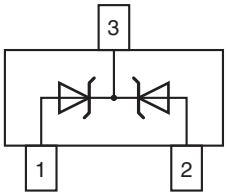
Small Signal Zener Diodes, Dual



FEATURES

- Dual silicon planar Zener diodes, common cathode
- The Zener voltages are graded according to the international E24 standard. Standard Zener voltage tolerance is ± 5 %.
- The parameters are valid for both diodes in one case. ΔV_Z and ΔR_{zj} of the two diodes in one case is ≤ 5 %
- AEC-Q101 qualified
- ESD capability according to AEC-Q101:
  Human body model > 8 kV
  Machine model > 800 V
- Base P/N-E3 - RoHS-compliant, commercial grade
- Base P/N-HE3 - RoHS-compliant, AEC-Q101 qualified
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

Pb-free

e3

RoHS COMPLIANT

PRIMARY CHARACTERISTICS		
PARAMETER	VALUE	UNIT
V_Z range nom.	2.7 to 51	V
Test current I_{ZT}	5	mA
V_Z specification	Pulse current	
Int. construction	Dual common cathode	

ORDERING INFORMATION			
DEVICE NAME	ORDERING CODE	TAPED UNITS PER REEL	MINIMUM ORDER QUANTITY
DZ23-series	DZ23C2V7-E3-08 to DZ23C51-E3-08	3000 (8 mm tape on 7" reel)	15 000
	DZ23C2V7-HE3-08 to DZ23C51-HE3-08		
	DZ23C2V7-E3-18 to DZ23C51-E3-18	10 000 (8 mm tape on 13" reel)	10 000
	DZ23C2V7-HE3-18 to DZ23C51-HE3-18		

PACKAGE				
PACKAGE NAME	WEIGHT	MOLDING COMPOUND FLAMMABILITY RATING	MOISTURE SENSITIVITY LEVEL	SOLDERING CONDITIONS
SOT-23	8.8 mg	UL 94 V-0	MSL level 1 (according J-STD-020)	260 °C/10 s at terminals

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Power dissipation	Device on fiberglass substrate, see layout on page 6	P_{tot}	300	mW
Thermal resistance, junction to ambient air	Device on fiberglass substrate, see layout on page 6	R_{thJA}	420	K/W
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	- 65 to + 150	°C
Operating temperature range		T_{op}	- 55 to + 150	°C
Zener current		I_Z	P_{tot}/V_Z	mA

ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

PART NUMBER	MARKING CODE	ZENER VOLTAGE RANGE (1)			TEST CURRENT		REVERSE VOLTAGE		DYNAMIC RESISTANCE f = 1 kHz		TEMPERATURE COEFFICIENT OF ZENER VOLTAGE	
		V_Z at I_{ZT1}			I_{ZT1}	I_{ZT2}	V_R at I_R		Z_Z at I_{ZT1}	Z_{ZK} at I_{ZT2}	α_{VZ} at I_{ZT1}	
		V			mA		V	nA	Ω		10^{-4}/°C	
		MIN.	NOM.	MAX.			MAX.		MAX.	MAX.	MIN.	MAX.
DZ23C2V7	V1	2.5	2.7	2.9	5	1	-	-	75 (< 83)	< 500	- 9	- 4
DZ23C3V0	V2	2.8	3.0	3.2	5	1	-	-	80 (< 95)	< 500	- 9	- 3
DZ23C3V3	V3	3.1	3.3	3.5	5	1	-	-	80 (< 95)	< 500	- 8	- 3
DZ23C3V6	V4	3.4	3.6	3.8	5	1	-	-	80 (< 95)	< 500	- 8	- 3
DZ23C3V9	V5	3.7	3.9	4.1	5	1	-	-	80 (< 95)	< 500	- 7	- 3
DZ23C4V3	V6	4	4.3	4.6	5	1	-	-	80 (< 95)	< 500	- 6	- 1
DZ23C4V7	V7	4.4	4.7	5	5	1	-	-	70 (< 78)	< 500	- 5	2
DZ23C5V1	V8	4.8	5.1	5.4	5	1	> 0.8	100	30 (< 60)	< 480	- 3	4
DZ23C5V6	V9	5.2	5.6	6	5	1	> 1	100	10 (< 40)	< 400	- 2	6
DZ23C6V2	V10	5.8	6.2	6.6	5	1	> 2	100	4.8 (< 10)	< 200	- 1	7
DZ23C6V8	V11	6.4	6.8	7.2	5	1	> 3	100	4.5 (< 8)	< 150	2	7
DZ23C7V5	V12	7	7.5	7.9	5	1	> 5	100	4 (< 7)	< 50	3	7
DZ23C8V2	V13	7.7	8.2	8.7	5	1	> 6	100	4.5 (< 7)	< 50	4	7
DZ23C9V1	V14	8.5	9.1	9.6	5	1	> 7	100	4.8 (< 10)	< 50	5	8
DZ23C10	V15	9.4	10	10.6	5	1	> 7.5	100	5.2 (< 15)	< 70	5	8
DZ23C11	V16	10.4	11	11.6	5	1	> 8.5	100	6 (< 20)	< 70	5	9
DZ23C12	V17	11.4	12	12.7	5	1	> 9	100	7 (< 20)	< 90	6	9
DZ23C13	V18	12.4	13	14.1	5	1	> 10	100	9 (< 25)	< 110	7	9
DZ23C15	V19	13.8	15	15.6	5	1	> 11	100	11 (< 30)	< 110	7	9
DZ23C16	V20	15.3	16	17.1	5	1	> 12	100	13 (< 40)	< 170	8	9.5
DZ23C18	V21	16.8	18	19.1	5	1	> 14	100	18 (< 50)	< 170	8	9.5
DZ23C20	V22	18.8	20	21.2	5	1	> 15	100	20 (< 50)	< 220	8	10
DZ23C22	V23	20.8	22	23.3	5	1	> 17	100	25 (< 55)	< 220	8	10
DZ23C24	V24	22.8	24	25.6	5	1	> 18	100	28 (< 80)	< 220	8	10
DZ23C27	V25	25.1	27	28.9	5	1	> 20	100	30 (< 80)	< 250	8	10
DZ23C30	V26	28	30	32	5	1	> 22.5	100	35 (< 80)	< 250	8	10
DZ23C33	V27	31	33	35	5	1	> 25	100	40 (< 80)	< 250	8	10
DZ23C36	V28	34	36	38	5	1	> 27	100	40 (< 90)	< 250	8	10
DZ23C39	V29	37	39	41	5	1	> 29	100	50 (< 90)	< 300	10	12
DZ23C43	V30	40	43	46	5	1	> 32	100	60 (< 100)	< 700	10	12
DZ23C47	V31	44	47	50	5	1	> 35	100	70 (< 100)	< 750	10	12
DZ23C51	V32	48	51	54	5	1	> 38	100	70 (< 100)	< 750	10	12

