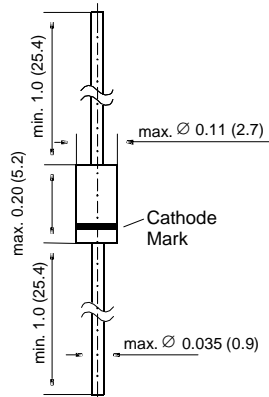


# ZY1, ZY11 THRU ZY200

## ZENER DIODES

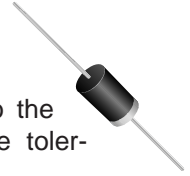
### DO-41 Plastic



Dimensions are in inches and (millimeters)

### FEATURES

- ◆ Silicon Power Zener Diodes
- ◆ For use in stabilizing and clipping circuits with high power rating
- ◆ The Zener voltages are graded according to the international E 24 standard. Smaller voltage tolerances are available upon request.



### MECHANICAL DATA

**Case:** DO-41 Plastic Case

**Weight:** approx. 0.34 g

### MAXIMUM RATINGS

Ratings at 25°C ambient temperature unless otherwise specified.

	SYMBOL	VALUE	UNIT
Zener Current (see Table "Characteristics")			
Power Dissipation at Tamb = 25°C	P <sub>tot</sub>	2.0 <sup>1)</sup>	Watts
Junction Temperature	T <sub>j</sub>	150	°C
Storage Temperature Range	T <sub>s</sub>	- 55 to +150	°C

	SYMBOL	MIN.	TYP.	MAX.	UNIT
Thermal Resistance Junction to Ambient Air	R <sub>thJA</sub>	-	-	60 <sup>1)</sup>	°C/W

**NOTES:**

(1) Valid provided that leads are kept at ambient temperature at a distance of 10 mm from case.

# ZY1, ZY11 THRU ZY200

## ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

Type	Zener voltage <sup>(2)</sup> at I <sub>ZT</sub>  V <sub>Z</sub> (V)	Dynamic resistance at I <sub>ZT</sub> f = 1 kHz max r <sub>Zj</sub> (Ω)	Temp. coeff. of Zener volt. at I <sub>ZT</sub>  α <sub>VZ</sub> (10 <sup>-4</sup> /K)	Test current  I <sub>ZT</sub> (mA)	Reverse voltage at I <sub>R</sub> = 0.5μA  V <sub>R</sub> (V)	Admissible Zener current <sup>(1)</sup> at T <sub>amb</sub> = 25°C  I <sub>Z</sub> (mA)
