

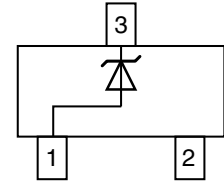
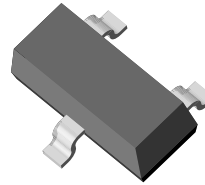
## Small Signal Zener Diodes

### Features

- Silicon planar Zener diodes.
- Standard Zener voltage tolerance is  $\pm 5\%$ . Other tolerances are available upon request.
- These diodes are also available in DO-35 case with the type designation 1N4681 to 1N4717 and SOD-123 case with the type designation MMSZ4681-V to MMSZ4717-V
- AEC-Q101 qualified
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC



**RoHS**  
COMPLIANT



18078

### Mechanical Data

**Case:** SOT-23

**Weight:** approx. 8.8 mg

**Terminals:** solderable per MIL-STD-750, method 2026

#### Packaging codes/options:

GS18/10 k per 13" reel (8 mm tape), 10 k/box

GS08/3 k per 7" reel (8 mm tape), 15 k/box

### Absolute Maximum Ratings

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

Parameter	Test conditions	Symbol	Value	Unit
Zener current (see table "Characteristics")				
Power dissipation		$P_{tot}$	350 <sup>1)</sup>	mW

#### Note

<sup>1)</sup> On FR - 5 board using recommended solder pad layout.

### Thermal Characteristics

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

Parameter	Test conditions	Symbol	Value	Unit
Thermal resistance junction to ambient air		$R_{thJA}$	420 <sup>1)</sup>	K/W
Maximum junction temperature		$T_j$	150	$^{\circ}\text{C}$
Storage temperature range		$T_{stg}$	- 55 to + 150	$^{\circ}\text{C}$

#### Note

<sup>1)</sup> On FR - 5 board using recommended solder pad layout.

# MMBZ4681-V to MMBZ4717-V



Vishay Semiconductors

## Electrical Characteristics

Maximum  $V_F = 0.9$  V, at  $I_F = 10$  mA

Part number	Marking code	Zener voltage <sup>1)</sup>			Max. reverse current	Reverse voltage	Max. voltage change
		$V_Z$ at $I_{ZT} = 50$ $\mu$ A					
		V			$\mu$ A	V	V
		typ.	min.	max.			
MMBZ4681-V	CF	2.4	2.28	2.52	2	1	0.80
MMBZ4682-V	CH	2.7	2.57	2.84	1	1	0.85
MMBZ4683-V	CJ	3	2.85	3.15	0.8	1	0.90
MMBZ4684-V	CK	3.3	3.14	3.47	7.5	1.5	0.95
MMBZ4685-V	CM	3.6	3.42	3.78	7.5	2	0.95
MMBZ4686-V	CN	3.9	3.71	4.10	5	2	0.97
MMBZ4687-V	CP	4.3	4.09	4.52	4	2	0.99
MMBZ4688-V	CT	4.7	4.47	4.94	10	3	0.99
MMBZ4689-V	CU	5.1	4.85	5.36	10	3	0.97
MMBZ4690-V	CV	5.6	5.32	5.88	10	4	0.96
MMBZ4691-V	CA	6.2	5.89	6.51	10	5	0.95
MMBZ4692-V	CX	6.8	6.46	7.14	10	5.1	0.90
MMBZ4693-V	CY	7.5	7.13	7.88	10	5.7	0.75
MMBZ4694-V	CZ	8.2	7.79	8.61	1	6.2	0.5
MMBZ4695-V	DC	8.7	8.27	9.14	1	6.6	0.1
MMBZ4696-V	DD	9.1	8.65	9.56	1	6.9	0.08
MMBZ4697-V	DE	10	9.50	10.5	1	7.6	0.1
MMBZ4698-V	DF	11	10.50	11.6	0.05	8.4	0.11
MMBZ4699-V	DH	12	11.40	12.6	0.05	9.1	0.12
MMBZ4700-V	DJ	13	12.40	13.7	0.05	9.8	0.13
MMBZ4701-V	DK	14	13.30	14.7	0.05	10.6	0.14
MMBZ4702-V	DM	15	14.30	15.8	0.05	11.4	0.15
MMBZ4703-V	DN	16	15.20	16.8	0.05	12.1	0.16
MMBZ4704-V	DP	17	16.20	17.9	0.05	12.9	0.17
MMBZ4705-V	DT	18	17.10	18.9	0.05	13.6	0.18
MMBZ4706-V	DU	19	18.10	20	0.05	14.4	0.19
MMBZ4707-V	DV	20	19.00	21	0.01	15.2	0.2
MMBZ4708-V	DA	22	20.90	23.1	0.01	16.7	0.22
MMBZ4709-V	DZ	24	22.80	25.2	0.01	18.2	0.24
MMBZ4710-V	DY	25	23.80	26.3	0.01	19	0.25
MMBZ4711-V	EA	27	25.70	28.4	0.01	20.4	0.27
MMBZ4712-V	EC	28	26.60	29.4	0.01	21.2	0.28
MMBZ4713-V	ED	30	28.50	31.5	0.01	22.8	0.3
MMBZ4714-V	EE	33	31.40	34.7	0.01	25	0.33
MMBZ4715-V	EF	36	34.20	37.8	0.01	27.3	0.36
MMBZ4716-V	EH	39	37.10	41	0.01	29.6	0.39
MMBZ4717-V	EJ	43	40.90	45.2	0.01	32.6	0.43

