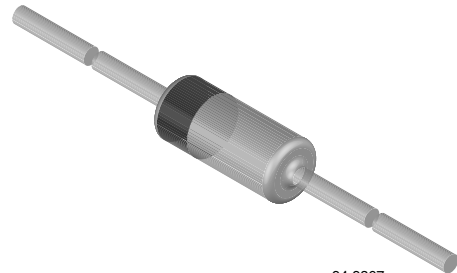


Small Signal Zener Diodes

Features

- Very sharp reverse characteristic
- Low reverse current level
- Very high stability
- Low noise
- 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



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Applications

- Voltage stabilization

Mechanical Data

Case: DO-35

Weight: approx. 125 mg

Cathode band color: black

Packaging codes/options:

TAP/10 k per Ammopack (52 mm tape), 30 k/box

Absolute Maximum Ratings

$T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Power dissipation	$I = 4\text{ mm}$, $T_L = 25\text{ }^{\circ}\text{C}$	P_{tot}	500	mW
Z-current		I_Z	P_{tot}/V_Z	mA
Junction temperature		T_j	175	$^{\circ}\text{C}$
Storage temperature range		T_{stg}	- 65 to + 175	$^{\circ}\text{C}$

Thermal Characteristics

$T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Thermal resistance junction to ambient air	$I = 4\text{ mm}$, $T_L = \text{constant}$	R_{thJA}	300	K/W

Electrical Characteristics

$T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified

Parameter	Test condition	Symbol	Min.	Typ.	Max.	Unit
Forward voltage	$I_F = 200\text{ mA}$	V_F			1.5	V

Electrical Characteristics

Part number group	Part number	Zener voltage		Dynamic resistance	Test current	Reverse leakage current			
		V_Z at I_Z		r_Z at I_Z	I_Z	I_R	at V_R	$I_R^{(1)}$	at $V_R^{(1)}$
		V	V	Ω	mA	μA	V	μA	V
		min.	max.	max.		max.		max.	
TZX2V4	TZX2V4A	2.3	2.5	100	5	5	0.5	50	1
	TZX2V4B	2.4	2.6	100	5	5	0.5	50	1
TZX2V7	TZX2V7A	2.5	2.7	100	5	5	0.5	10	1
	TZX2V7B	2.6	2.8	100	5	5	0.5	10	1
	TZX2V7C	2.7	2.9	100	5	5	0.5	10	1
TZX3V0	TZX3V0A	2.8	3	100	5	5	0.5	6	1
	TZX3V0B	2.9	3.1	100	5	5	0.5	6	1
	TZX3V0C	3	3.2	100	5	5	0.5	6	1
TZX3V3	TZX3V3A	3.1	3.3	100	5	5	1	2	1
	TZX3V3B	3.2	3.4	100	5	5	1	2	1
	TZX3V3C	3.3	3.5	100	5	5	1	2	1
TZX3V6	TZX3V6A	3.4	3.6	100	5	5	1	2	1
	TZX3V6B	3.5	3.7	100	5	5	1	2	1
	TZX3V6C	3.6	3.8	100	5	5	1	2	1
TZX3V9	TZX3V9A	3.7	3.9	100	5	5	1	2	1
	TZX3V9B	3.8	4	100	5	5	1	2	1
	TZX3V9C	3.9	4.1	100	5	5	1	2	1
TZX4V3	TZX4V3A	4	4.2	100	5	5	1.5	1	1
	TZX4V3B	4.1	4.3	100	5	5	1.5	1	1
	TZX4V3C	4.2	4.4	100	5	5	1.5	1	1
	TZX4V3D	4.3	4.5	100	5	5	1.5	1	1
TZX4V7	TZX4V7A	4.4	4.6	100	5	5	2	6	2
	TZX4V7B	4.5	4.7	100	5	5	2	5	2
	TZX4V7C	4.6	4.8	100	5	5	2	4	2
	TZX4V7D	4.7	4.9	100	5	5	2	3	2
TZX5V1	TZX5V1A	4.8	5	100	5	5	2	2	2
	TZX5V1B	4.9	5.1	100	5	5	2	2	2
	TZX5V1C	5	5.2	100	5	5	2	2	2
	TZX5V1D	5.1	5.3	100	5	5	2	2	2
TZX5V6	TZX5V6A	5.2	5.5	40	5	5	2	1	2
	TZX5V6B	5.3	5.6	40	5	5	2	1	2
	TZX5V6C	5.4	5.7	40	5	5	2	1	2
	TZX5V6D	5.5	5.8	40	5	5	2	1	2
	TZX5V6E	5.6	5.9	40	5	5	2	1	2
TZX6V2	TZX6V2A	5.7	6	15	5	1	3	3	4
	TZX6V2B	5.8	6.1	15	5	1	3	3	4
	TZX6V2C	6	6.3	15	5	1	3	3	4
	TZX6V2D	6.1	6.4	15	5	1	3	3	4
	TZX6V2E	6.3	6.6	15	5	1	3	3	4
TZX6V8	TZX6V8A	6.4	6.7	15	5	1	3.5	2	4
	TZX6V8B	6.6	6.9	15	5	1	3.5	2	4
	TZX6V8C	6.7	7	15	5	1	3.5	2	4
	TZX6V8D	6.9	7.2	15	5	1	3.5	2	4



