

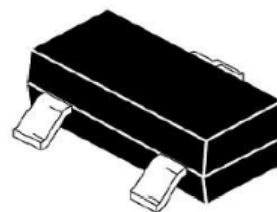
## Planar Plastic Zener Diode

Version: A1 2021-09-10

### Features

- Silicon Planar Zener Diode
- 300mW Power Dissipation
- Zener Voltages from 5.1V - 20V
- Ultra-Small Package for Surface Mount Package
- Tolerance approximately:  $\pm 2\%$

### Exterior

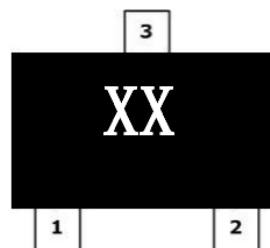


SOT-23


### Application Information

- DC power
- Signal interface
- Other portable devices

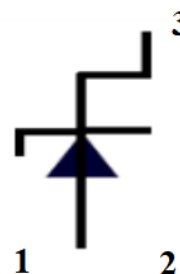
### Package (top view)



### Agency Approvals

Icon	Description
<b>RoHS</b>	Compliance with 2011/65/EU
<b>HF</b>	Compliance with IEC61249-2-21:2003
	Mean lead free

### Schematic(top view)



### Maximum Ratings(Ta=25°C unless otherwise specified)

Characteristic	Symbol	VALUE	UNIT
Forward Voltage (Note 2) @ I <sub>F</sub> =10mA	V <sub>F</sub>	0.9	V
Power Dissipation(Note 1)	P <sub>d</sub>	300	mW
Thermal Resistance from Junction to Ambient	R <sub>θJA</sub>	417	°C/W
Junction Temperature	T <sub>j</sub>	150	°C
Storage Temperature range	T <sub>stg</sub>	-55~+150	°C

**Planar Plastic Zener Diode**

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## Part Number and Electrical Parameter

Part Number	Type Code	Zener Voltage Range				Maximum Zener Impedance			Maximum Reverse Current		Temperature Coefficient of Zener voltage @ I <sub>ZT</sub> =5mA mV/° C	
		V <sub>Z</sub> @I <sub>ZT</sub>			I <sub>ZT</sub>	Z <sub>ZT</sub> @I <sub>ZT</sub>	Z <sub>K</sub> @I <sub>ZK</sub>	I <sub>ZK</sub>	I <sub>R</sub>	V <sub>R</sub>	Min	Max
		Nom(V)	Min(V)	Max(V)	(mA)	(Ω)		(mA)	(μA)	(V)		
BW-TAC5V1T1G-2	2Z2	5.1	5.00	5.20	5	60	480	1.0	2	2.0	-2.7	1.2
BW-TAC5V6T1G-2	2Z3	5.6	5.49	5.71	5	40	400	1.0	1	2.0	-2.0	2.5
BW-TAC6V2T1G-2	2Z4	6.2	6.08	6.32	5	10	150	1.0	3	4.0	0.4	3.7
BW-TAC6V8T1G-2	2Z5	6.8	6.66	6.94	5	15	80	1.0	2	4.0	1.2	4.5
BW-TAC7V5T1G-2	2Z6	7.5	7.35	7.65	5	15	80	1.0	1	5.0	2.5	5.3
BW-TAC8V2T1G-2	2Z7	8.2	8.04	8.36	5	15	80	1.0	0.7	5.0	3.2	6.2
BW-TAC9V1T1G-2	2Z8	9.1	8.92	9.28	5	15	100	1.0	0.5	6.0	3.8	7.0
BW-TAC10VT1G-2	2Z9	10	9.80	10.20	5	20	150	1.0	0.2	7.0	4.5	8.0
BW-TAC11VT1G-2	2Y1	11	10.78	11.22	5	20	150	1.0	0.1	8.0	5.4	9.0
BW-TAC12VT1G-2	2Y2	12	11.76	12.24	5	25	150	1.0	0.1	8.0	6.0	10.0
BW-TAC13VT1G-2	2Y3	13	12.74	13.26	5	30	170	1.0	0.1	8.0	7.0	11.0
BW-TAC15VT1G-2	2Y4	15	14.70	15.30	5	30	200	1.0	0.1	10.5	9.2	13.0
BW-TAC16VT1G-2	2Y5	16	15.68	16.32	5	40	200	1.0	0.1	11.2	10.4	14.0
BW-TAC18VT1G-2	2Y6	18	17.64	18.36	5	45	225	1.0	0.1	12.6	12.4	16.0
BW-TAC20VT1G-2	2Y7	20	19.60	20.40	5	55	225	1.0	0.1	14.0	14.4	18.0

**Notes:** 1) Valid provided that device terminals are kept at ambient temperature.

2) Tested with pulses, period=5ms, pulse width =300 μ s.

