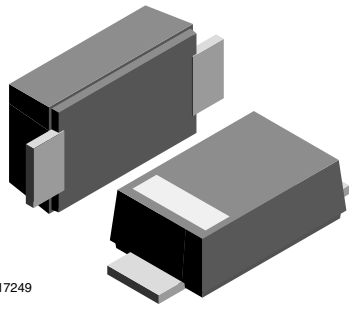
Zener Diodes with Surge Current Specification

Features

- Sillicon planar zener diodes
- Low profile surface-mount package
- Zener and surge current specification
- Low leakage current
- Excellent stability
- High temperature soldering: 260 °C/10 s at terminals
- AEC-Q101 qualified
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21 definition

RoHS COMPLIANT
HALOGEN FREE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Mechanical Data

Case: DO-219AB (SMF)
Weight: approx. 15 mg
Packaging codes/options:
18/10 k per 13 " reel (8 mm tape), 10 k/box
08/3 k per 7 " reel (8 mm tape), 15 k/box

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Power dissipation	T_L = 80 °C	P_{tot}	2.3	W
	T_A = 25 °C	P_{tot}	0.8 [1]	W
Non-repetitive peak pulse power dissipation	100 µs square pulse [2]	P_{ZSM}	300	W
	10/1000 µs waveform (BZD27-C7V5P-M to BZD27-C100P-M) [2]	P_{RSM}	150	W
	10/1000 µs waveform (BZD27-C110P-M to BZD27-C200P-M) [2]	P_{RSM}	100	W

Note:
[1] Mounted on epoxy-glass PCB with 3 mm x 3 mm Cu pads (≥ 40 µm thick)
[2] T_J = 25 °C prior to surge

Thermal Characteristics

T_{amb} = 25 °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air [1]		R_{thJA}	180	K/W
Thermal resistance junction to lead		R_{thJL}	30	K/W
Maximum junction temperature		T_j	150	°C
Storage temperature range		T_S	- 55 to + 150	°C

Note:
[1] Mounted on epoxy-glass PCB with 3 mm x 3 mm Cu pads (≥ 40 µm thick)

Electrical Characteristics

Maximum V_F = 1.2 V, at I_F = 0.2 A
When used as voltage regulator diodes (T_J = 25 °C, unless otherwise specified)

