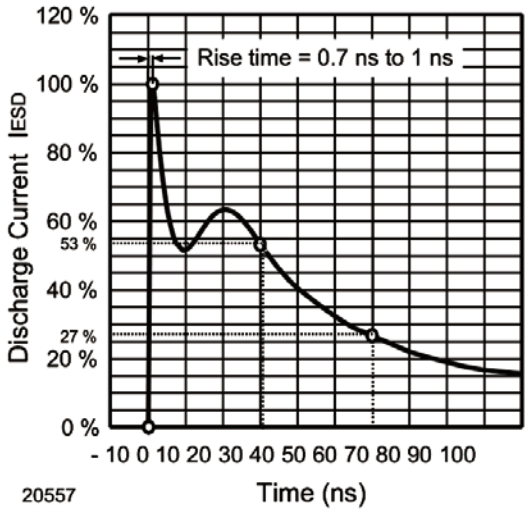


Fig. 1 - ESD Discharge Current Wave Form acc. IEC 61000-4-2(330Ω/150pF)

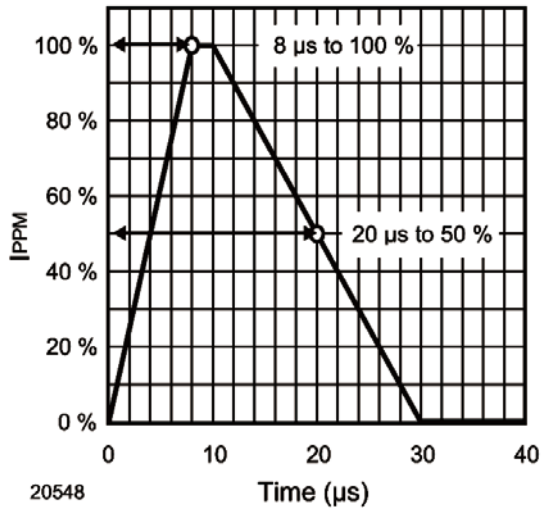


Fig. 2 - 8/20 µs Peak Pulse Current Wave Form acc. IEC 61000-4-5

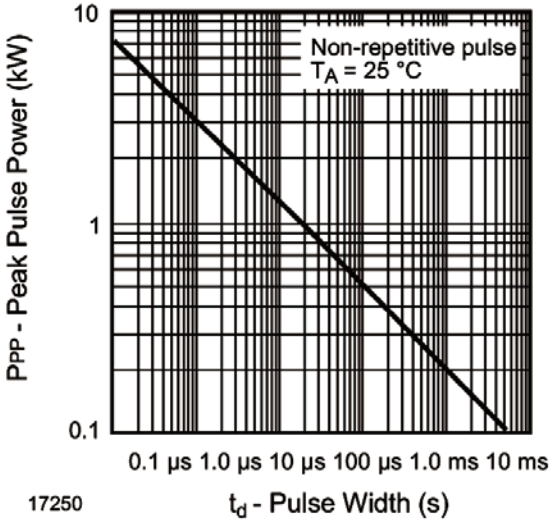


Fig. 3 - Peak Pulse Power Rating

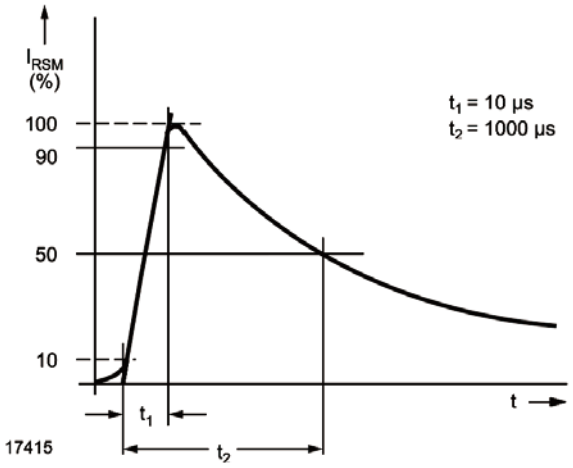


Fig. 4 - Pulse Waveform

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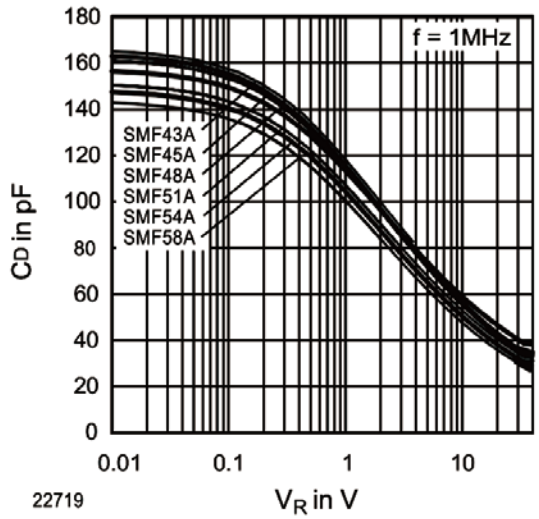