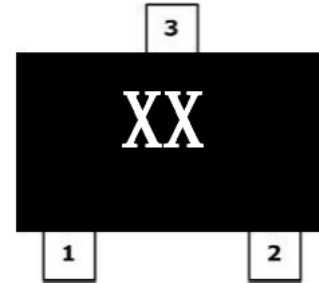
3) f=1kHz.

### Part Numbering System

BW TA C XXX T1 G 2  
 (1) (2) (3) (4) (5) (6) (7)

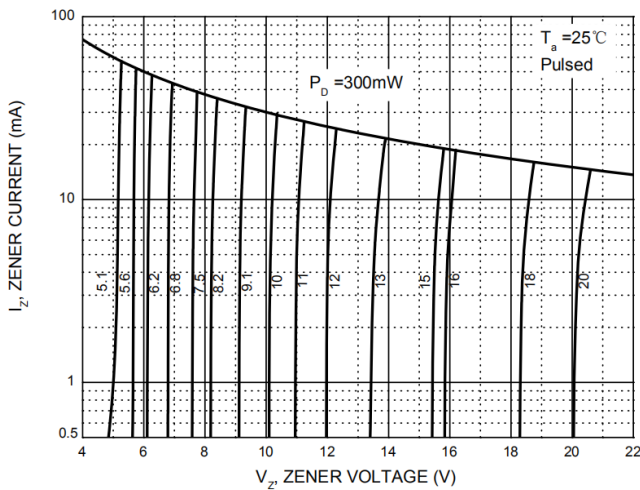
- (1) Bencent Zener Diode
- (2) Package: SOT23
- (3) Power Dissipation: 300mW
- (4) Work Voltage: 5.1V-20V
- (5) Package type: Taping, 3K/R
- (6) Green
- (7) Tolerance of accuracy:  $\pm 2\%$

### Mark

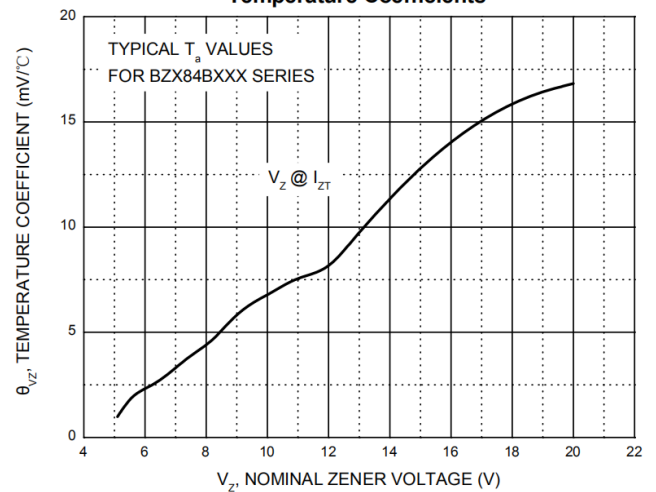


### Typical Characteristics

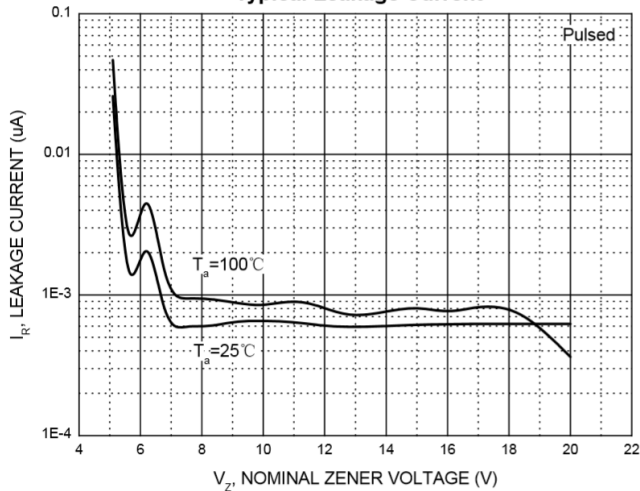
Zener Characteristics ( $V_z$  5.1V to 20 V)



