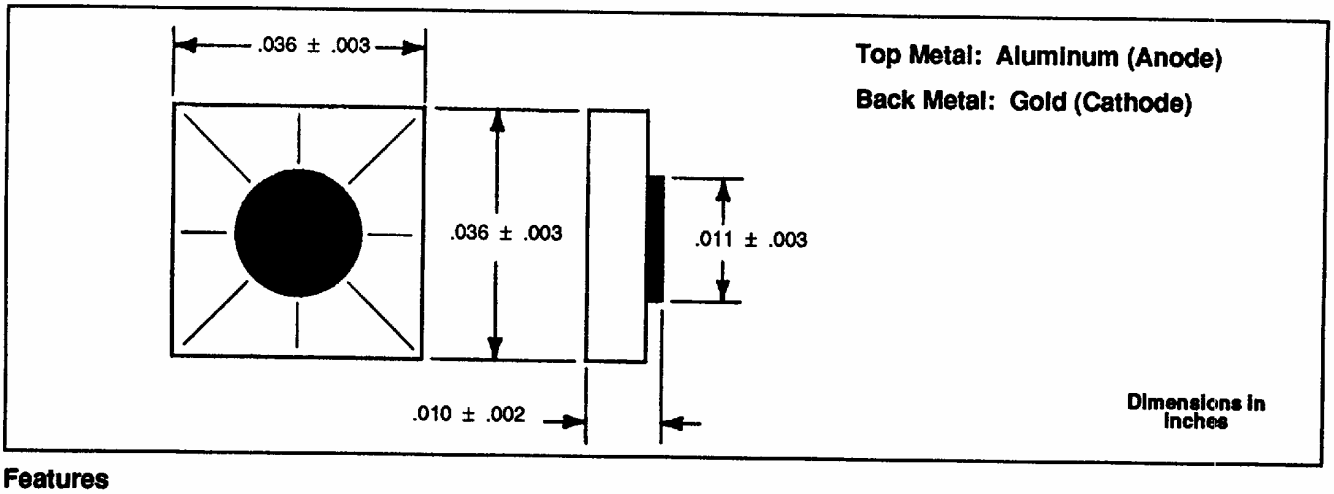
CLVA Zener Diode Die



Features

- The CLVA Die is available in types and tolerances of the general purpose series with 100% testing of Zener Voltage, and reverse leakage as standard. The die is fully passiviated using silicon dioxide and silicon nitride over coat for surface protection over the active junction. The back contact is gold and is compatible with eutectic or epoxy mounting. The top contact is an aluminum - silicon alloy suitable for a variety of wire bonding techniques.

- The CLVA Die exhibits considerably sharper breakdown characteristics than conventional Zeners in the 4-10 volt range. Above 10 volts the break down mechanism of Zener regulators is avalanche, which produces a very sharp knee and provides good voltage regulation. Below 10 volts the field emission phenomenon starts, and as the operating voltage decreases, field emission accounts for an increasingly higher percentage of the die breakdown mechanism.

Electrical Characteristics **General Purpose CLVA Zeners**

Type[1]	Nominal Zener Voltage @ Iz Vdc	Maximum Dynamic[2,4] Impedance Ohms	Zz @ Iz mA	Maximum Noise[3,4] Density @ 250μA μV/√Hz	Maximum Reverse Leakage I_R @ V_R μA	Vdc
CLVA43A	4.3	18	20	4	4.0	1.5
CLVA47A	4.7	15	10	4	4.0	1.5
CLVA51A	5.1	15	5	4	0.1	2.0
CLVA56A	5.6	40	1	4	0.05	3.0
CLVA62A	6.2	50	1	4	0.05	4.0
CLVA68A	6.8	50	1	4	0.05	5.0
CLVA75A	7.5	100	1	4	0.01	6.0
CLVA82A	8.2	100	1	4	0.01	6.5
CLVA91A	9.1	100	1	4	0.01	8.0
CLVA100A	10.0	100	1	4	0.01	9.0

V_F @ 200mA = 1.5V Max.
[1] A suffix denotes ± 5% V_Z tolerance, B suffix denotes ± 2% V_Z tolerance.
[2] Measured @ DC test current with 10% AC superimposed (60 Hz rms).
[3] 1000 Hz to 3000 Hz, see Noise Measurement Circuit.
[4] These parameters are verified by wafer lot acceptance testing.

