Z–Diodes

Features

- Very sharp reverse characteristic
- Low reverse current level
- Available with tighter tolerances
- Very high stability
- Low noise
- Silicon Epitaxial Planar
- High reliability

Applications

Voltage stabilization

Order Instruction

Type	Ordering Code	Remarks
TLZ2V4	TLZ2V4–GS08	Tape and Reel (2.500 pcs)
	TLZ2V4–GS18	Tape and Reel (10.000 pcs)

Absolute Maximum Ratings

T_j = 25°C

Parameter	Test Conditions	Type	Symbol	Value	Unit
Power dissipation	$R_{thJA} \leqq$ 300K/W		P_V	500	mW
Z–current			I_Z	P_V/V_Z	mA
Junction temperature			T_j	175	˚C
Storage temperature range			T_{stg}	–65...+175	˚C

Maximum Thermal Resistance

T_j = 25°C

Parameter	Test Conditions	Symbol	Value	Unit
Junction ambient	on PC board 50 mmx50 mmx1.6 mm	R_{thJA}	500	K/W

Electrical Characteristics

T_j = 25°C

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Forward voltage	I_F=200mA		V_F			1.5	V

Type	V_{Zmin}	$V_{Zmax.}$	at I_Z	Z_{Zmax}	at I_Z	$Z_{ZKmax.}$	at I_Z	$I_{Rmax.}$	at V_R	I_{Rmax} [2]	at V_R [2]	Body Mark-ing
	(V)	(V)	(mA)	(Ω)	(mA)	(Ω)	(mA)	(μA)	(V)	(μA)	(V)	
TLZ2V4	2.330	2.630	20	100	20	2000	1	120	1.0	70	0.8	2V4
TLZ2V4A	2.330	2.520	20	100	20	2000	1	120	1.0	70	0.8	2A4
TLZ2V4B	2.430	2.630	20	100	20	2000	1	120	1.0	70	0.8	2B4
TLZ2V7	2.540	2.910	20	100	20	1000	1	100	1.0	70	0.8	2V7
TLZ2V7A	2.540	2.750	20	100	20	1000	1	100	1.0	70	0.8	2A7
TLZ2V7B	2.690	2.910	20	100	20	1000	1	100	1.0	70	0.8	2B7
TLZ3V0	2.850	3.220	20	80	20	1000	1	50	1.0	70	0.8	3V0
TLZ3V0A	2.850	3.070	20	80	20	1000	1	50	1.0	70	0.8	3A0
TLZ3V0B	3.010	3.220	20	80	20	1000	1	50	1.0	20	0.8	3B0
TLZ3V3	3.160	3.530	20	70	20	1000	1	20	1.0	20	0.8	3V3
TLZ3V3A	3.160	3.380	20	70	20	1000	1	20	1.0	20	0.8	3A3
TLZ3V3B	3.320	3.530	20	70	20	1000	1	20	1.0	20	0.8	3B3
TLZ3V6	3.455	3.845	20	60	20	1000	1	10	1.0	6	0.8	3V6
TLZ3V6A	3.455	3.695	20	60	20	1000	1	10	1.0	6	0.8	3A6
TLZ3V6B	3.600	3.845	20	60	20	1000	1	10	1.0	6	0.8	3B6
TLZ3V9	3.74	4.16	20	50	20	1000	1	5	1.0	3	0.8	3V9
TLZ3V9A	3.74	4.01	20	50	20	1000	1	5	1.0	3	0.8	3A9
TLZ3V9B	3.89	4.16	20	50	20	1000	1	5	1.0	3	0.8	3B9
TLZ4V3	4.04	4.57	20	40	20	1000	1	5	1.0	3	0.8	4V3
TLZ4V3A	4.04	4.29	20	40	20	1000	1	5	1.0	3	0.8	4A3
TLZ4V3B	4.17	4.43	20	40	20	1000	1	5	1.0	3	0.8	4B3
TLZ4V3C	4.30	4.57	20	40	20	1000	1	5	1.0	3	0.8	4C3
TLZ4V7	4.44	4.93	20	25	20	900	1	5	1.0	1.5	0.8	4V7
TLZ4V7A	4.44	4.68	20	25	20	900	1	5	1.0	1.5	0.8	4A7
TLZ4V7B	4.55	4.80	20	25	20	900	1	5	1.0	1.5	0.8	4B7
TLZ4V7C	4.68	4.93	20	25	20	900	1	5	1.0	1.5	0.8	4C7
TLZ5V1	4.81	5.37	20	20	20	800	1	5	1.5	0.5	1.0	5V1
TLZ5V1A	4.81	5.07	20	20	20	800	1	5	1.5	0.5	1.0	5A1
TLZ5V1B	4.94	5.20	20	20	20	800	1	5	1.5	0.5	1.0	5B1
TLZ5V1C	5.09	5.37	20	20	20	800	1	5	1.5	0.1	1.0	5C1
TLZ5V6	5.28	5.91	20	13	20	500	1	5	2.5	0.1	1.0	5V6
TLZ5V6A	5.28	5.55	20	13	20	500	1	5	2.5	0.1	1.0	5A6
TLZ5V6B	5.45	5.73	20	13	20	500	1	5	2.5	0.1	1.0	5B6
TLZ5V6C	5.61	5.91	20	13	20	500	1	5	2.5	0.1	1.0	5C6

