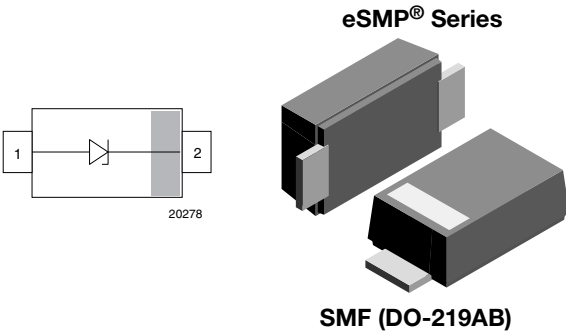
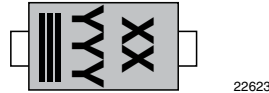


400 W TransZorb® Transient Voltage Suppressor (TVS) Diode in SMF-Package


eSMP® Series
SMF (DO-219AB)
MARKING (example only)


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

LINKS TO ADDITIONAL RESOURCES

FEATURES

- 400 W peak pulse power capability with a 10/1000 μ s waveform
- Tolerance of the avalanche breakdown voltage
 $\pm 5\%$ VTVSxxxA...
 $\pm 2\%$ VTVSxxxG...
- Low-profile package
- Wave and reflow solderable
- ESD-protection acc. IEC 61000-4-2
 ± 30 kV contact discharge
 ± 30 kV air discharge
- 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
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



PRIMARY CHARACTERISTICS	
V_{BR}	6.4 V to 78.2 V
V_{WM}	3.3 V to 63 V
P_{PPM}	400 W
T_J max.	175 °C
Polarity	Uni-directional
Package	SMF (DO-219AB)

ORDERING INFORMATION							
PART NUMBER (EXAMPLE)	TOLERANCE V_{BR}	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	
			HALOGEN-FREE				
VTVS5V0ASMF-	$\pm 5\%$		M	3	-08		VTVS5V0ASMF-M3-08
VTVS5V0ASMF-	$\pm 5\%$	H	M	3	-08		VTVS5V0ASMF-HM3-08
VTVS5V0ASMF-	$\pm 5\%$		M	3		-18	VTVS5V0ASMF-M3-18
VTVS5V0ASMF-	$\pm 5\%$	H	M	3		-18	VTVS5V0ASMF-HM3-18
VTVS5V0GSMF-	$\pm 2\%$		M	3	-08		VTVS5V0GSMF-M3-08
VTVS5V0GSMF-	$\pm 2\%$	H	M	3	-08		VTVS5V0GSMF-HM3-08
VTVS5V0GSMF-	$\pm 2\%$		M	3		-18	VTVS5V0GSMF-M3-18
VTVS5V0GSMF-	$\pm 2\%$	H	M	3		-18	VTVS5V0GSMF-HM3-18

**PACKAGE DATA**

PACKAGE NAME	MOLDING COMPOUND	WEIGHT (mg)	HEIGHT MAX. (mm)	LENGTH MAX. (mm)	WIDTH H MAX. (mm)	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	WHISKER TEST ACC. JESD 201	SOLDERING CONDITIONS
SMF (DO-219AB)	Halogen-free	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

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25\text{ °C}$, unless otherwise specified)

PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Peak pulse current	$t_p = 10/1000\ \mu\text{s}$ waveform	I_{PPM}	see "Electrical Characteristics"	A
Peak pulse power	$t_p = 10/1000\ \mu\text{s}$ waveform	P_{PP}	400	W
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 infinite heat sink	R_{thJL}	20	K/W
Forward clamping voltage	$I_F = 50\text{ A}$, $t_p = 1\text{ ms}$	V_F	1.8	V
Operating temperature	Junction temperature	T_J	-55 to +175	°C
Storage temperature		T_{STG}	-55 to +175	°C