Part number group	Part number	Zener voltage		Dynamic resistance	Test current	Reverse leakage current			
		V _Z at I _Z		r _Z at I _Z	I _Z	I _R	at V _R	I _R ¹⁾	at V _R ¹⁾
		V	V	Ω	mA	μA	V	μA	V
		min.	max.	max.		max.		max.	
TZX7V5	TZX7V5A	7	7.3	15	5	1	5	30	6.65
	TZX7V5B	7.2	7.6	15	5	1	5	30	6.84
	TZX7V5C	7.3	7.7	15	5	1	5	30	6.94
	TZX7V5D	7.5	7.9	15	5	1	5	30	7.13
	TZX7V5X	7.07	7.45	15	5	1	5	30	6.72
TZX8V2	TZX8V2A	7.7	8.1	20	5	1	6.2	0.1	7.32
	TZX8V2B	7.9	8.3	20	5	1	6.2	0.1	7.5
	TZX8V2C	8.1	8.5	20	5	1	6.2	0.1	7.7
	TZX8V2D	8.3	8.7	20	5	1	6.2	0.1	7.98
TZX9V1	TZX9V1A	8.5	8.9	20	5	1	6.8	0.04	8.08
	TZX9V1B	8.7	9.1	20	5	1	6.8	0.04	8.27
	TZX9V1C	8.9	9.3	20	5	1	6.8	0.04	8.46
	TZX9V1D	9.1	9.5	20	5	1	6.8	0.04	8.65
	TZX9V1E	9.3	9.7	20	5	1	6.8	0.04	8.84
TZX10	TZX10A	9.5	9.9	25	5	1	7.5	0.04	9.03
	TZX10B	9.7	10.1	25	5	1	7.5	0.04	9.22
	TZX10C	9.9	10.3	25	5	1	7.5	0.04	9.41
	TZX10D	10.2	10.6	25	5	1	7.5	0.04	9.69
TZX11	TZX11A	10.4	10.8	25	5	1	8.2	0.04	9.88
	TZX11B	10.7	11.1	25	5	1	8.2	0.04	10.2
	TZX11C	10.9	11.3	25	5	1	8.2	0.04	10.4
	TZX11D	11.1	11.6	25	5	1	8.2	0.04	10.5
TZX12	TZX12A	11.4	11.9	35	5	1	9.5	0.04	10.8
	TZX12B	11.6	12.1	35	5	1	9.5	0.04	11
	TZX12C	11.9	12.4	35	5	1	9.5	0.04	11.3
	TZX12D	12.2	12.7	35	5	1	9.5	0.04	11.6
	TZX12X	11.44	12.03	35	5	1	9.5	0.04	10.9
TZX13	TZX13A	12.4	12.9	35	5	1	10	0.04	11.8
	TZX13B	12.6	13.1	35	5	1	10	0.04	12
	TZX13C	12.9	13.4	35	5	1	10	0.04	12.3
TZX14	TZX14A	13.2	13.7	35	5	1	11	0.04	12.5
	TZX14B	13.5	14	35	5	1	11	0.04	12.8
	TZX14C	13.8	14.3	35	5	1	11	0.04	13.1
TZX15	TZX15A	14.1	14.7	40	5	1	11.5	0.04	13.4
	TZX15B	14.5	15.1	40	5	1	11.5	0.04	13.8
	TZX15C	14.9	15.5	40	5	1	11.5	0.04	14.2
	TZX15X	14.35	15.09	40	5	1	11.5	0.04	13.6
TZX16	TZX16A	15.3	15.9	45	5	1	12	0.04	14.5
	TZX16B	15.7	16.5	45	5	1	12	0.04	14.9
	TZX16C	16.3	17.1	45	5	1	12	0.04	15.5
TZX18A	TZX18A	16.9	17.7	55	5	1	13	0.04	16.1
	TZX18B	17.5	18.3	55	5	1	13	0.04	16.6
	TZX18C	18.1	19	55	5	1	13	0.04	17.2
TZX20A	TZX20A	18.8	19.7	60	2	1	15	0.04	17.9
	TZX20B	19.5	20.4	60	2	1	15	0.04	18.5
	TZX20C	20.2	21.2	60	2	1	15	0.04	19.2

