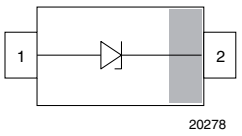
Zener Diodes Permitting 500 mW Power Dissipation



FEATURES

- Sillicon planar Zener diodes, ultra small
- Low profile MicroSMF DO-219AC package
- Low leakage current
- Excellent stability
- High temperature soldering: 260 °C / 10 s at terminals
- Wave and reflow solderable (reflow as per JPC / JEDEC® J-STD 020) (double wave as per IEC 61760-1)
- AEC-Q101 qualified available
- Base P/N-G3 - RoHS-compliant, green, industrial grade
- Base P/N-HG3 - RoHS-compliant, green, AEC-Q101 qualified
- ESD immunity acc. IEC 61000-4-2 acc. to part table
- Surge performance acc. to part table
- Zener voltage range 2.0 V to 9.1 V under development
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free
e3
RoHS COMPLIANT
HALOGEN FREE
GREEN (5-2008)

PRIMARY CHARACTERISTICS		
PARAMETER	VALUE	UNIT
V_Z range nom.	10 to 39	V
Test current I_{ZT}	5 to 20	mA
V_Z specification	Pulse current	
Int. construction	Single	

ORDERING INFORMATION			
DEVICE NAME	ORDERING CODE	TAPED UNITS PER REEL	MINIMUM ORDER QUANTITY
PLZ-Series	Part number-G3/H	4500 per 7" reel (8 mm tape)	22 500 / box
PLZ-Series	Part number-HG3/H		

PACKAGE				
PACKAGE NAME	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
DO-219AC (MicroSMF)	4.8 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	260 °C / 10 s at terminals

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Power dissipation		P_{tot}	500	mW
Power dissipation	Mounted on FR4 board 50 mm x 50 mm x 1.6 mm, solder land 10 mm x 10 mm	P_{tot}	960	
Non-repetitive peak surge power dissipation	t_p = 8/20 µs acc. IEC 61000-4-5	P_{ZSM}	100	W
Z-current		I_Z	P_{tot}/V_Z	mA
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	-55 to +150	

THERMAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Typ. thermal resistance junction to ambient air	Mounted on FR4 board 50 mm x 50 mm x 1.6 mm, solder land 10 mm x 10 mm	R_{thJA}	130	K/W

ELECTRICAL SPECIFICATIONS (T_{amb} = 25 °C, unless otherwise specified)						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward Voltage	I_F = 10 mA	V_F		0.8	0.9	V

