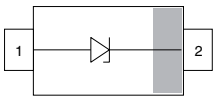
400 W TransZorb® Transient Voltage Suppressor (TVS) Diode in SMF-Package



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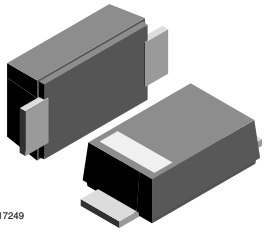
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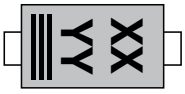
FEATURES

- 400 W peak pulse power capability with a 10/1000 µs waveform
- Tolerance of the avalanche breakdown voltage
  ± 5 % VTVSxxxA...
  ± 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
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT
HALOGEN FREE

PRIMARY CHARACTERISTICS	
V_{BR}	6.4 V to 78.2 V
V_{WM}	5.0 V to 63 V
P_{PPM}	400 W
T_J max.	175 °C
Polarity	Uni-directional
Package	DO-219AB (SMF)

MARKING (example only)



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

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 / HALOGEN-FREE	TIN PLATED	3K PER 7" REEL (8 mm TAPE), 30K/BOX = MOQ	10K PER 13" REEL (8 mm TAPE), 50K/BOX = MOQ	
VTVS5V0ASMF-	± 5 %		M	3	-08		VTVS5V0ASMF-M3-08
VTVS5V0ASMF-	± 5 %	H	M	3	-08		VTVS5V0ASMF-HM3-08
VTVS5V0ASMF-	± 5 %		M	3		-18	VTVS5V0ASMF-M3-18
VTVS5V0ASMF-	± 5 %	H	M	3		-18	VTVS5V0ASMF-HM3-18
VTVS5V0GSMF-	± 2 %		M	3	-08		VTVS5V0GSMF-M3-08
VTVS5V0GSMF-	± 2 %	H	M	3	-08		VTVS5V0GSMF-HM3-08
VTVS5V0GSMF-	± 2 %		M	3		-18	VTVS5V0GSMF-M3-18
VTVS5V0GSMF-	± 2 %	H	M	3		-18	VTVS5V0GSMF-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
DO-219AB (SMF)	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 °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 = 10/1000 µs 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 A, t_p = 1 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 °C, unless otherwise specified)									
PART NUMBER	**TYPE CODE**	**REVERSE BREAKDOWN VOLTAGE at T_J = 25 °C, I_T = 1 mA**		**STAND-OFF VOLTAGE**	**REVERSE CURRENT at V_{RWM}**	**PEAK PULSE CURRENT t_p = 10/1000 µs**	**REVERSE CLAMPING VOLTAGE at I_{PPM}**	**CAP. at V_R = 0 V, f = 1 MHz**	**PROTECTION PATHS**
	HALOGEN-FREE	**V_{BR} (V) MIN.**	**V_{BR} (V) MAX.**	**V_{RWM} (V)**	**I_R (µA)**	**I_{PPM} (A)**	**V_C MAX. (V)**	**C_D TYP. (pF)**	**$N_{channel}$**
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 °C, unless otherwise specified)

PART NUMBER	TYPE CODE	REVERSE BREAKDOWN VOLTAGE at T_J = 25 °C, I_T = 1 mA		STAND-OFF VOLTAGE	REVERSE CURRENT at V_{RWM}	PEAK PULSE CURRENT t_p = 10/1000 µs	REVERSE CLAMPING VOLTAGE at I_{PPM}	CAP. at V_R = 0 V, f = 1 MHz	PROTECTION PATHS
	HALOGEN-FREE	V_{BR} (V) MIN.	V_{BR} (V) MAX.	V_{RWM} (V)	I_R (µA)	I_{PPM} (A)	V_C MAX. (V)	C_D TYP. (pF)	$N_{channel}$
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)