Part number	Marking code	Working voltage [1]		Differential resistance		Temperature coefficient		Test current	Reverse current at reverse voltage	
		V_Z at I_{ZT}		r_{dif} at I_Z		α_Z at I_Z		I_{ZT}	I_R	V_R
		V		Ω		%/°C		mA	µA	V
		min.	max.	typ.	max.	min.	max.		max.	
BZD27C3V6P-M	N0	3.4	3.8	4	8	- 0.14	- 0.04	100	100	1
BZD27C3V9P-M	N1	3.7	4.1	4	8	- 0.14	- 0.04	100	50	1
BZD27C4V3P-M	N2	4	4.6	4	7	- 0.12	- 0.02	100	25	1
BZD27C4V7P-M	N3	4.4	5	3	7	- 0.1	0	100	10	1
BZD27C5V1P-M	N4	4.8	5.4	3	6	- 0.08	0.02	100	5	1
BZD27C5V6P-M	N5	5.2	6	2	4	- 0.04	0.04	100	10	2
BZD27C6V2P-M	N6	5.8	6.6	2	3	- 0.01	0.06	100	5	2
BZD27C6V8P-M	N7	6.4	7.2	1	3	0	0.07	100	10	3
BZD27C7V5P-M	N8	7	7.9	1	2	0	0.07	100	50	3
BZD27C8V2P-M	N9	7.7	8.7	1	2	0.03	0.08	100	10	3
BZD27C9V1P-M	O0	8.5	9.6	2	4	0.03	0.08	50	10	5
BZD27C10P-M	O1	9.4	10.6	2	4	0.05	0.09	50	7	7.5
BZD27C11P-M	O2	10.4	11.6	4	7	0.05	0.1	50	4	8.2
BZD27C12P-M	O3	11.4	12.7	4	7	0.05	0.1	50	3	9.1
BZD27C13P-M	O4	12.4	14.1	5	10	0.05	0.1	50	2	10
BZD27C15P-M	O5	13.8	15.6	5	10	0.05	0.1	50	1	11
BZD27C16P-M	O6	15.3	17.1	6	15	0.06	0.11	25	1	12
BZD27C18P-M	O7	16.8	19.1	6	15	0.06	0.11	25	1	13
BZD27C20P-M	O8	18.8	21.2	6	15	0.06	0.11	25	1	15
BZD27C22P-M	O9	20.8	23.3	6	15	0.06	0.11	25	1	16
BZD27C24P-M	P0	22.8	25.6	7	15	0.06	0.11	25	1	18
BZD27C27P-M	P1	25.1	28.9	7	15	0.06	0.11	25	1	20
BZD27C30P-M	P2	28	32	8	15	0.06	0.11	25	1	22
BZD27C33P-M	P3	31	35	8	15	0.06	0.11	25	1	24
BZD27C36P-M	P4	34	38	21	40	0.06	0.11	10	1	27
BZD27C39P-M	P5	37	41	21	40	0.06	0.11	10	1	30
BZD27C43P-M	P6	40	46	24	45	0.07	0.12	10	1	33
BZD27C47P-M	P7	44	50	24	45	0.07	0.12	10	1	36
BZD27C51P-M	P8	48	54	25	60	0.07	0.12	10	1	39
BZD27C56P-M	P9	52	60	25	60	0.07	0.12	10	1	43
BZD27C62P-M	Q0	58	66	25	80	0.08	0.13	10	1	47
BZD27C68P-M	Q1	64	72	25	80	0.08	0.13	10	1	51
BZD27C75P-M	Q2	70	79	30	100	0.08	0.13	10	1	56
BZD27C82P-M	Q3	77	87	30	100	0.08	0.13	10	1	62
BZD27C91P-M	Q4	85	96	60	200	0.08	0.13	5	1	68
BZD27C100P-M	Q5	94	106	60	200	0.09	0.13	5	1	75
BZD27C110P-M	Q6	104	116	80	250	0.09	0.13	5	1	82
BZD27C120P-M	Q7	114	127	80	250	0.09	0.13	5	1	91
BZD27C130P-M	Q8	124	141	110	300	0.09	0.13	5	1	100
BZD27C150P-M	Q9	138	156	130	300	0.09	0.13	5	1	110
BZD27C160P-M	R0	153	171	150	350	0.09	0.13	5	1	120
BZD27C180P-M	R1	168	191	180	400	0.09	0.13	5	1	130
BZD27C200P-M	R2	188	212	200	500	0.09	0.13	5	1	150

Note:
[1] Pulse test: tp ≤ 5 ms.

Electrical Characteristics

When used as protection diodes (T_J = 25 °C, unless otherwise specified)