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

PART NUMBER	MARKING CODE	ZENER VOLTAGE RANGE (1)		TEST CURRENT	REVERSE CURRENT		DYNAMIC RESISTANCE	PEAK PULSE CURRENT (2)	REVERSE CLAMPING VOLTAGE AT I_{PPM}	ESD IMMUNITY (3)
		V_Z at I_{ZT}		I_{ZT1}	I_R at V_R		Z_Z at I_{ZT}	I_{PPM}	V_C	V_{ESD}
		V		mA	µA	V	Ω	A	V	kV
		MIN.	MAX.		MAX.		MAX.		MAX.	MAX.
PLZ10A	10A	9.12	9.59	20	0.2	7.0	8	7.09	14.1	≥ 30
PLZ10B	10B	9.41	9.90	20				6.90	14.5	≥ 30
PLZ10C	10C	9.70	10.20	20				6.75	14.8	≥ 30
PLZ10D	10D	9.94	10.44	20				6.58	15.2	≥ 30
PLZ11A	11A	10.18	10.71	10	0.2	8.0	10	6.47	15.5	≥ 30
PLZ11B	11B	10.50	11.05	10				6.25	16.0	≥ 30
PLZ11C	11C	10.82	11.38	10				6.10	16.4	≥ 30
PLZ12A	12A	11.13	11.71	10	0.2	9.0	12	5.95	16.8	≥ 30
PLZ12B	12B	11.44	12.03	10				5.80	17.2	≥ 30
PLZ12C	12C	11.74	12.35	10				5.43	18.4	≥ 30
PLZ13A	13A	12.11	12.75	10	0.2	10	14	5.29	18.9	≥ 30
PLZ13B	13B	12.55	13.21	10				5.15	19.4	≥ 30
PLZ13C	13C	12.99	13.66	10				5.05	19.8	≥ 30
PLZ15A	15A	13.44	14.13	10	0.2	11	16	4.93	20.3	≥ 30
PLZ15B	15B	13.89	14.62	10				4.76	21.0	≥ 30
PLZ15C	15C	14.35	15.09	10				4.50	22.0	≥ 30
PLZ16A	16A	14.80	15.57	10	0.2	12	18	4.25	23.5	≥ 30
PLZ16B	16B	15.25	16.04	10				4.18	23.9	≥ 30
PLZ16C	16C	15.69	16.51	10				3.96	25.2	≥ 30
PLZ18A	18A	16.22	17.06	10	0.2	13	23	3.95	25.3	≥ 30
PLZ18B	18B	16.82	17.70	10				3.77	26.5	≥ 30
PLZ18C	18C	17.42	18.33	10				3.69	27.1	≥ 30
PLZ20A	20A	18.02	18.96	10	0.2	15	28	3.43	29.1	≥ 30
PLZ20B	20B	18.63	19.59	10				3.40	29.4	≥ 30
PLZ20C	20C	19.23	20.22	10				3.33	30.0	≥ 30
PLZ20D	20D	19.72	20.72	10				3.18	31.4	≥ 30
PLZ22A	22A	20.15	21.20	5	0.2	17	30	3.13	31.9	≥ 30
PLZ22B	22B	20.64	21.71	5				3.07	32.6	≥ 30
PLZ22C	22C	21.08	22.17	5				2.82	35.4	25
PLZ22D	22D	21.52	22.63	5				2.80	35.6	25
PLZ24A	24A	22.05	23.18	5	0.2	19	35	2.77	36.1	25
PLZ24B	24B	22.61	23.77	5				2.70	37.0	25
PLZ24C	24C	23.12	24.31	5				2.64	37.8	25
PLZ24D	24D	23.63	24.85	5				2.61	38.3	25
PLZ27A	27A	24.26	25.52	5	0.2	21	45	2.55	39.2	25
PLZ27B	27B	24.97	26.26	5				2.49	40.1	25
PLZ27C	27C	25.63	26.95	5				2.32	43.0	20
PLZ27D	27D	26.29	27.64	5				2.30	43.5	20

Notes

(1) Pulse test: t_p = 40 ms

(2) Pulse test: t_p = 8/20 µs acc. IEC 61000-4-5

(3) Contact discharge acc. IEC 61000-4-2

ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)										
PART NUMBER	**MARKING CODE**	**ZENER VOLTAGE RANGE (1)**		**TEST CURRENT**	**REVERSE CURRENT**		**DYNAMIC RESISTANCE**	**PEAK PULSE CURRENT (2)**	**REVERSE CLAMPING VOLTAGE AT I_{PPM}**	**ESD IMMUNITY (3)**
		V_Z at I_{ZT}		**I_{ZT1}**	**I_R at V_R**		**Z_Z at I_{ZT}**	**I_{PPM}**	**V_C**	**V_{ESD}**
		V		**mA**	**µA**	**V**	**Ω**	**A**	**V**	**kV**
		MIN.	**MAX.**		**MAX.**		**MAX.**		**MAX.**	**MAX.**
PLZ30A	30A	26.99	28.39	5	0.2	23	55	2.28	43.7	20
PLZ30B	30B	27.70	29.13	5				2.21	45.2	20
PLZ30C	30C	28.36	29.82	5				2.21	45.5	20
PLZ30D	30D	29.02	30.51	5				2.20	46.3	20
PLZ33A	33A	29.68	31.22	5	0.2	25	65	2.10	47.6	20
PLZ33B	33B	30.32	31.88	5				1.94	51.6	15
PLZ33C	33C	30.90	32.50	5				1.91	52.2	15
PLZ33D	33D	31.49	33.11	5				1.91	52.2	15
PLZ36A	36A	32.14	33.79	5	0.2	27	75	1.88	53.1	15
PLZ36B	36B	32.79	34.49	5				1.78	55.9	15
PLZ36C	36C	33.40	35.13	5				1.76	56.7	15
PLZ36D	36D	34.01	35.77	5				1.75	56.9	15
PLZ39A	39A	34.68	36.47	5	0.2	30	85	1.74	57.2	15
PLZ39B	39B	35.36	37.19	5				1.74	57.4	15
PLZ39C	39C	36.00	37.85	5				1.70	58.7	15
PLZ39D	39D	36.63	38.20	5				1.67	59.9	15

