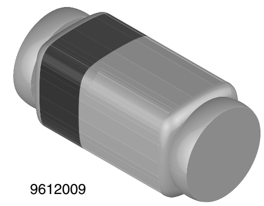
Small Signal Zener Diodes

Features

- Very sharp reverse characteristic
- Low reverse current level
- Very high stability
- Low noise
- High reliability
- Lead (Pb)-free component
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



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Applications

- Voltage stabilization

Mechanical Data

Case: QuadroMELF glass case SOD80
Weight: approx. 34 mg
Cathode band color: black
Packaging codes/options:
GS18/10 k per 13" reel (8 mm tape), 10 k/box
GS08/2.5 k per 7" reel (8 mm tape), 12.5 k/box

Absolute Maximum Ratings

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

Parameter	Test condition	Symbol	Value	Unit
Power dissipation	$R_{thJA} \leq$ 300 K/W	P_{tot}	500	mW
Z-current		I_Z	P_{tot}/V_Z	mA
Junction temperature		T_j	175	°C
Storage temperature range		T_{stg}	- 65 to + 175	°C

Thermal Characteristics

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

Parameter	Test condition	Symbol	Value	Unit
Junction to ambient air	on PC board 50 mm x 50 mm x 1.6 mm	R_{thJA}	500	K/W

Electrical Characteristics

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

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	I_F = 200 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_{ZT}		Z_Z at I_{ZT}	Z_{ZK} at I_{ZK}	I_{ZT}	I_{ZK}	I_R at V_R	
		V	V	Ω	Ω	mA	mA	µA	V
		min	max	max	max			max	
VLZ2V4	VLZ2V4A	2.33	2.52	100	2000	20	1	70	1
	VLZ2V4B	2.43	2.63	100	2000	20	1	70	1
VLZ2V7	VLZ2V7A	2.54	2.75	100	1000	20	1	50	1
	VLZ2V7B	2.69	2.91	100	1000	20	1	50	1
VLZ3V0	VLZ3V0A	2.85	3.07	80	1000	20	1	50	1
	VLZ3V0B	3.01	3.22	80	1000	20	1	10	1
VLZ3V3	VLZ3V3A	3.16	3.38	70	1000	20	1	10	1
	VLZ3V3B	3.32	3.53	70	1000	20	1	10	1
VLZ3V6	VLZ3V6A	3.455	3.695	60	1000	20	1	5	1
	VLZ3V6B	3.6	3.845	60	1000	20	1	5	1
VLZ3V9	VLZ3V9A	3.74	4.01	50	1000	20	1	3	1
	VLZ3V9B	3.89	4.16	50	1000	20	1	3	1
VLZ4V3	VLZ4V3A	4.04	4.29	40	1000	20	1	3	1
	VLZ4V3B	4.17	4.43	40	1000	20	1	3	1
	VLZ4V3C	4.3	4.57	40	1000	20	1	3	1
VLZ4V7	VLZ4V7A	4.44	4.68	25	900	20	1	10	2
	VLZ4V7B	4.55	4.8	25	900	20	1	6	2
	VLZ4V7C	4.68	4.93	25	900	20	1	3	2
VLZ5V1	VLZ5V1A	4.81	5.07	20	800	20	1	2	2
	VLZ5V1B	4.94	5.2	20	800	20	1	2	2
	VLZ5V1C	5.09	5.37	20	800	20	1	2	2
VLZ5V6	VLZ5V6A	5.28	5.55	13	500	20	1	1	2
	VLZ5V6B	5.45	5.73	13	500	20	1	1	2
	VLZ5V6C	5.61	5.91	13	500	20	1	1	2
VLZ6V2	VLZ6V2A	5.78	6.09	10	300	20	1	3	4
	VLZ6V2B	5.96	6.27	10	300	20	1	3	4
	VLZ6V2C	6.12	6.44	10	300	20	1	3	4
VLZ6V8	VLZ6V8A	6.29	6.63	8	150	20	0.5	2	4
	VLZ6V8B	6.49	6.83	8	150	20	0.5	2	4
	VLZ6V8C	6.66	7.01	8	150	20	0.5	2	4
VLZ7V5	VLZ7V5A	6.85	7.22	8	120	20	0.5	3	6.5
	VLZ7V5B	7.07	7.45	8	120	20	0.5	3	6.73
	VLZ7V5C	7.29	7.67	8	120	20	0.5	3	6.93
VLZ8V2	VLZ8V2A	7.53	7.92	8	120	20	0.5	7.5	7.15
	VLZ8V2B	7.78	8.19	8	120	20	0.5	7.5	7.39
	VLZ8V2C	8.03	8.45	8	120	20	0.5	7.5	7.63
VLZ9V1	VLZ9V1A	8.29	8.73	8	120	20	0.5	0.04	7.88
	VLZ9V1B	8.57	9.01	8	120	20	0.5	0.04	8.14
	VLZ9V1C	8.83	9.3	8	120	20	0.5	0.04	8.39
VLZ10	VLZ10A	9.12	9.59	8	120	20	0.5	0.04	8.66
	VLZ10B	9.41	9.9	8	120	20	0.5	0.04	8.94
	VLZ10C	9.7	10.2	8	120	20	0.5	0.04	9.22
	VLZ10D	9.94	10.44	8	120	20	0.5	0.04	9.44
VLZ11	VLZ11A	10.18	10.71	10	120	10	0.5	0.04	9.67
	VLZ11B	10.5	11.05	10	120	10	0.5	0.04	9.98
	VLZ11C	10.82	11.38	10	120	10	0.5	0.04	10.28