Part number group	Part number	Zener voltage		Dynamic resistance	Test current	Reverse leakage current			
		V_Z at I_Z		r_z at I_Z	I_Z	I_R	at V_R	$I_R^{1)}$	at $V_R^{1)}$
		V	V	Ω	mA	μA	V	μA	V
		min.	max.	max.		max.		max.	
TZX22	TZX22A	20.9	21.9	65	2	1	17	0.04	19.9
	TZX22B	21.6	22.6	65	2	1	17	0.04	20.5
	TZX22C	22.3	23.3	65	2	1	17	0.04	21.2
TZX24	TZX24A	22.9	24	70	2	1	19	0.04	21.8
	TZX24B	23.6	24.7	70	2	1	19	0.04	22.4
	TZX24C	24.3	25.5	70	2	1	19	0.04	23.1
	TZX24X	22.61	23.77	70	2	1	19	0.04	21.5
TZX27	TZX27A	25.2	26.6	80	2	1	21	0.04	23.9
	TZX27B	26.2	27.6	80	2	1	21	0.04	24.9
	TZX27C	27.2	28.6	80	2	1	21	0.04	25.8
	TZX27X	26.99	28.39	80	2	1	21	0.04	25.6
TZX30	TZX30A	28.2	29.6	100	2	1	23	0.04	26.8
	TZX30B	29.2	30.6	100	2	1	23	0.04	27.7
	TZX30C	30.2	31.6	100	2	1	23	0.04	28.7
	TZX30X	29.02	30.51	100	2	1	23	0.04	27.6
TZX33	TZX33A	31.2	32.6	120	2	1	25	0.04	29.6
	TZX33B	32.2	33.6	120	2	1	25	0.04	30.6
	TZX33C	33.2	34.5	120	2	1	25	0.04	31.5
TZX36	TZX36A	34.2	35.7	140	2	1	27	0.04	32.5
	TZX36B	35.3	36.8	140	2	1	27	0.04	33.5
	TZX36C	36.4	38	140	2	1	27	0.04	34.6
	TZX36X	35.36	37.19	140	2	1	27	0.04	33.6

¹⁾ Additional measurement

NOTE: Additional measurement of voltage group TZM9V1 to TZX36, I_R at 95 % $V_{Zmin} \leq 40$ nA at $T_j = 25$ °C

