



# BZX55 Series

Zener Diodes

Zener Voltage Range: 0.8, 2.4 to 200 Volts Power Dissipation: 500mW

## Features

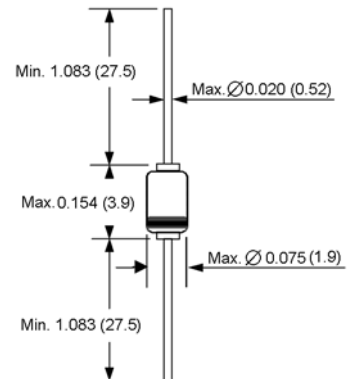
- ◆ Silicon Planar Power Zener Diodes.
- ◆ The Zener voltages are graded according to the international E 24 standard. Standard Zener voltage tolerance is  $\pm 5\%$ . Replace suffix "C" with "B" for  $\pm 2\%$  tolerance. Other voltage tolerances and other Zener voltages are available upon request.



DO-204AH (DO-35 Glass)

## Mechanical Data

- ◆ Case: DO-35 Glass Case
- ◆ Weight: approx. 0.13g



Dimensions in inches and (millimeters)

## Maximum Ratings and Thermal Characteristics

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Parameter	Symbol	Value	Unit
Zener current (see Table "Characteristics")			
Power dissipation at $T_{amb} = 25^\circ\text{C}$	$P_{tot}$	500 <sup>(1)</sup>	mW
Thermal resistance junction to ambient air	$R_{\theta JA}$	300 <sup>(1)</sup>	$^\circ\text{C/W}$
Junction temperature	$T_j$	175	$^\circ\text{C}$
Storage temperature range	$T_s$	-55 to +175	$^\circ\text{C}$

**Notes:** 1. Valid provided that leads at a distance of 3/8" from case are kept at ambient temperature.

# Electrical Characteristics

(T<sub>A</sub>=25°C unless otherwise noted) Maximum V<sub>F</sub>=1.0V at I<sub>F</sub>=100mA