Part-number-group	Part-number	Zener Voltage		Dynamic Resistance		Test Current		Reverse Leakage Current	
		V_Z at I_{ZT}		Z_Z at I_{ZT}	Z_{ZK} at I_{ZK}	I_{ZT}	I_{ZK}	I_R at V_R	
		V	V	Ω	Ω	mA	mA	µA	V
		min	max	max	max			max	
VLZ12	VLZ12A	11.13	11.71	12	110	10	0.5	0.04	10.6
	VLZ12B	11.44	12.03	12	110	10	0.5	0.04	10.9
	VLZ12C	11.74	12.35	12	110	10	0.5	0.04	11.2
VLZ13	VLZ13A	12.11	12.75	14	110	10	0.5	0.04	11.5
	VLZ13B	12.55	13.21	14	110	10	0.5	0.04	11.9
	VLZ13C	12.99	13.66	14	110	10	0.5	0.04	12.3
VLZ15	VLZ15A	13.44	14.13	16	110	10	0.5	0.04	12.8
	VLZ15B	13.89	14.62	16	110	10	0.5	0.04	13.2
	VLZ15C	14.35	15.09	16	110	10	0.5	0.04	13.6
VLZ16	VLZ16A	14.8	15.57	18	150	10	0.5	0.04	14.1
	VLZ16B	15.25	16.04	18	150	10	0.5	0.04	14.5
	VLZ16C	15.69	16.51	18	150	10	0.5	0.04	14.9
VLZ18	VLZ18A	16.22	17.06	23	150	10	0.5	0.04	15.4
	VLZ18B	16.82	17.7	23	150	10	0.5	0.04	16
	VLZ18C	17.42	18.33	23	150	10	0.5	0.04	16.5
VLZ20	VLZ20A	18.02	18.96	28	200	10	0.5	0.04	17.1
	VLZ20B	18.63	19.59	28	200	10	0.5	0.04	17.7
	VLZ20C	19.23	20.22	28	200	10	0.5	0.04	18.3
	VLZ20D	19.72	20.72	28	200	10	0.5	0.04	18.7
VLZ22	VLZ22A	20.15	21.2	30	200	5	0.5	0.04	19.1
	VLZ22B	20.64	21.71	30	200	5	0.5	0.04	19.6
	VLZ22C	21.08	22.17	30	200	5	0.5	0.04	20
	VLZ22D	21.52	22.63	30	200	5	0.5	0.04	20.4
VLZ24	VLZ24A	22.05	23.18	35	200	5	0.5	0.04	20.9
	VLZ24B	22.61	23.77	35	200	5	0.5	0.04	21.5
	VLZ24C	23.12	24.31	35	200	5	0.5	0.04	22
	VLZ24D	23.63	24.85	35	200	5	0.5	0.04	22.4
VLZ27	VLZ27A	24.26	25.52	45	250	5	0.5	0.04	23
	VLZ27B	24.97	26.26	45	250	5	0.5	0.04	23.7
	VLZ27C	25.63	26.95	45	250	5	0.5	0.04	24.3
	VLZ27D	26.29	27.64	45	250	5	0.5	0.04	25
VLZ30	VLZ30A	26.99	28.39	55	250	5	0.5	0.04	25.6
	VLZ30B	27.7	29.13	55	250	5	0.5	0.04	26.3
	VLZ30C	28.36	29.82	55	250	5	0.5	0.04	26.9
	VLZ30D	29.02	30.51	55	250	5	0.5	0.04	27.6
VLZ33	VLZ33A	29.68	31.22	65	250	5	0.5	0.04	28.2
	VLZ33B	30.32	31.88	65	250	5	0.5	0.04	28.8
	VLZ33C	30.9	32.5	65	250	5	0.5	0.04	29.4
	VLZ33D	31.49	33.11	65	250	5	0.5	0.04	29.9
VLZ36	VLZ36A	32.14	33.79	75	250	5	0.5	0.04	30.5
	VLZ36B	32.79	34.49	75	250	5	0.5	0.04	31.2
	VLZ36C	33.4	35.13	75	250	5	0.5	0.04	31.7
	VLZ36D	34.01	35.77	75	250	5	0.5	0.04	32.3