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

PART NUMBER	TYPE CODE	REVERSE BREAKDOWN VOLTAGE at $T_J = 25\text{ °C}$, $I_T = 1\text{ mA}$		STAND-OFF VOLTAGE	MAXIMUM REVERSE CURRENT at V_{RWM}	MAXIMUM PEAK PULSE CURRENT $t_p = 10/1000\ \mu\text{s}$	MAXIMUM REVERSE CLAMPING VOLTAGE at I_{PPM}	TYPICAL CAP. at $V_R = 0\text{ V}$, $f = 1\text{ MHz}$	PROTECTION PATHS
		$V_{BR}(V)$ MIN.	$V_{BR}(V)$ MAX.						
VTVS3V3ASMF	9Z5	6.4	7.0	3.3	0.05	42.95	8.9	2095	1
VTVS5V0ASMF	905	6.4	7.0	5.00	5	42.95	8.9	2095	1
VTVS8V5ASMF	915	9.5	10.5	8.50	0.1	28.24	13.5	1270	1
VTVS9V4ASMF	925	10.5	11.6	9.40	0.1	25.48	14.9	1130	1
VTVS10ASMF	935	11.4	12.7	10.30	0.05	23.20	16.3	988	1
VTVS11ASMF	945	12.6	13.9	11.20	0.05	21.13	18.0	910	1
VTVS12ASMF	955	14.0	15.4	12.40	0.05	19.01	20.1	807	1
VTVS14ASMF	965	15.4	17.0	13.80	0.05	17.16	22.2	752	1
VTVS15ASMF	975	17.1	18.8	15.10	0.05	15.47	25	684	1
VTVS17ASMF	985	19.0	21.0	16.90	0.05	13.79	28	606	1
VTVS19ASMF	995	20.9	23.2	18.70	0.05	12.44	31	558	1
VTVS21ASMF	9A5	23.0	25.4	20.50	0.05	11.33	34	513	1
VTVS23ASMF	9B5	25.7	28.4	22.60	0.05	10.09	38	480	1
VTVS25ASMF	9C5	28.5	31.5	25.20	0.05	9.07	42	433	1
VTVS28ASMF	9D5	31.4	34.7	27.90	0.05	8.21	47	412	1
VTVS31ASMF	9E5	34.2	37.8	30.60	0.05	7.51	51	380	1
VTVS33ASMF	9F5	37.1	41.0	33.30	0.05	6.91	55	379	1
VTVS36ASMF	9G5	40.9	45.2	36.00	0.05	6.24	61	342	1
VTVS40ASMF	9H5	44.7	49.4	39.60	0.05	5.70	67	309	1
VTVS43ASMF	9J5	48.5	53.6	43.20	0.05	5.23	73	292	1
VTVS47ASMF	9K5	53.2	58.8	46.80	0.05	4.76	80	293	1
VTVS52ASMF	9L5	58.9	65.1	52.20	0.05	4.28	89	242	1
VTVS58ASMF	9M5	64.6	71.4	57.60	0.05	3.89	98	245	1
VTVS63ASMF	9N5	70.8	78.2	63.00	0.05	3.54	108	227	1



ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)									
PART NUMBER	TYPE CODE	REVERSE BREAKDOWN VOLTAGE at $T_J = 25\text{ }^{\circ}\text{C}$, $I_T = 1\text{ mA}$		STAND-OFF VOLTAGE	MAXIMUM REVERSE CURRENT at V_{RWM}	MAXIMUM PEAK PULSE CURRENT $t_p = 10/1000\text{ }\mu\text{s}$	MAXIMUM REVERSE CLAMPING VOLTAGE at I_{PPM}	TYPICAL CAP. at $V_R = 0\text{ V}$, $f = 1\text{ MHz}$	PROTECTION PATHS
	HALOGEN-FREE	V_{BR} (V) MIN.	V_{BR} (V) MAX.	V_{RWM} (V)	I_R (μA)	I_{PPM} (A)	V_C (V)	C_D (pF)	$N_{channel}$
VTVS3V3GSMF	9Z2	6.57	6.84	3.3	0.05	43.99	8.9	2095	1
VTVS5V0GSMF	902	6.57	6.84	5.00	5	43.99	8.9	2095	1
VTVS8V5GSMF	912	9.80	10.20	8.50	0.1	29.10	13.5	1270	1
VTVS9V4GSMF	922	10.83	11.28	9.40	0.1	26.23	14.9	1130	1
VTVS10GSMF	932	11.81	12.30	10.30	0.05	23.98	16.3	988	1
VTVS11GSMF	942	12.99	13.52	11.20	0.05	21.75	18.0	910	1
VTVS12GSMF	952	14.41	15.00	12.40	0.05	19.53	20.1	807	1
VTVS14GSMF	962	15.88	16.53	13.80	0.05	17.67	22.2	752	1
VTVS15GSMF	972	17.60	18.31	15.10	0.05	15.89	25	684	1
VTVS17GSMF	982	19.60	20.40	16.90	0.05	14.21	28	606	1
VTVS19GSMF	992	21.61	22.50	18.70	0.05	12.84	31	558	1
VTVS21GSMF	9A2	23.72	24.69	20.50	0.05	11.67	34	513	1
VTVS23GSMF	9B2	26.51	27.60	22.60	0.05	10.40	38	480	1
VTVS25GSMF	9C2	29.40	30.60	25.20	0.05	9.35	42	433	1
VTVS28GSMF	9D2	32.39	33.72	27.90	0.05	8.45	47	412	1
VTVS31GSMF	9E2	35.28	36.72	30.60	0.05	7.74	51	380	1
VTVS33GSMF	9F2	38.27	39.84	33.30	0.05	7.11	55	379	1
VTVS36GSMF	9G2	42.19	43.92	36.00	0.05	6.43	61	342	1
VTVS40GSMF	9H2	46.11	48.00	39.60	0.05	5.87	67	309	1
VTVS43GSMF	9J2	50.03	52.08	43.20	0.05	5.39	73	292	1
VTVS47GSMF	9K2	54.88	57.12	46.80	0.05	4.90	80	293	1
VTVS52GSMF	9L2	60.76	63.24	52.20	0.05	4.41	89	242	1
VTVS58GSMF	9M2	66.64	69.36	57.60	0.05	4.01	98	245	1
VTVS63GSMF	9N2	73.01	75.99	63.00	0.05	3.65	108	227	1

