CODI

GLA 28 to GLA 100
GENERAL PURPOSE LOW VOLTAGE AVALANCHE DIODES

General Purpose Low Voltage Avalanche Diodes

600 mw - 2.8 to 10.0 volts

LOW NOISE DENSITY: 4uV/$\sqrt{Hz}$ typical
VERY LOW DYNAMIC IMPEDANCE
2%, 5%, 10% Vz TOLERANCES

APPLICATIONS

- High Stability Regulators
- Wave Shaping
- Comparator References
- Low Ripple Series Regulators
- OP Amp Regulators
- Feedback Clamps

The BiTaxial® process, introduced by CODI, creates a breakthrough in zener diode design. The small number of crystal dislocations, and more uniform radial resistivity gradient in BiTaxial material, allows avalanche to occur at lower voltages than any other manufacturing process available today. The combination of sharp breakdown, low zener voltage, lower noise density, lower dynamic impedance, low reverse current results in a zener diode as close to the "ideal" device as is practical. Zener voltages compatible with integrated circuit power supplies, IC op amps, etc. give the circuit and systems designer performance characteristics only talked of prior to these new CODI low voltage avalanche diodes.

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Maximum	Unit
P	Continuous Power Dissipation. See Note 1	600	mw
Ta(OPR)	Operating (Free Air) Temperature Range—See Note 2	-65 to +175	°C
Tstg	Storage Temperature Range	-65 to +175	°C
	Lead Temperature 1/16 inch from case for 10 seconds	260	°C

Note 1: Derate linearly at the rate of 4 mw per °C. above Ta of 25°C.

Note 2: The device is lead conduction cooled. The lead temperature ⅜ inch from the case must be no more than 8°C greater than the free air temperature for these ratings to apply.

ELECTRICAL CHARACTERISTICS

CODI TYPE NUMBER (Note 1)	ZENER VOLTAGE (Note 2)	TEST CURRENT	DYNAMIC IMPEDANCE (Note 3)	NOISE DENSITY @ 250 μA	REGULATION from I_{zt} to I_{zi}		REVERSE CURRENT @ 25°C		AVERAGE TEMP COEFICIENT
	Nom. V_z@I_{zt}	I_{zt}	Max. Z_z@I_{zt}	Max.	Max. △V	I_{zi}	Max. I_r	V_r	Max.
	Vdc	mA	Ω	μV/√H_z	Vdc	mA	μA	Vdc	%/°C Temp.
GLA 28	2.8	20	50	4	1.0	2.0	10.0	1.0	−.065
GLA 31	3.1	20	30	4	1.0	2.0	5.0	1.0	−.063
GLA 35	3.5	20	20	4	1.0	2.0	4.0	1.0	−.058
GLA 39	3.9	20	15	4	1.0	2.0	4.0	1.0	−.050
GLA 43	4.3	20	12	4	1.0	2.0	4.0	1.5	−.025
GLA 47	4.7	10	10	4	0.75	1.0	4.0	2.0	+.010
GLA 51	5.1	5	10	4	0.45	0.25	0.10	2.0	+.025
GLA 56	5.6	1	40	4	0.15	0.05	0.05	3.0	+.033
GLA 62	6.2	1	40	4	0.15	0.01	0.05	4.0	+.045
GLA 68	6.8	1	50	4	0.15	0.01	0.05	5.0	+.050
GLA 75	7.5	1	50	4	0.15	0.01	0.01	6.0	+.055
GLA 82	8.2	1	75	4	0.15	0.01	0.01	6.5	+.062
GLA 91	9.1	1	75	4	0.15	0.01	0.01	8.0	+.066
GLA 100	10.0	1	75	4	0.15	0.01	0.01	9.0	+.070

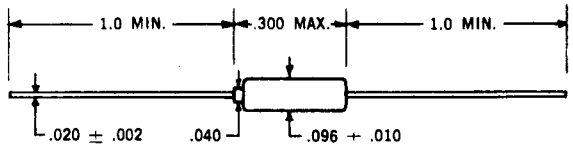
Note 1: Case Type—these devices are also available in a micro package. To specify the micro package, insert the prefix letter M before the part number, for example, MGLA 28. (See data sheet MGLA 28 to MGLA 100).

Note 2: Tolerance—tolerance is specified by the type number suffix letter
No suffix letter ± 10%
Suffix letter A ± 5%
Suffix letter B ± 2%

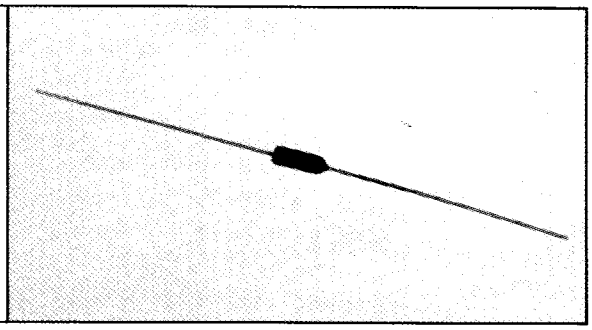
Note 3: Dynamic Impedance—dynamic impedance is measued at Izt with 10% ac superimposed (60 Hz RMS).