Part number	Rev. breakdown voltage	Test current	Temperature coefficient		Clamping voltage		Reverse current at stand-off voltage	
	$V_{(BR)R}$ at I_{test}	I_{test}	α_Z at I_{test}		V_C	at I_{RSM} [1]	I_R	at V_{WM}
	V	mA	%/°C		V	A	µA	V
	min.		min.	max.	max .		max.	
BZD27C7V5P-M	7	100	0	0.07	11.3	13.3	1500	6.2
BZD27C8V2P-M	7.7	100	0.03	0.08	12.3	12.2	1200	6.8
BZD27C9V1P-M	8.5	50	0.03	0.08	13.3	11.3	100	7.5
BZD27C10P-M	9.4	50	0.05	0.09	14.8	10.1	20	8.2
BZD27C11P-M	10.4	50	0.05	0.1	15.7	9.6	5	9.1
BZD27C12P-M	11.4	50	0.05	0.1	17	8.8	5	10
BZD27C13P-M	12.4	50	0.05	0.1	18.9	7.9	5	11
BZD27C15P-M	13.8	50	0.05	0.1	20.9	7.2	5	12
BZD27C16P-M	15.3	25	0.06	0.11	22.9	6.6	5	13
BZD27C18P-M	16.8	25	0.06	0.11	25.6	5.9	5	15
BZD27C20P-M	18.8	25	0.06	0.11	28.4	5.3	5	16
BZD27C22P-M	20.8	25	0.06	0.11	31	4.8	5	18
BZD27C24P-M	22.8	25	0.06	0.11	33.8	4.4	5	20
BZD27C27P-M	25.1	25	0.06	0.11	38.1	3.9	5	22
BZD27C30P-M	28	25	0.06	0.11	42.2	3.6	5	24
BZD27C33P-M	31	25	0.06	0.11	46.2	3.2	5	27
BZD27C36P-M	34	10	0.06	0.11	50.1	3	5	30
BZD27C39P-M	37	10	0.06	0.11	54.1	2.8	5	33
BZD27C43P-M	40	10	0.07	0.12	60.7	2.5	5	36
BZD27C47P-M	44	10	0.07	0.12	65.5	2.3	5	39
BZD27C51P-M	48	10	0.07	0.12	70.8	2.1	5	43
BZD27C56P-M	52	10	0.07	0.12	78.6	1.9	5	47
BZD27C62P-M	58	10	0.08	0.13	86.5	1.7	5	51
BZD27C68P-M	64	10	0.08	0.13	94.4	1.6	5	56
BZD27C75P-M	70	10	0.08	0.13	103.5	1.5	5	62
BZD27C82P-M	77	10	0.08	0.13	114	1.3	5	68
BZD27C91P-M	85	5	0.09	0.13	126	1.2	5	75
BZD27C100P-M	94	5	0.09	0.13	139	1.1	5	82
BZD27C110P-M	104	5	0.09	0.13	139	0.72	5	91
BZD27C120P-M	114	5	0.09	0.13	152	0.65	5	100
BZD27C130P-M	124	5	0.09	0.13	169	0.59	5	110
BZD27C150P-M	138	5	0.09	0.13	187	0.53	5	120
BZD27C160P-M	153	5	0.09	0.13	205	0.48	5	130
BZD27C180P-M	168	5	0.09	0.13	229	0.43	5	150
BZD27C200P-M	188	5	0.09	0.13	254	0.39	5	160

Note:

[1] Non-repetitive peak reverse current in accordance with "IEC 60-1, section 8" (10/1000 µs pulse); see fig. 5.

