

## Small Signal Zener Diodes



### FEATURES

- Silicon planar Zener diodes
- Standard Zener voltage tolerance is  $\pm 5\%$
- High temperature soldering guaranteed:  
260 °C/4 x 10 s set terminals
- These diodes are also available in DO-35 case with the type designation 1N4681 to 1N4717, and SOT-23 case with type designation MMBZ4681-V to MMBZ4717-V
- AEC-Q101 qualified
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC


**RoHS**  
COMPLIANT

PRIMARY CHARACTERISTICS		
PARAMETER	VALUE	UNIT
$V_Z$ range nom.	2.4 to 43	V
Test current $I_{ZT}$	0.05	mA
$V_Z$ specification	Thermal equilibrium	
Int. construction	Single	

ORDERING INFORMATION			
DEVICE NAME	ORDERING CODE	TAPED UNITS PER REEL	MINIMUM ORDER QUANTITY
MMSZ4681-V to MMSZ4717-V	MMSZ4681-V to MMSZ4717-V-series-GS18	10 000 (8 mm tape on 13" reel)	10 000/box
MMSZ4681-V to MMSZ4717-V	MMSZ4681-V to MMSZ4717-V-series-GS08	3000 (8 mm tape on 7" reel)	15 000/box

PACKAGE				
PACKAGE NAME	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
SOD-123	10.3 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	260 °C/10 s at terminals

ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25\text{ °C}$ , unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Power dissipation	$T_L = 75\text{ °C}$ , on FR - 4 or FR - 5 board with minimum recommended solder pad layout	$P_{tot}$	500	mW
Zener current	See table "Characteristics"			
Junction to ambient air	On FR - 4 or FR - 5 board with minimum recommended solder pad layout	$R_{thJA}$	340	K/W
Junction temperature		$T_j$	150	°C
Storage temperature range		$T_{stg}$	- 55 to + 150	°C



ELECTRICAL CHARACTERISTICS ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)							
PART NUMBER	MARKING CODE	ZENER VOLTAGE RANGE <sup>(1)</sup>			TEST CURRENT	REVERSE CURRENT	
		$V_Z$ at $I_{ZT1}$			$I_{ZT1}$	$I_R$ at $V_R$	
		V			mA	$\mu\text{A}$	V
		MIN.	NOM.	MAX.		MAX.	
MMSZ4681-V	CF	2.28	2.4	2.52	0.05	2	1
MMSZ4682-V	CH	2.57	2.7	2.84	0.05	1	1
MMSZ4683-V	CJ	2.85	3	3.15	0.05	0.8	1
MMSZ4684-V	CK	3.14	3.3	3.47	0.05	7.5	1.5
MMSZ4685-V	CM	3.42	3.6	3.78	0.05	7.5	2
MMSZ4686-V	CN	3.71	3.9	4.1	0.05	5	2
MMSZ4687-V	CP	4.09	4.3	4.52	0.05	4	2
MMSZ4688-V	CT	4.47	4.7	4.94	0.05	10	3
MMSZ4689-V	CU	4.85	5.1	5.36	0.05	10	3
MMSZ4690-V	CV	5.32	5.6	5.88	0.05	10	4
MMSZ4691-V	CA	5.89	6.2	6.51	0.05	10	5
MMSZ4692-V	CX	6.46	6.8	7.14	0.05	10	5.1
MMSZ4693-V	CY	7.13	7.5	7.88	0.05	10	5.7
MMSZ4694-V	CZ	7.79	8.2	8.61	0.05	1	6.2
MMSZ4695-V	DC	8.27	8.7	9.14	0.05	1	6.6
MMSZ4696-V	DD	8.65	9.1	9.56	0.05	1	6.9
MMSZ4697-V	DE	9.5	10	10.5	0.05	1	7.6
MMSZ4698-V	DF	10.5	11	11.6	0.05	0.05	8.4
MMSZ4699-V	DH	11.4	12	12.6	0.05	0.05	9.1
MMSZ4700-V	DJ	12.4	13	13.7	0.05	0.05	9.8
MMSZ4701-V	DK	13.3	14	14.7	0.05	0.05	10.6
MMSZ4702-V	DM	14.3	15	15.8	0.05	0.05	11.4
MMSZ4703-V	DN	15.2	16	16.8	0.05	0.05	12.1
MMSZ4704-V	DP	16.2	17	17.9	0.05	0.05	12.9
MMSZ4705-V	DT	17.1	18	18.9	0.05	0.05	13.6
MMSZ4706-V	DU	18.1	19	20	0.05	0.05	14.4
MMSZ4707-V	DV	19	20	21	0.05	0.01	15.2
MMSZ4708-V	DA	20.9	22	23.1	0.05	0.01	16.7
MMSZ4709-V	DZ	22.8	24	25.2	0.05	0.01	18.2
MMSZ4710-V	DY	23.8	25	26.3	0.05	0.01	19
MMSZ4711-V	EA	25.7	27	28.4	0.05	0.01	20.4
MMSZ4712-V	EC	26.6	28	29.4	0.05	0.01	21.2
MMSZ4713-V	ED	28.5	30	31.5	0.05	0.01	22.8
MMSZ4714-V	EE	31.4	33	34.7	0.05	0.01	25
MMSZ4715-V	EF	34.2	36	37.8	0.05	0.01	27.3
MMSZ4716-V	EH	37.1	39	41	0.05	0.01	29.6
MMSZ4717-V	EJ	40.9	43	45.2	0.05	0.01	32.6