ZY1 <sup>(3)</sup>	0.71 ... 0.82	0.5 (< 1)	-26 ... -16	100	–	1000
ZY11	10.4 ... 11.6	4 (< 7)	+5 ... +10	50	> 9.2	135
ZY12	11.4 ... 12.7	4 (< 7)	+5 ... +10	50	> 10	120
ZY13	12.4 ... 14.1	5 (< 10)	+5 ... +10	50	> 10.7	110
ZY15	13.8 ... 15.8	5 (< 10)	+5 ... +10	50	> 12	98
ZY16	15.3 ... 17.1	6 (< 15)	+6 ... +11	25	> 13.3	90
ZY18	16.8 ... 19.1	6 (< 15)	+6 ... +11	25	> 14.7	80
ZY20	18.8 ... 21.2	6 (< 15)	+6 ... +11	25	> 16.5	72
ZY22	20.8 ... 23.3	6 (< 15)	+6 ... +11	25	> 18.3	66
ZY24	22.8 ... 25.6	7 (< 15)	+6 ... +11	25	> 20.1	60
ZY27	25.1 ... 28.9	7 (< 15)	+6 ... +11	25	> 22.5	53
ZY30	28 ... 32	8 (< 15)	+6 ... +11	25	> 25.1	48
ZY33	31 ... 35	8 (< 15)	+6 ... +11	25	> 27.8	44
ZY36	34 ... 38	21 (< 40)	+6 ... +11	10	> 30.2	40
ZY39	37 ... 41	21 (< 40)	+6 ... +11	10	> 32.9	37
ZY43	40 ... 46	24 (< 45)	+7 ... +12	10	> 35.6	33
ZY47	44 ... 50	24 (< 45)	+7 ... +12	10	> 39.2	30
ZY51	48 ... 54	25 (< 60)	+7 ... +12	10	> 42.8	27
ZY56	52 ... 60	25 (< 60)	+7 ... +12	10	> 47.3	25
ZY62	58 ... 66	25 (< 80)	+8 ... +13	10	> 51.7	21
ZY68	64 ... 72	25 (< 80)	+8 ... +13	10	> 57.1	20
ZY75	70 ... 79	30 (< 100)	+8 ... +13	10	> 63.2	18
ZY82	77 ... 88	30 (< 100)	+8 ... +13	10	> 68.6	16
ZY91	85 ... 96	60 (< 200)	+9 ... +13	5	> 75.7	15
ZY100	94 ... 106	60 (< 200)	+9 ... +13	5	> 83.7	13
ZY110	104 ... 116	80 (< 250)	+9 ... +13	5	> 92.6	12
ZY120	114 ... 127	80 (< 250)	+9 ... +13	5	> 101.6	11
ZY130	124 ... 141	110 (< 300)	+9 ... +13	5	> 110.5	10
ZY150	138 ... 156	110 (< 300)	+9 ... +13	5	> 123	9
ZY160	153 ... 171	150 (< 350)	+9 ... +13	5	> 136	8.5
ZY180	168 ... 191	150 (< 350)	+9 ... +13	5	> 149	8
ZY200	188 ... 212	150 (< 350)	+9 ... +13	5	> 167	7.5