DO - 7 PACKAGE

OUTLINE DRAWING



(all dim. in inches)



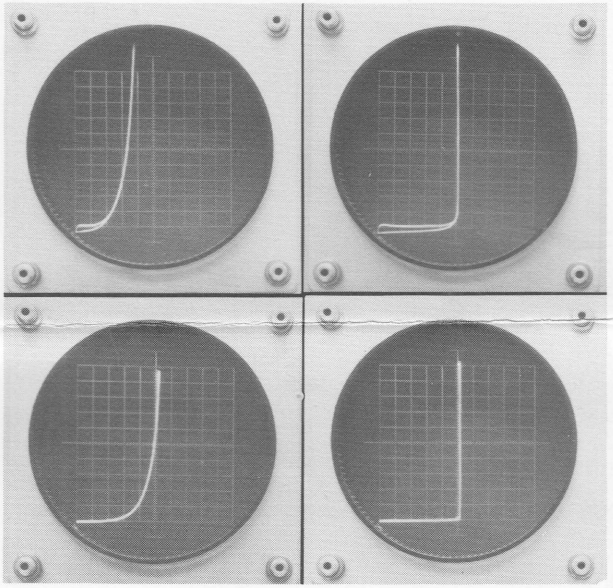
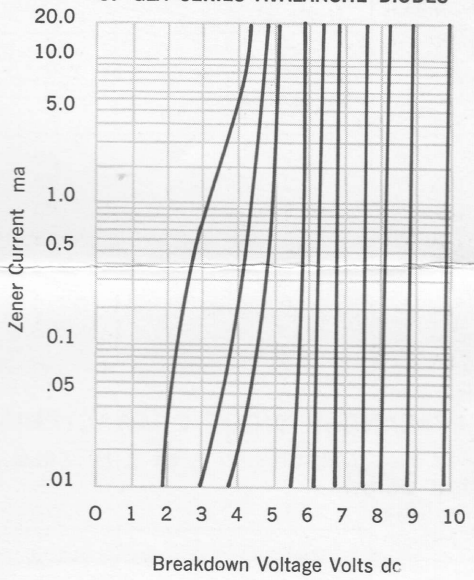


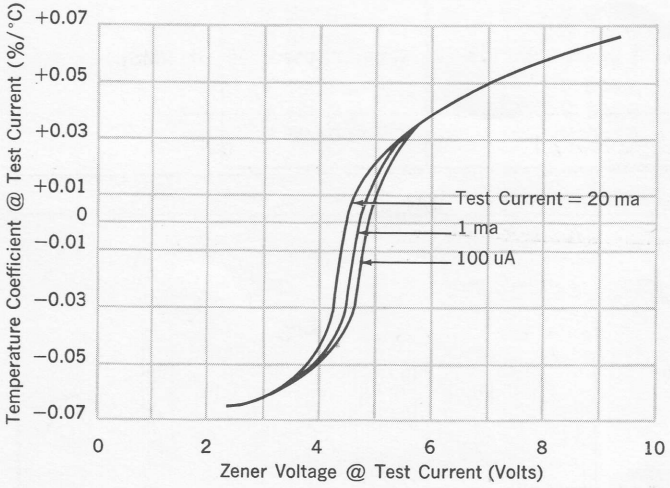
Photo of Tektronix 575

comparisons of GLA 51 (right) to IN 751 (left)
In upper photos vertical scale is 10μa/division. In lower photos vertical scale is 100μa/division. Horizontal scale is 1 volt/division in all photos.