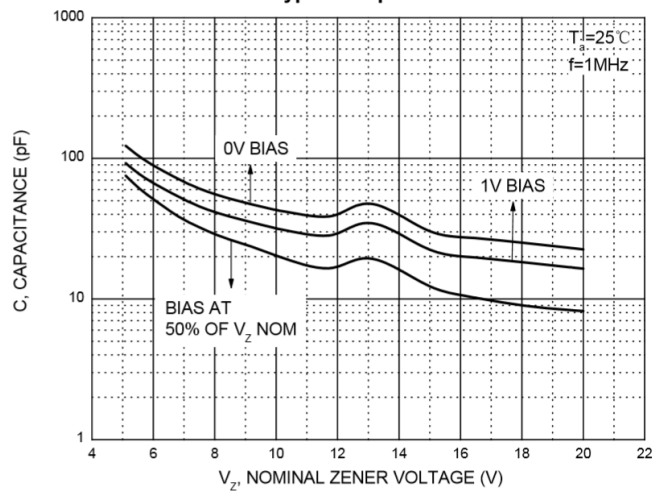
Temperature Coefficients



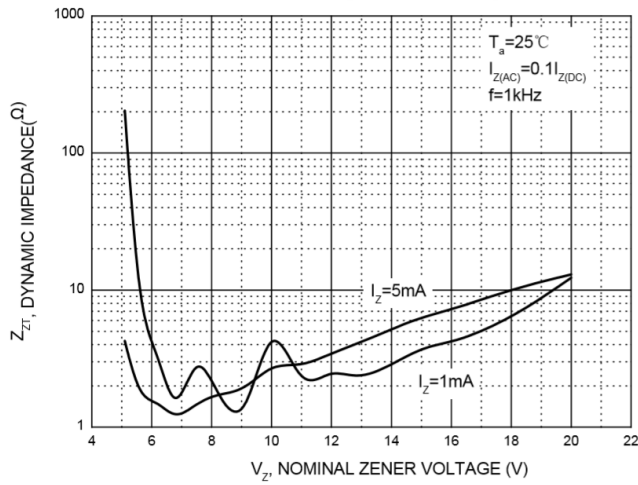
Typical Leakage Current



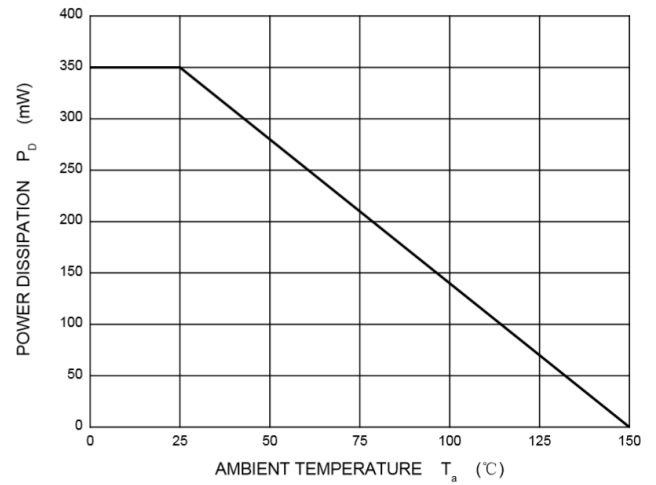
Typical Capacitance



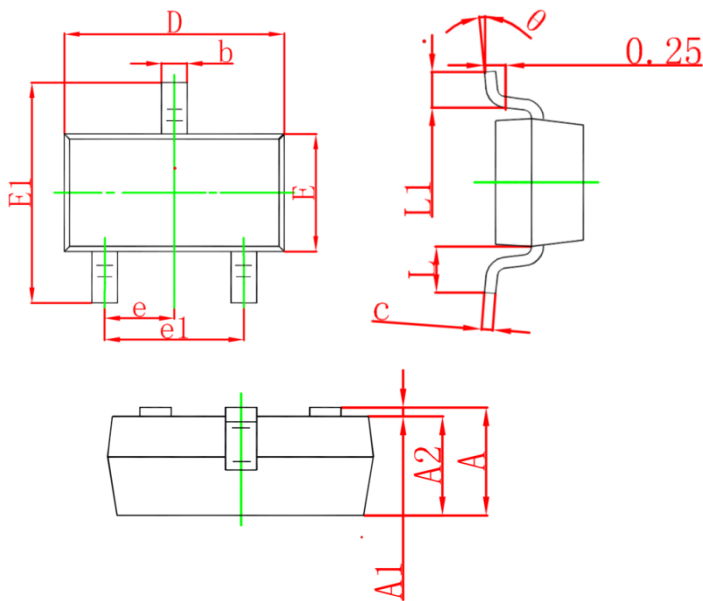
Effect of Zener Voltage on Zener Impedance



Power Derating Curve

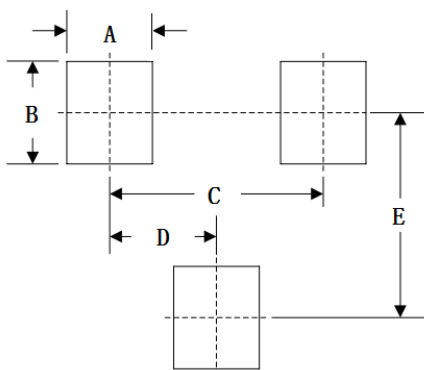


### Product Dimensions



REF	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.550REF		0.022REF	
L1	0.300	0.500	0.012	0.020
$\theta$	0 $^\circ$	8 $^\circ$	0 $^\circ$	8 $^\circ$