### NOTES:

(1) Valid provided that leads are kept at ambient temperature at a distance of 10 mm from case

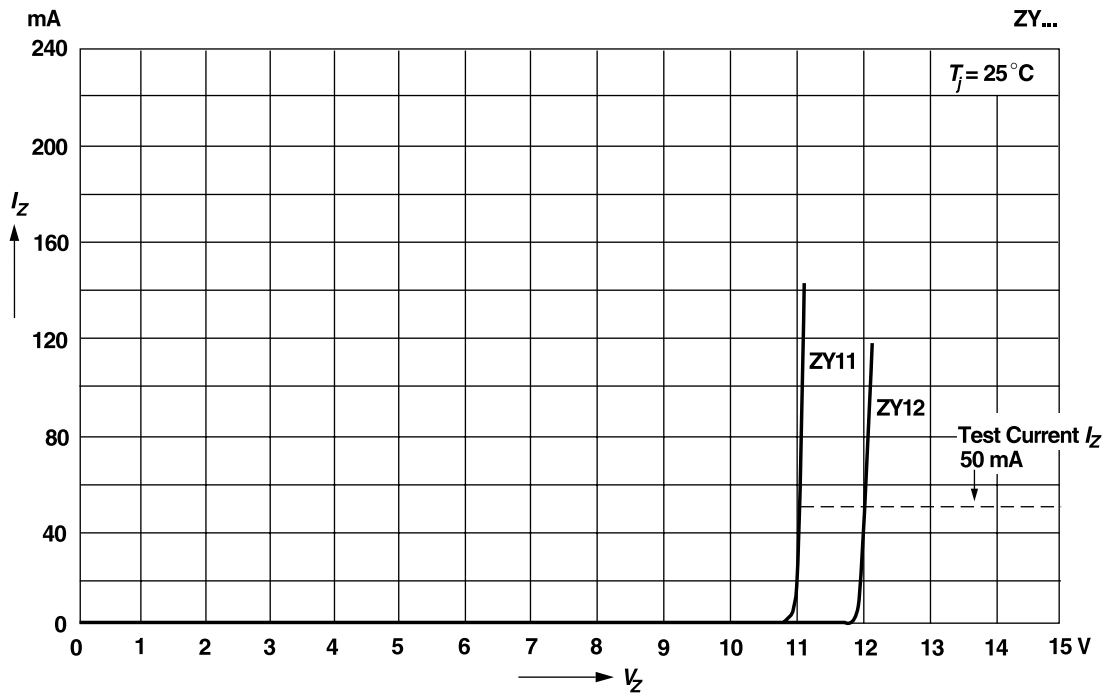
(2) Tested with pulses t<sub>p</sub> = 5 ms