Part-number-group	Part-number	Zener Voltage		Dynamic Resistance		Test Current		Reverse Leakage Current	
		V_Z at I_{ZT}		Z_Z at I_{ZT}	Z_{ZK} at I_{ZK}	I_{ZT}	I_{ZK}	I_R at V_R	
		V	V	Ω	Ω	mA	mA	µA	V
		min	max	max	max			max	
VLZ39	VLZ39A	34.68	36.47	85	250	5	0.5	0.04	32.9
	VLZ39B	35.36	37.19	85	250	5	0.5	0.04	33.6
	VLZ39C	36	37.85	85	250	5	0.5	0.04	34.2
	VLZ39D	36.63	38.52	85	250	5	0.5	0.04	34.8
	VLZ39E	37.36	39.29	85	250	5	0.5	0.04	35.5
	VLZ39F	38.14	40.11	85	250	5	0.5	0.04	36.2
	VLZ39G	38.94	40.8	85	250	5	0.5	0.04	37
VLZ43	VLZ43	40	45	90	-	5	-	0.04	38
VLZ47	VLZ47	44	49	90	-	5	-	0.04	41.8
VLZ51	VLZ51	48	54	100	-	5	-	0.04	45.6
VLZ56	VLZ56	53	60	100	-	5	-	0.04	50.4

Typical Characteristics

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

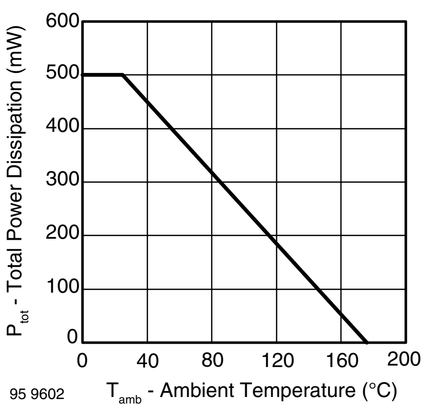


Figure 1. Total Power Dissipation vs. Ambient Temperature

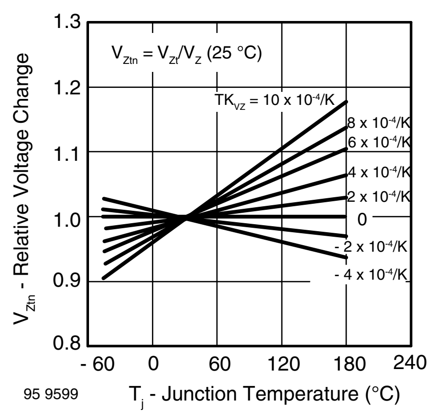


Figure 3. Typical Change of Working Voltage vs. Junction Temperature

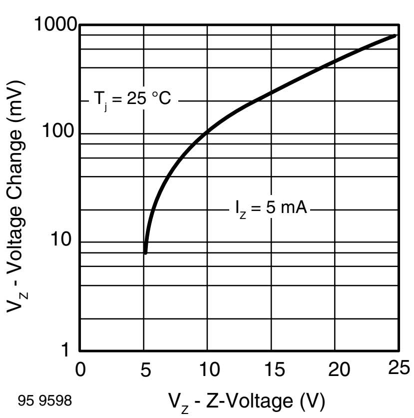


Figure 2. Typical Change of Working Voltage under Operating Conditions at T_{amb} = 25°C