### Recommended Soldering Pad



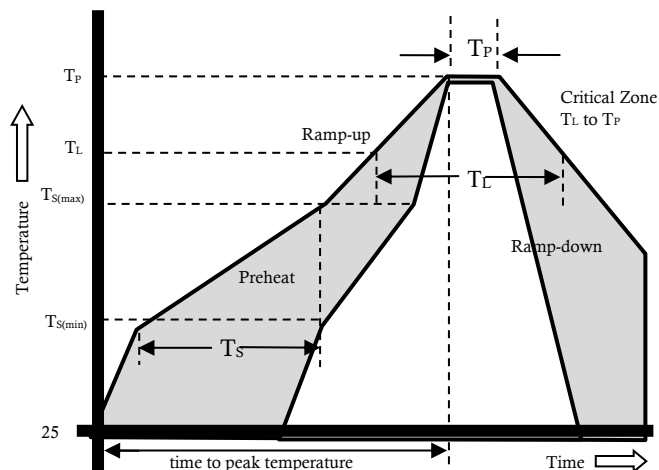
REF	mm	inch
A	0.6	0.0234
B	0.8	0.0315
C	1.9	0.0748
D	0.95	0.0374
E	2.02	0.0795

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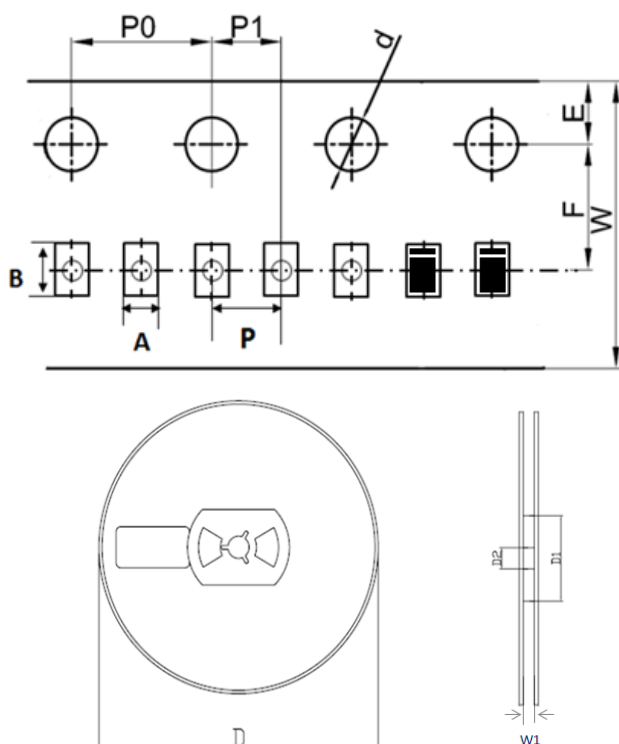
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### Reflow Profile

Reflow Condition		Pb-Free assembly
Pre Heat	Temperature Min	150°C
	Temperature Max	200°C
	Time (min to max)	60 – 180 secs
Average ramp up rate (Liquid) T <sub>amp</sub> (T <sub>L</sub> ) to peak		3°C/s max
T <sub>S</sub> (max) to T <sub>L</sub> - Ramp-up Rate		3°C/s max
Reflow	- Temperature (T <sub>L</sub> ) (Liquid)	217°C
	- Temperature (T <sub>L</sub> )	60 – 150 secs
Peak Temperature (T <sub>P</sub> )		260±0/-5 °C
Time within 5°C of actual peak Temperature (T <sub>P</sub> )		30secs
Ramp-down Rate		6°C/s max
Time 25°C to peak Temperature (T <sub>P</sub> )		8 mins max.
Do not exceed		260°C



### Package Reel Information



REF	mm	inch
A	3.10±0.20	0.122±0.008
B	2.90±0.20	0.114±0.008
d	1.50±0.1/-0	0.059±0.004/-0
D	178.00±2.00	7.008±0.079
D1	55.00±3.00	2.165±0.118
D2	13.00±0.50	0.512±0.020
E	1.75±0.10	0.069±0.004
F	3.50±0.20	0.138±0.008
P	4.00±0.20	0.158±0.008
P0	4.00±0.20	0.158±0.008
P1	2.00±0.20	0.079±0.008
W	8.00±0.20	0.315±0.008
W1	9.50±1.00	0.374±0.039

Outline	Reel (pcs)	Per Carton (pcs)	Reel Diameters (mm)	Carton Size(mm)		
				L	W	H
Taping	3,000	90,000	178	390	370	220