Type number y=C for +5% y=B for +2%	Dynamic resistance		Temp. coefficient of zener voltage at I <sub>Z</sub> =5mA α <sub>VZ</sub> (% / °C)		Reverse leakage current			Admissible zener current <sup>(2)</sup> I <sub>ZM</sub> (mA)
	at I <sub>Z</sub> =5mA f=1kHz r <sub>Z1</sub> (Ω)	at I <sub>Z</sub> =1mA f=1kHz r <sub>Z1</sub> (Ω)	Min.	Max.	at T <sub>amb</sub> =25°C I <sub>R</sub> (nA)	at T <sub>amb</sub> =150°C I <sub>R</sub> (μA)	at V <sub>R</sub> (Volts)	
BZX55 - y0V8 <sup>(3)</sup>	< 8	< 600	- 0.25	-	-	-	-	-
BZX55 - y2V4	< 85	< 600	- 0.08	- 0.06	< 50000	< 100	1	145
BZX55 - y2V7	< 85	< 600	- 0.08	- 0.06	< 10000	< 50	1	135
BZX55 - y3V0	< 85	< 600	- 0.08	- 0.06	< 4000	< 40	1	125
BZX55 - y3V3	< 85	< 600	- 0.08	- 0.05	< 2000	< 40	1	115
BZX55 - y3V6	< 85	< 600	- 0.08	- 0.04	< 2000	< 40	1	105
BZX55 - y3V9	< 85	< 600	- 0.07	- 0.03	< 2000	< 40	1	95
BZX55 - y4V3	< 75	< 600	- 0.04	- 0.01	< 1000	< 20	1	90
BZX55 - y4V7	< 60	< 600	- 0.03	+ 0.01	< 500	< 10	1	85
BZX55 - y5V1	< 35	< 550	- 0.02	+ 0.05	< 100	< 2	1	80
BZX55 - y5V6	< 25	< 450	- 0.01	+ 0.06	< 100	< 2	1	70
BZX55 - y6V2	< 10	< 200	0	+ 0.07	< 100	< 2	2	64
BZX55 - y6V8	< 8	< 150	+ 0.01	+ 0.08	< 100	< 2	3	58
BZX55 - y7V5	< 7	< 50	+ 0.01	+ 0.09	< 100	< 2	5	53
BZX55 - y8V2	< 7	< 50	+ 0.01	+ 0.09	< 100	< 2	6.2	47
BZX55 - y9V1	< 10	< 50	+ 0.02	+ 0.10	< 100	< 2	6.8	43
BZX55 - y10	< 15	< 70	+ 0.03	+ 0.11	< 100	< 2	7.5	40
BZX55 - y11	< 20	< 70	+ 0.03	+ 0.11	< 100	< 2	8.2	36
BZX55 - y12	< 20	< 90	+ 0.03	+ 0.11	< 100	< 2	9.1	32
BZX55 - y13	< 26	< 110	+ 0.03	+ 0.11	< 100	< 2	10	29
BZX55 - y15	< 30	< 110	+ 0.03	+ 0.11	< 100	< 2	11	27
BZX55 - y16	< 40	< 170	+ 0.03	+ 0.11	< 100	< 2	12	24
BZX55 - y18	< 50	< 170	+ 0.03	+ 0.11	< 100	< 2	13	21
BZX55 - y20	< 55	< 220	+ 0.03	+ 0.11	< 100	< 2	15	20
BZX55 - y22	< 55	< 220	+ 0.03	+ 0.11	< 100	< 2	16	18
BZX55 - y24	< 80	< 220	+ 0.04	+ 0.12	< 100	< 2	18	16
BZX55 - y27	< 80	< 220	+ 0.04	+ 0.12	< 100	< 2	20	14
BZX55 - y30	< 80	< 220	+ 0.04	+ 0.12	< 100	< 2	22	13
BZX55 - y33	< 80	< 220	+ 0.04	+ 0.12	< 100	< 2	24	12
BZX55 - y36	< 80	< 220	+ 0.04	+ 0.12	< 100	< 2	27	11
BZX55 - y39	< 90 <sup>(4)</sup>	< 500 <sup>(5)</sup>	+ 0.04	+ 0.12	< 100	< 5	30	10
BZX55 - y43	< 90 <sup>(4)</sup>	< 600 <sup>(5)</sup>	+ 0.04	+ 0.12	< 100	< 5	33	9.2
BZX55 - y47	< 110 <sup>(4)</sup>	< 700 <sup>(5)</sup>	+ 0.04	+ 0.12	< 100	< 5	36	8.5
BZX55 - y51	< 125 <sup>(4)</sup>	< 700 <sup>(5)</sup>	+ 0.04	+ 0.12	< 100	< 10	39	7.8
BZX55 - y56	< 135 <sup>(4)</sup>	< 1000 <sup>(5)</sup>	typ. +0.1 <sup>(4)</sup>		< 100	< 10	43	7.0
BZX55 - y62	< 150 <sup>(4)</sup>	< 1000 <sup>(5)</sup>	typ. +0.1 <sup>(4)</sup>		< 100	< 10	47	6.4
BZX55 - y68	< 200 <sup>(4)</sup>	< 1000 <sup>(5)</sup>	typ. +0.1 <sup>(4)</sup>		< 100	< 10	51	5.9
BZX55 - y75	< 250 <sup>(4)</sup>	< 1500 <sup>(5)</sup>	typ. +0.1 <sup>(4)</sup>		< 100	< 10	56	5.3
BZX55 - y82	< 300 <sup>(4)</sup>	< 2000 <sup>(5)</sup>	typ. +0.1 <sup>(4)</sup>		< 100	< 10	62	4.8
BZX55 - y91	< 450 <sup>(6)</sup>	< 5000 <sup>(7)</sup>	typ. +0.1 <sup>(4)</sup>		< 100	< 10	68	4.4
BZX55 - y100	< 450 <sup>(6)</sup>	< 5000 <sup>(7)</sup>	typ. +0.1 <sup>(4)</sup>		< 100	< 10	75	4.0
BZX55 - y110	< 600	< 5000	typ. +0.1 <sup>(4)</sup>		< 100	< 10	82	-
BZX55 - y120	< 800	< 5500	typ. +0.1 <sup>(4)</sup>		< 100	< 10	91	-
BZX55 - y130	< 950	< 6000	typ. +0.1 <sup>(4)</sup>		< 100	< 10	100	-
BZX55 - y150	< 1250	< 6500	typ. +0.1 <sup>(4)</sup>		< 100	< 10	110	-
BZX55 - y160	< 1400	< 7000	typ. +0.1 <sup>(4)</sup>		< 100	< 10	120	-
BZX55 - y180	< 1700	< 8500	typ. +0.1 <sup>(4)</sup>		< 100	< 10	130	-
BZX55 - y200	< 2000	< 10000	typ. +0.1 <sup>(4)</sup>		< 100	< 10	150	-