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CLVA Zener Diode Die

High Performance CLVA Zeners (all electrical characteristics shown are JEDEC registered values for IN6082 through IN6091)

Type[1]	Normal Zener Voltage @ Iz Vdc	Maximum[2, 4] Impedance Zz Ohms	Iz mA	Maximum Reverse Leakage IR @ VR µA	Vdc	Maximum[3, 4] Noise Density @ 250 mA mV/ √Hz	Maximum Regulation[4] Iz - Izl *Vz Vdc	Izl µA
OAC6082	4.3	18	20	20	1.5	1	0.75	2.0
OAC6083	4.7	10	10	2.0	2.0	1	0.50	1.0
OAC6084	5.1	10	5	2.0	3.0	1	0.30	0.25
OAC6085	5.6	40	1	2.0	4.5	1	0.10	0.05
OAC6086	6.2	45	1	0.5	5.6	1	0.10	0.01
OAC6087	6.8	50	1	0.05	6.2	1	0.10	0.01
OAC6088	7.5	50	1	0.01	6.8	1	0.10	0.01
OAC6089	8.2	60	1	0.01	7.5	1	0.10	0.01
OAC6090	9.1	60	1	0.01	8.2	2	0.10	0.01
OAC6091	10.0	60	1	0.01	9.1	2	0.10	0.01

V_F @ 200mA = 1.2V Max.
[1] Suffix denotes V_Z tolerance: None = ± 20%, A suffix is ± 10%, B: ± 5%, C: ± 2%.
[2] Measured at DC test current with 10% AC RMS superimposed (60 Hz).
[3] Measured from 1000 Hz to 3000 Hz, see Noise Measurement Circuit.
[4] These parameters are verified by wafer lot acceptance testing.

High Performance Zener Diodes (Aµ electrical characteristics shown are JEDEC registered values for IN5521 through IN5530)

Type [1]	Nominal Zener Voltage @ Iz Vdc	Test Current Iz mA	Maximum [2, 3, 6] Dynamic Impedance Zz @ Iz Ohms	IR µA	Reverse Leakage Current VR None, A suffix Volts	B, C suffix Volts	Maximum Zener[2, 6] Current Izm mAdc	Maximum Noise[2, 4, 6] Iz = 250 µA mV/ √Hz	Maximum Regulation ΔVz[2, 5, 6] Volts	Low Vz Current Izl mAdc
OAC5521	4.3	20	18	3	1.0	1.5	88	0.5	0.75	2.0
OAC5522	4.7	10	22	2	1.5	2.0	81	0.5	0.60	1.0
OAC5523	5.1	5	26	2	2.0	2.5	75	0.5	0.65	0.25
OAC5524	5.6	3	30	2	3.0	3.5	68	1	0.30	0.25
OAC5525	6.2	1	30	1	4.5	5.0	61	1	0.30	0.25
OAC5526	6.8	1	30	1	5.5	6.2	56	1	0.10	0.01
OAC5527	7.5	1	35	0.5	6.0	6.8	51	2	0.05	0.01
OAC5528	8.2	1	40	0.5	6.5	7.5	46	4	0.05	0.01
OAC5529	9.1	1	45	0.1	7.0	8.2	42	4	0.05	0.01
OAC5530	10.0	1	60	0.05	8.0	9.1	38	4	0.10	0.01

V_F @ 200mA = 1.1V Max.
[1] Numbers shown are ± 20%, A suffix is ± 10%, B: ± 5%, C: ± 2%.
[2] Guaranteed for B and C, suffix only.
[3] Measured at DC test current with 10% AC RMS superimposed (60 Hz).
[4] 1000 Hz to 3000 Hz, see Noise Measurement Circuit.
[5] ΔV_Z is maximum difference between V_Z at I_Z and V_{ZL} at I_{ZL}.
[6] These parameters are verified by wafer lot acceptance testing.

