

### 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 <sup>(1)</sup>
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 <sup>(1)</sup>
Forward voltage	@ 200 mA: 1.1 volts maximum (1N957B-1N985B)
	@ 200mA: 1.3 volts maximum (1N985-1N992B)
Solder temperature	260°C for 10 s maximum

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

Part number <sup>(1)</sup>	Nominal zener voltage <sup>(2)</sup>	Zener test current	Maximum zener impedance <sup>(3)</sup>			Maximum DC zener current <sup>(4)</sup>	Maximum surge current <sup>(5)</sup>	Maximum reverse leakage current		Maximum temperature coefficient
			$Z_{ZT} @ I_{ZT}$	$Z_{ZK}$	@ $I_{ZK}$			$I_R$	@ $V_R$	
			Ohms	Ohms	mA			$\mu\text{A}$	Volts	
1N957B	6.8	18.5	4.5	700	1.0	55	300	150	5.2	0.05
1N958B	7.5	16.5	5.5	700	0.5	50	275	75	5.7	0.058
1N959B	8.2	15.0	6.5	700	0.5	45	250	50	6.2	0.065
1N960B	9.1	14.0	7.5	700	0.5	41	225	25	6.9	0.068
1N961B	10	12.5	8.5	700	0.25	38	200	10	7.6	0.075
1N962B	11	11.5	9.5	700	0.25	32	175	5	8.4	0.076
1N963B	12	10.5	11.5	700	0.25	31	160	5	9.1	0.077
1N964B	13	9.5	13	700	0.25	28	150	5	9.9	0.079
1N965B	15	8.5	16	700	0.25	25	130	5	11.4	0.082
1N966B	16	7.8	17	700	0.25	24	120	5	12.2	0.083
1N967B	18	7.0	21	750	0.25	20	110	5	13.7	0.085
1N968B	20	6.2	25	750	0.25	18	100	5	15.2	0.086
1N969B	22	5.6	29	750	0.25	16	90	5	16.7	0.087
1N970B	24	5.2	33	750	0.25	15	80	5	18.2	0.088
1N971B	27	4.6	41	750	0.25	13	70	5	20.6	0.090
1N972B	30	4.2	49	1000	0.25	12	65	5	22.8	0.091
1N973B	33	3.8	58	1000	0.25	11	60	5	25.1	0.092
1N974B	36	3.4	70	1000	0.25	10	55	5	27.4	0.093
1N975B	39	3.2	80	1000	0.25	9.5	46	5	29.7	0.094
1N976B	43	3.0	93	1500	0.25	8.8	44	5	32.7	0.095

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

Part number (1)	Nominal zener voltage (2)	Zener test current	Maximum zener impedance <sup>(3)</sup>			Maximum DC zener current (4)	Maximum surge current (5)	Maximum reverse leakage current		Maximum temperature coefficient
			$Z_{ZT} @ I_{ZT}$	$Z_{ZK}$	@ $I_{ZK}$			$I_R$	@ $V_R$	
			Ohms	Ohms	mA			$\mu\text{A}$	Volts	
1N977B	47	2.7	105	1500	0.25	7.9	40	5	35.8	0.095
1N978B	51	2.5	125	1500	0.25	7.4	37	5	38.8	0.096
1N979B	56	2.2	150	2000	0.25	6.8	35	5	42.6	0.096
1N980B	62	2.0	185	2000	0.25	6.0	30	5	47.1	0.097
1N981B	68	1.8	230	2000	0.25	5.5	28	5	51.7	0.097
1N982B	75	1.7	270	2000	0.25	5.0	26	5	56.0	0.098
1N983B	82	1.5	330	3000	0.25	4.6	23	5	62.2	0.098
1N984B	91	1.4	400	3000	0.25	4.1	21	5	69.2	0.099
1N985B	100	1.3	500	3000	0.25	3.7	18	5	76.0	0.110
1N986B	110	1.1	750	4000	0.25	3.3	16	5	83.6	0.110
1N987B	120	1.0	900	4500	0.25	3.1	15	5	91.2	0.110
1N988B	130	0.95	1100	5000	0.25	2.7	13	5	98.8	0.110
1N989B	150	0.85	1500	6000	0.25	2.4	12	5	114.0	0.110
1N990B	160	0.80	1700	6500	0.25	2.2	11	5	121.6	0.110
1N991B	180	0.68	2200	7100	0.25	2.0	10	5	136.8	0.110
1N992B	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  $75^\circ\text{C}$  lead temperature at  $3/8"$  from body.