(3) The ZY1 is a silicon diode operated in forward direction. Hence, the index of all parameters ratings should be "F" instead of "Z". Connect the cathode lead to the negative pole

# RATINGS AND CHARACTERISTIC CURVES ZY1, ZY11 THRU ZY200

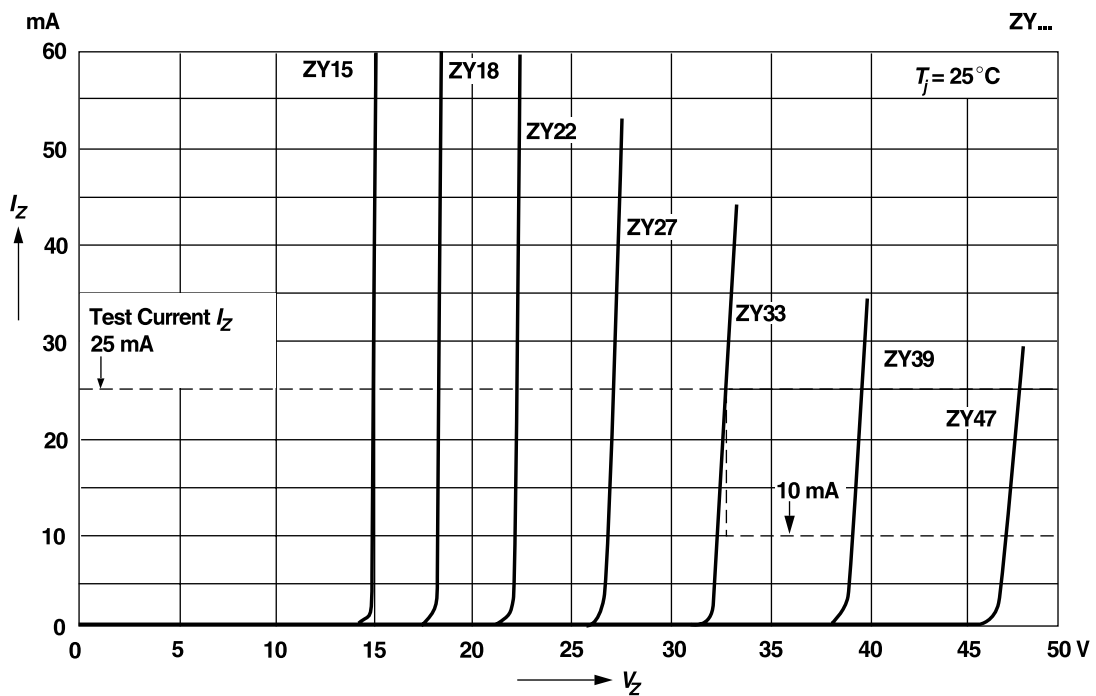
## Breakdown characteristics

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



## Breakdown characteristics

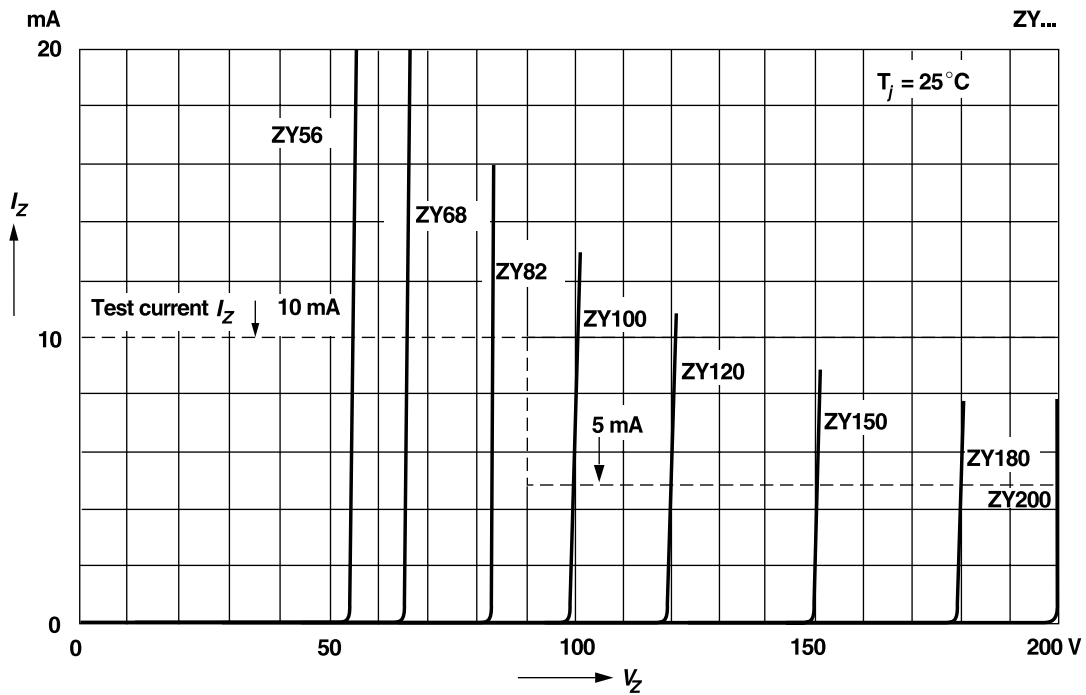