Fig. 5 - Typical Capacitance CD vs. Reverse Voltage VR

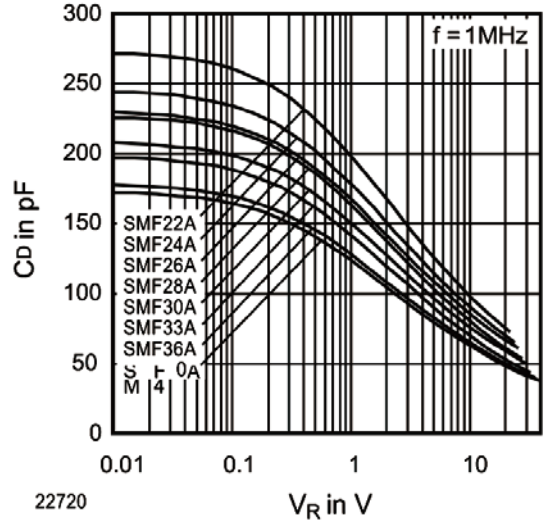


Fig. 6 - Typical Capacitance CD vs. Reverse Voltage VR

Typical Characteristics

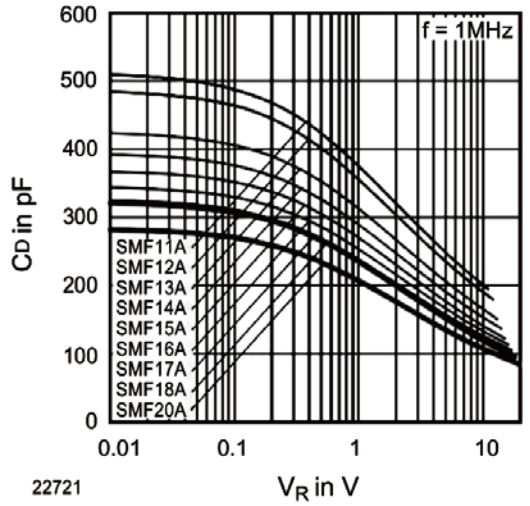


Fig. 7 - Typical Capacitance C_D vs. Reverse Voltage V_R

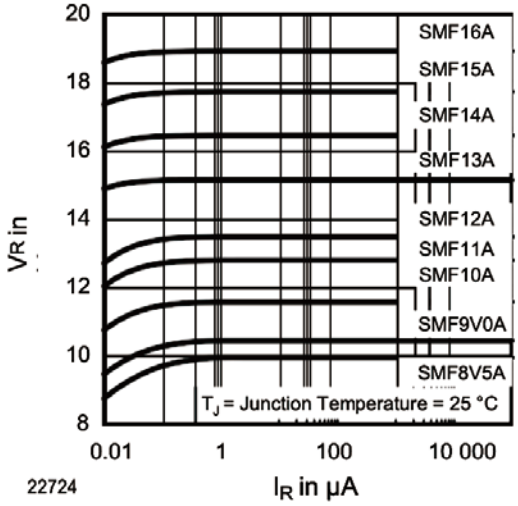


Fig. 10 - Typical Capacitance C_D vs. Reverse Voltage V_R

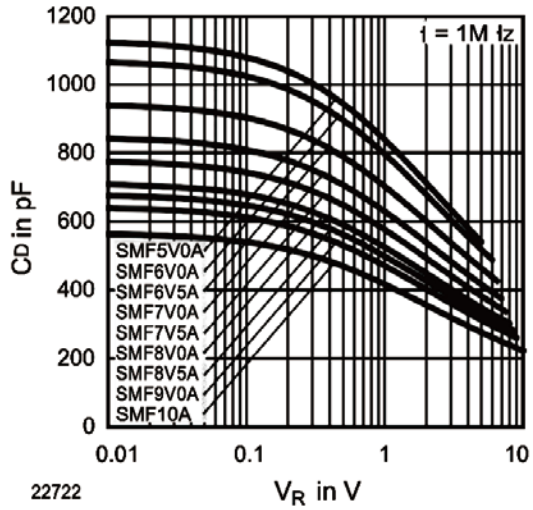


Fig. 8 - Typical Capacitance C_D vs. Reverse Voltage V_R

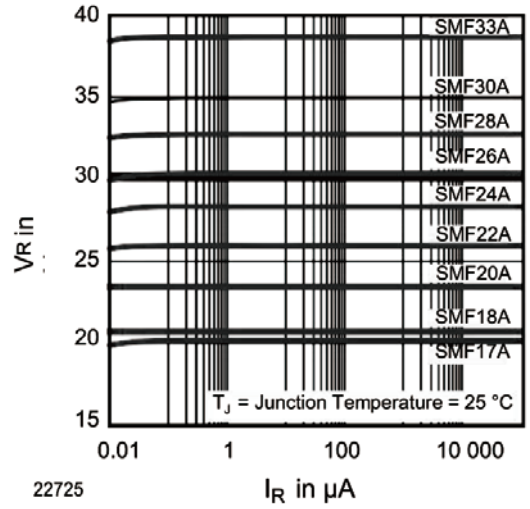


Fig. 11 - Typical Reverse Voltage V_R vs. Reverse Current I_R

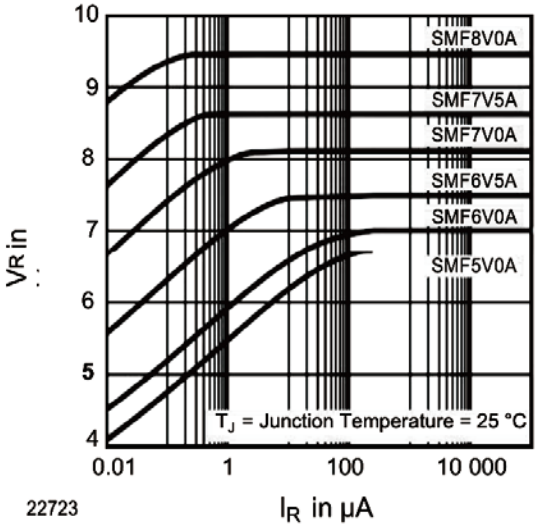


