

1N957UR-1N992UR

500 mW SILICON ZENER DIODES

FEATURES

- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.
- Available as non-RoHS (Sn/Pb plating), standard, and as RoHS by adding "-PBF" suffix.

MAXIMUM RATINGS

Rating	Value
Operating temperature	-65°C to +175°C
Storage temperature	-65°C to +175°C
Thermal resistance	250°C/W junction to lead at 3/8" lead length from body, or 310°C/W junction to ambient when mounted on FR4 PC board ⁽¹⁾
Steady-state power	0.5W at $T_L \leq 50^\circ\text{C}$ 3/8" from body or 0.48W at $T_A \leq 25^\circ\text{C}$ when mounted on FR4 PC board ⁽¹⁾
Forward voltage	@ 200 mA: 1.1 volts maximum (1N957UR-1N985UR)
	@ 200mA: 1.3 volts maximum (1N985-1N992UR)
Solder temperature	260°C for 10 s maximum

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Part number ⁽¹⁾	Nominal zener voltage ⁽²⁾	Zener test current	Maximum zener impedance ⁽³⁾			Maximum DC zener current ⁽⁴⁾	Maximum surge current ⁽⁵⁾	Maximum reverse leakage current		Maximum temperature coefficient
	V_Z	I_{ZT}	$Z_{ZT} @ I_{ZT}$	Z_{ZK}	@ I_{ZK}	I_{ZM}	I_{ZSM}	I_R	@ V_R	α_{VZ}
	Volts	mA	Ohms	Ohms	mA	mA	mA	μA	Volts	%/°C
1N957UR	6.8	18.5	4.5	700	1.0	55	300	150	5.2	0.05
1N958UR	7.5	16.5	5.5	700	0.5	50	275	75	5.7	0.058
1N959UR	8.2	15.0	6.5	700	0.5	45	250	50	6.2	0.065
1N960UR	9.1	14.0	7.5	700	0.5	41	225	25	6.9	0.068
1N961UR	10	12.5	8.5	700	0.25	38	200	10	7.6	0.075
1N962UR	11	11.5	9.5	700	0.25	32	175	5	8.4	0.076
1N963UR	12	10.5	11.5	700	0.25	31	160	5	9.1	0.077
1N964UR	13	9.5	13	700	0.25	28	150	5	9.9	0.079
1N965UR	15	8.5	16	700	0.25	25	130	5	11.4	0.082
1N966UR	16	7.8	17	700	0.25	24	120	5	12.2	0.083
1N967UR	18	7.0	21	750	0.25	20	110	5	13.7	0.085
1N968UR	20	6.2	25	750	0.25	18	100	5	15.2	0.086
1N969UR	22	5.6	29	750	0.25	16	90	5	16.7	0.087
1N970UR	24	5.2	33	750	0.25	15	80	5	18.2	0.088
1N971UR	27	4.6	41	750	0.25	13	70	5	20.6	0.090
1N972UR	30	4.2	49	1000	0.25	12	65	5	22.8	0.091
1N973UR	33	3.8	58	1000	0.25	11	60	5	25.1	0.092
1N974UR	36	3.4	70	1000	0.25	10	55	5	27.4	0.093
1N975UR	39	3.2	80	1000	0.25	9.5	46	5	29.7	0.094
1N976UR	43	3.0	93	1500	0.25	8.8	44	5	32.7	0.095

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Part number (1)	Nominal zener voltage (2)	Zener test current	Maximum zener impedance ⁽³⁾			Maximum DC zener current (4)	Maximum surge current (5)	Maximum reverse leakage current		Maximum temperature coefficient
	V_Z	I_{ZT}	$Z_{ZT} @ I_{ZT}$	Z_{ZK}	@ I_{ZK}	I_{ZM}	I_{ZSM}	I_R	@ V_R	α_{VZ}
	Volts	mA	Ohms	Ohms	mA	mA	mA	μA	Volts	%/ $^\circ\text{C}$
1N977UR	47	2.7	105	1500	0.25	7.9	40	5	35.8	0.095
1N978UR	51	2.5	125	1500	0.25	7.4	37	5	38.8	0.096
1N979UR	56	2.2	150	2000	0.25	6.8	35	5	42.6	0.096
1N980UR	62	2.0	185	2000	0.25	6.0	30	5	47.1	0.097
1N981UR	68	1.8	230	2000	0.25	5.5	28	5	51.7	0.097
1N982UR	75	1.7	270	2000	0.25	5.0	26	5	56.0	0.098
1N983UR	82	1.5	330	3000	0.25	4.6	23	5	62.2	0.098
1N984UR	91	1.4	400	3000	0.25	4.1	21	5	69.2	0.099
1N985UR	100	1.3	500	3000	0.25	3.7	18	5	76.0	0.110
1N986UR	110	1.1	750	4000	0.25	3.3	16	5	83.6	0.110
1N987UR	120	1.0	900	4500	0.25	3.1	15	5	91.2	0.110
1N988UR	130	0.95	1100	5000	0.25	2.7	13	5	98.8	0.110
1N989UR	150	0.85	1500	6000	0.25	2.4	12	5	114.0	0.110
1N990UR	160	0.80	1700	6500	0.25	2.2	11	5	121.6	0.110
1N991UR	180	0.68	2200	7100	0.25	2.0	10	5	136.8	0.110
1N992UR	200	0.65	2500	8000	0.25	1.8	9	5	152.0	0.110

NOTE 1: Zener voltage tolerance on "B" suffix is $\pm 5\%$. Suffix letter A denotes $+10\%$. No suffix denotes $\pm 20\%$ tolerance. "C" suffix denotes $\pm 2\%$ and "D" suffix denotes $\pm 1\%$.