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

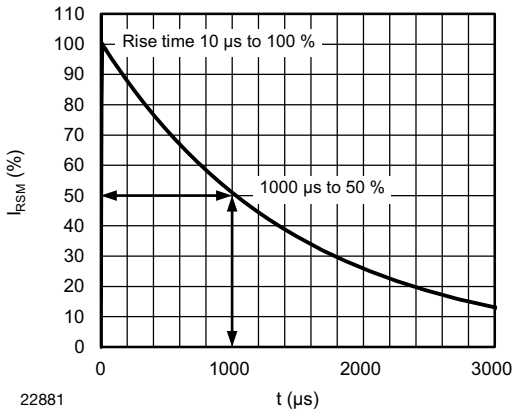


Fig. 1 - 10/1000 µs Peak Pulse Current Wave Form

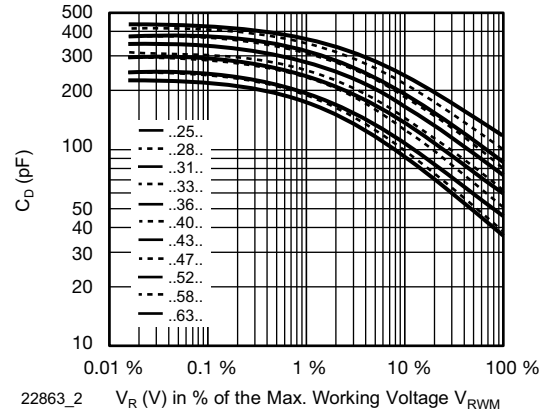


Fig. 4 - Typical Capacitance C_D vs. Reverse Voltage V_R

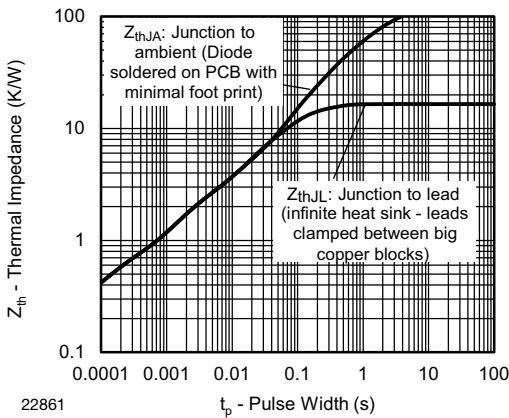


Fig. 2 - Thermal Impedance vs. Time

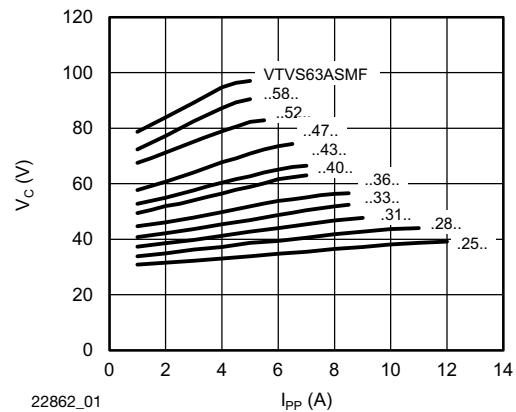


Fig. 5 - Typical Peak Clamping Voltage vs. Peak Pulse Current