$T_j = \text{constant (pulsed)}$



# RATINGS AND CHARACTERISTIC CURVES ZY1, ZY11 THRU ZY200

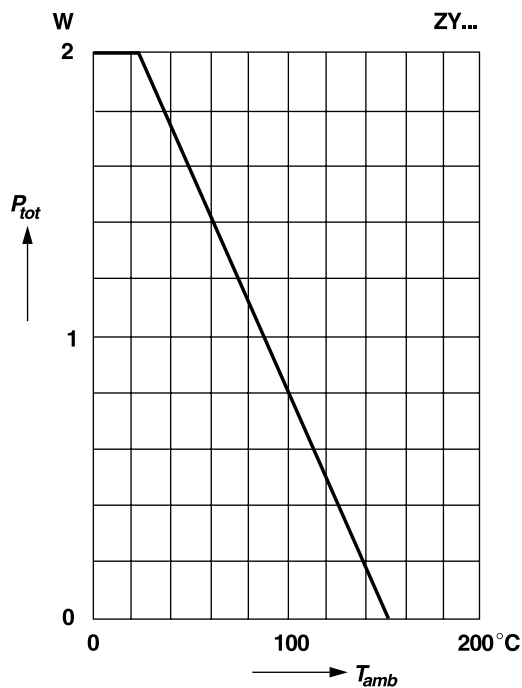
## Breakdown characteristics

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

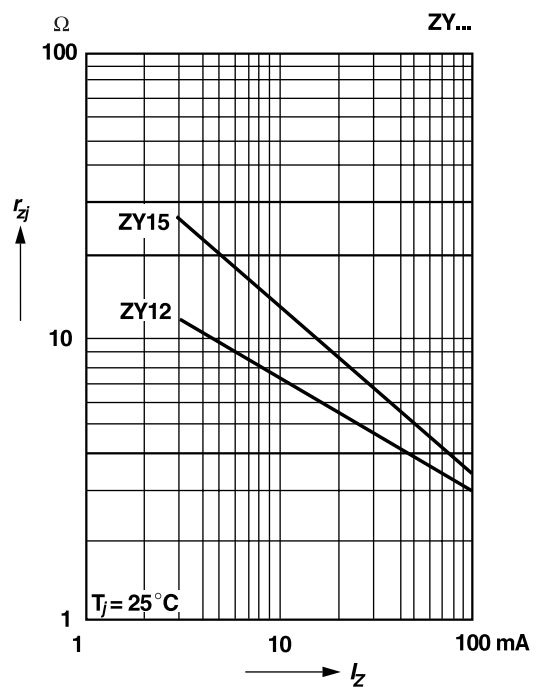


## Admissible power dissipation versus ambient temperature

Valid provided that leads are kept at ambient temperature at a distance of 10 mm from case

