Zener Type No.	Zener Voltage at I_{ZT} Volts	@ mA	Max. Zener Impedance @ I_{ZT} Ohms	Zener Voltage Tolerance	Power Rating	Device Package	MICROSEMI Recommended Substitute
1N3350	200.0	65.0	100.0	" "	"	"	
1N3392 thru 1N3432 is an obsolete 500mw series							
1N3433 thru 1N3463 is an obsolete 2 watt series							
1N3477	2.2	5.0	60 @ 10mA	No Suffix = 10% Suffix A = 5%	250mw	DO-7	
1N3496(2)	5.9 - 6.5	7.5	15.0	T.C. = .005%/°C(7)	"	DO-7	
1N3497(2)	5.9 - 6.5	"	"	T.C. = .002%/°C(7)	"	"	
1N3498(2)	5.9 - 6.5	"	"	T.C. = .001%/°C(7)	"	"	
1N3499(2)	5.9 - 6.5	"	"	T.C. = .0005%/°C(7)	"	"	
1N3500(2)	5.9 - 6.5	"	"	T.C. = .01%/°C(7)	"	"	
1N3501(2,18)	6.2 - 6.5	"	12.0	T.C. = .0013%/°C(13)	250mw	DO-7	
1N3502(2,18)	6.2 - 6.5	"	"	T.C. = .0006%/°C(13)	"	"	
1N3503(2,18)	6.2 - 6.5	"	"	T.C. = .0013%/°C(13)	"	"	
1N3504(2,18)	6.2 - 6.5	"	"	T.C. = .0013%/°C(13)	"	"	
1N3506(19)	3.3	20.0	24.0	5%	400mw	DO-7	
1N3507(19)	3.6	"	22.0	"	"	"	
1N3508(19)	3.9	"	20.0	"	"	"	
1N3509(19)	4.3	"	18.0	"	"	"	
1N3510(19)	4.7	"	16.0	"	"	"	
1N3511(19)	5.1	"	14.0	"	"	"	
1N3512(19)	5.6	"	8.0	"	"	"	
1N3513(19)	6.2	"	3.0	"	"	"	
1N3514(19)	6.8	"	"	"	"	"	
1N3515(19)	7.5	10.0	4.0	"	"	"	
1N3516(19)	8.2	"	5.0	"	"	"	
1N3517(19)	9.1	"	6.0	"	"	"	
1N3518(19)	10.0	10.0	7.0	5%	400mw	DO-7	
1N3519(19)	11.0	"	8.0	"	"	"	
1N3520(19)	12.0	"	10.0	"	"	"	
1N3521(19)	13.0	5.0	12.0	"	"	"	
1N3522(19)	15.0	"	14.0	"	"	"	
1N3523(19)	16.0	"	16.0	"	"	"	
1N3524(19)	18.0	"	18.0	"	"	"	
1N3525(19)	20.0	"	20.0	"	"	"	
1N3526(19)	22.0	"	35.0	"	"	"	
1N3527(19)	24.0	"	38.0	"	"	"	
1N3528(19)	27.0	4.0	40.0	"	"	"	
1N3529(19)	30.0	"	48.0	"	"	"	
1N3530(19)	33.0	3.0	50.0	"	"	"	
1N3531(19)	36.0	"	75.0	"	"	"	
1N3532(19)	39.0	"	100.0	"	"	"	
1N3533(19)	43.0	2.0	130.0	"	"	"	
1N3534(19)	47.0	"	150.0	"	"	"	
1N3537(1)	11.0 - 13.0	25.0	7.0	8%	1 watt	Case R(9)	1N3022
1N3553(2)	6.3 ± 3.2%	7.5	15.0	T.C. = .01%/°C(4)	250mw	DO-7	
1N3580 (2)	11.7 ± 5%	"	25.0	T.C. = .01%/°C(7)	750mw	DO-13	1N941(27)
1N3581 (2)	11.7 ± 5%	"	"	T.C. = .005%/°C(7)	"	"	1N942(27)
1N3582 (2)	11.7 ± 5%	"	"	T.C. = .002%/°C(7)	"	"	1N943(27)
1N3583 (2)	11.7 ± 5%	"	"	T.C. = .001%/°C(7)	"	"	1N944(27)
1N3584 (2)	11.7 ± 5%	"	"	T.C. = .0005%/°C(7)	"	"	1N945(27)

