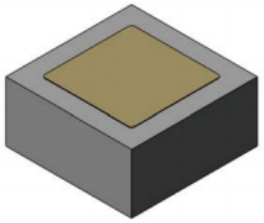
JANHCC1N6309 - JANHCC1N6349
JANKCC1N6309 - JANKCC1N6349

0.5 W Zener Diode Chips

Rev. V1

Features

- Low reverse Leakage Characteristics
- Low Noise Characteristics
- All Junctions Completely Protected with Silicon Dioxide
- Electrically Equivalent to 1N6309 - 1N6349
- Compatible with All Wire Bonding and Die Attach Techniques
- JANHC, JANKC available per MIL-PRF-19500/533



Description

This zener diode chip series is military qualified to MIL-PRF-19500/533 and is ideal for high reliability applications where a failure cannot be tolerated. It includes zener selections from 2.4 to 110 volts in standard 5% tolerances as well as tighter tolerances identified by different suffix letters on the part number. They are also available in surface mount and axial lead packages. VPT Components also offers numerous other zener products to meet higher and lower power ratings in both thru-hole and surface mount packages.

Electrical Specifications

Part Types[1]	Zener Voltage	Test Current	Dynamic Impedance		Current Maxium Zener	Voltage Reg.[2]	Reverse Current		Noise Density
	+/-5% @ IZ1	IZT	ZZT @ IZ2	ZZK @ 250 µA	IZM	VZ (reg.)	I_R1 @ V_R, 25°C		@ 250 mA 1 to 3 kHz
	Volts	mA	Ohms		mA	Volts	µA	Volts	µV / √Hz
	Nom.	Typ.	Typ.		Max.	Typ.	Max.		Max.
6309	2.4	20	30	1200	177	1.5	100	1.0	1
6310	2.7	20	30	1300	157	1.5	60	1.0	1
6311	3.0	20	29	1400	141	1.5	30	1.0	1
6312	3.3	20	27	1400	128	1.6	5	1.0	1
6313	3.6	20	25	1400	117	1.6	3	1.0	1
6314	3.9	20	23	1700	108	1.6	2	1.0	1
6315	4.3	20	20	1900	99	0.90	2	1.0	1
6316	4.7	20	17	1500	90	0.50	5	1.5	1
6317	5.1	20	14	1300	83	0.40	5	2.0	1
6318	5.6	20	8	1200	76	0.40	5	2.5	2
6319	6.2	20	3	800	68	0.30	5	3.5	5
6320	6.8	20	3	400	63	0.35	2	4.0	5
6321	7.5	20	4	400	57	0.40	2	5.0	5
6322	8.2	20	5	400	52	0.40	1	6.0	20

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Electrical Specifications

Part Types[1]	Zener Voltage	Test Current	Dynamic Impedance		Current Maxium Zener	Voltage Reg.[2]	Reverse Current		Noise Density
	+/-5% @ IZ1	I_{ZT}	Z_{ZT} @ IZ2	Z_{ZK} @ 250 µA	I_{ZM}	V_Z (reg.)	I_R1 @ V_R, 25°C		@ 250 mA 1 to 3 kHz
	Volts	mA	Ohms		mA	Volts	µA	Volts	µV / √Hz
	Nom.	Typ.	Typ.		Max.	Typ.	Max.		Max.
6323	9.1	20	6	500	47	0.50	1	7.0	40
6324	10	20	6	500	43	0.50	1	8.0	80
6325	11	20	7	550	39	0.50	1.0	8.5	100
6326	12	20	7	550	35	0.55	1.0	9.0	100
6327	13	12	8	550	33	0.55	0.05	9.9	100
6328	15	8.5	10	600	28	0.70	0.05	11	100
6329	16	7.8	12	600	27	0.75	0.05	12	100
6330	18	7.0	14	600	24	0.85	0.05	14	100
6331	20	6.2	18	500	21	0.95	0.05	15	100
6332	22	5.6	20	500	19	1.05	0.05	17	100
6333	24	5.2	24	500	18	1.15	0.05	18	100
6334	27	4.6	27	500	16	1.30	0.05	21	100
6335	30	4.2	32	500	14	1.45	0.05	23	100
6336	33	3.8	40	600	13	1.60	0.05	25	100
6337	36	3.4	50	600	12	1.75	0.05	27	100
6338	39	3.2	55	700	11	1.90	0.05	30	100
6339	43	3.0	65	800	9.9	2.10	0.05	33	80
6340	47	2.7	75	900	9.0	2.25	0.05	36	80
6341	51	2.5	85	1000	8.3	2.50	0.05	39	80
6342	56	2.2	100	1200	7.6	2.70	0.05	43	80
6343	62	2.0	125	1300	6.8	2.90	0.05	47	80
6344	68	1.8	155	1500	6.3	3.20	0.05	52	80
6345	75	1.7	180	1600	5.7	3.40	0.05	56	80
6346	82	1.5	220	1800	5.2	3.80	0.05	62	80
6347	91	1.4	270	2100	4.7	4.20	0.05	69	80
6348	100	1.3	340	2400	4.3	4.40	0.05	76	80
6349	110	1.1	500	2800	3.9	4.80	0.05	84	80