Note

(1) Tested with pulses t_p = 5 ms

TYPICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

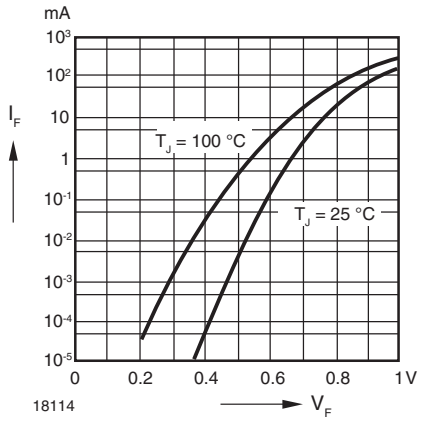


Fig. 1 - Forward Characteristics

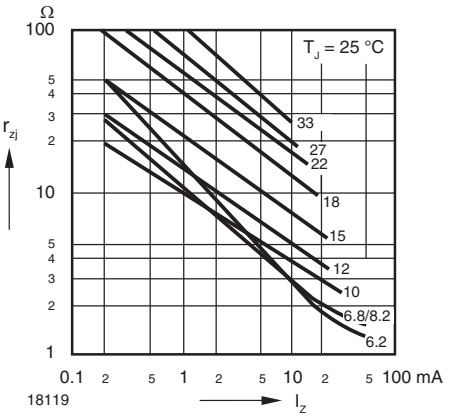


Fig. 4 - Dynamic Resistance vs. Zener Current

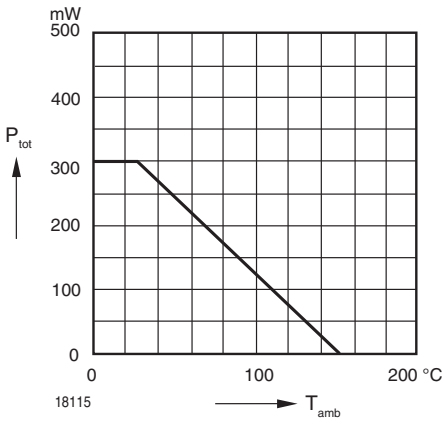


Fig. 2 - Admissible Power Dissipation vs. Ambient Temperature

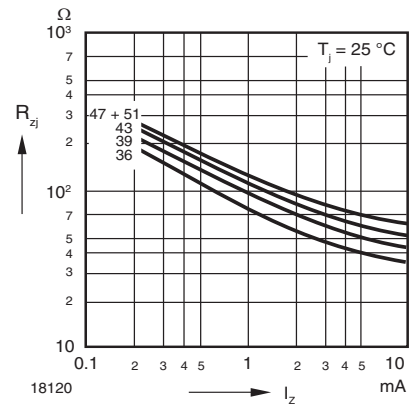


Fig. 5 - Dynamic Resistance vs. Zener Current

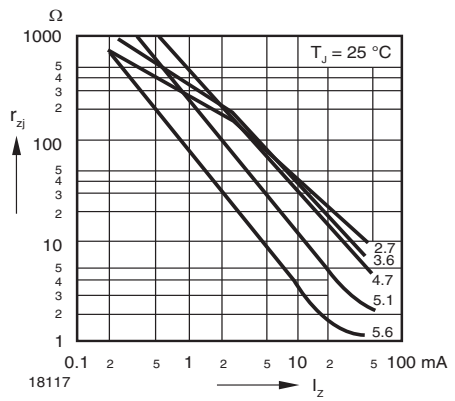


Fig. 3 - Dynamic Resistance vs. Zener Current

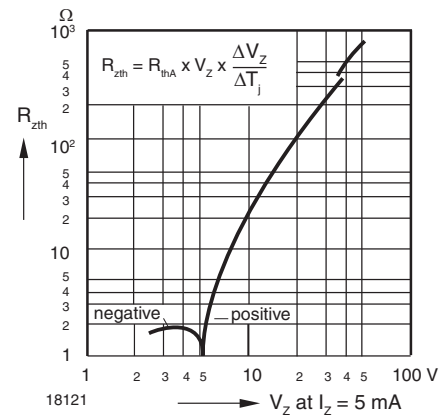


Fig. 6 - Thermal Differential Resistance vs. Zener Voltage

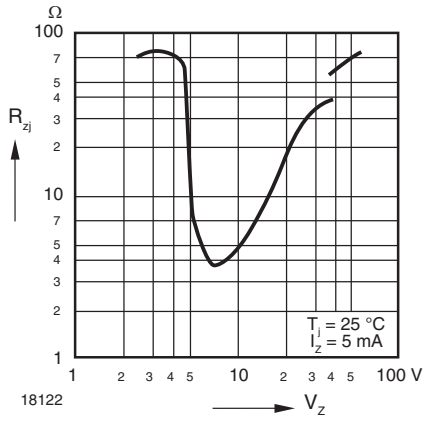


Fig. 7 - Dynamic Resistance vs. Zener Voltage