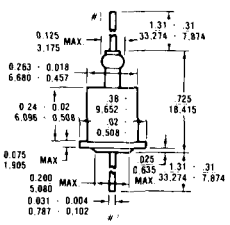
Type No.	PIV Volts	Io 25°C Amps	VF Volts	IR μA	T_{RR}	Device Package	MICROSEMI Recommended Substitute
1N3595	150	—	.83 min. 1.00 max.	1.0(nA)	(m sec.) 3.0	DO35	
		(100°C)A					
1N3611	200	1.0	1.1	1.0		A	
1N3612	400	1.0	1.1	1.0		A	
1N3613	600	1.0	1.1	1.0		A	
1N3614	800	1.0	1.1	1.0		A	
		(55°)					
1N3644	1500	.25	5.0	5		S	
1N3645	2000	.25	5.0	5		S	
1N3646	2500	.25	5.0	5		S	
1N3647	3000	.25	5.0	5		S	

Zener Type No.	Zener Voltage at I_{ZT} Volts	@ mA	Max. Zener Impedance @ I_{ZT} Ohms	Zener Voltage Tolerance	Power Rating	Device Package	MICROSEMI Recommended Substitute
1N3675	6.8	18.5	4.5	No Suffix = 20%	750mw	Case X (28)	
1N3676	7.5	16.5	5.5	Suffix A = 10%	"	"	
1N3677	8.2	15.0	6.5	Suffix B = 5%	"	"	

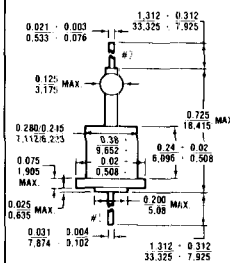
NOTE — Diode types presently available from Microsemi Corporation are shown in bold type.