**Notes**

- Maximum  $V_F = 0.9\text{ V}$  at  $I_F = 10\text{ mA}$
- <sup>(1)</sup> Measured with device junction in thermal equilibrium

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

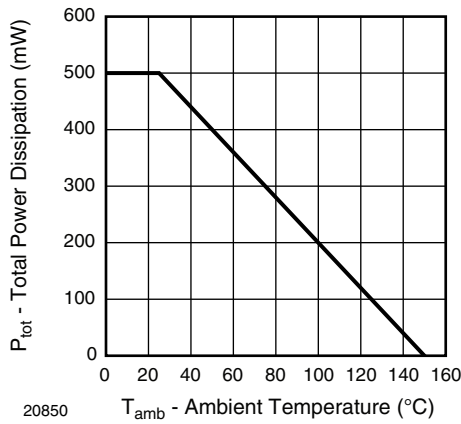


Fig. 1 - Total Power Dissipation vs. Ambient Temperature

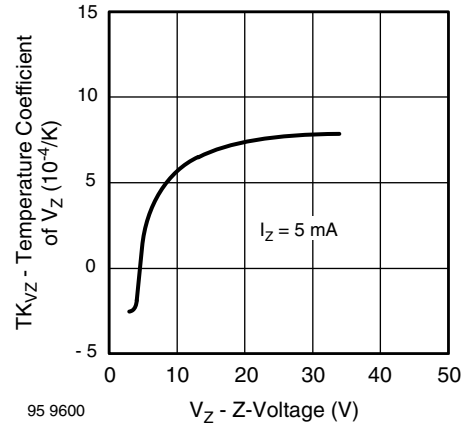


Fig. 4 - Temperature Coefficient of  $V_Z$  vs. Z-Voltage

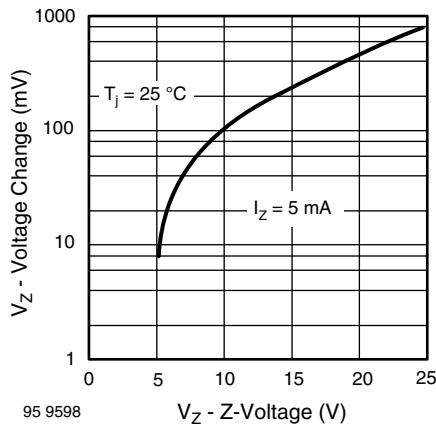


Fig. 2 - Typical Change of Working Voltage under Operating Conditions at  $T_{amb} = 25\text{ }^{\circ}\text{C}$