Notes: 1. Tested with pulses t<sub>p</sub>=5 ms

2. Valid provided that leads are kept at ambient temperature at a distance of 8 mm from case

3. The BZX55 - C0V8 is a silicon diode with operation in forward direction. Hence, the index of all parameters should be "F" instead of "Z". Connect the cathode lead to the negative pole.

4. at I<sub>Z</sub>=2.5 mA

5. at I<sub>Z</sub>=0.5 mA

6. at I<sub>Z</sub>=1.0 mA

7. at I<sub>Z</sub>=0.1 mA

# Electrical Characteristics

(T<sub>A</sub>=25°C unless otherwise noted) Maximum V<sub>F</sub>=1.0V at I<sub>F</sub>=100mA

Type number ±5% Tol.	Zener voltage range <sup>(1)</sup> at I <sub>ZT1</sub> (mA) V <sub>Z</sub> (Volts)		Test current I <sub>ZT1</sub> (mA)
	Min.	Max.	
BZX55-C0V8 <sup>(3)</sup>	0.73	0.83	5.0
BZX55-C2V4	2.28	2.56	5.0
BZX55-C2V7	2.50	2.90	5.0
BZX55-C3V0	2.80	3.20	5.0
BZX55-C3V3	3.10	3.50	5.0
BZX55-C3V6	3.40	3.90	5.0
BZX55-C3V9	3.70	4.10	5.0
BZX55-C4V3	4.00	4.60	5.0
BZX55-C4V7	4.40	5.00	5.0
BZX55-C5V1	4.80	5.40	5.0
BZX55-C5V6	5.20	6.00	5.0
BZX55-C6V2	5.80	6.60	5.0
BZX55-C6V8	6.40	7.20	5.0
BZX55-C7V5	7.00	7.90	5.0
BZX55-C8V2	7.70	8.70	5.0
BZX55-C9V1	8.50	9.60	5.0
BZX55-C10	9.40	10.6	5.0
BZX55-C11	10.4	11.6	5.0
BZX55-C12	11.4	12.7	5.0
BZX55-C13	12.4	14.1	5.0
BZX55-C15	13.8	15.6	5.0
BZX55-C16	15.3	17.1	5.0
BZX55-C18	16.8	19.1	5.0
BZX55-C20	18.8	21.2	5.0
BZX55-C22	20.8	23.3	5.0
BZX55-C24	22.8	25.6	5.0
BZX55-C27	25.1	28.9	5.0
BZX55-C30	28.0	32.0	5.0
BZX55-C33	31.0	35.0	5.0
BZX55-C36	34.0	38.0	5.0
BZX55-C39	37.0	41.0	2.5
BZX55-C43	40.0	46.0	2.5
BZX55-C47	44.0	50.0	2.5
BZX55-C51	48.0	54.0	2.5
BZX55-C56	52.0	60.0	2.5
BZX55-C62	58.0	66.0	2.5
BZX55-C68	64.0	72.0	2.5
BZX55-C75	70.0	80.0	2.5
BZX55-C82	77.0	87.0	2.5
BZX55-C91	85.0	96.0	1.0
BZX55-C100	94.0	106	1.0
BZX55-C110	104	116	1.0
BZX55-C120	114	127	1.0
BZX55-C130	124	141	1.0
BZX55-C150	138	156	1.0
BZX55-C160	153	171	1.0
BZX55-C180	168	191	1.0
BZX55-C200	188	212	1.0