Notes

(1) Pulse test: t_p = 40 ms

(2) Pulse test: t_p = 8/20 µs acc. IEC 61000-4-5

(3) Contact discharge acc. IEC 61000-4-2

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

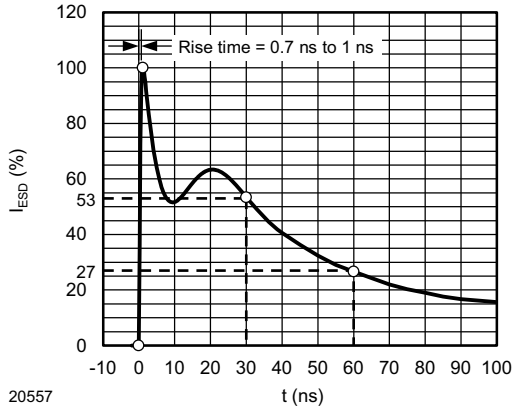


Fig. 1 - ESD Discharge Current Wave Form acc. IEC 61000-4-2 (330 Ω / 150 pF)

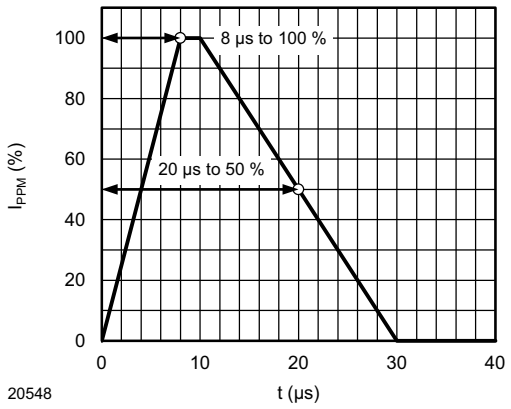


Fig. 2 - 8/20 µs Peak Pulse Current Wave Form acc. IEC 61000-4-5

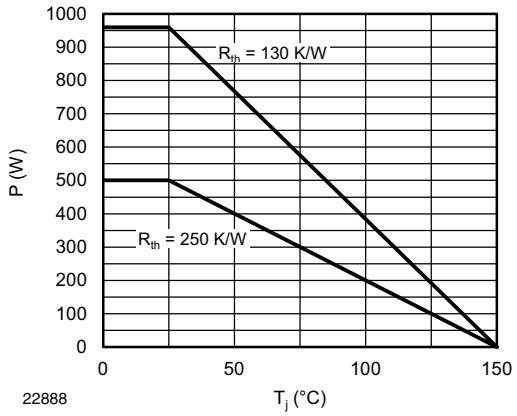