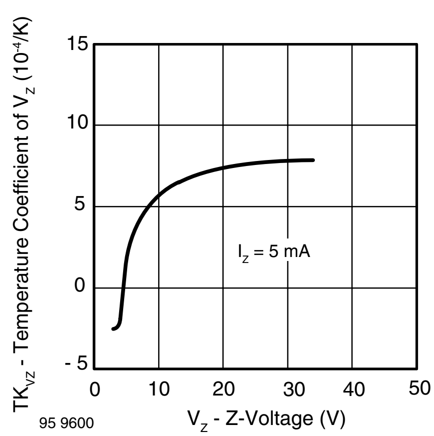


Figure 4. Temperature Coefficient of Vz vs. Z-Voltage

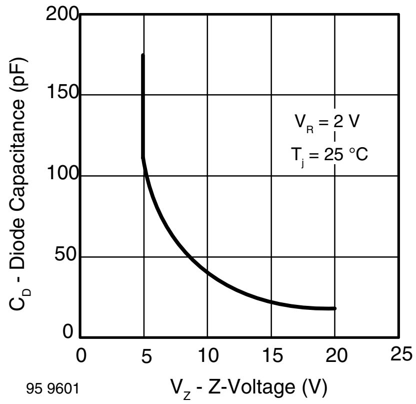


Figure 5. Diode Capacitance vs. Z-Voltage

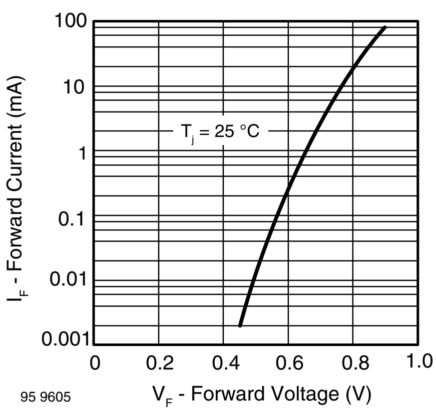


Figure 6. Forward Current vs. Forward Voltage

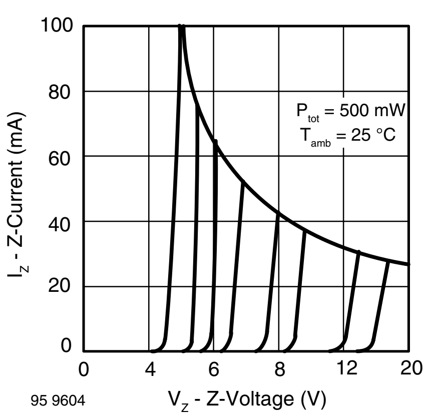


Figure 7. Z-Current vs. Z-Voltage

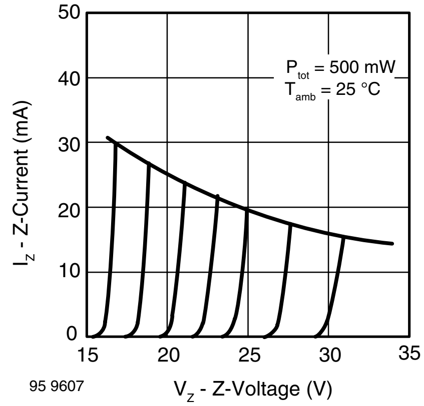


Figure 8. Z-Current vs. Z-Voltage

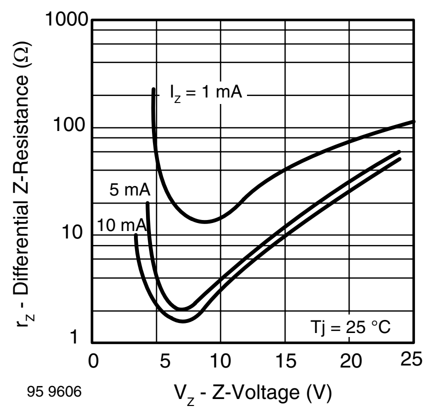