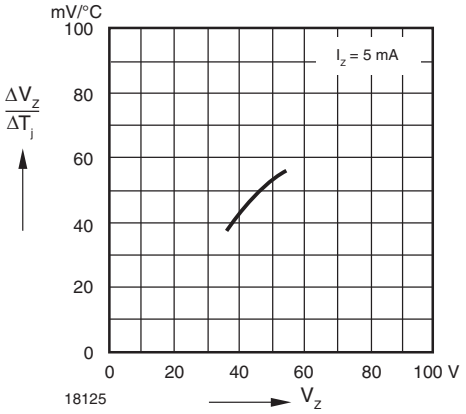


Fig. 10 - Temperature Dependence of Zener Voltage vs. Zener Voltage

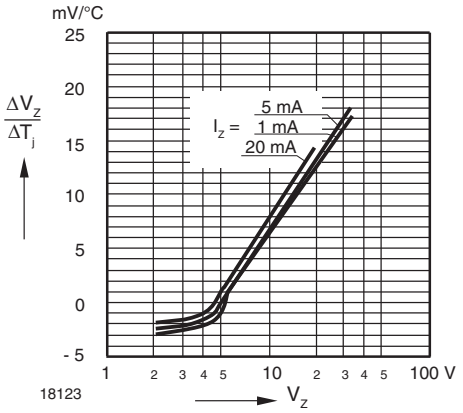


Fig. 8 - Temperature Dependence of Zener Voltage vs. Zener Voltage

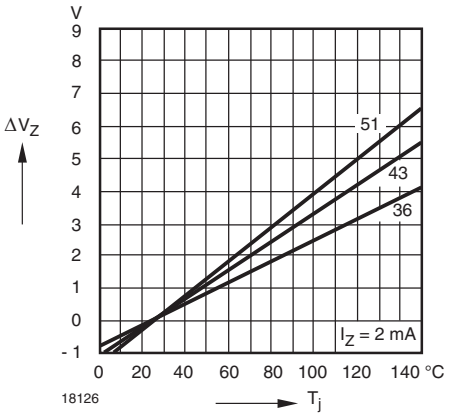


Fig. 11 - Change of Zener Voltage vs. Junction Temperature

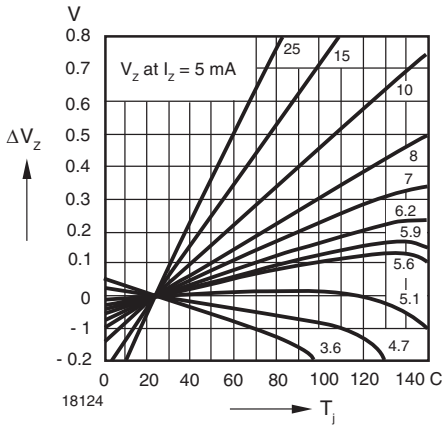


Fig. 9 - Change of Zener Voltage vs. Junction Temperature

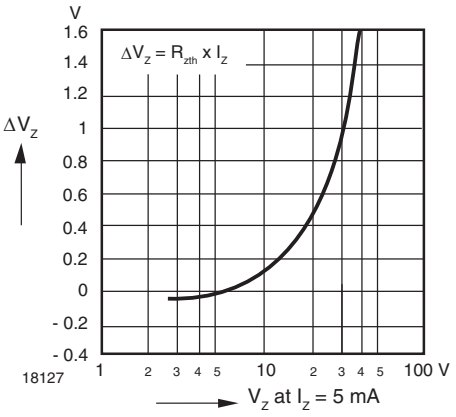


Fig. 12 - Change of Zener Voltage from Turn-on up to the Point of Thermal Equilibrium vs. Zener voltage

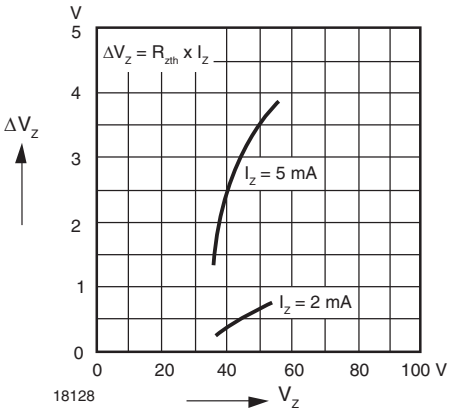


Fig. 13 - Change of Zener Voltage from Turn-on up to the Point of Thermal Equilibrium vs. Zener voltage