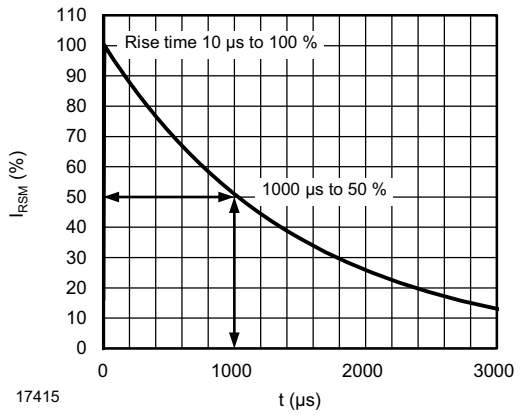


Fig. 1 - 10/1000 µs Peak Pulse Current Wave Form

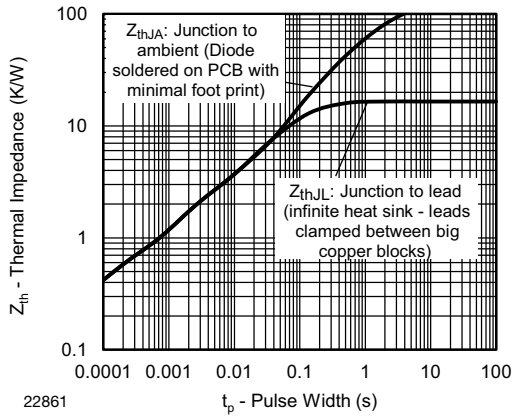


Fig. 2 - Thermal Impedance vs. Time

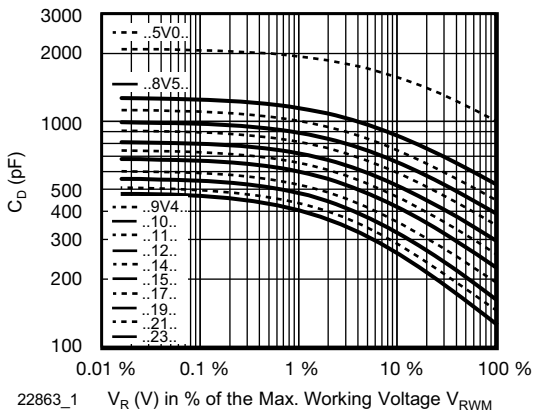


Fig. 3 - Typical Capacitance C_D vs. Reverse Voltage V_R

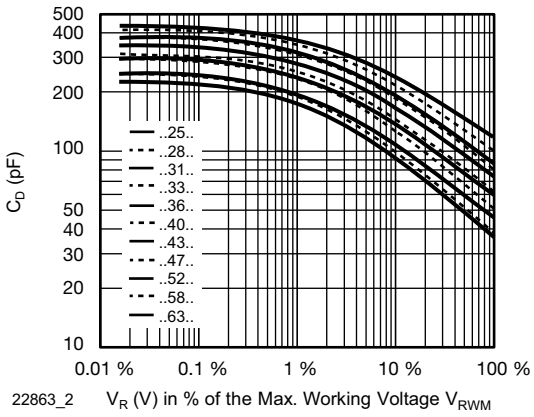