CASE CONFIGURATION CHART

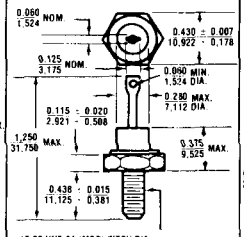
DO-1



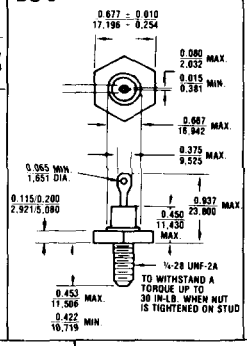
DO-3



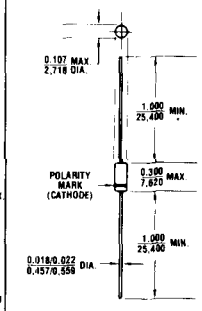
DO-4



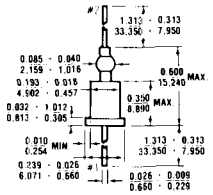
DO-5



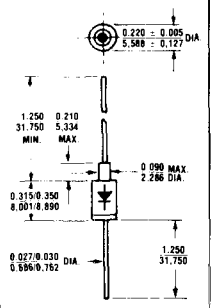
DO-7



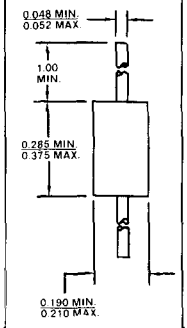
DO-12



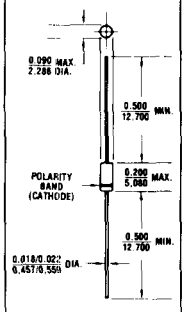
DO-13



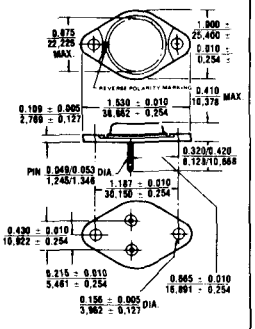
DO-27



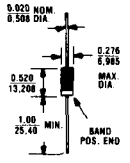
DO-35



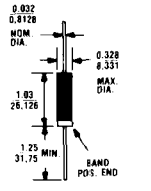
TO-3



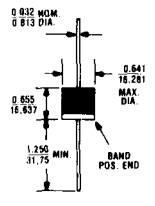
Case 1



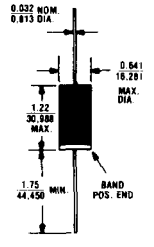
Case 2



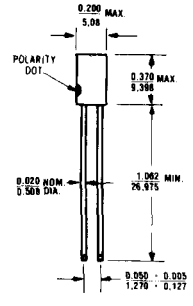
Case 3



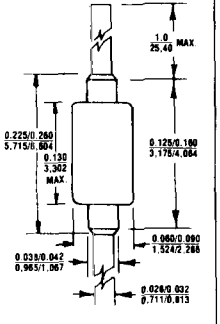
Case 4



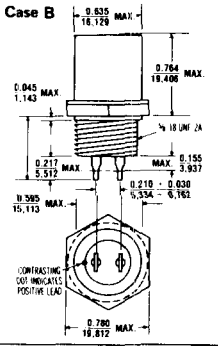
Case A



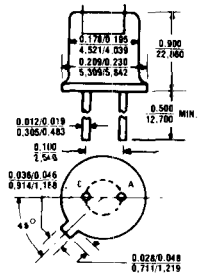
A196d



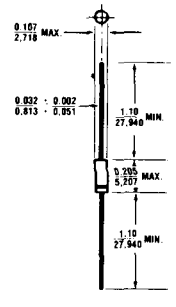
Case B



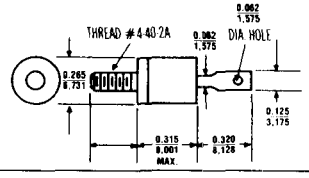
C29N



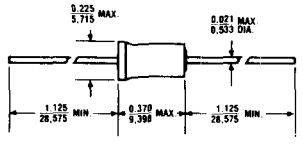
Case J (DO-41)



Case K



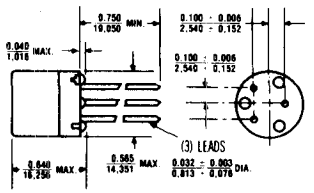
Case L



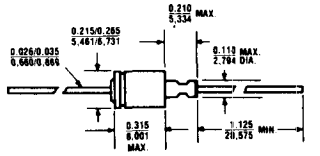
All dimensions in INCH / m.m.