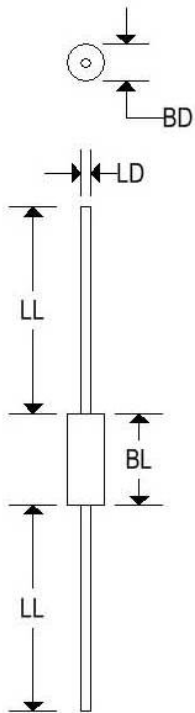
NOTE 5: The surge for  $I_{ZM}$  is a square wave or equivalent half-sine wave pulse of 1/120 second duration.

# 1N957B-1N992B

500 mW SILICON ZENER DIODES

## MECHANICAL CHARACTERISTICS

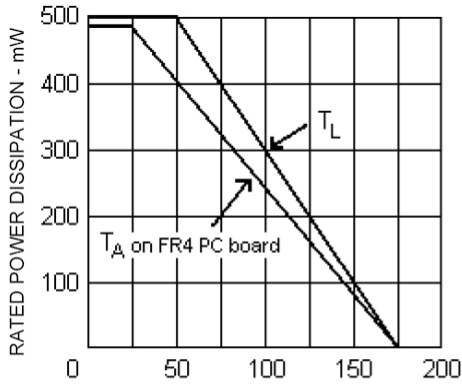
<b>Case</b>	DO-35
<b>Marking</b>	Body painted, alph-numeric
<b>Polarity</b>	Cathode band



	DO-35			
	Inches		Millimeters	
	Min	Max	Min	Max
BD	0.055	0.090	1.400	2.290
BL	0.120	0.200	3.050	5.080
LD	0.018	0.022	0.460	0.560
LL	1.000	1.500	25.400	38.100

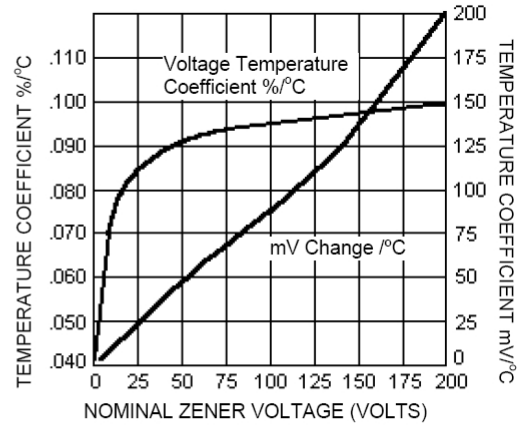
# 1N957B-1N992B

## 500 mW SILICON ZENER DIODES

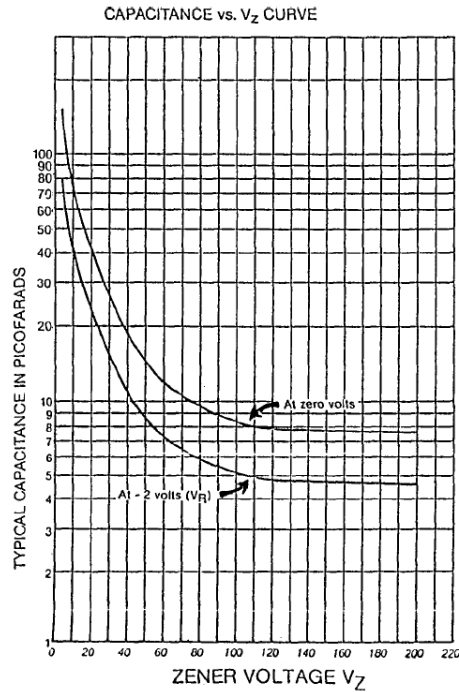


$T_L$  – LEAD TEMPERATURE ( $^{\circ}\text{C}$ ) 3/8" FROM BODY or  
 $T_A$  on FR4 PC BOARD

**FIGURE 1**  
POWER DERATING CURVE



**FIGURE 2**  
ZENER VOLTAGE TEMPERATURE  
COEFFICIENT vs. ZENER VOLTAGE



**FIGURE 3**  
CAPACITANCE vs. ZENER VOLTAGE  
(TYPICAL)