NOTE 2: Zener voltage is measured with the device junction in thermal equilibrium at an ambient temperature of $25^\circ\text{C} \pm 3^\circ\text{C}$.

NOTE 3: Zener impedance is derived by superimposing on I_{ZTA} 60HZ rms a.c. current equal to 10% of I_{ZT} .

NOTE 4: The values of I_{ZM} are calculated for a $\pm 5\%$ tolerance on nominal zener voltage. Allowance has been made for the rise in zener voltage above V_{ZT} which results from zener impedance and the increase in junction temperature as power dissipation approaches 400mW. In the case of individual diodes I_{ZM} is that value of current which results in a dissipation of 400mW at 75°C lead temperature at 3/8" from Body.

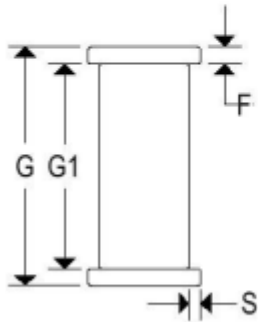
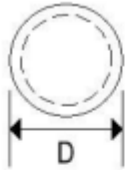
NOTE 5: The surge for I_{ZM} is a square wave or equivalent half-sine wave pulse of 1/120 second duration.

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MECHANICAL CHARACTERISTICS

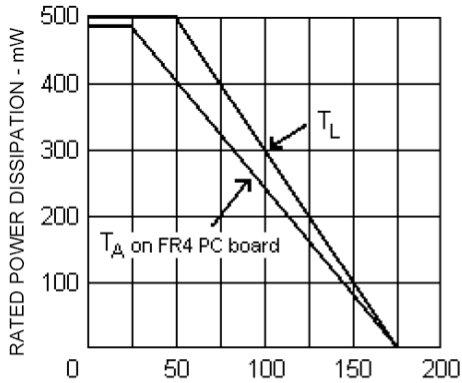
Case	SOD-80
Marking	Body painted, alpha-numeric
Polarity	Cathode band



	SOD-80			
	Inches		Millimeters	
	Min	Max	Min	Max
D	0.055	0.067	1.397	1.702
F	-	0.022	-	0.559
G	0.130	0.146	3.302	3.708
G1	0.100 REF		2.540 REF	
S	0.001	-	0.025	-

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T_L - LEAD TEMPERATURE ($^{\circ}\text{C}$) 3/8" FROM BODY or
 T_A on FR4 PC BOARD

FIGURE 1
POWER DERATING CURVE

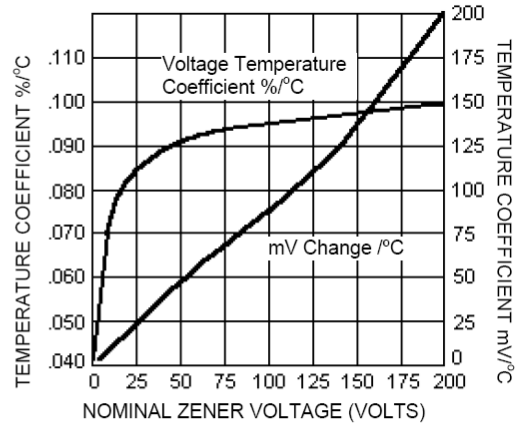


FIGURE 2
ZENER VOLTAGE TEMPERATURE
COEFFICIENT vs. ZENER VOLTAGE

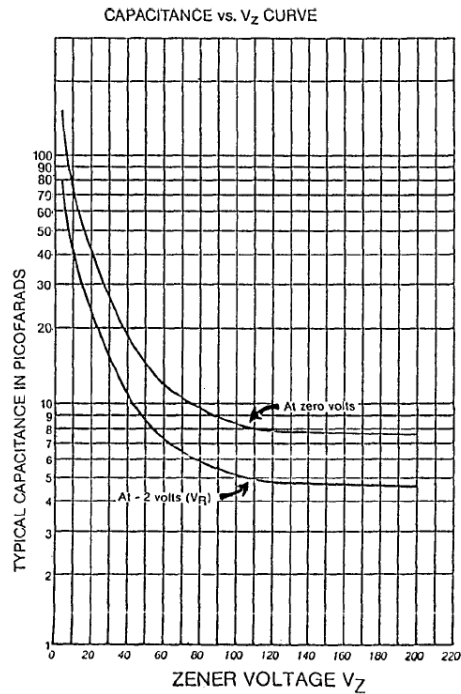


FIGURE 3
CAPACITANCE vs. ZENER VOLTAGE
(TYPICAL)