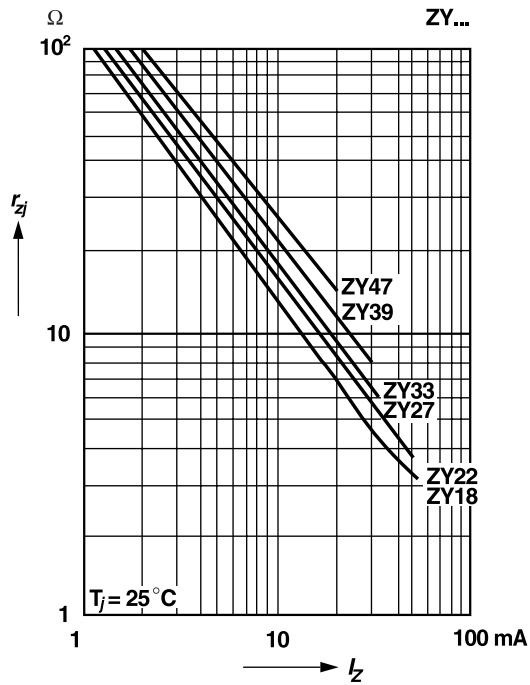


## Dynamic resistance versus Zener current



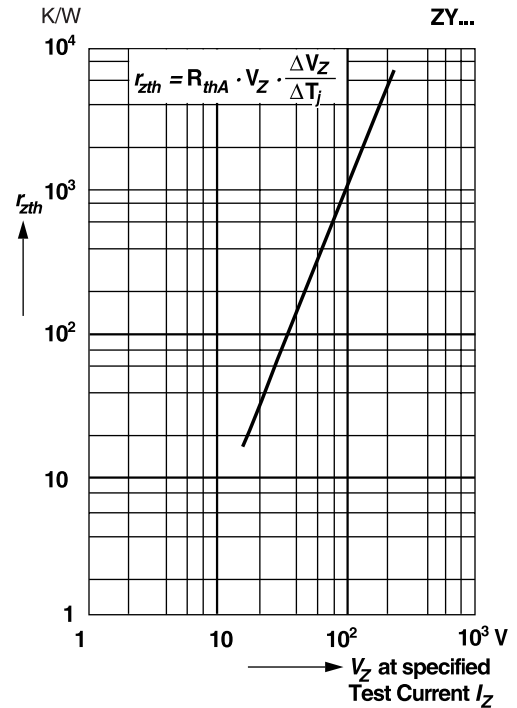
# RATINGS AND CHARACTERISTIC CURVES ZY1, ZY11 THRU ZY200

**Dynamic resistance versus Zener current**

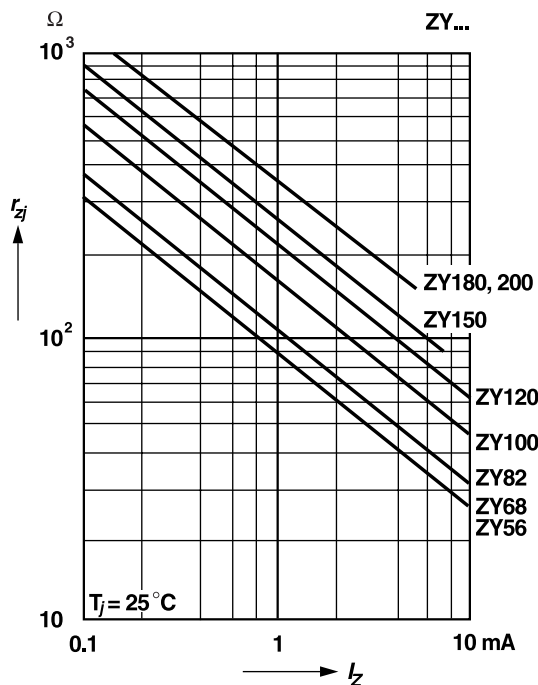


**Thermal differential resistance versus Zener voltage**

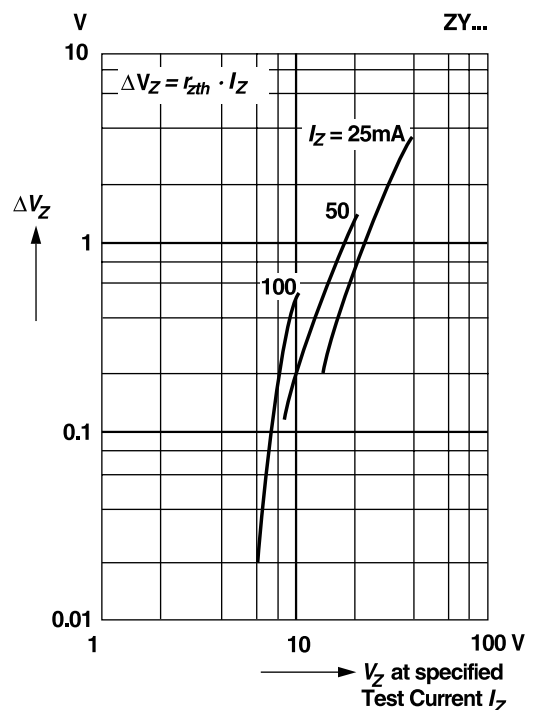
Valid provided that leads are kept at ambient temperature at a distance of 10 mm from case