Type number ±2% Tol.	Zener voltage range <sup>(1)</sup> at I <sub>ZT1</sub> (mA) V <sub>Z</sub> (Volts)		Test current I <sub>ZT1</sub> (mA)
	Min.	Max.	
BZX55-B0V8 <sup>(3)</sup>	0.78	0.82	5.0
BZX55-B2V7	2.35	2.45	5.0
BZX55-B3	2.65	2.75	5.0
BZX55-B3V0	2.94	3.06	5.0
BZX55-B3V3	3.23	3.37	5.0
BZX55-B3V6	3.53	3.67	5.0
BZX55-B3V9	3.82	3.98	5.0
BZX55-B4V3	4.21	4.39	5.0
BZX55-B4V7	4.61	4.79	5.0
BZX55-B5V1	5.00	5.20	5.0
BZX55-B5V6	5.49	5.71	5.0
BZX55-B6V2	6.08	6.32	5.0
BZX55-B6V8	6.66	6.94	5.0
BZX55-B7V5	7.35	7.65	5.0
BZX55-B8V2	8.04	8.36	5.0
BZX55-B9V1	8.92	9.28	5.0
BZX55-B10	9.80	10.2	5.0
BZX55-B11	10.8	11.2	5.0
BZX55-B12	11.8	12.2	5.0
BZX55-B13	12.7	13.3	5.0
BZX55-B15	14.7	15.3	5.0
BZX55-B16	15.7	16.3	5.0
BZX55-B18	17.6	18.4	5.0
BZX55-B20	19.6	20.4	5.0
BZX55-B22	21.6	22.4	5.0
BZX55-B24	23.5	24.5	5.0
BZX55-B27	26.5	27.5	5.0
BZX55-B30	29.4	30.6	5.0
BZX55-B33	32.3	33.7	5.0
BZX55-B36	35.3	36.7	5.0
BZX55-B39	38.2	39.8	2.5
BZX55-B43	42.1	43.9	2.5
BZX55-B47	46.1	47.9	2.5
BZX55-B51	50.0	52.0	2.5
BZX55-B56	54.9	56.9	2.5
BZX55-B62	60.8	63.2	2.5
BZX55-B68	66.6	69.4	2.5
BZX55-B75	73.5	76.5	2.5
BZX55-B82	80.4	83.6	2.5
BZX55-B91	89.2	92.8	1.0
BZX55-B100	98.0	102	1.0
BZX55-B110	108	112	1.0
BZX55-B120	118	122	1.0
BZX55-B130	127	133	1.0
BZX55-B150	147	153	1.0
BZX55-B160	157	163	1.0
BZX55-B180	176	184	1.0
BZX55-B200	196	204	1.0

- Notes:**
1. Measured with pulses t<sub>r</sub>=5 ms
  2. The BZX55 - C0V8 is a silicon diode with operation in forward direction. Hence, the index of all parameters should be "F" instead of "Z". Connect the cathode lead to the negative pole.

# RATINGS AND CHARACTERISTIC CURVES

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

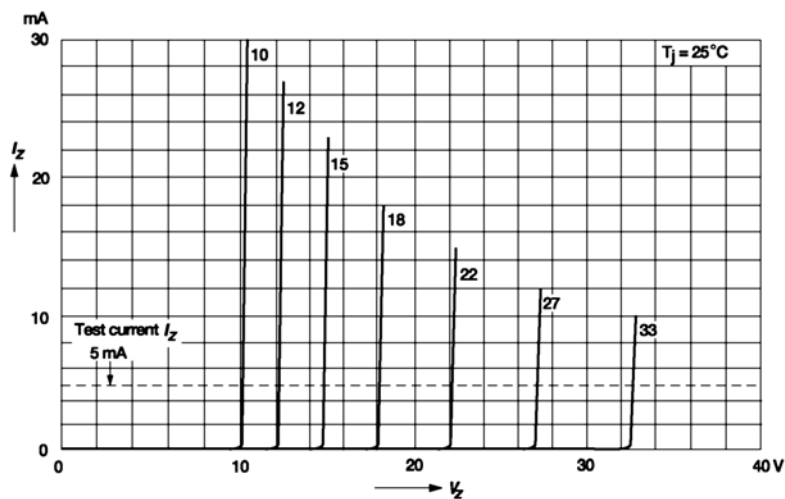
## Breakdown characteristics

at  $T_j = \text{constant}$  (pulsed)