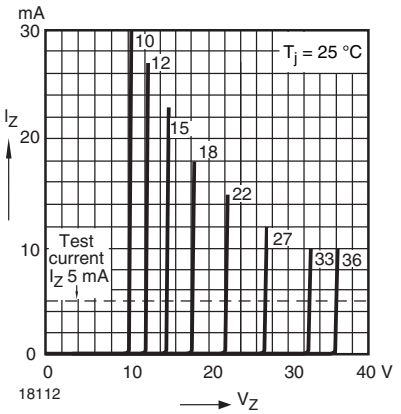


Fig. 15 - Breakdown Characteristics

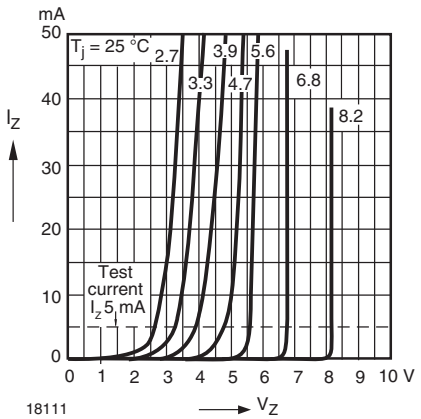


Fig. 14 - Breakdown Characteristics

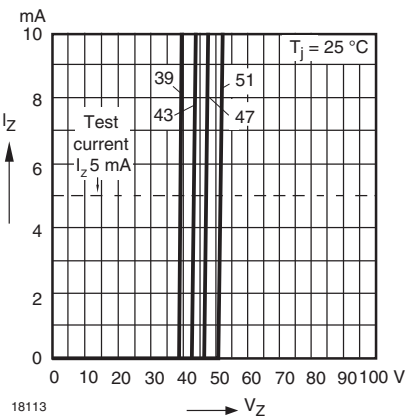
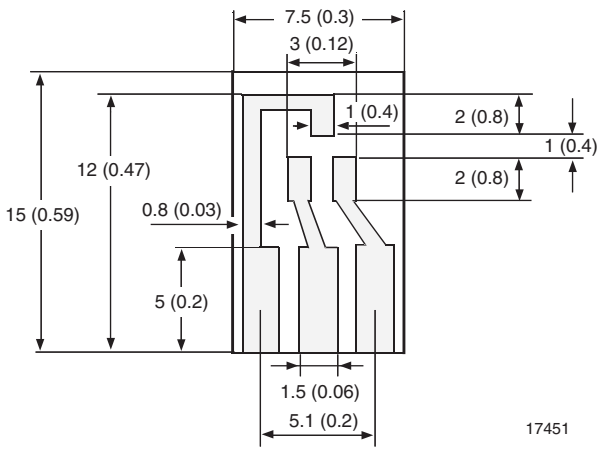


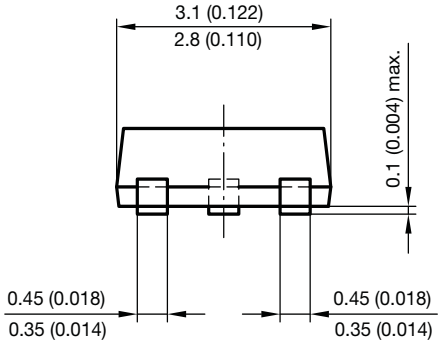
Fig. 16 - Breakdown Characteristics

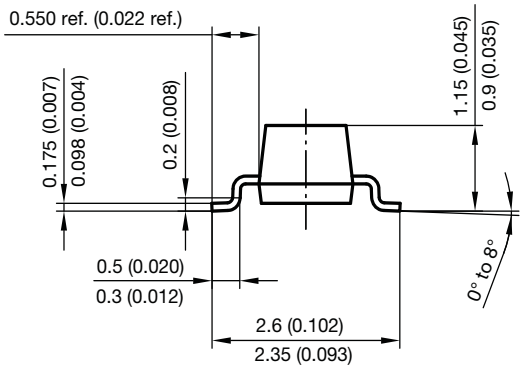
LAYOUT FOR R_{thJA} TEST

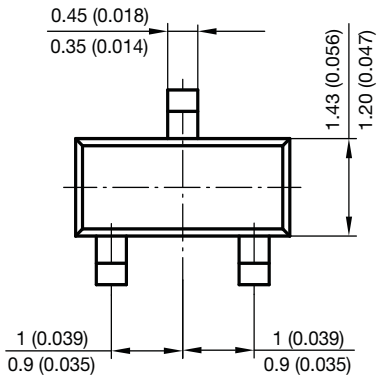
Thickness: fiberglass 0.059" (1.5 mm)
Copper leads 0.012" (0.3 mm)



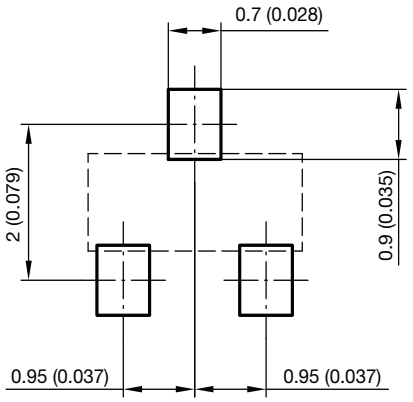
PACKAGE DIMENSIONS in millimeters (inches): **SOT-23**







Foot print recommendation:



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Rev. 8 - Date: 23.Sept.2009
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