Fig. 3 - Maximum Power Dissipation vs. Junction Temperature

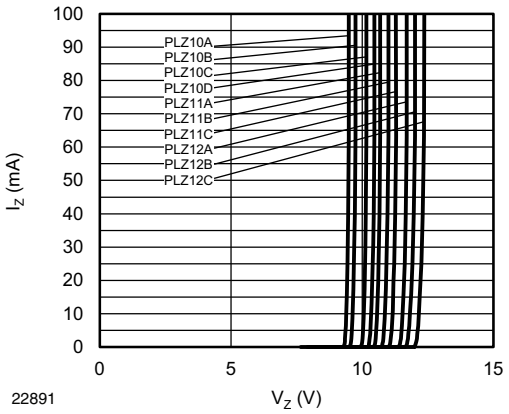


Fig. 6 - Breakdown Characteristics

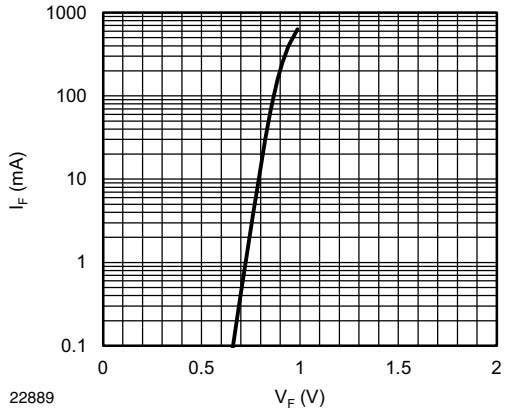


Fig. 4 - Typical Forward Current vs. Forward Voltage

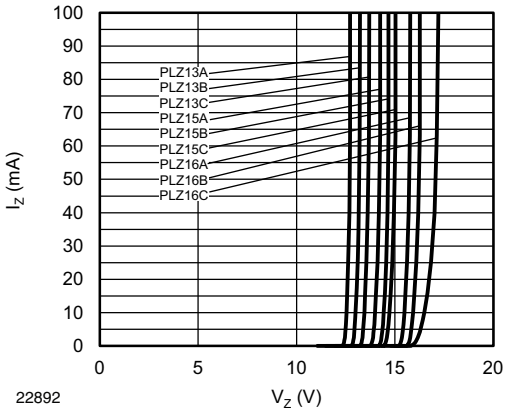


Fig. 7 - Breakdown Characteristics

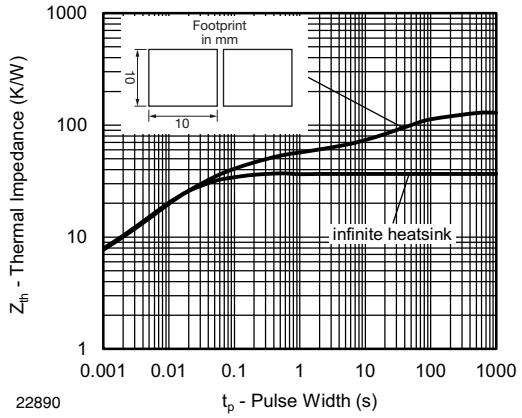


Fig. 5 - Thermal Impedance vs. Time

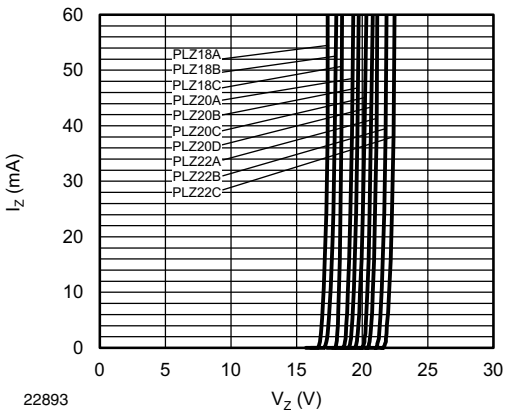


Fig. 8 - Breakdown Characteristics

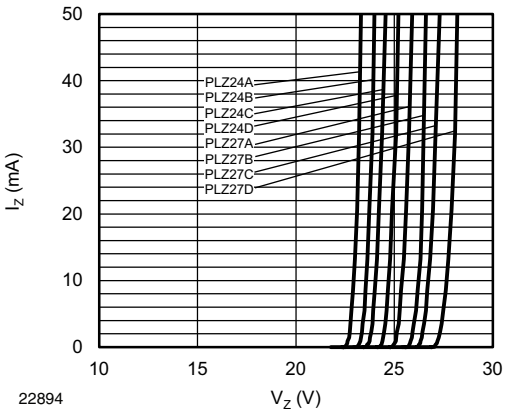


