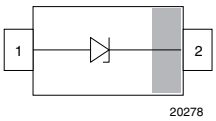
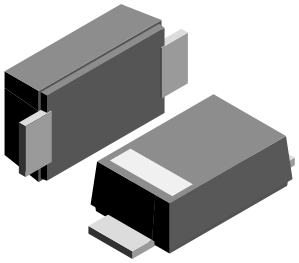
Surface-Mount ESD Protection Diodes



eSMP® Series

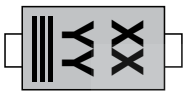


SMF (DO-219AB)

FEATURES

- 200 W peak pulse power capability with a 10/1000 µs waveform, repetition rate (duty cycle): 0.01 %
- Low profile package
- Wave and reflow solderable
- ESD immunity acc. IEC 61000-4-2
  ± 30 kV contact discharge
  ± 30 kV air discharge
- ESD capability according to AEC-Q101:
  human body model: class H3B: > 8 kV
- Low incremental surge resistance, excellent clamping capability
- "Low Noise" technology - very fast response time
- AEC-Q101 qualified available
- Compatible to SOD-123W package case outline or SOD-123F and SOD-123FL

MARKING (example only)



Bar = cathode marking
YY = type code (see table below)
XX = date code

ORDERING INFORMATION

PART NUMBER (EXAMPLE)	ENVIRONMENTAL AND QUALITY CODE				PACKAGING CODE		ORDERING CODE (EXAMPLE)
	AEC-Q101 QUALIFIED	RoHS-COMPLIANT + LEAD (Pb)-FREE TERMINATIONS		TIN PLATED	3K PER 7" REEL (8 mm TAPE), MOQ = 30K	10K PER 13" REEL (8 mm TAPE), MOQ = 50K	
		STANDARD	HALOGEN-FREE				
SMF5V0A-		E		3	-08		SMF5V0A-E3-08
SMF5V0A-			M	3	-08		SMF5V0A-M3-08
SMF5V0A-	H	E		3	-08		SMF5V0A-HE3-08
SMF5V0A-	H		M	3	-08		SMF5V0A-HM3-08
SMF5V0A-		E		3		-18	SMF5V0A-E3-18
SMF5V0A-			M	3		-18	SMF5V0A-M3-18
SMF5V0A-	H	E		3		-18	SMF5V0A-HE3-18
SMF5V0A-	H		M	3		-18	SMF5V0A-HM3-18

PACKAGE DATA

PACKAGE NAME	MOLDING COMPOUND	WEIGHT (mg)	HEIGHT MAX. (mm)	LENGTH MAX. (mm)	WIDTH MAX. (mm)	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	WHISKER TEST ACC. JESD 201	SOLDERING CONDITIONS
SMF (DO-219AB)	Standard	15	1.08	3.9	1.9	UL 94 V-0	MSL level 1 (acc. J-STD-020)	Class 2	Peak temperature max. 260 °C
	Halogen-free								

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified)				
PARAMETER	**TEST CONDITIONS**	**SYMBOL**	**VALUE**	**UNIT**
Peak pulse current	t_p = 10/1000 µs waveform	I_{PPM}	see "Electrical Characteristics"	A
Peak pulse power	t_p = 8/20 µs waveform acc. IEC 61000-4-5	P_{PP}	1000	W
	t_p = 10/1000 µs waveform		200	W
Peak forward surge current	8.3 ms single half sine-wave	I_{FSM}	50	A
ESD immunity	Contact discharge acc. IEC 61000-4-2; 10 pulses	V_{ESD}	± 30	kV
	Air discharge acc. IEC 61000-4-2; 10 pulses		± 30	kV
Thermal resistance	Mounted on epoxy glass PCB with 3 mm x 3 mm, Cu pads (≥ 40 µm thick)	R_{thJA}	180	K/W
Forward clamping voltage	I_F = 50A, t_p = 400 µs	V_F	2.5	V
Junction temperature		T_J	175	°C
Storage temperature range		T_{stg}	-65 to +175	°C
Operating temperature range		T_{op}	-65 to +175	°C

ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

PART NUMBER	TYPE CODE		REVERSE BREAKDOWN VOLTAGE at I_T, t_p = 5 ms		TEST CURRENT	STAND-OFF VOLTAGE	MAXIMUM REVERSE CURRENT at V_{RWM}	MAXIMUM PEAK PULSE CURRENT t_p = 10/1000 µs	MAXIMUM REVERSE CLAMPING VOLTAGE at I_{PPM}	TYPICAL CAP. at V_R = 0 V, f = 1 MHz	PROTECTION PATHS
	STD.	HALOGEN-FREE	V_{BR} MIN. (V)	V_{BR} MAX. (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	7.1	10	5	5	21.7	9.2	1120	1
SMF6V0A	AG	NG	6.67	7.4	10	6	26	19.4	10.3	1063	1
SMF6V5A	AK	NK	7.22	8	10	6.5	20	17.9	11.2	938	1
SMF7V0A	AM	NM	7.78	8.6	10	7	3	16.7	12	843	1
SMF7V5A	AP	NP	8.33	9.3	1	7.5	0.1	15.5	12.9	773	1
SMF8V0A	AR	NR	8.89	9.9	1	8	0.1	14.7	13.6	706	1
SMF8V5A	AT	NT	9.44	10.5	1	8.5	0.1	13.9	14.4	674	1
SMF9V0A	AV	NV	10	11.2	1	9	0.1	13.5	15.4	640	1
SMF10A	AX	NX	11.1	12.3	1	10	0.1	11.8	17	562	1
SMF11A	AZ	NZ	12.2	13.5	1	11	0.1	11	18.2	509	1
SMF12A	BE	OE	13.3	14.7	1	12	0.1	10.1	19.9	483	1
SMF13A	BG	OG	14.4	16	1	13	0.1	9.3	21.5	423	1
SMF14A	BK	OK	15.6	17.3	1	14	0.1	8.6	23.2	392	1
SMF15A	BM	OM	16.7	18.5	1	15	0.1	8.2	24.4	367	1
SMF16A	BP	OP	17.8	19.7	1	16	0.1	7.7	26	343	1
SMF17A	BR	OR	18.9	20.9	1	17	0.1	7.2	27.6	324	1
SMF18A	BT	OT	20	22.3	1	18	0.1	6.8	29.2	320	1
SMF20A	BV	OV	22.2	24.6	1	20	0.1	6.2	32.4	283	1
SMF22A	BX	OX	24.4	27	1	22	0.1	5.6	35.5	271	1
SMF24A	BZ	OZ	26.7	29.6	1	24	0.1	5.1	38.9	244	1
SMF26A	CE	PE	28.9	32	1	26	0.1	4.8	42.1	230	1
SMF28A	CG	PG	31.1	34.4	1	28	0.1	4.4	45.4	227	1
SMF30A	CK	PK	33.3	36.9	1	30	0.1	4.1	48.4	207	1
SMF33A	CM	PM	36.7	40.6	1	33	0.1	3.8	53.3	198	1
SMF36A	CP	PP	40	44.3	1	36	0.1	3.4	58.1	178	1
SMF40A	CR	PR	44.4	49.1	1	40	0.1	3.1	64.5	172	1
SMF43A	CT	PT	47.8	52.9	1	43	0.1	2.9	69.4	165	1
SMF45A	CV	PV	50	55.3	1	45	0.1	2.8	72.7	162	1
SMF48A	CX	PX	53.3	59	1	48	0.1	2.6	77.4	161	1
SMF51A	CZ	PZ	56.7	62.7	1	51	0.1	2.4	82.4	151	1
SMF54A	CA	PA	60	66	1	54	0.1	2.25	88	148	1
SMF58A	CC	PC	64.4	70.8	1	58	0.1	2.1	95	144	1

TYPICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

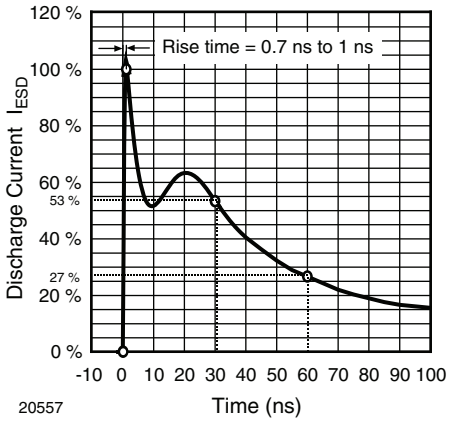


Fig. 1 - ESD Discharge Current Wave Form acc. IEC 61000-4-2 (330 Ω/150pF)