CASE CONFIGURATION CHART

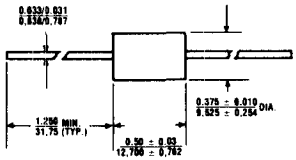
Case Q



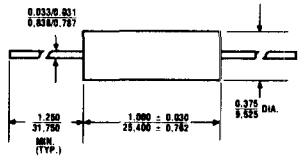
Case R



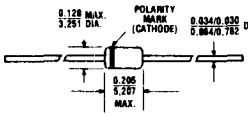
Case S



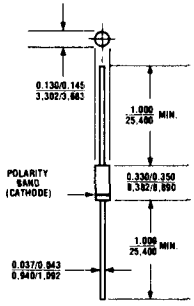
Case T



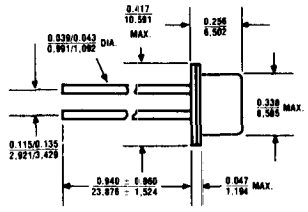
Case X



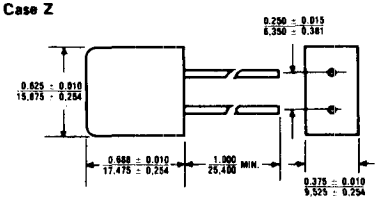
T-18



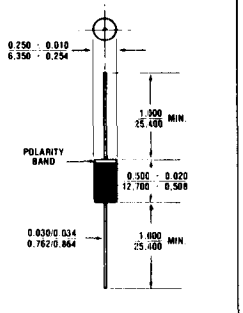
Case AA



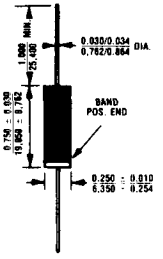
Case Z



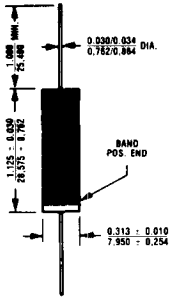
Case CC



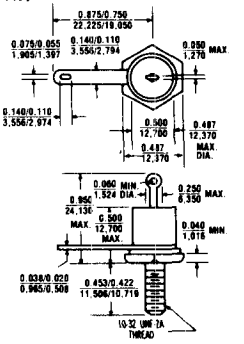
Case DD



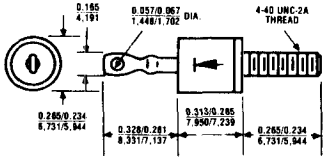
Case EE



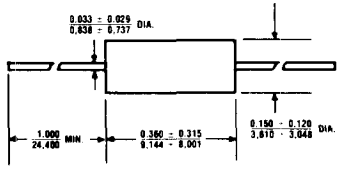
Case HH



Case FF



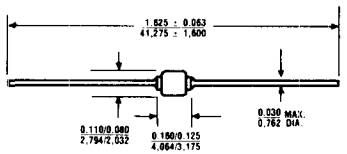
Case GG



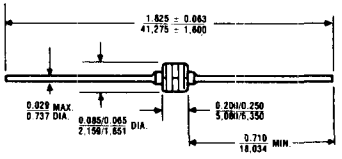
All dimensions in INCH / m.m.

CASE CONFIGURATION CHART

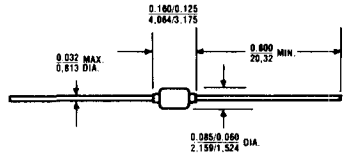
Case JJ



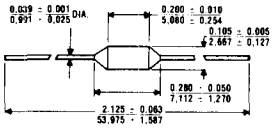
Case LL



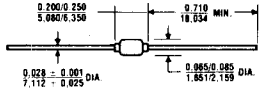
Case MM



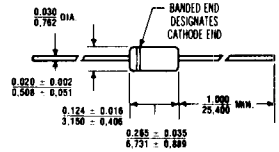
Case NN



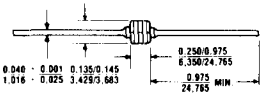
Case OO



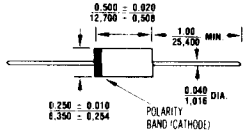
Case QQ



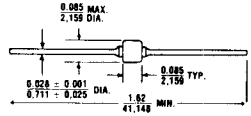
Case RR



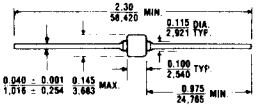
Case SS



Case UU



Case VV



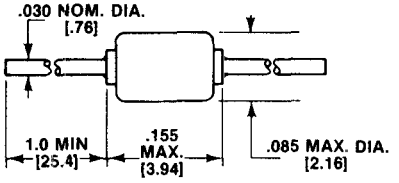
All dimensions in INCH / m.m.

CASE CONFIGURATION CHART

MECHANICAL CONFIGURATIONS PHYSICAL DIMENSIONS

DIMENSIONS IN INCHES (MM)

PACKAGE A



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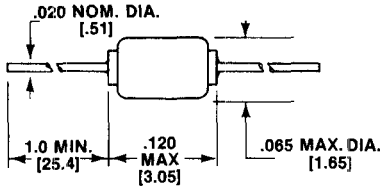

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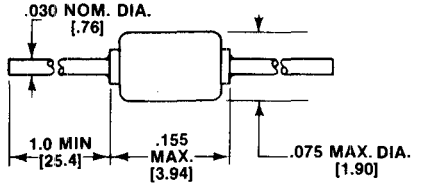

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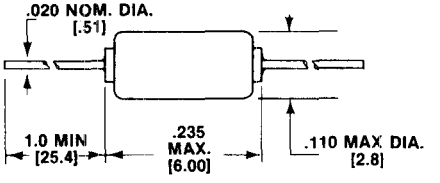