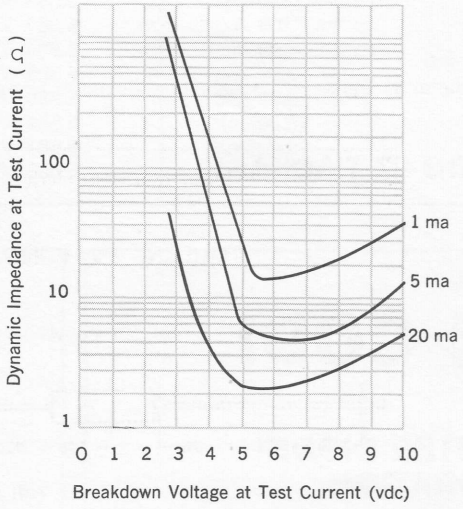
TYPICAL BREAKDOWN CHARACTERISTICS OF GLA SERIES AVALANCHE DIODES



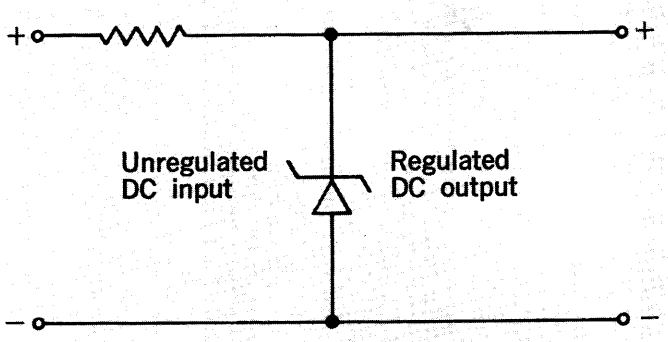
TYPICAL TEMPERATURE COEFFICIENT (25°C to 100°C)



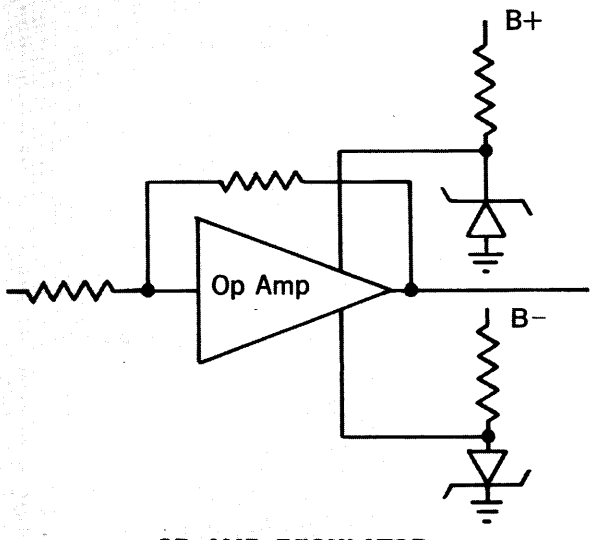
TYPICAL DYNAMIC IMPEDANCES



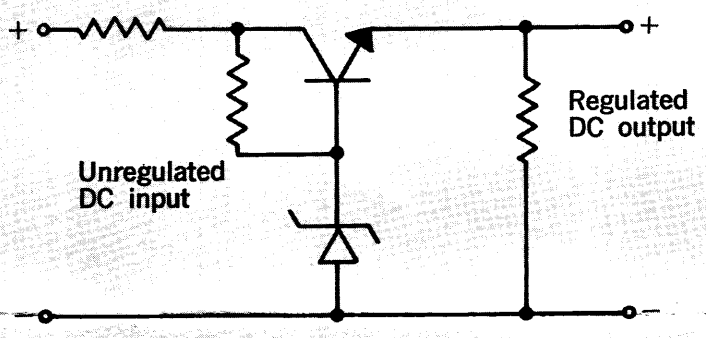
TYPICAL CIRCUIT APPLICATIONS



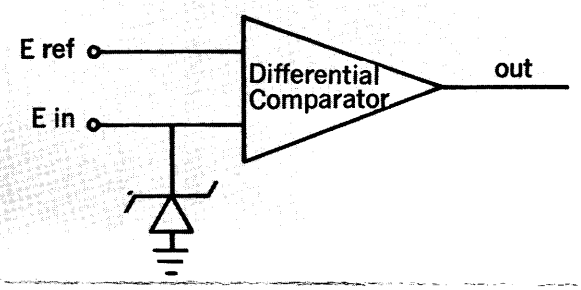
BASIC PARALLEL REGULATOR



OP AMP REGULATOR



BASIC SERIES REGULATOR



DIFFERENTIAL COMPARATOR CLAMP

TYPICAL AVALANCHE DIODE CHARACTERISTICS

Typical V_Z vs I_{ZT} characteristics of a BiTaxial Avalanche Diode compared with a theoretically perfect device are reprinted below.

Izt	Vz of MGLA 56	Vz of IDEAL 5.6V ZENER	△V
.01 ma	5.125 V	5.600 V	−0.578 V
.03 ma	5.440 V	5.600 V	−0.160 V
.05 ma	5.525 V	5.600 V	−0.075 V
.10 ma	5.544 V	5.600 V	−0.056 V
.30 ma	5.553 V	5.600 V	−0.047 V
.50 ma	5.557 V	5.600 V	−0.043 V
1.00 ma	5.564 V	5.600 V	−0.036 V
3.00 ma	5.585 V	5.600 V	−0.015 V
5.00 ma	5.600 V	5.600 V	0 V
10.00 ma	5.632 V	5.600 V	+0.032 V
20.00 ma	5.664 V	5.600 V	+0.064 V
30.00 ma	5.696 V	5.600 V	+0.096 V

CODI

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