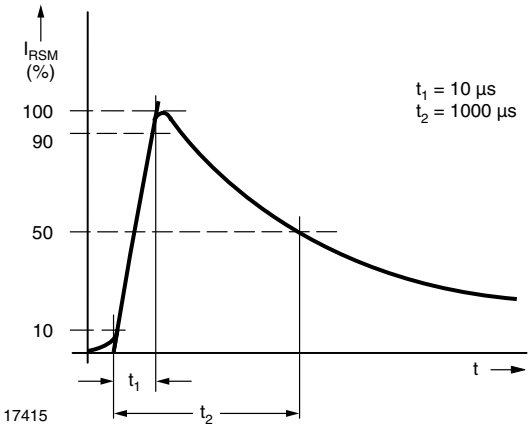


Fig. 4 - Pulse Waveform

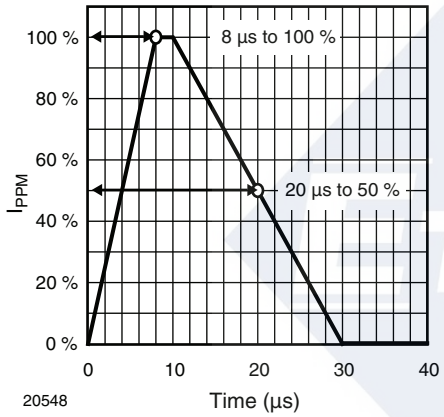


Fig. 2 - 8/20 µs Peak Pulse Current Wave Form acc. IEC 61000-4-5

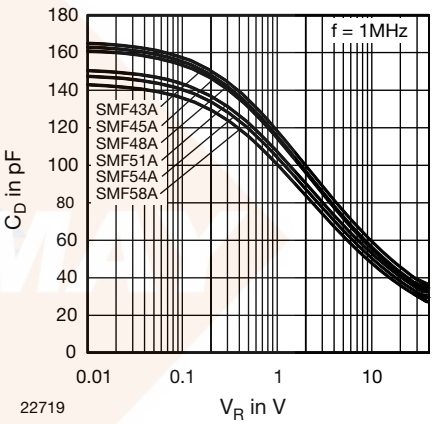


Fig. 5 - Typical Capacitance C_D vs. Reverse Voltage V_R

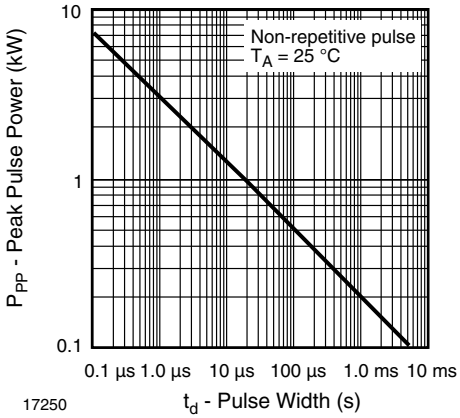


Fig. 3 - Peak Pulse Power Rating

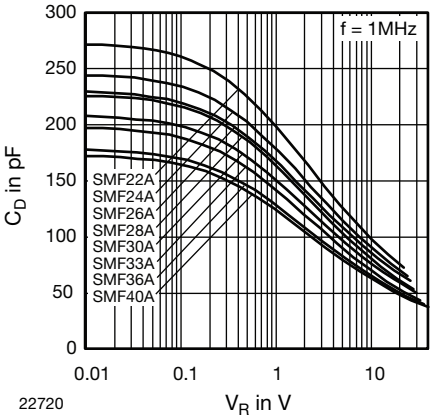


Fig. 6 - Typical Capacitance C_D vs. Reverse Voltage V_R

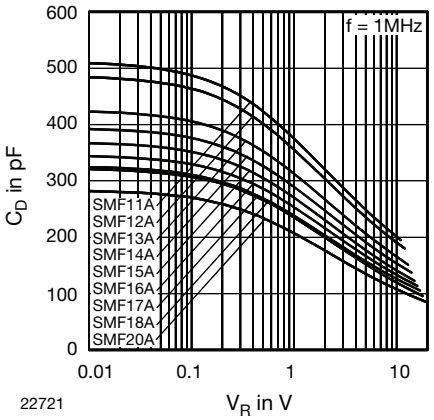


Fig. 7 - Typical Capacitance C_D vs. Reverse Voltage V_R