### Notes

<sup>1)</sup> Tested with pulse test current

<sup>2)</sup> Maximum voltage change ( $V_Z$ ). Voltage change is equal to the difference between  $V_Z$  at 100  $\mu$ A and  $V_Z$  at 10  $\mu$ A.

## Typical Characteristics ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

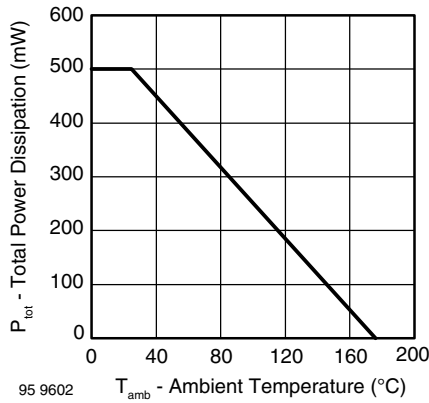


Figure 1. Total Power Dissipation vs. Ambient Temperature

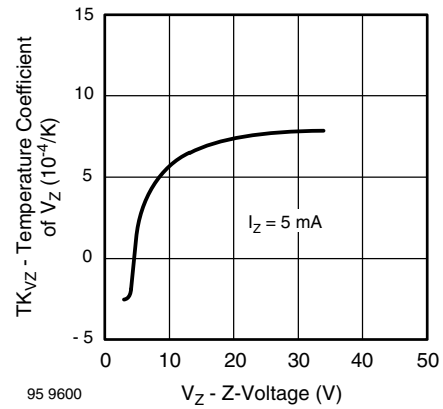


Figure 4. Temperature Coefficient of  $V_Z$  vs. Z-Voltage

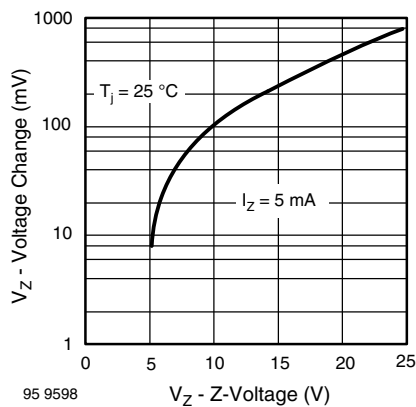


Figure 2. Typical Change of Working Voltage under Operating Conditions at  $T_{amb} = 25\text{ }^{\circ}\text{C}$

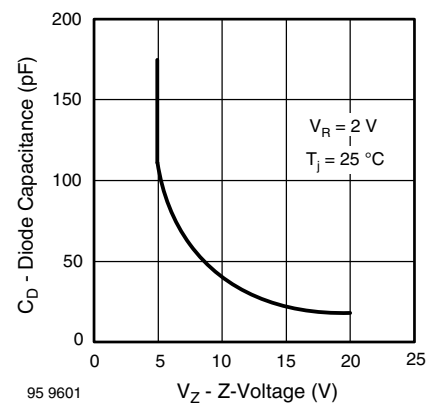


Figure 5. Diode Capacitance vs. Z-Voltage

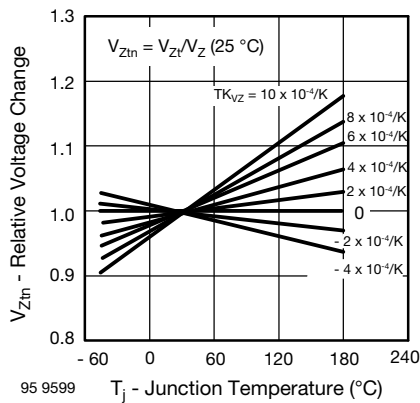


Figure 3. Typical Change of Working Voltage vs. Junction Temperature

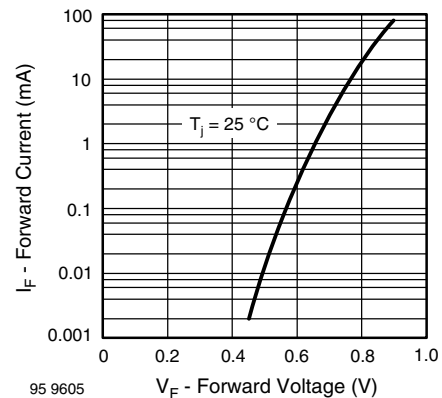


Figure 6. Forward Current vs. Forward Voltage

# MMBZ4681-V to MMBZ4717-V



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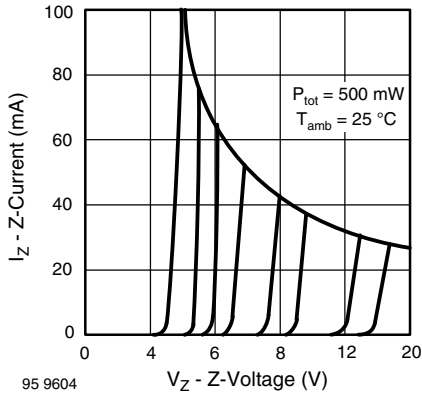