Type	V_{Zmin}	$V_{Zmax.}$	at I_Z	Z_{Zmax}	at I_Z	$Z_{ZKmax.}$	at I_Z	$I_{Rmax.}$	at V_R	I_{Rmax} [2]	at V_R [2]	Body Mark-ing
	(V)	(V)	(mA)	(Ω)	(mA)	(Ω)	(mA)	(μA)	(V)	(μA)	(V)	
TLZ6V2	5.78	6.44	20	10	20	300	1	5	3.0	0.1	1.0	6V2
TLZ6V2A	5.78	6.09	20	10	20	300	1	5	3.0	0.1	1.0	6A2
TLZ6V2B	5.96	6.27	20	10	20	300	1	5	3.0	0.1	2.0	6B2
TLZ6V2C	6.12	6.44	20	10	20	300	1	5	3.0	0.1	2.0	6C2
TLZ6V8	6.29	7.01	20	8	20	150	0.5	2	3.5	0.1	2.0	6V8
TLZ6V8A	6.29	6.63	20	8	20	150	0.5	2	3.5	0.1	2.0	6A8
TLZ6V8B	6.49	6.83	20	8	20	150	0.5	2	3.5	0.1	3.0	6B8
TLZ6V8C	6.66	7.01	20	8	20	150	0.5	2	3.5	0.1	3.0	6C8
TLZ7V5	6.85	7.67	20	8	20	120	0.5	0.5	4.0	0.1	3.0	7V5
TLZ7V5A	6.85	7.22	20	8	20	120	0.5	0.5	4.0	0.1	3.0	7A5
TLZ7V5B	7.07	7.45	20	8	20	120	0.5	0.5	4.0	0.1	4.0	7B5
TLZ7V5C	7.29	7.67	20	8	20	120	0.5	0.5	4.0	0.1	4.0	7C5
TLZ8V2	7.53	8.45	20	8	20	120	0.5	0.5	5.0	0.1	4.0	8V2
TLZ8V2A	7.53	7.92	20	8	20	120	0.5	0.5	5.0	0.1	4.0	8A2
TLZ8V2B	7.78	8.19	20	8	20	120	0.5	0.5	5.0	0.1	4.0	8B2
TLZ8V2C	8.03	8.45	20	8	20	120	0.5	0.5	5.0	0.1	4.0	8C2
TLZ9V1	8.29	9.30	20	8	20	120	0.5	0.5	6.0	–	–	9V1
TLZ9V1A	8.29	8.73	20	8	20	120	0.5	0.5	6.0	–	–	9A1
TLZ9V1B	8.57	9.01	20	8	20	120	0.5	0.5	6.0	–	–	9B1
TLZ9V1C	8.83	9.30	20	8	20	120	0.5	0.5	6.0	–	–	9C1
TLZ10	9.12	10.44	20	8	20	120	0.5	0.2	7.0	–	–	10
TLZ10A	9.12	9.59	20	8	20	120	0.5	0.2	7.0	–	–	10A
TLZ10B	9.41	9.90	20	8	20	120	0.5	0.2	7.0	–	–	10B
TLZ10C	9.70	10.20	20	8	20	120	0.5	0.2	7.0	–	–	10C
TLZ10D	9.94	10.44	20	8	20	120	0.5	0.2	7.0	–	–	10D
TLZ11	10.18	11.38	10	10	10	120	0.5	0.2	8.0	–	–	11
TLZ11A	10.18	10.71	10	10	10	120	0.5	0.2	8.0	–	–	11A
TLZ11B	10.50	11.05	10	10	10	120	0.5	0.2	8.0	–	–	11B
TLZ11C	10.82	11.38	10	10	10	120	0.5	0.2	8.0	–	–	11C
TLZ12	11.13	12.35	10	12	10	110	0.5	0.2	9.0	–	–	12
TLZ12A	11.13	11.71	10	12	10	110	0.5	0.2	9.0	–	–	12A
TLZ12B	11.44	12.03	10	12	10	110	0.5	0.2	9.0	–	–	12B
TLZ12C	11.74	12.35	10	12	10	110	0.5	0.2	9.0	–	–	12C
TLZ13	12.11	13.66	10	14	10	110	0.5	0.2	10	–	–	13
TLZ13A	12.11	12.75	10	14	10	110	0.5	0.2	10	–	–	13A
TLZ13B	12.55	13.21	10	14	10	110	0.5	0.2	10	–	–	13B
TLZ13C	12.99	13.66	10	14	10	110	0.5	0.2	10	–	–	13C