Fig. 9 - Typical Reverse Voltage V_R vs. Reverse Current I_R

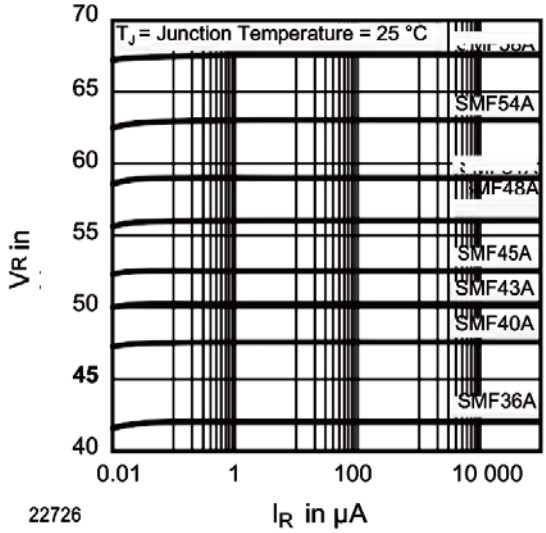
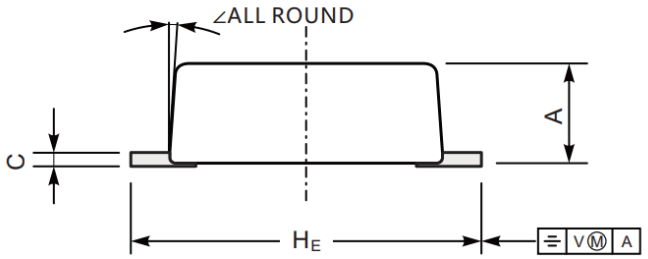
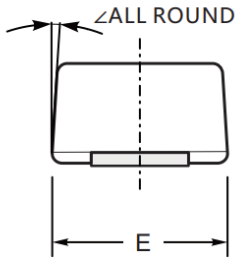


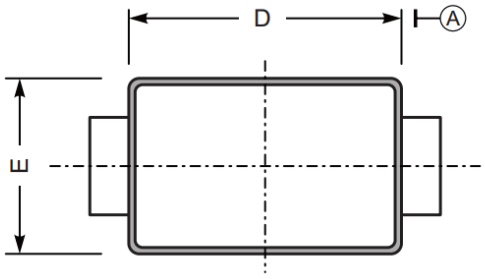
Fig. 12 - Typical Reverse Voltage V_R vs. Reverse Current I_R

PACKAGE OUTLINE

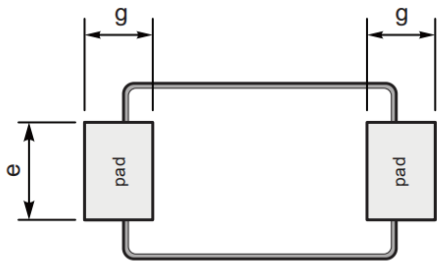
Plastic surface mounted package; 2 leads SOD-123FL







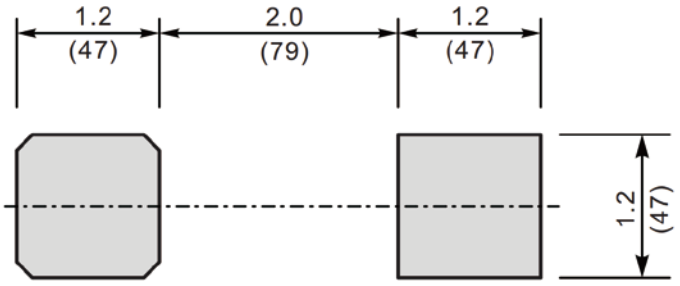
Top View



Bottom View

UNIT		A	C	D	E	e	g	HE	∠
mm	max	1.1	0.20	2.9	1.9	1.1	0.9	3.8	7°
	min	0.9	0.12	2.6	1.7	0.8	0.7	3.5	
mil	max	43	7.9	114	75	43	35	150	
	min	35	4.7	102	67	31	28	138	

The recommended mounting pad size



Unit: mm / (mil)