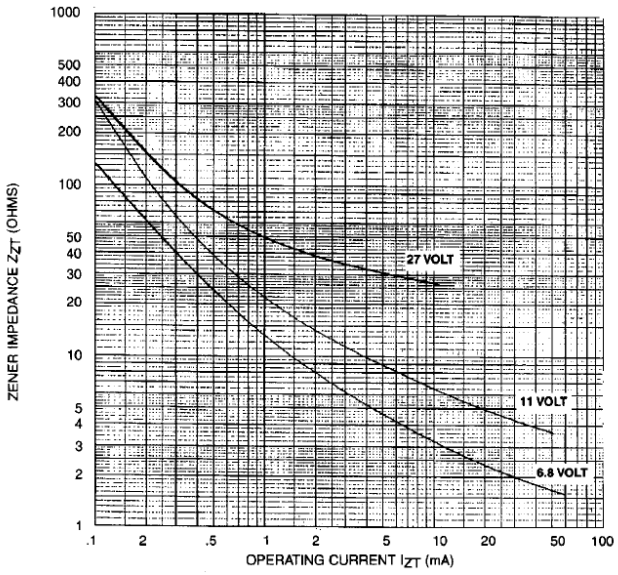
1. The JEDEC type numbers shown above have a standard tolerance of ±5% of the nominal Zener voltage. Nominal Zener voltage is measured with the device junction in thermal equilibrium at an ambient temperature of 25°C ±3°C. Suffix “C” signifies ±2%, suffix “D” signifies ±1% tolerance.
2. Vz REG = Vz @ 50% of I_{ZM} minus Vz @ 10% of I_{ZM}.
3. Zener impedance is derived by superimposing on 1 Z_{ZT} A 60 Hz rms ac current equal to 10% of 1 Z_{ZT} or 1 Z_{ZK}.

Absolute Maximum Ratings[4,5]

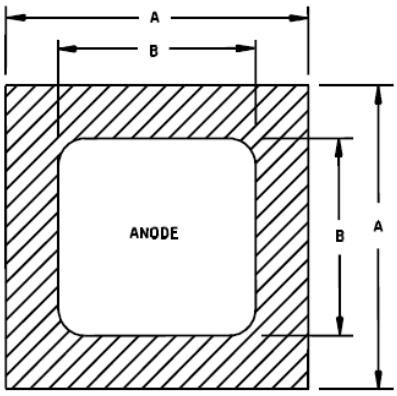
Parameter	Absolute Maximum
Forward Voltage	1.4 V @ 1 A
Storage Temperature	-65°C to +175°C
Operating Temperature	-65°C to +175°C

4. Exceeding any one or combination of these limits may cause permanent damage to this device.
5. VPT Components does not recommend sustained operation near these survivability limits.

Zener Impedance vs. Operating Current



Die



BACKSIDE IS CATHODE

Ltr	JANHCC, JANKCC			
	Inches		Millimeters	
	Min	Max	Min	Max
A	.019	.023	0.48	0.58
B	.013	.017	0.33	0.43

Notes:

1. Dimensions are in inches
2. Millimeter equivalents are given for general information only
3. Die thickness is .010 (0.25 mm) ± .002 inches
4. (± 0.05 mm).
5. Anode metallization: Minimum AL thickness = 25,000 A.
6. Cathode metallization: Minimum AU thickness = 4,000 A
7. Circuit layout data: For Zener operation, cathode must be operated positive with respect to anode.