Typical Characteristics

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

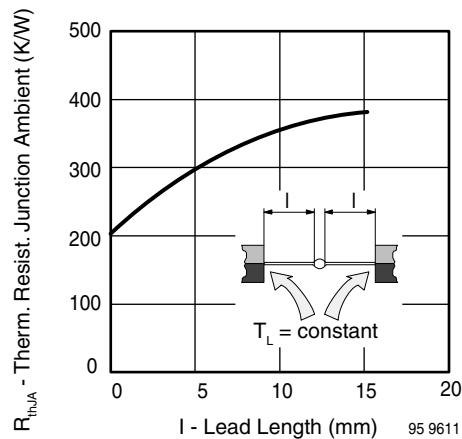


Figure 1. Thermal Resistance vs. Lead Length

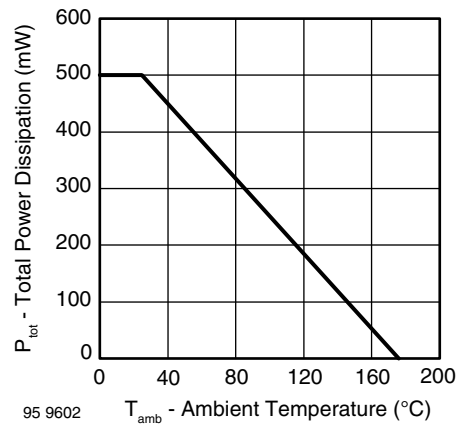


Figure 2. Total Power Dissipation vs. Ambient Temperature

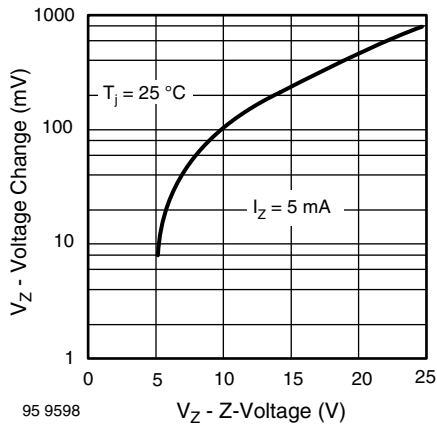


Figure 3. Typical Change of Working Voltage under Operating Conditions at $T_{amb} = 25\text{ }^{\circ}\text{C}$