## Breakdown characteristics

at  $T_j = \text{constant}$  (pulsed)

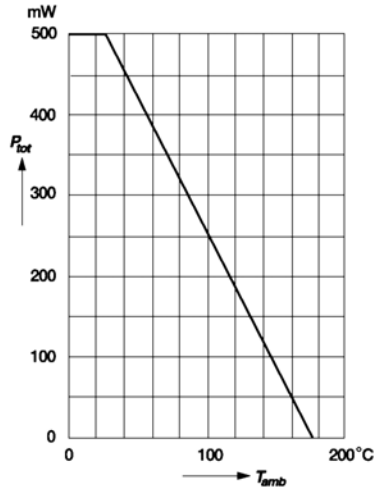


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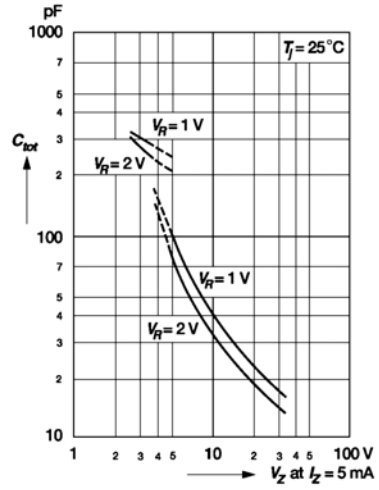
( $T_A = 25^\circ\text{C}$  unless otherwise noted)

## Admissible power dissipation versus ambient temperature

Valid provided that leads are kept ambient temperature at a distance of 8 mm from case.

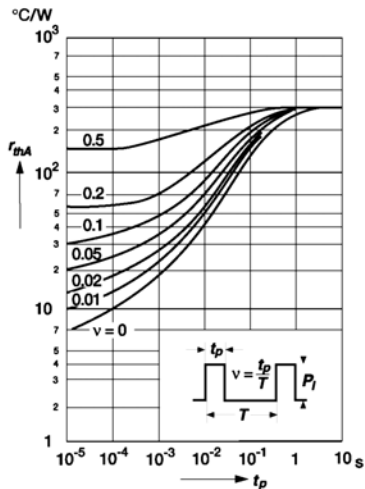


## Capacitance versus Zener voltage

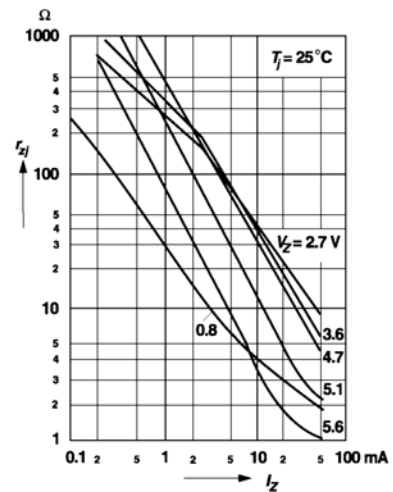


## Pulse thermal resistance versus pulse duration

Valid provided that leads are kept at ambient temperature at a distance of 8 mm from case.