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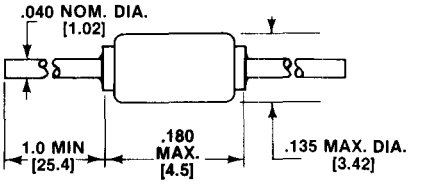

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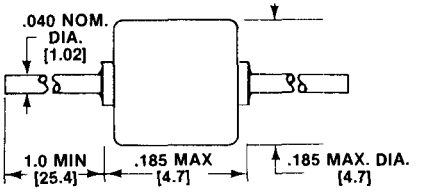
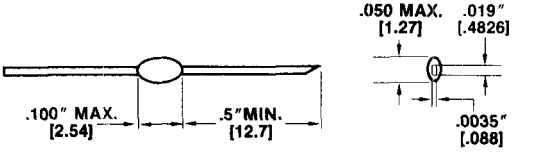
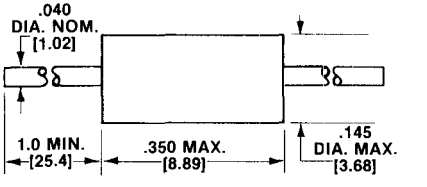


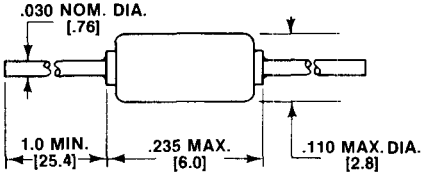
PACKAGE H



PACKAGE R



PACKAGE S



Microsemi Corp.

1N3595

GENERAL PURPOSE DIODES

FEATURES

- High conductance.
- Extremely low reverse current.
- Ultra-stable operation up to +150°C.
- Hermetically sealed glass package.
- Meets or exceeds requirements of MIL-S-19500/241.

ABSOLUTE MAXIMUM RATINGS

Operating Temperature: −65°C to +150°C.
Storage Temperature: −65°C to +200°C.
Surge Current: 4 Amps.

SPECIFICATIONS

Electrical Characteristics

TYPE	FORWARD VOLTAGE DROP V_F@I_F		FORWARD CURRENT I_F	REVERSE CURRENT (MAX) I_R@ 125V		REVERSE CURRENT (MAX) I_R@ 30V	REVERSE RECOVERY (MAX) (NOTE 1) T_{RR}	JUNCTION CAPACITANCE (MAX) C @ 0V
	VOLTS		mADC	nA		nA	μsec	pF
	MIN	MAX		25°C	125°C	125°C		
1N3595	.83	1.00	200	1.0	500	300	3.0	8.0
	.79	.92	100	1.0		300	3.0	8.0
	.74	.88	50	1.0		300	3.0	8.0
	.65	.80	10	1.0	3μA	300	3.0	8.0
	.60	.75	5	1.0	@	300	3.0	8.0
	.52	.68	1	1.0	150°C	300	3.0	8.0
	2.6	2.6						

NOTE: 1: As current data sheet

Mechanical Characteristics

Case: Hermetically sealed glass case.
Lead Material: Tinned clad copper steel.
Marking: Body painted, alpha numeric
Polarity: Cathode band

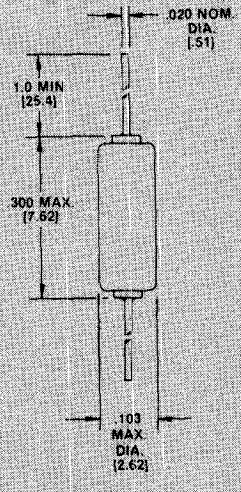


FIGURE 1

For more information call:
(714) 979-8220

6.35 VOLT ULTRA-STABLE (T.C.) ZENER REFERENCE DIODES

MAXIMUM RATINGS (See Fig. 5)

Operating Temperature Range: −65° to +150°C

Maximum Lead Temperature 1/8 ±1/32 inch from case for 8 seconds: 230°C

Maximum DC Power Dissipation at or below 25°C Ambient: 250 mW

Linear Derating: 2.0 mW/°C (See Figure 5)