Figure 7. Z-Current vs. Z-Voltage

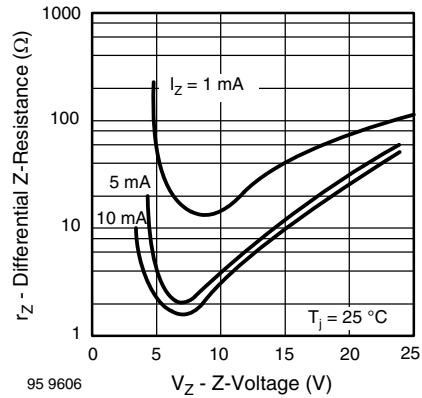


Figure 9. Differential Z-Resistance vs. Z-Voltage

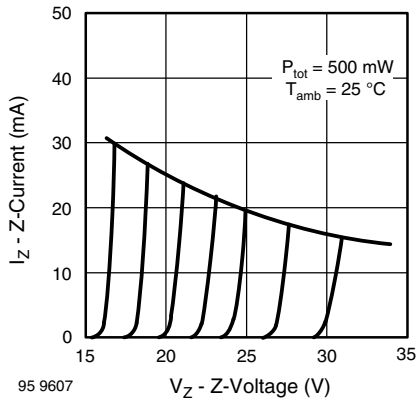


Figure 8. Z-Current vs. Z-Voltage

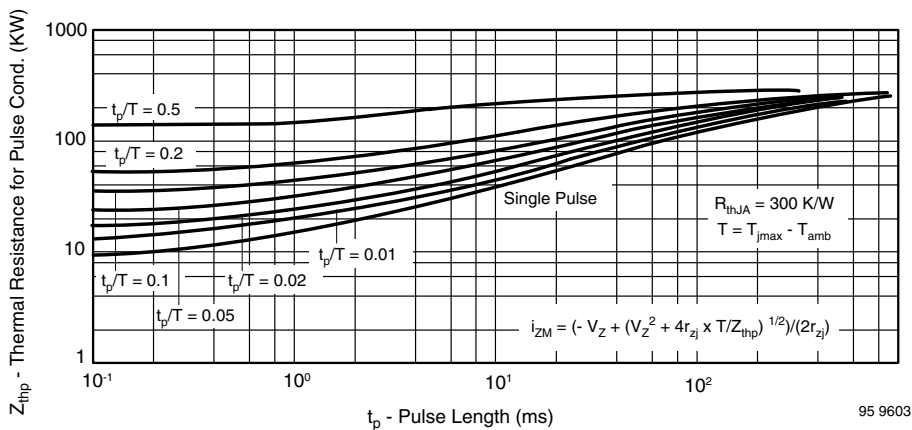
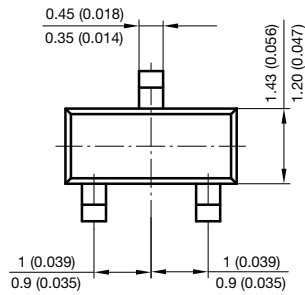
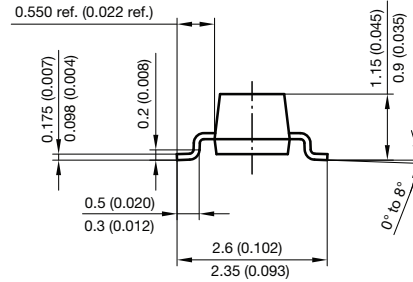
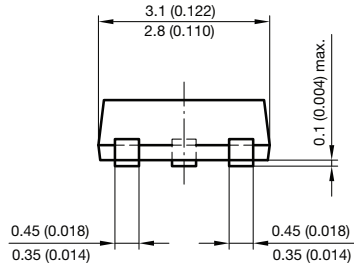
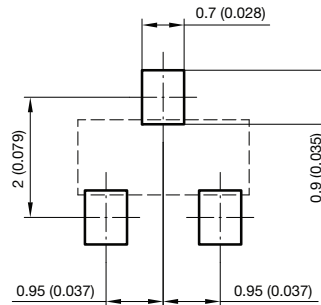


Figure 10. Thermal Response

## Package Dimensions in millimeters (inches): SOT-23



Foot print recommendation:



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## Disclaimer

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