**Dynamic resistance versus Zener current**

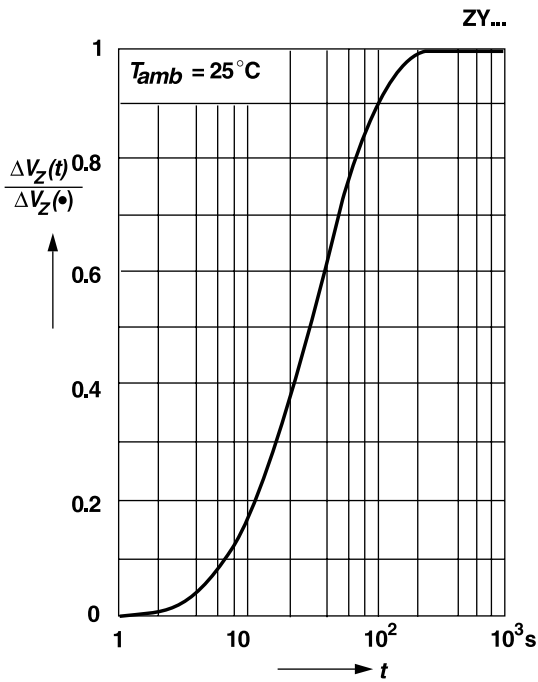


**Change of Zener voltage from turn-on up to the point of thermal equilibrium versus Zener Voltage**

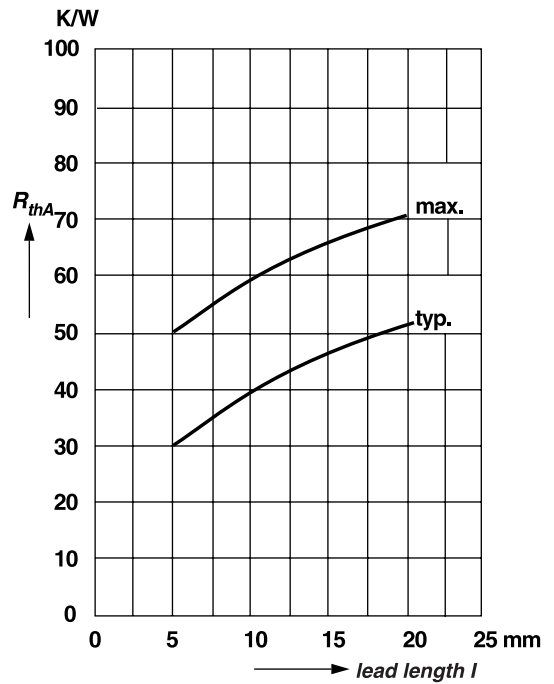


# RATINGS AND CHARACTERISTIC CURVES ZY1, ZY11 THRU ZY200

Relative change of Zener voltage versus turn-on time

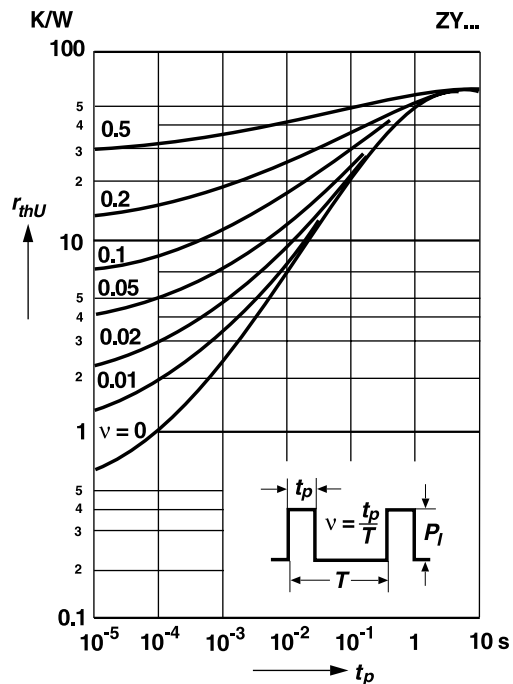


Thermal resistance versus lead length



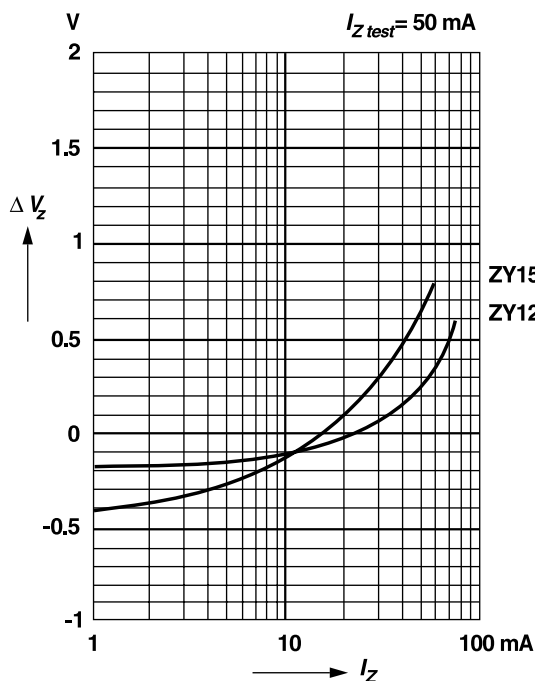
Pulse thermal resistance versus pulse duration

Valid provided that leads are kept at ambient temperature at a distance of 10 mm from case