Type	$V_{Zmin.}$	$V_{Zmax.}$	at I_Z	$Z_{Zmax.}$	at I_Z	$Z_{ZKmax.}$	at I_Z	$I_{Rmax.}$	at V_R	I_{Rmax} 2)	at V_R 2)	Body Mark-ing
	(V)	(V)	(mA)	(Ω)	(mA)	(Ω)	(mA)	(μA)	(V)	(μA)	(V)	
TLZ15	13.44	15.09	10	16	10	110	0.5	0.2	11	–	–	15
TLZ15A	13.44	14.13	10	16	10	110	0.5	0.2	11	–	–	15A
TLZ15B	13.89	14.62	10	16	10	110	0.5	0.2	11	–	–	15B
TLZ15C	14.35	15.09	10	16	10	110	0.5	0.2	11	–	–	15C
TLZ16	14.80	16.51	10	18	10	150	0.5	0.2	12	–	–	16
TLZ16A	14.80	15.57	10	18	10	150	0.5	0.2	12	–	–	16A
TLZ16B	15.25	16.04	10	18	10	150	0.5	0.2	12	–	–	16B
TLZ16C	15.69	16.51	10	18	10	150	0.5	0.2	12	–	–	16C
TLZ18	16.22	18.33	10	23	10	150	0.5	0.2	13	–	–	18
TLZ18A	16.22	17.06	10	23	10	150	0.5	0.2	13	–	–	18A
TLZ18B	16.82	17.70	10	23	10	150	0.5	0.2	13	–	–	18B
TLZ18C	17.42	18.33	10	23	10	150	0.5	0.2	13	–	–	18C
TLZ20	18.02	20.72	10	28	10	200	0.5	0.2	15	–	–	20
TLZ20A	18.02	18.96	10	28	10	200	0.5	0.2	15	–	–	20A
TLZ20B	18.63	19.59	10	28	10	200	0.5	0.2	15	–	–	20B
TLZ20C	19.23	20.22	10	28	10	200	0.5	0.2	15	–	–	20C
TLZ20D	19.72	20.72	10	28	10	200	0.5	0.2	15	–	–	20D
TLZ22	20.15	22.63	5	30	5	200	0.5	0.2	17	–	–	22
TLZ22A	20.15	21.20	5	30	5	200	0.5	0.2	17	–	–	22A
TLZ22B	20.64	21.71	5	30	5	200	0.5	0.2	17	–	–	22B
TLZ22C	21.08	22.17	5	30	5	200	0.5	0.2	17	–	–	22C
TLZ22D	21.52	22.63	5	30	5	200	0.5	0.2	17	–	–	22D
TLZ24	22.05	24.85	5	35	5	200	0.5	0.2	19	–	–	24
TLZ24A	22.05	23.18	5	35	5	200	0.5	0.2	19	–	–	24A
TLZ24B	22.61	23.77	5	35	5	200	0.5	0.2	19	–	–	24B
TLZ24C	23.12	24.31	5	35	5	200	0.5	0.2	19	–	–	24C
TLZ24D	23.63	24.85	5	35	5	200	0.5	0.2	19	–	–	24D
TLZ27	24.26	27.64	5	45	5	250	0.5	0.2	21	–	–	27
TLZ27A	24.26	25.52	5	45	5	250	0.5	0.2	21	–	–	27A
TLZ27B	24.97	26.26	5	45	5	250	0.5	0.2	21	–	–	27B
TLZ27C	25.63	26.95	5	45	5	250	0.5	0.2	21	–	–	27C
TLZ27D	26.29	27.64	5	45	5	250	0.5	0.2	21	–	–	27D
TLZ30	26.99	30.51	5	55	5	250	0.5	0.2	23	–	–	30
TLZ30A	26.99	28.39	5	55	5	250	0.5	0.2	23	–	–	30A
TLZ30B	27.70	29.13	5	55	5	250	0.5	0.2	23	–	–	30B
TLZ30C	28.36	29.82	5	55	5	250	0.5	0.2	23	–	–	30C
TLZ30D	29.02	30.51	5	55	5	250	0.5	0.2	23	–	–	30D