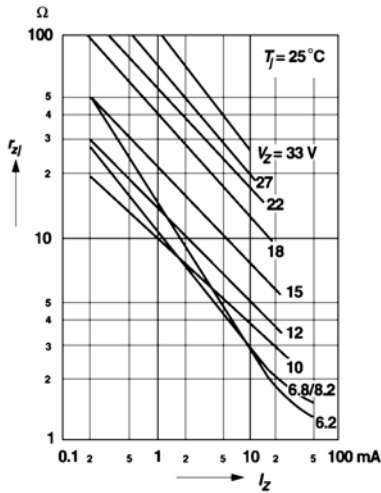
## Dynamic resistance versus Zener current



# RATINGS AND CHARACTERISTIC CURVES

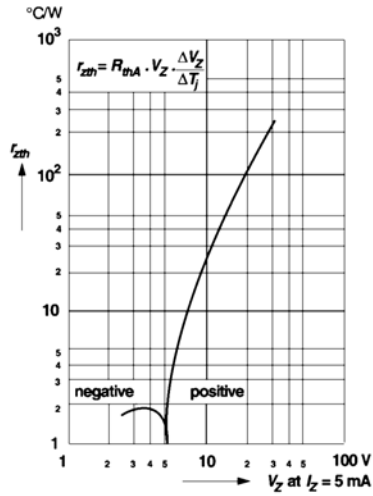
( $T_A = 25^\circ\text{C}$  unless otherwise noted)

**Dynamic resistance versus Zener current**

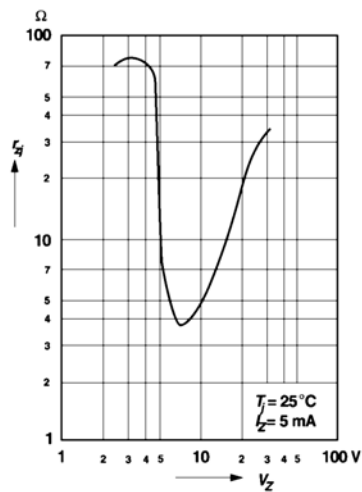


**Thermal differential resistance versus Zener voltage**

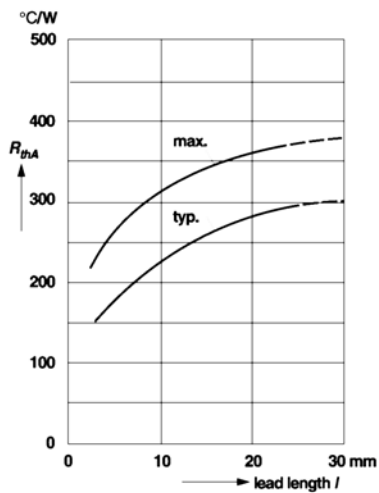
Valid provided that leads are kept at ambient temperature at a distance of 8 mm from case.



**Dynamic resistance versus Zener voltage**



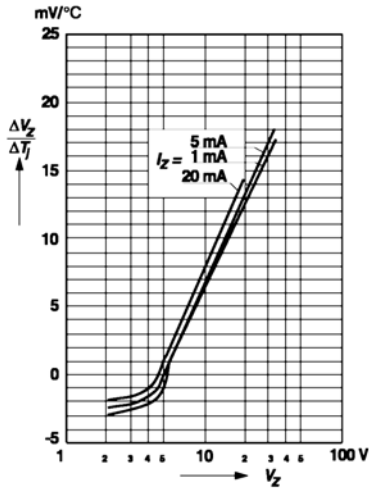
**Thermal resistance versus lead length**



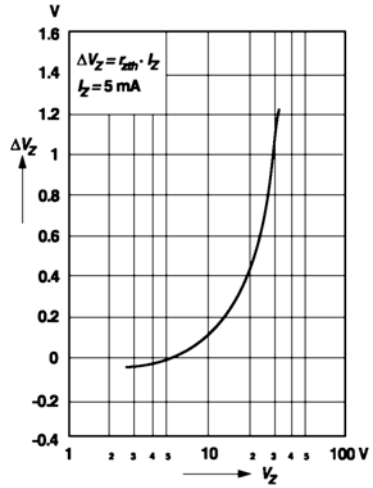
# RATINGS AND CHARACTERISTIC CURVES

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Temperature dependence of Zener voltage versus Zener voltage



Change of Zener voltage from turn-on up to the point of thermal equilibrium versus Zener voltage



Change of Zener voltage versus junction temperature