Fig. 4 - Typical Capacitance C_D vs. Reverse Voltage V_R

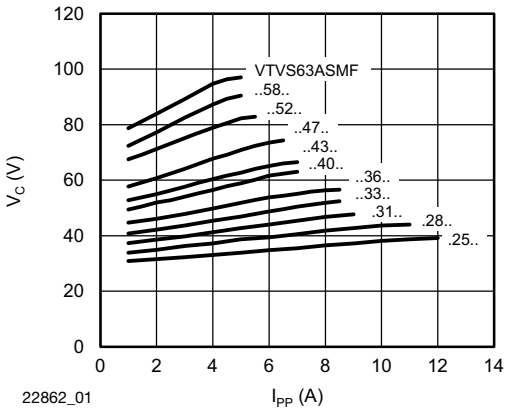


Fig. 5 - Typical Peak Clamping Voltage vs. Peak Pulse Current

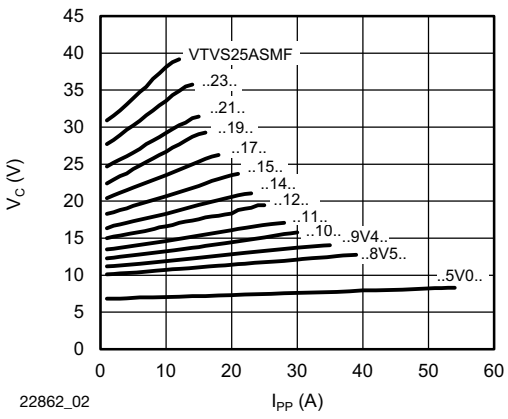
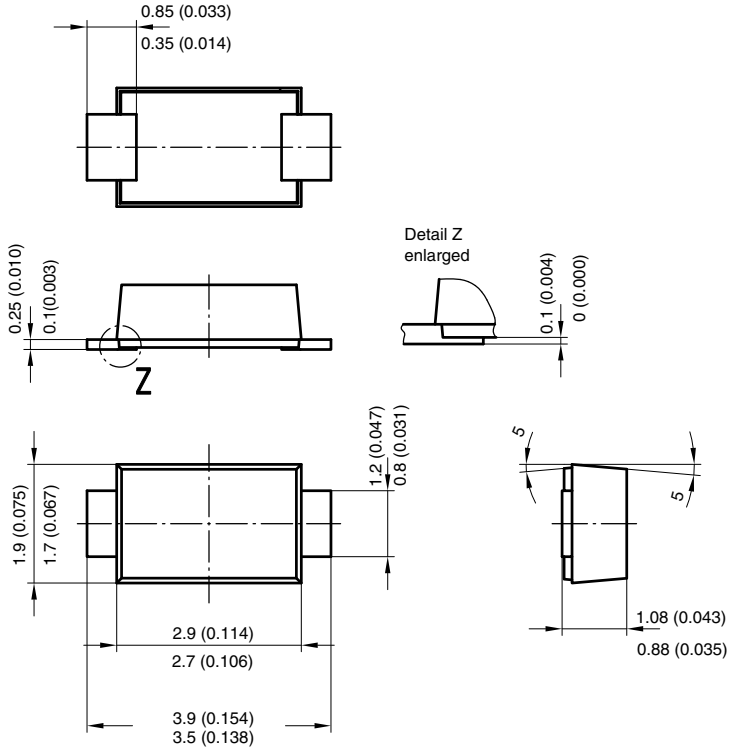
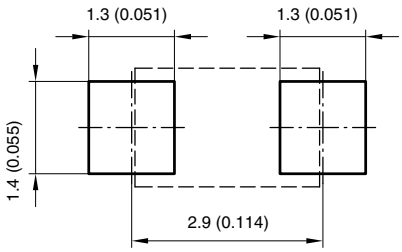