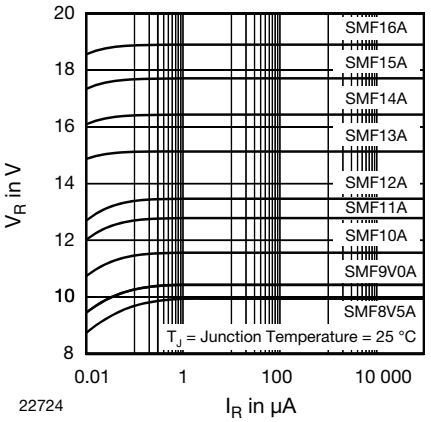


Fig. 10 - Typical Reverse Voltage V_R vs. Reverse Current I_R

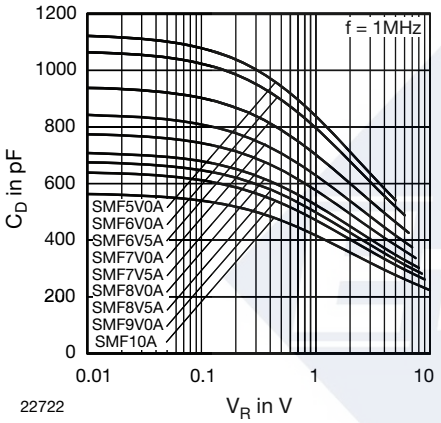


Fig. 8 - Typical Capacitance C_D vs. Reverse Voltage V_R

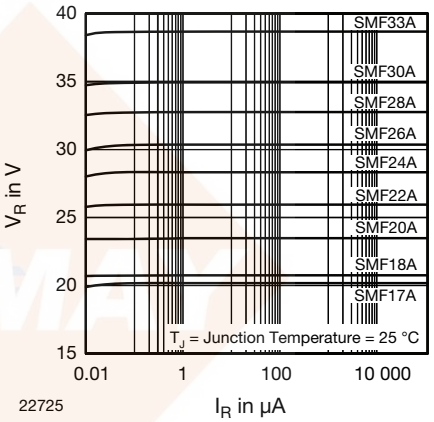


Fig. 11 - Typical Reverse Voltage V_R vs. Reverse Current I_R

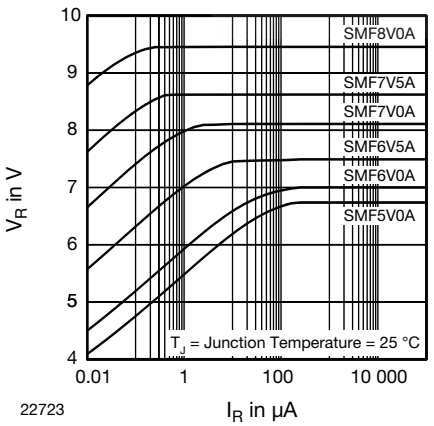


Fig. 9 - Typical Reverse Voltage V_R vs. Reverse Current I_R

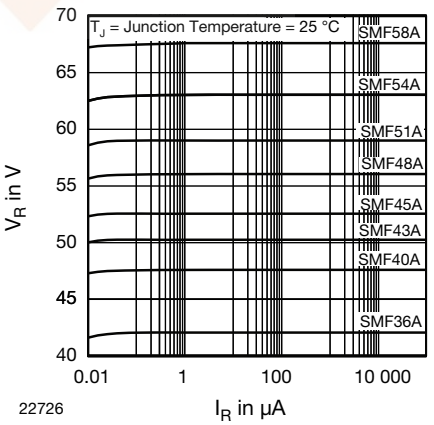
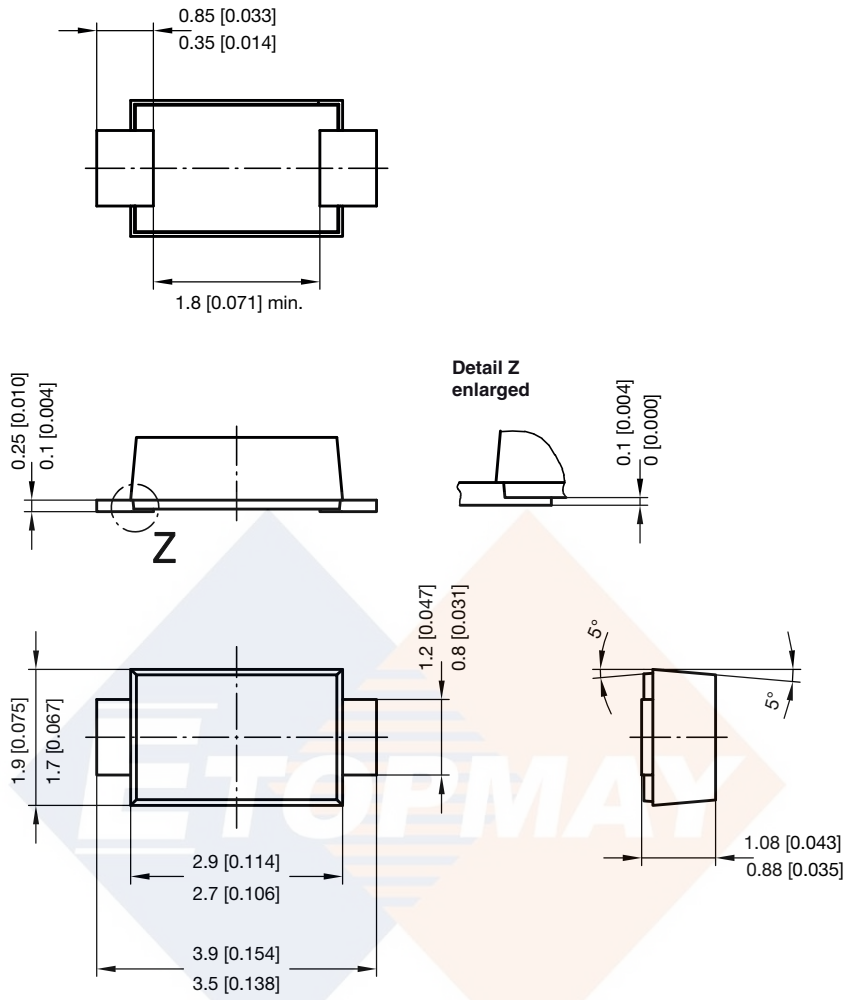


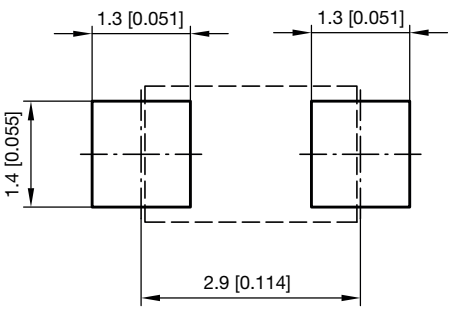