Typical Characteristics

T_{amb} = 25 °C, unless otherwise specified

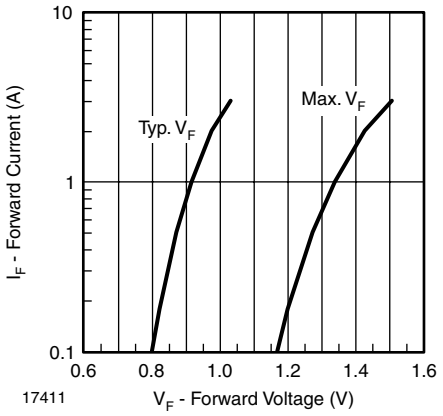


Figure 1. Forward Current vs. Forward Voltage

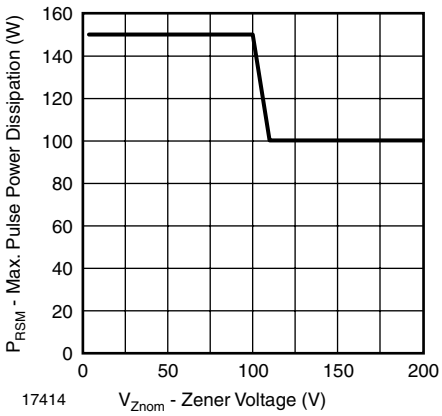


Figure 4. Maximum Pulse Power Dissipation vs. Zener Voltage

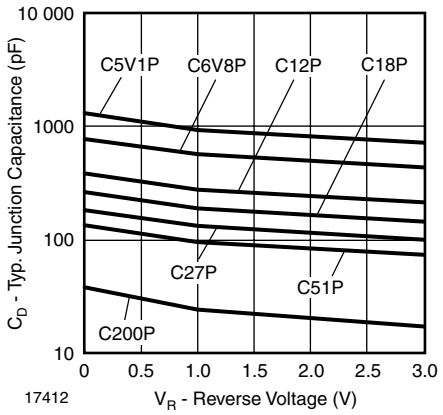


Figure 2. Typ. Diode Capacitance vs. Reverse Voltage

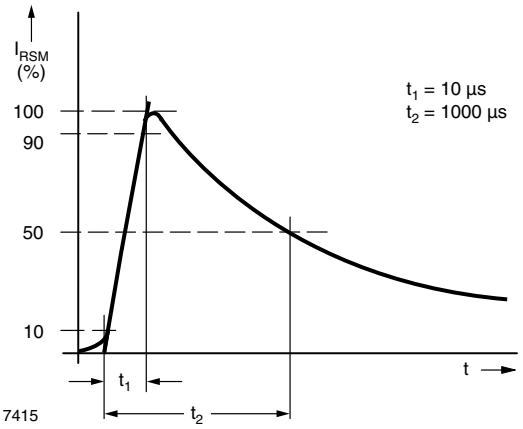


Figure 5. Non-Repetitive Peak Reverse Current Pulse Definition

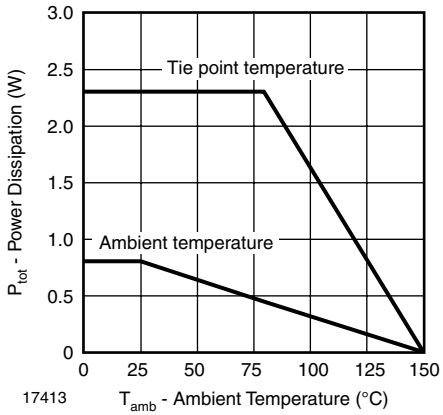
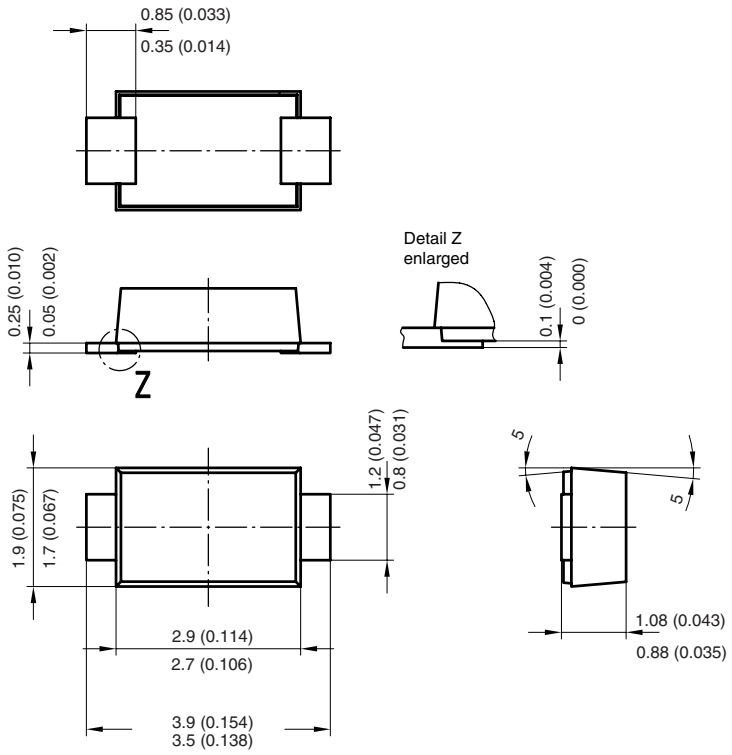
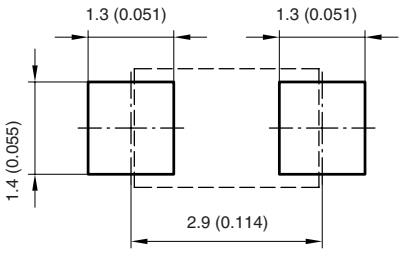