Maximum Steady State Current (I_{ZM}) at 125°C: 7.5 mA

MECHANICAL CHARACTERISTICS

Case: Hermetically sealed glass

Dimensions: DO-7 outline

Finish: All external surfaces are corrosion resistant and leads are readily solderable

Polarity: Diode to be operated with the banded end positive

Weight: 0.2 grams (typical)

Mounting Position: Any

ELECTRICAL CHARACTERISTICS @ 25°C unless otherwise specified

JEDEC TYPE NUMBER	NOMINAL ZENER VOLTAGE V_Z @ I_{ZT}	ZENER TEST CURRENT ±0.01 mA I_{ZT}	MAXIMUM ZENER IMPEDANCE Z_{ZT} @ I_{ZT} (NOTE 1)	VOLTAGE TEMPERATURE STABILITY $\triangle V_{ZT}$ MAXIMUM (NOTE 2)	TEMPERATURE RANGE	EFFECTIVE TEMPERATURE COEFFICIENT	VOLTAGE TIME STABILITY @ 80°C INITIAL-TO PEAK $\triangle V_{Zt}$ MAXIMUM (NOTE 3)	EFFECTIVE VOLTAGE TIME STABILITY INITIAL-TO-PEAK
	VOLTS	mA	OHMS	mV	°C	%/°C	μV/1000 HRS.	PPM/1000 HRS.
1N3501	6.2-6.5	7.5	12	6	25 to 100	.001	635	100
1N3502	6.2-6.5	7.5	12	3	25 to 100	.0005	635	100
1N3503	6.2-6.5	7.5	12	6	25 to 100	.001	318	50
1N3504	6.2-6.5	7.5	12	6	25 to 100	.001	127	20

NOTE 1

The zener impedance is derived from the 60 Hz ac voltage which results when an ac current having an rms value equal to 10% of the DC zener current (I_{ZT}) is superimposed on I_{ZT}.

NOTE 2

The maximum allowable change observed over the entire temperature range i.e., the diode voltage will not exceed the specified mV change at any discrete temperature between the established limits.

NOTE 3

When operated at:

I_{ZT} = 7.5 mA ±0.0001 mA

T_A = 80°C ± 0.1°C

(See Precautions Below)

NOTES AND PRECAUTIONS FOR CERTIFIED REFERENCE DIODES

1. DIODE IDENTIFICATION: The diodes are shipped attached to their certification papers and each diode is individually packaged with the diode identification on the package. Identification includes JEDEC type number and a diode serial number consisting of 7 digits showing the lot number and diode number, which provide traceability to factory records.

2. PRECAUTIONS: The normal precautions must be taken when soldering as with any semiconductor device, such as a thermal shunt between the soldering iron and the diode body. "Mechanical" rather than solder mounting is preferred for optimum performance. Mounting the diode inside a large thermal mass such as aluminum, copper, brass, or epoxy will reduce thermally induced voltage fluctuations discernible as low frequency noise in the 0-3 Hz region of the spectrum.

Certain precautions must be taken to ensure that the diode's stability is fully utilized in the circuit. If the current through the zener is not controlled, the reference voltage will shift due to diode impedance ($\triangle V_Z = \triangle I_Z \times Z_{ZT}$). If the diode's junction temperature is allowed to change, due to a change in ambient or case temperature or due to a power level change, a shift in voltage will occur consistent with the temperature coefficient of the diode. In addition, the device must be physically mounted so as to give the diode a constant thermal resistance, junction-to-ambient. Drafts, circulating oil, and even the minute convection currents produced by a diode in a closed container can cause shifts in reference voltage greater than those that can be attributed to the diode's inherent stability.

The certified stability of a diode is achieved only under steady state, constant temperature conditions. If the diode is operated at conditions other than the certification test conditions, it is recommended that it be operated for a period of 2 to 3 weeks under circuit operating conditions to achieve rated stability.

A slight derating of voltage-time stability (ΔV_{Zt}) may be experienced if the diode is operated outside the "stable-area" defined in Figure 5.

Temperature coefficients much lower than specified can be attained by operating the diode at the "O" TC crossover current (the current at which the tempera-