Fig. 6 - Typical Peak Clamping Voltage vs. Peak Pulse Current

PACKAGE DIMENSIONS in millimeters (inches): **SMF**

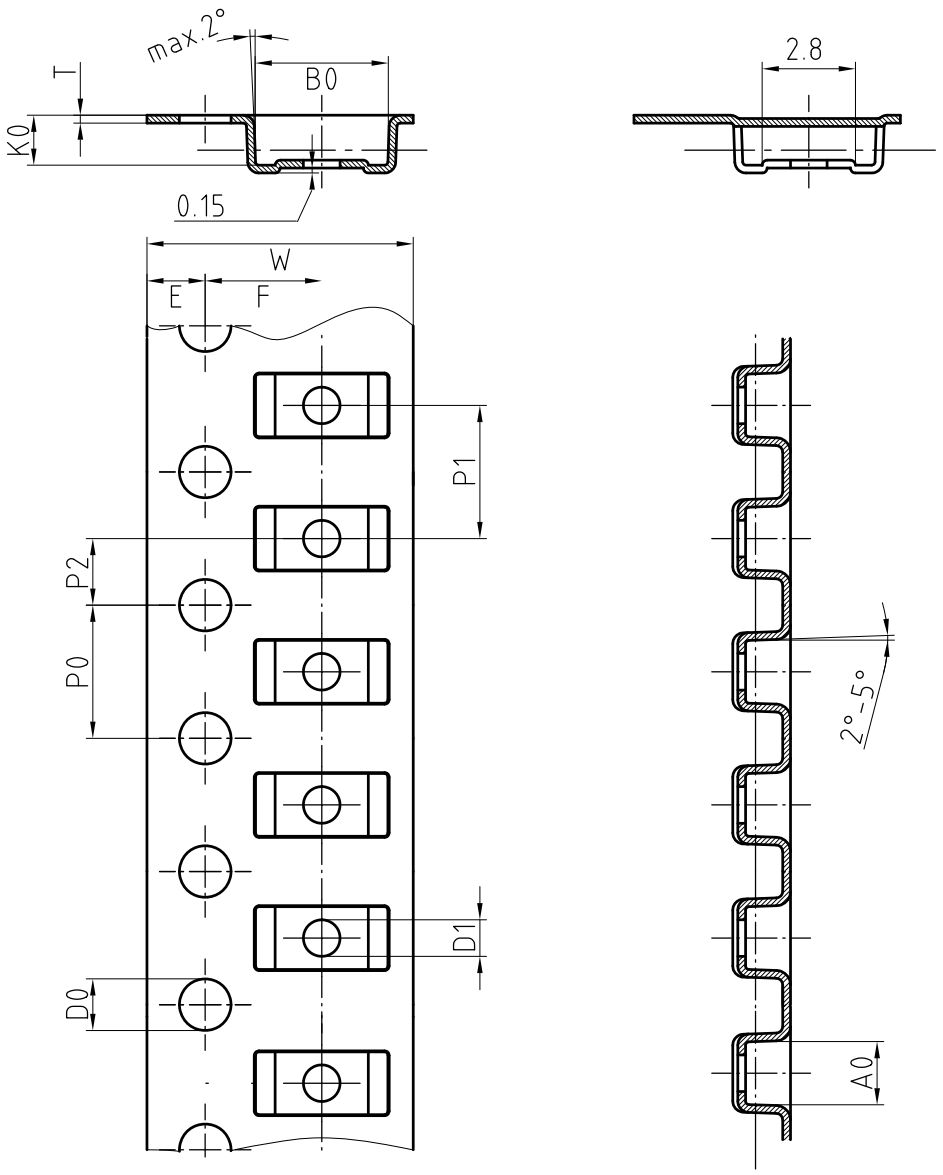


Foot print recommendation:



Created - Date: 15. February 2005
Rev. 3 - Date: 13. March 2007
Document no.:S8-V-3915.01-001 (4)
17247

BLISTER TAPE DIMENSIONS in millimeters (inches)

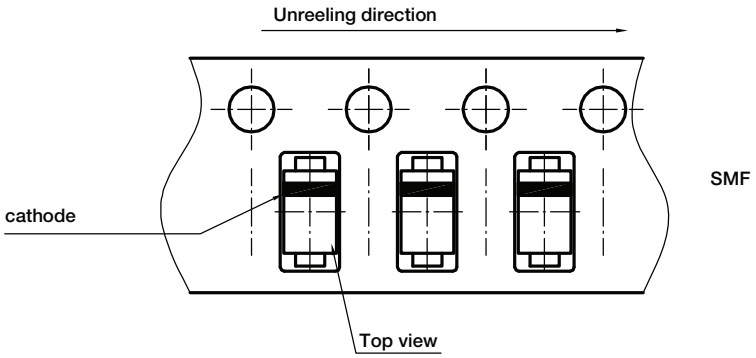


Mat:	A0	B0	K0	W	T	P0	P2	P1	D0	D1	E	F
PS	1.9	4.0	1.5	8.0	0.235	4.0	2.0	4.0	1.5	1	1.75	3.5

Document-No.: S8-V-3717.02-001 (3)

18513

ORIENTATION IN CARRIER TAPE - SMF



Document no.: S8-V-3717.02-003 (4)
Created - Date: 09. Feb. 2010
22670

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