Figure 9. Differential Z-Resistance vs. Z-Voltage

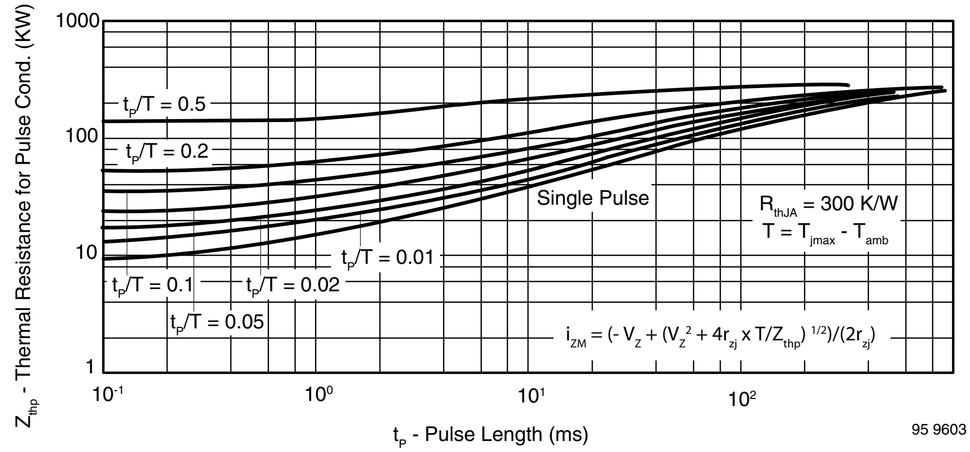
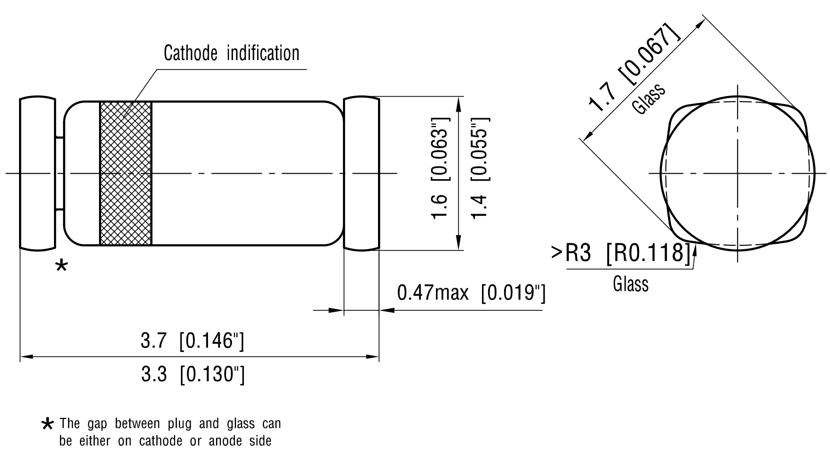
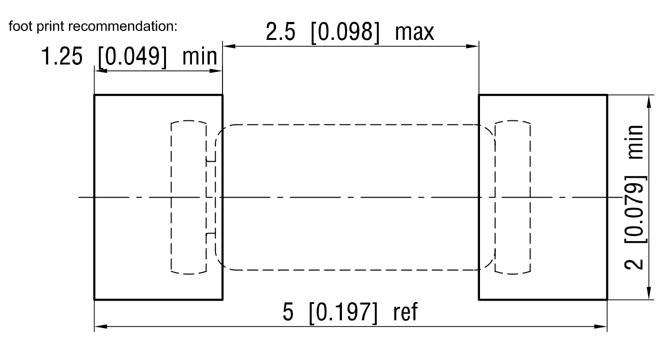


Figure 10. Thermal Response

Package Dimensions in millimeters (inches): QuadroMELF SOD80





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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.

Vishay Semiconductor GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany

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