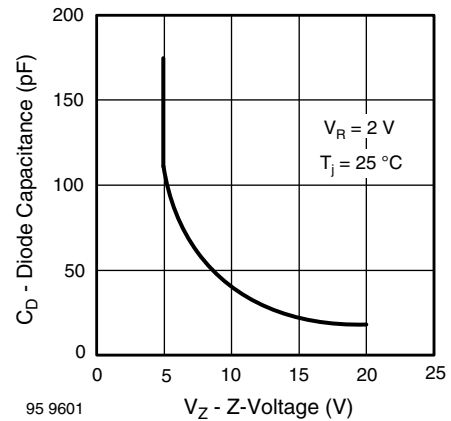


Figure 6. Diode Capacitance vs. Z-Voltage

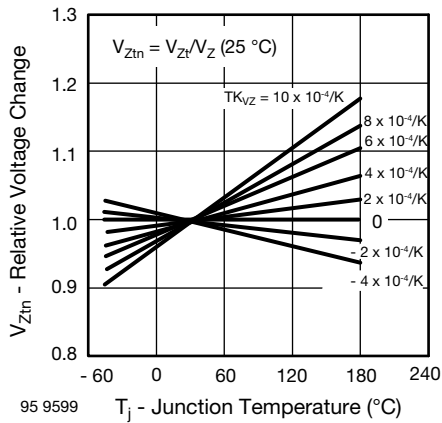


Figure 4. Typical Change of Working Voltage vs. Junction Temperature

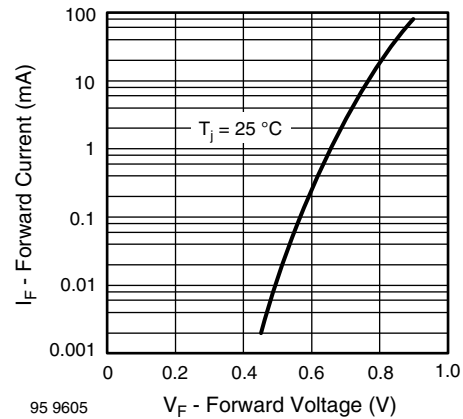


Figure 7. Forward Current vs. Forward Voltage

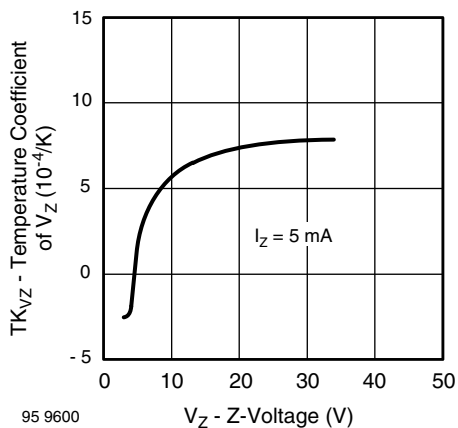


Figure 5. Temperature Coefficient of V_Z vs. Z-Voltage

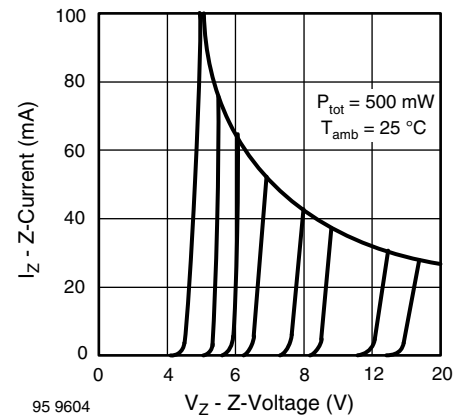


Figure 8. Z-Current vs. Z-Voltage

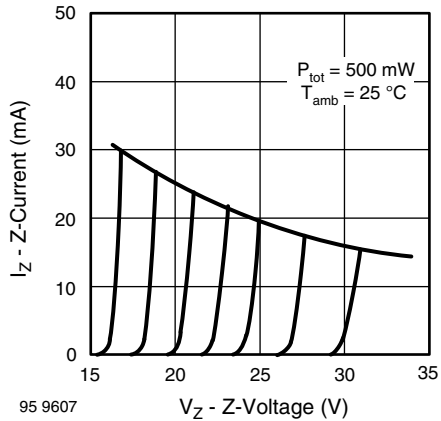


Figure 9. Z-Current vs. Z-Voltage

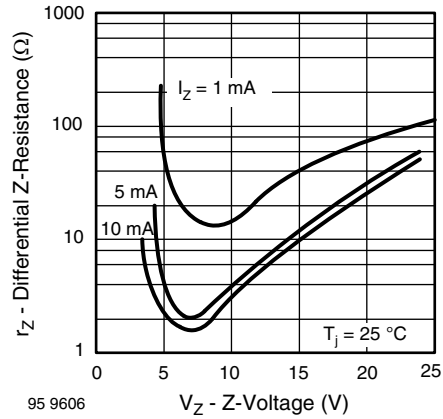


Figure 10. Differential Z-Resistance vs. Z-Voltage

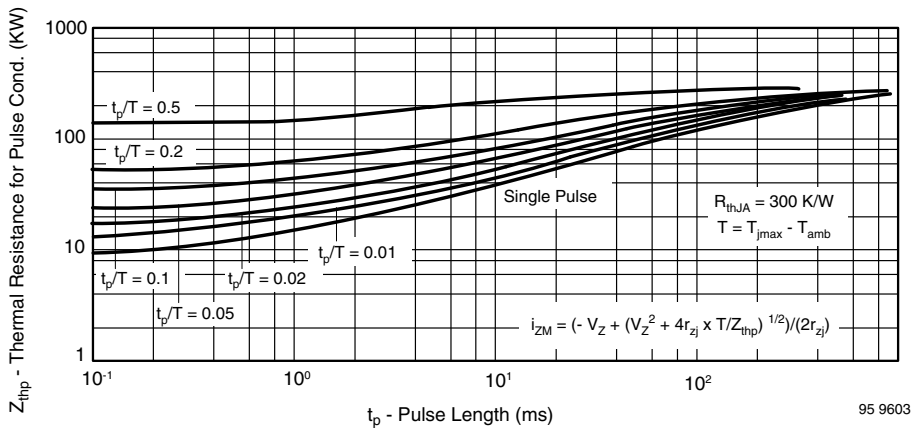
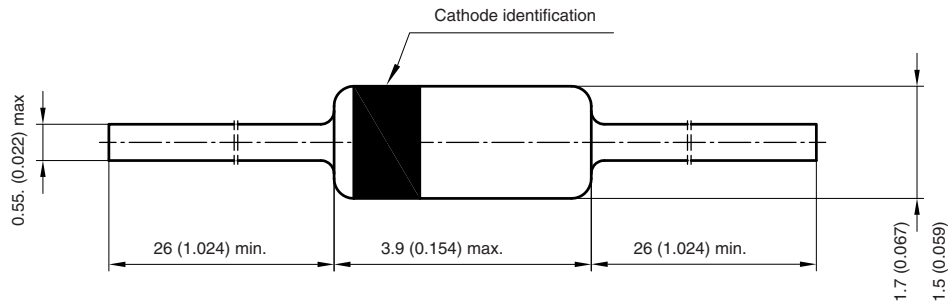


Figure 11. Thermal Response

Package Dimensions in millimeters (inches): DO-35



Rev. 6 - Date: 29. January 2007
 Document no.: 6.560-5004.02-4
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