Type	V_{Zmin}	$V_{Zmax.}$	at I_Z	Z_{Zmax}	at I_Z	$Z_{ZKmax.}$	at I_Z	$I_{Rmax.}$	at V_R	I_{Rmax} 2)	at V_R 2)	Body Mark-ing
	(V)	(V)	(mA)	(Ω)	(mA)	(Ω)	(mA)	(μA)	(V)	(μA)	(V)	
TLZ33	29.68	33.11	5	65	5	250	0.5	0.2	25	–	–	33
TLZ33A	29.68	31.22	5	65	5	250	0.5	0.2	25	–	–	33A
TLZ33B	30.32	31.88	5	65	5	250	0.5	0.2	25	–	–	33B
TLZ33C	30.90	32.50	5	65	5	250	0.5	0.2	25	–	–	33C
TLZ33D	31.49	33.11	5	65	5	250	0.5	0.2	25	–	–	33D
TLZ36	32.14	35.77	5	75	5	250	0.5	0.2	27	–	–	36
TLZ36A	32.14	33.79	5	75	5	250	0.5	0.2	27	–	–	36A
TLZ36B	32.79	34.49	5	75	5	250	0.5	0.2	27	–	–	36B
TLZ36C	33.40	35.13	5	75	5	250	0.5	0.2	27	–	–	36C
TLZ36D	34.01	35.77	5	75	5	250	0.5	0.2	27	–	–	36D
TLZ39	34.68	40.80	5	85	5	250	0.5	0.2	30	–	–	39
TLZ39A	34.68	36.47	5	85	5	250	0.5	0.2	30	–	–	39A
TLZ39B	35.36	37.19	5	85	5	250	0.5	0.2	30	–	–	39B
TLZ39C	36.00	37.85	5	85	5	250	0.5	0.2	30	–	–	39C
TLZ39D	36.63	38.52	5	85	5	250	0.5	0.2	30	–	–	39D
TLZ39E	37.36	39.29	5	85	5	250	0.5	0.2	30	–	–	39E
TLZ39F	38.14	40.11	5	85	5	250	0.5	0.2	30	–	–	39F
TLZ39G	38.94	40.80	5	85	5	250	0.5	0.2	30	–	–	39G
TLZ43	40.00	45.00	5	90	5	–	–	0.2	33	–	–	43
TLZ47	44.00	49.00	5	90	5	–	–	0.2	36	–	–	47
TLZ51	48.00	54.00	5	100	5	–	–	0.2	39	–	–	51
TLZ56	53.00	60.00	5	100	5	–	–	0.2	43	–	–	56

2) Additional measurement

Please note: Additional measurement of voltage group 9V1 to 75 I_R at 95 % V_{Zmin} = < 35 nA at T_j 25 °C

Characteristics (T_j = 25°C unless otherwise specified)