Fig. 12 - Typical Reverse Voltage V_R vs. Reverse Current I_R

PACKAGE DIMENSIONS in millimeters (inches): **SMF (DO-219AB)**



foot print recommendation:

Reflow soldering



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Rev. 6 - Date: 24.Feb.2021
Document no.: S8-V-3915.01-001 (4)
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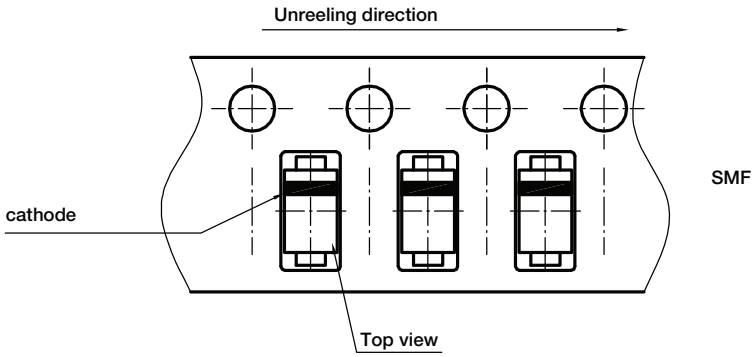
ORIENTATION IN CARRIER TAPE - SMF (DO-219AB)



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Created - Date: 09. Feb. 2010
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