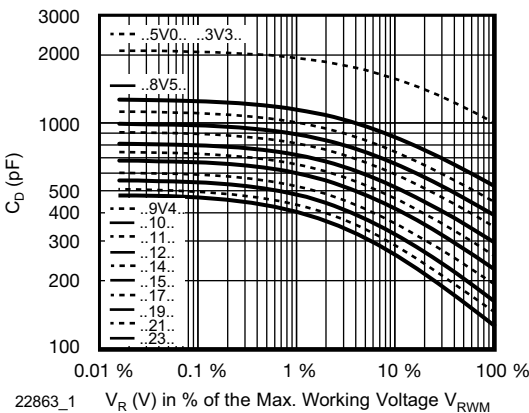


Fig. 3 - Typical Capacitance C_D vs. Reverse Voltage V_R

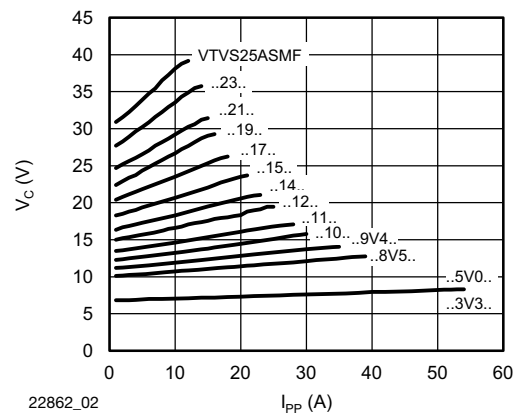
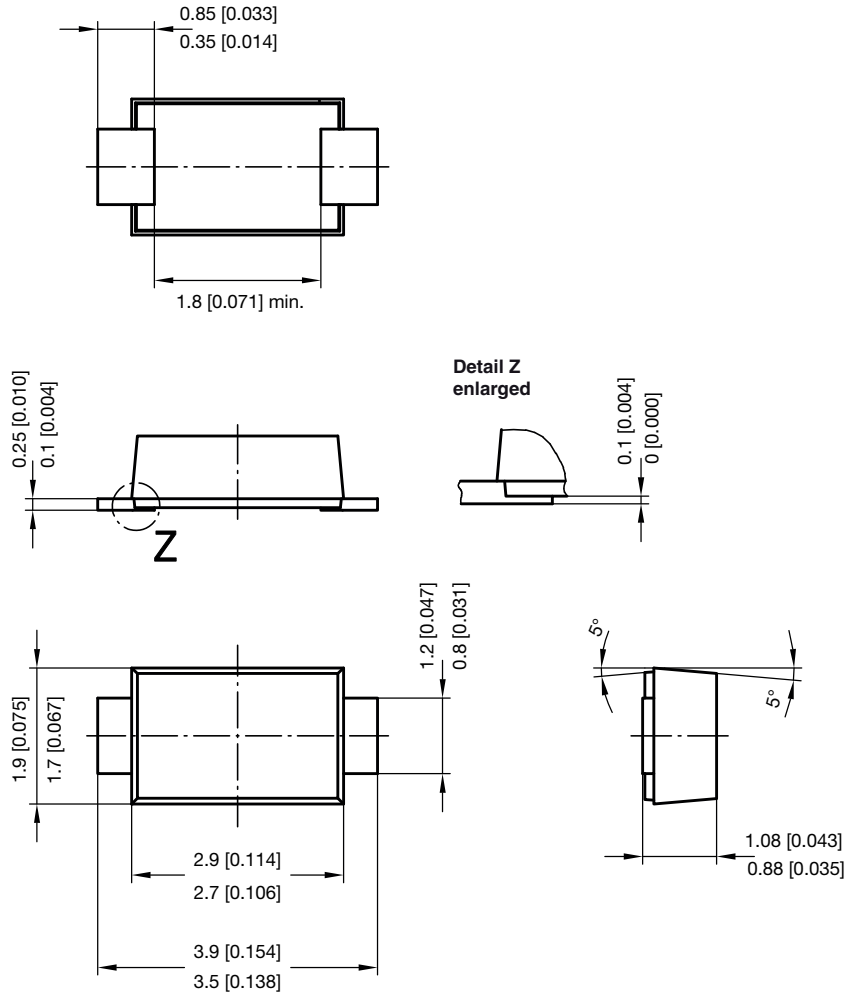
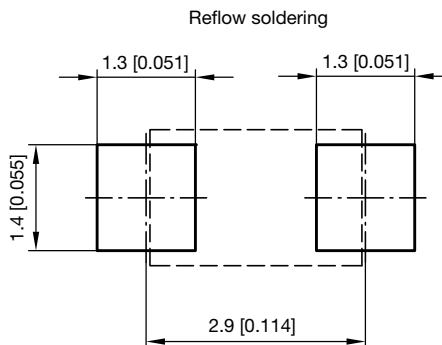


Fig. 6 - Typical Peak Clamping Voltage vs. Peak Pulse Current

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



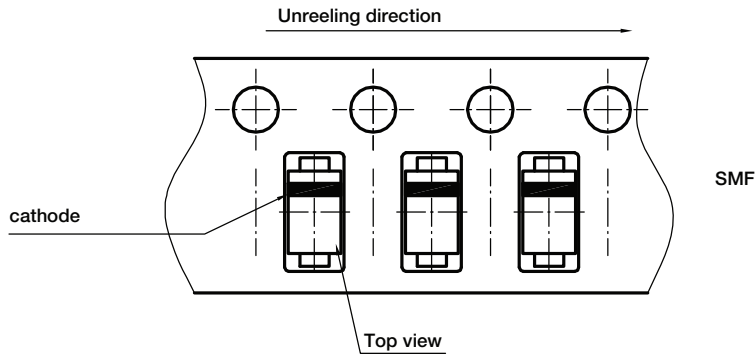
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