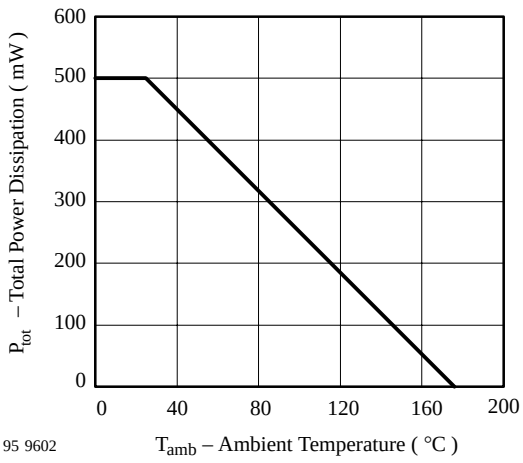


Figure 1. Total Power Dissipation vs. Ambient Temperature

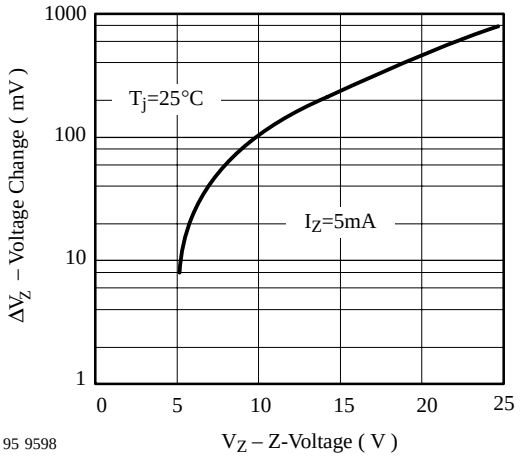


Figure 2. Typical Change of Working Voltage under Operating Conditions at T_{amb}=25°C