Figure 3. Power Dissipation vs. Ambient Temperature

Package Dimensions in millimeters (inches): DO219-AB (SMF)



Foot print recommendation:



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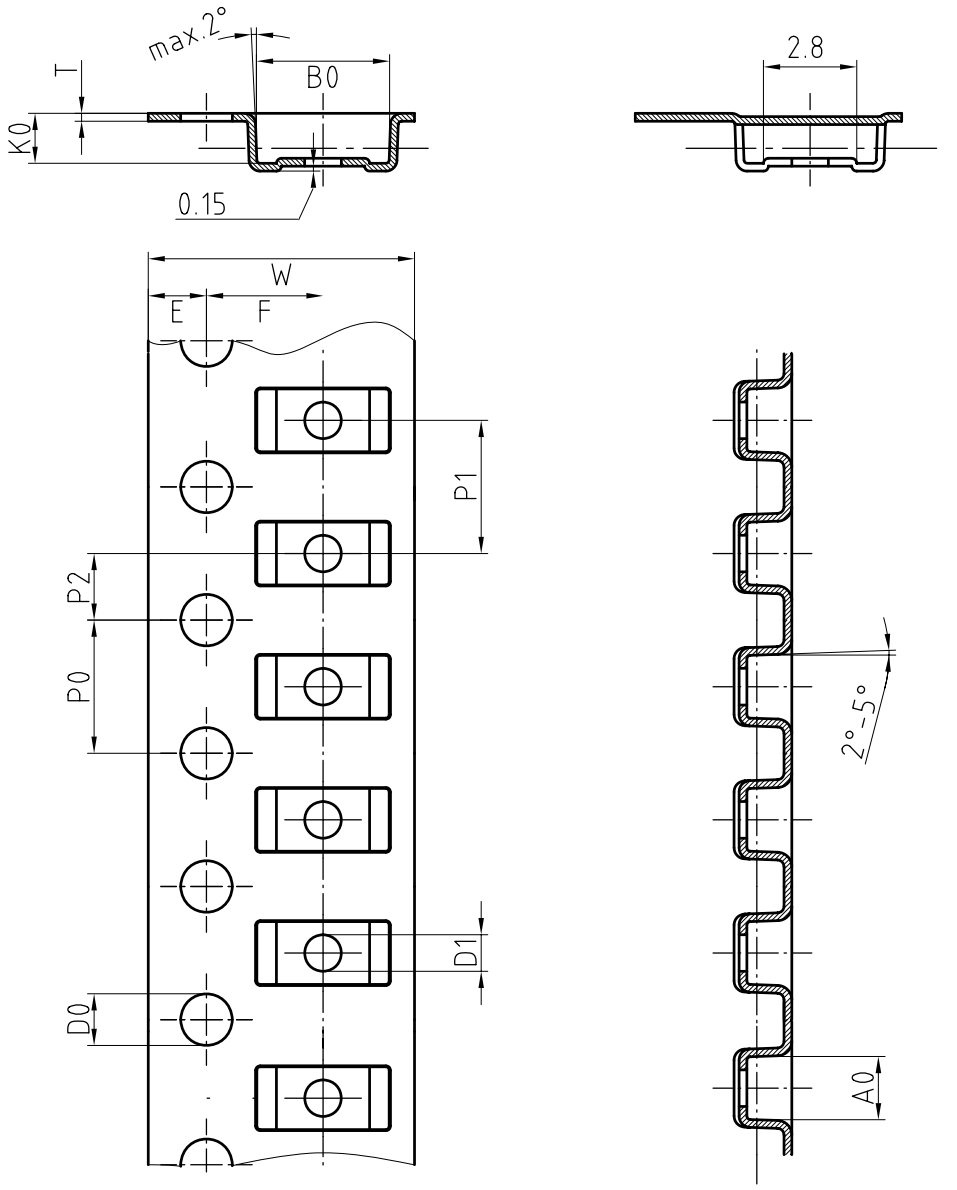
Blistertape for SMF Dimensions in millimeters



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

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