Fig. 9 - Breakdown Characteristics

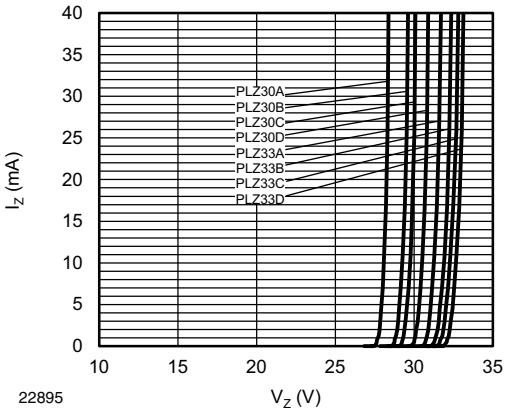


Fig. 10 - Breakdown Characteristics

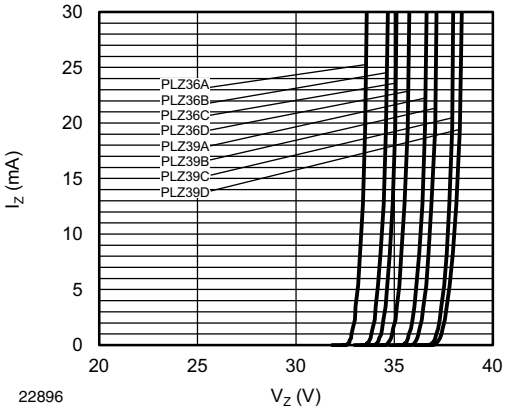
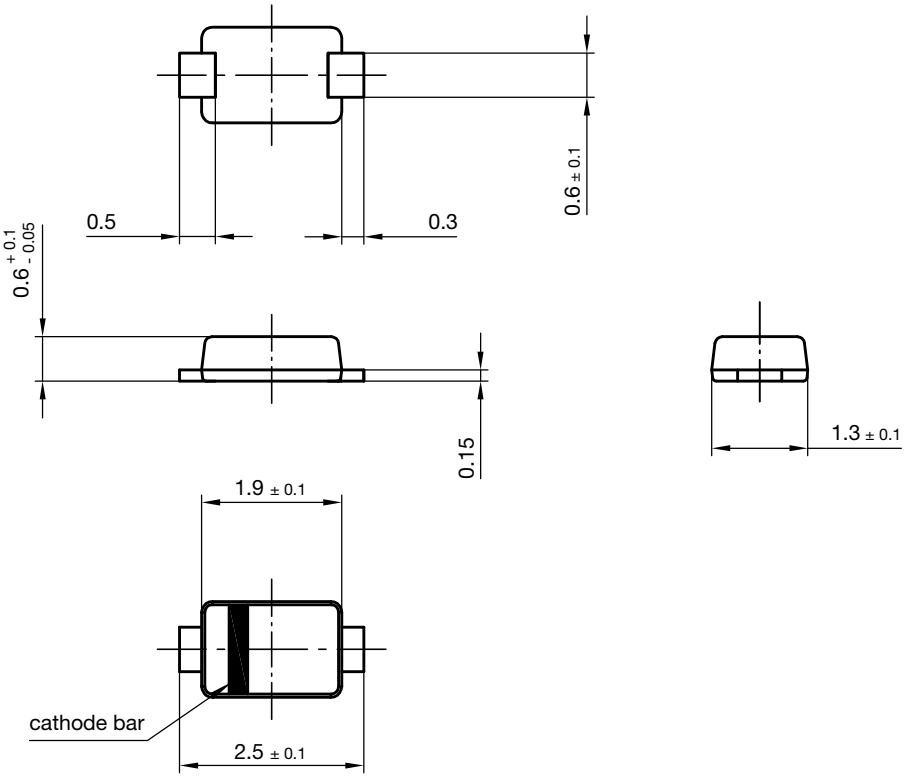
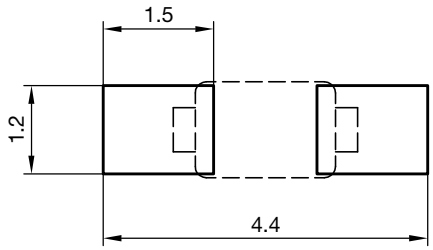


Fig. 11 - Breakdown Characteristics

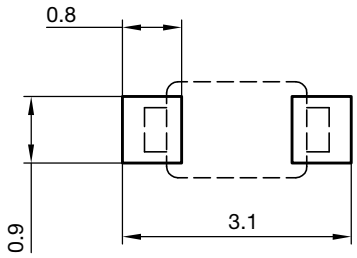
PACKAGE DIMENSIONS in millimeters: DO-219AC (MicroSMF)



foot print recommendation
for wave soldering:



foot print recommendation
for reflow soldering:



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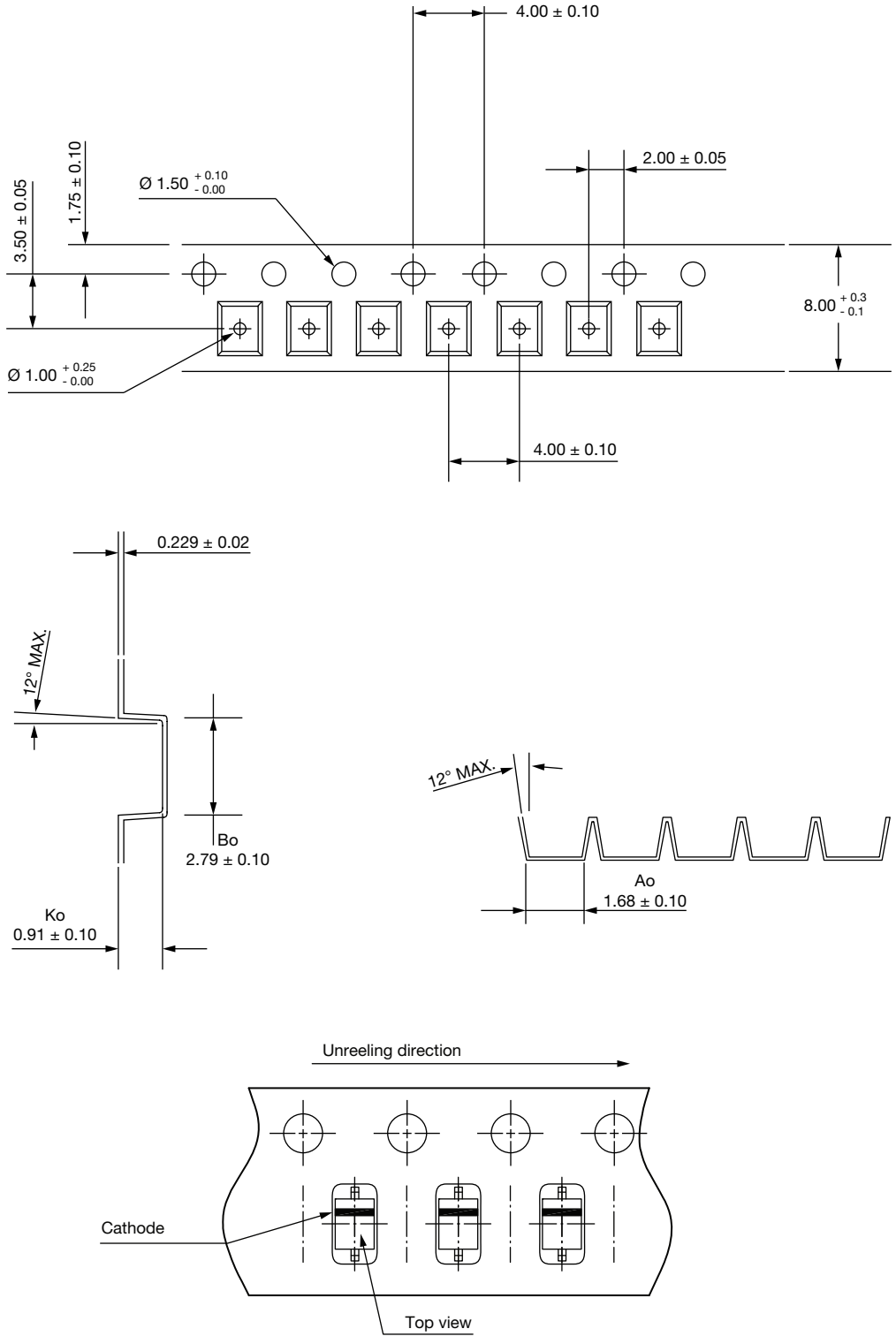
Document no.: S8-V-3910.03-001 (4)
Created - Date: 02.Dec.2010
Rev. 5 - Date: 06.May. 2014

BLISTER TAPE DIMENSIONS in millimeters: DO-219AC (MicroSMF)



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