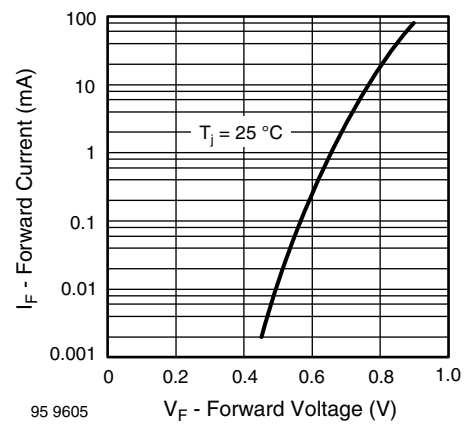


Fig. 5 - Forward Current vs. Forward Voltage

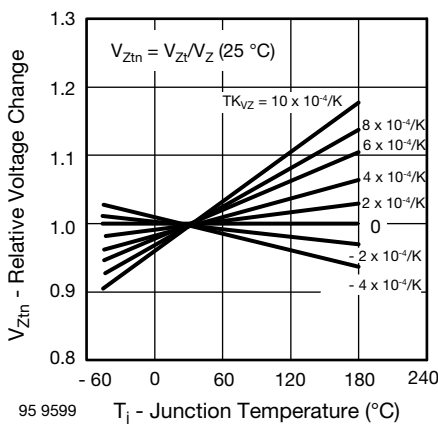


Fig. 3 - Typical Change of Working Voltage vs. Junction Temperature

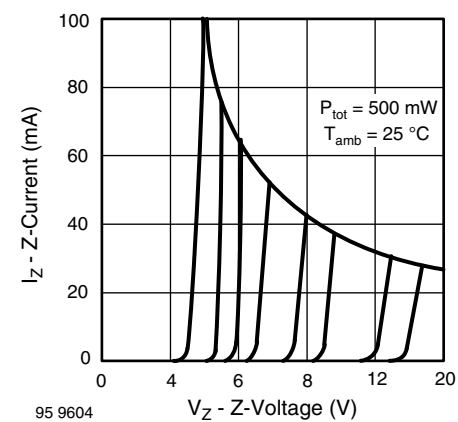


Fig. 6 - Z-Current vs. Z-Voltage

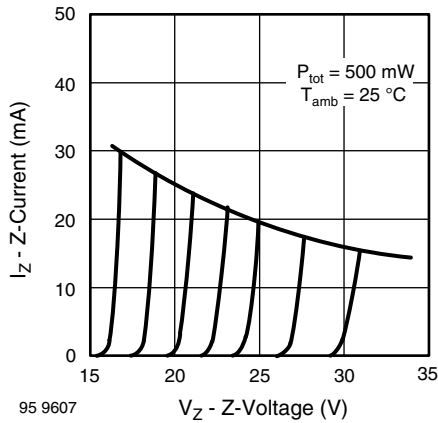


Fig. 7 - Z-Current vs. Z-Voltage

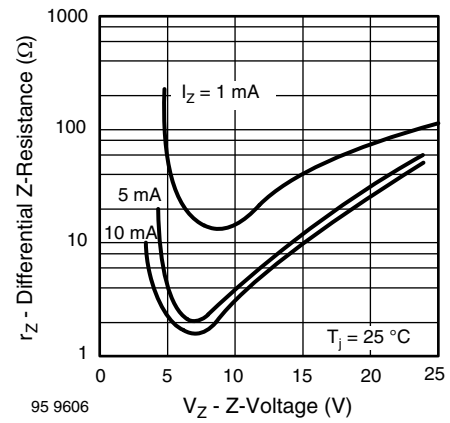
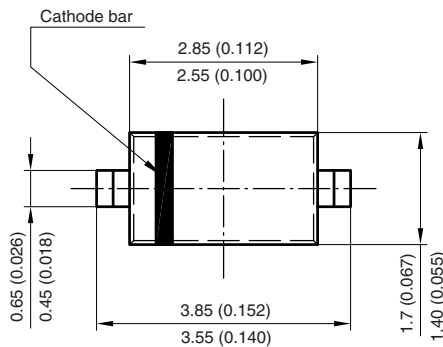
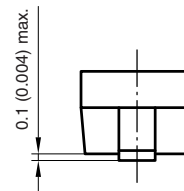
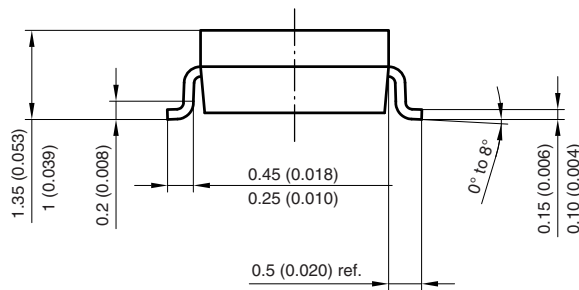
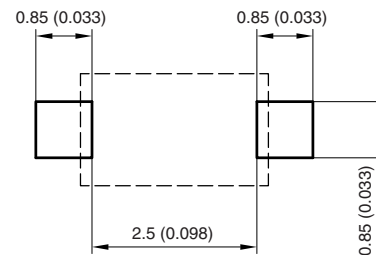


Fig. 8 - Differential Z-Resistance vs. Z-Voltage

## PACKAGE DIMENSIONS in millimeters (inches): SOD-123



Mounting Pad Layout



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 17432



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