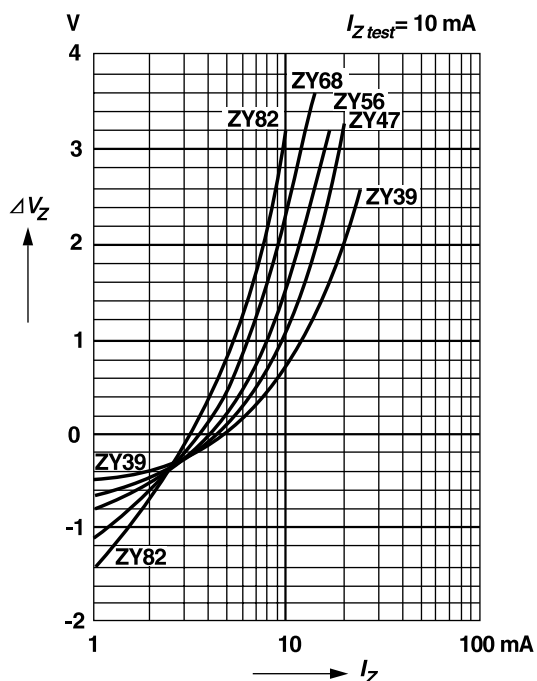


# RATINGS AND CHARACTERISTIC CURVES ZY1, ZY11 THRU ZY200

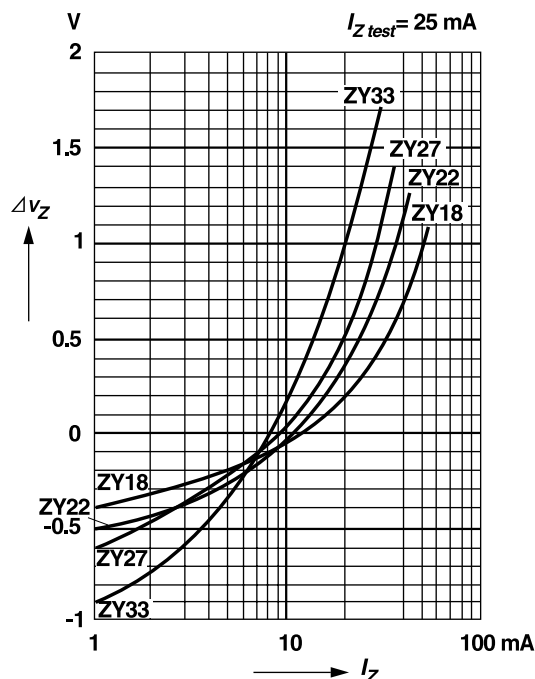
Difference between Zener voltage at test current pulses less than 1 s duration and Zener voltage at the point of thermal equilibrium versus Zener current



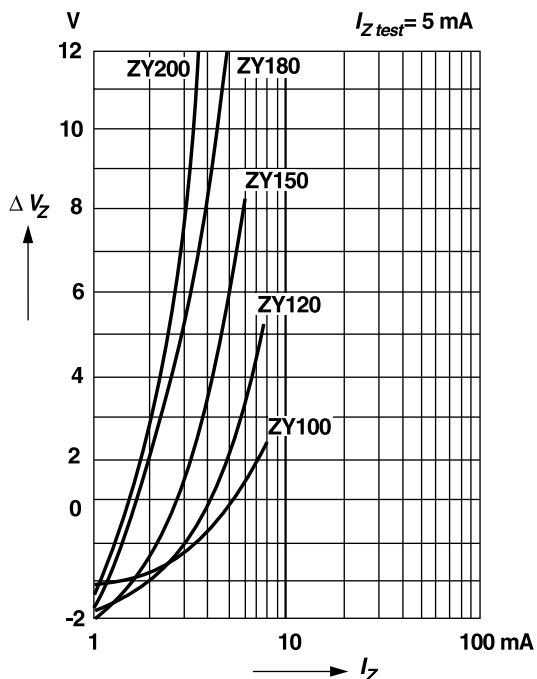
Difference between Zener voltage at test current pulses less than 1 s duration and Zener voltage at the point of thermal equilibrium versus Zener current



Difference between Zener voltage at test current pulses less than 1 s duration and Zener voltage at the point of thermal equilibrium versus Zener current



Difference between Zener voltage at test current pulses less than 1 s duration and Zener voltage at the point of thermal equilibrium versus Zener current



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