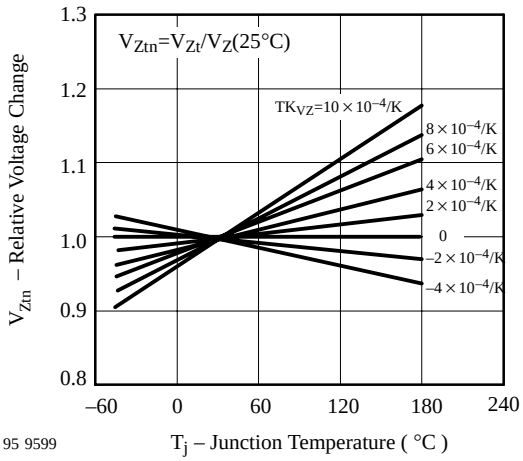


Figure 3. Typical Change of Working Voltage vs. Junction Temperature

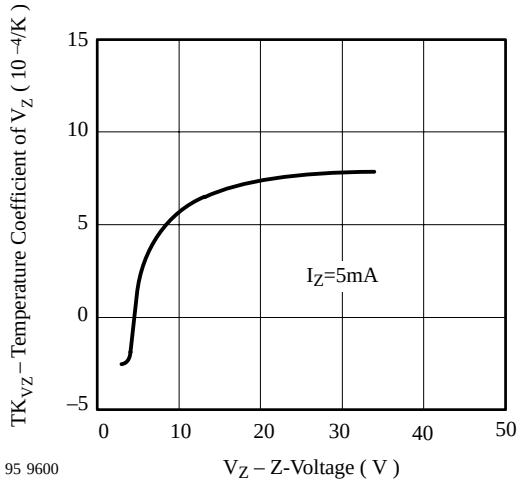


Figure 4. Temperature Coefficient of Vz vs. Z–Voltage

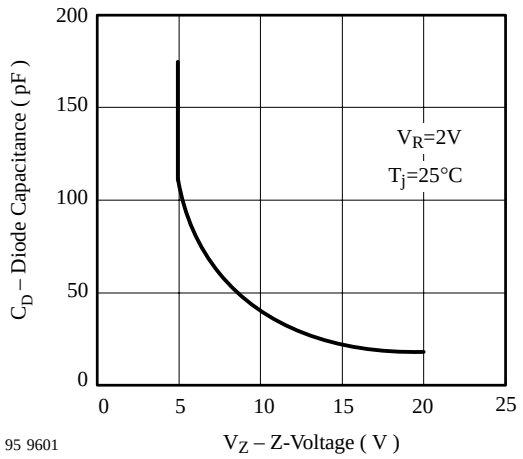


Figure 5. Diode Capacitance vs. Z–Voltage

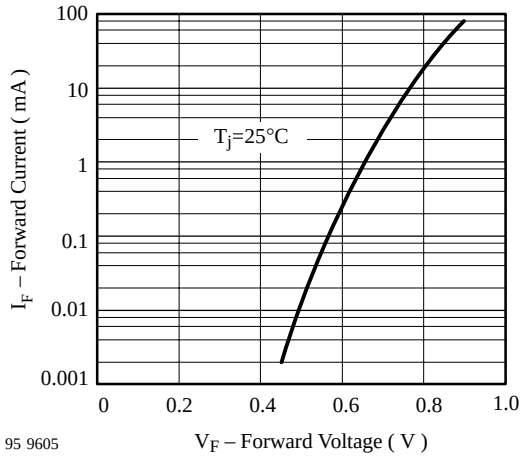


Figure 6. Forward Current vs. Forward Voltage

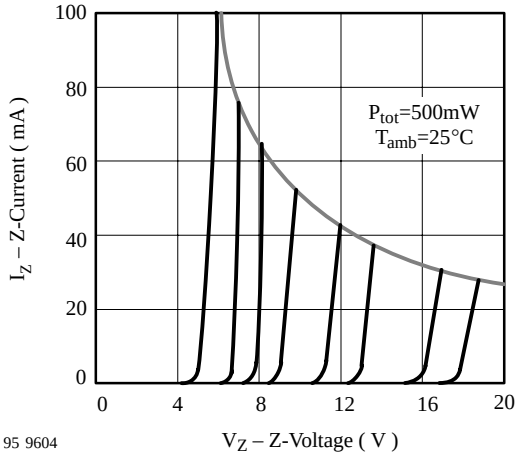


Figure 7. Z–Current vs. Z–Voltage

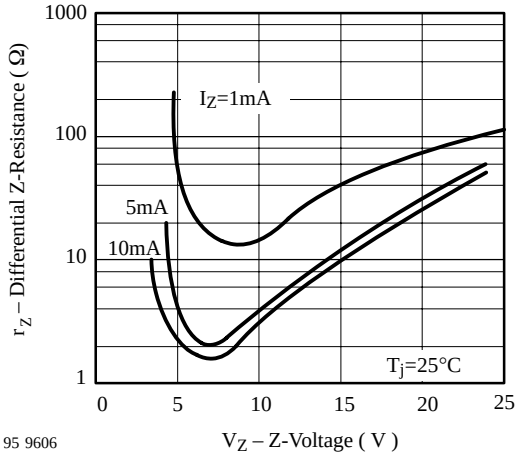


Figure 9. Differential Z–Resistance vs. Z–Voltage

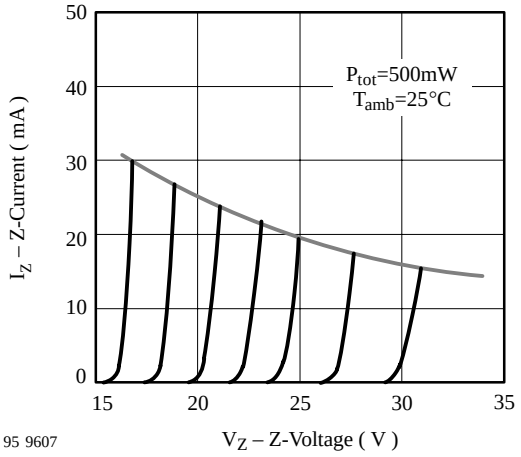


Figure 8. Z–Current vs. Z–Voltage

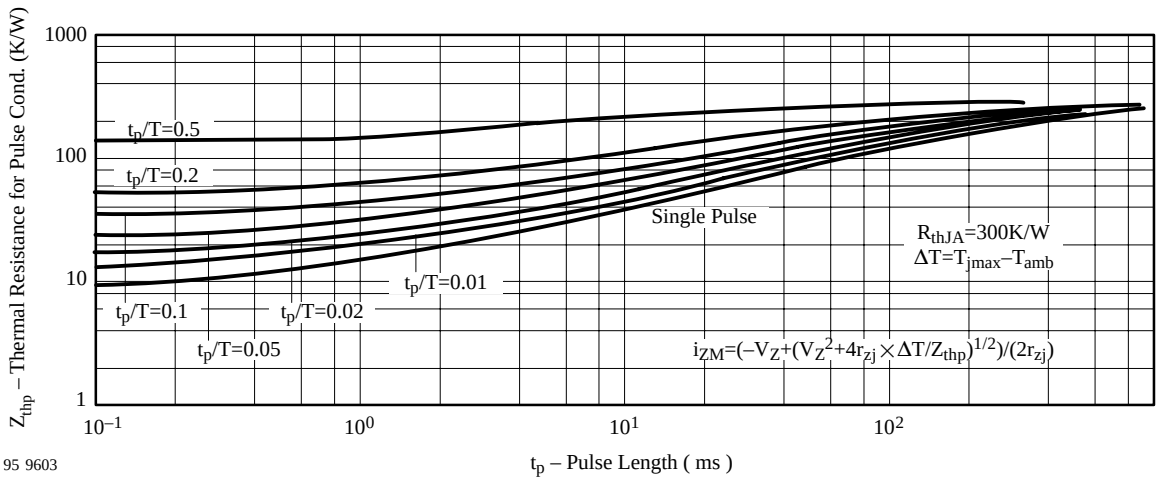
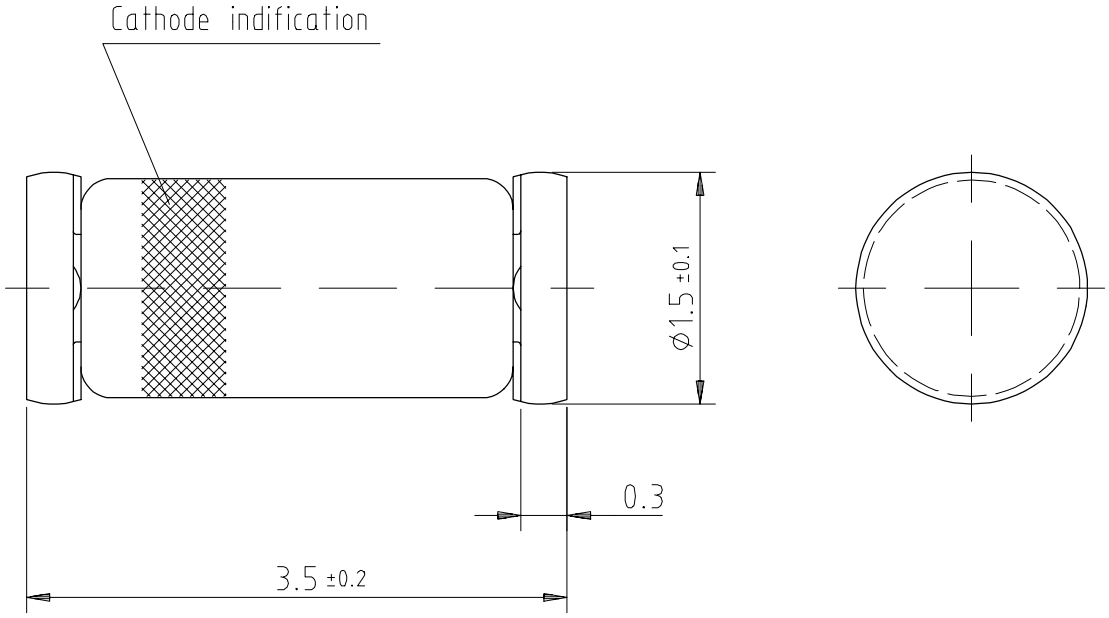


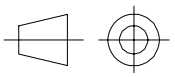
Figure 10. Thermal Response

Dimensions in mm



Glass case
Mini MELF / SOD 80
JEDEC DO 213 AA

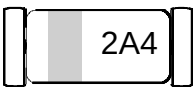
96 12070

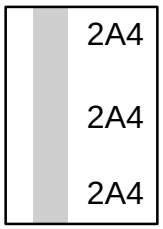


technical drawings
according to DIN
specifications

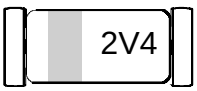
Marking Voltage Group

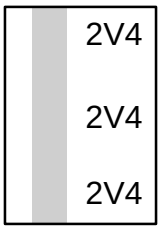
TLZ2V4A





TLZ2V4





Remark: The Zener voltage TLZ2V4 or Zener voltage group TLZ2V4A is printet with max 3 digits 3 times on the surface. The marking should be readable at minimum 2 times. The third print is allowed to be incomplete due to tolerances in Diameter of the glassbody.

Ozone Depleting Substances Policy Statement

It is the policy of **Vishay Semiconductor GmbH** to

1. Meet all present and future national and international statutory requirements.

2. Regularly and continuously improve the performance of our products, processes, distribution and operating systems with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

Vishay Semiconductor GmbH has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively

2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA

3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

Vishay Semiconductor GmbH can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.

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