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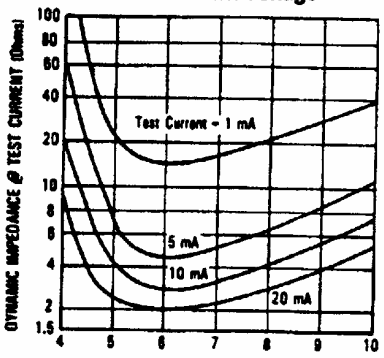
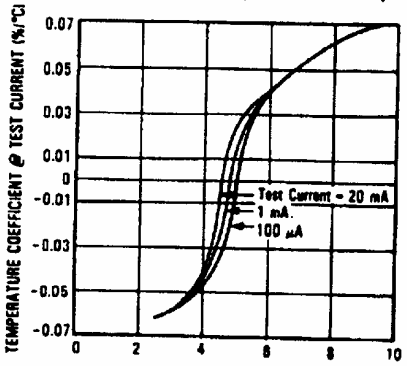
Typical Performance Curves in Do-7 Axial Package

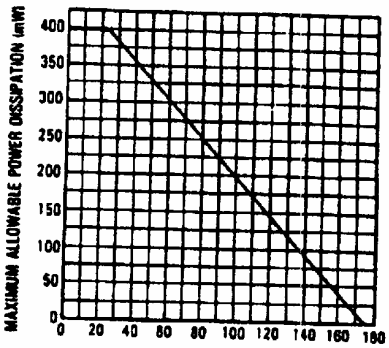
Dynamic Impedance vs. Breakdown Voltage



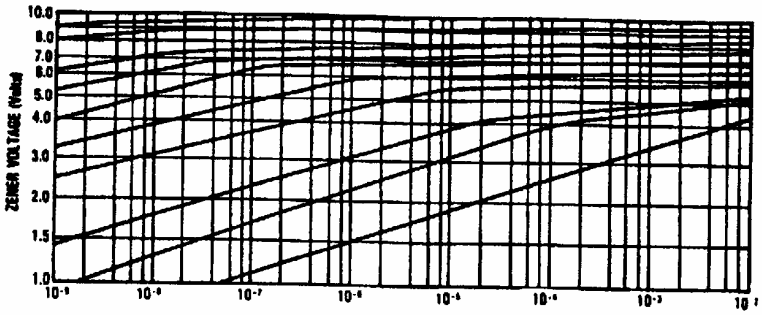
Temperature Coefficient vs. Zener Voltage (25°C to 100°C)



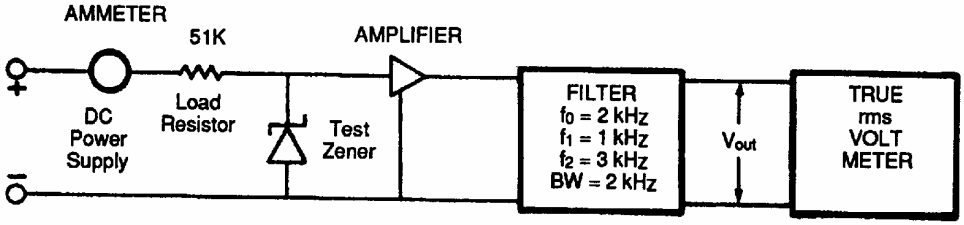
Power Derating with Temperature



Zener Voltage vs. Zener Current



Noise Measurement Circuit



Noise is specified in microvolts per square root hertz. The maximum noise in a particular application may be calculated from the following equation:

Noise = (N_D $\sqrt{\text{Bandpass of circuit}}$ (In µVrms)

where N_D is the noise density stated in the specification.

The circuit used to measure N_D is shown below.

Noise Density (volts per square root hertz) = $\frac{\text{Vout}}{\text{Overall Gain } \sqrt{\text{BW}}}$

where:

BW = Filter Bandwidth (hertz)

V_{out} = Output Noise (Vrms)

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