



# 1N5518 THRU 1N5546

## 0.4W LOW VOLTAGE AVALANCHE DIODES



**VOLTAGE RANGE**  
3.3 to 33 Volts

### FEATURES

- \* Low zener noise specified
- \* Low zener impedance
- \* Low leakage current
- \* Hermetically sealed glass package

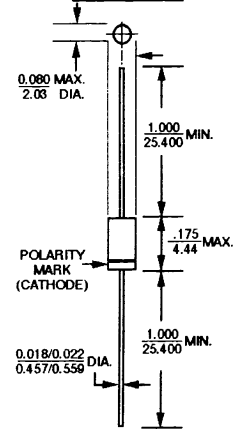
### MECHANICAL CHARACTERISTICS

- \* CASE: Hermetically sealed glass case. DO - 35.
- \* LEAD MATERIAL: Tinned copper clad steel.
- \* MARKING: Body painted, alphanumeric.
- \* POLARITY: banded end is cathode.
- \* THERMAL RESISTANCE: 200°C/W (Typical) junction to lead at 0.375 - inches from body. Metallurgically bonded DO - 35's exhibit less than 100°C/Watt at zero distance from body.

### MAXIMUM RATINGS

Operating temperature: -65°C to +200°C; Storage temperature: -65°C to +200°C

### DO-35



### ELECTRICAL CHARACTERISTICS

( $T_A = 25^\circ\text{C}$  unless otherwise noted. Based on dc measurements at thermal equilibrium  $V_F = 1.1 \text{ MAX}$  @  $I_F = 200 \text{ mA}$  for all types)

JEDEC TYPE NO. (Note 1)	NOMINAL ZENER VOLTAGE $V_Z$ @ $I_{ZT}$ VOLTS (Note 2)	TEST CURRENT $I_{ZT}$ mAdc	MAX. ZENER IMPEDANCE B-C-D SUFFIX $Z_Z$ @ $I_{ZT}$ OHMS (Note 3)	MAX. REVERSE LEAKAGE CURRENT			B-C-D SUFFIX MAXIMUM DC ZENER CURRENT $I_{ZM}$ mAdc (Note 5)	B-C-D SUFFIX MAX. NOISE DENSITY AT $I_Z = 250 \mu\text{A}$ ND (MICRO-VOLTS PER SQUARE ROOT CYCLE)	REGULATION FACTOR $\Delta V_Z$ VOLTS (Note 6)	LOW $V_Z$ CURRENT $I_{ZL}$ mAdc
				$I_R$ $\mu\text{Adc}$ (Note 4)	$V_R$ - VOLTS					
					NON & A SUFFIX	B-C-D SUFFIX				
1N5518	3.3	20	26	5.0	0.90	1.0	115	0.5	0.90	2.0
1N5519	3.6	20	24	3.0	0.90	1.0	105	0.5	0.90	2.0
1N5520	3.9	20	22	1.0	0.90	1.0	98	0.5	0.85	2.0
1N5521	4.3	20	18	3.0	1.0	1.5	88	0.5	0.75	2.0
1N5522	4.7	10	22	2.0	1.5	2.0	81	0.5	0.60	1.0
1N5523	5.1	5.0	26	2.0	2.0	2.5	75	0.5	0.65	0.25
1N5524	5.6	3.0	30	2.0	3.0	3.5	68	1.0	0.30	0.25
1N5525	6.2	1.0	30	1.0	4.5	5.0	61	1.0	0.20	0.01
1N5526	6.8	1.0	30	1.0	5.5	6.2	56	1.0	0.10	0.01
1N5527	7.5	1.0	35	0.5	6.0	6.8	51	2.0	0.05	0.01
1N5528	8.2	1.0	40	0.5	6.5	7.5	46	4.0	0.05	0.01
1N5529	9.1	1.0	45	0.1	7.0	8.2	42	4.0	0.05	0.01
1N5530	10.0	1.0	60	0.05	8.0	9.1	38	4.0	0.10	0.01
1N5531	11.0	1.0	80	0.05	9.0	9.9	35	5.0	0.20	0.01
1N5532	12.0	1.0	90	0.05	9.5	10.8	32	10	0.20	0.01
1N5533	13.0	1.0	90	0.01	10.5	11.7	29	15	0.20	0.01
1N5534	14.0	1.0	100	0.01	11.5	12.6	27	20	0.20	0.01
1N5535	15.0	1.0	100	0.01	12.5	13.5	25	20	0.20	0.01
1N5536	16.0	1.0	100	0.01	13.0	14.4	24	20	0.20	0.01
1N5537	17.0	1.0	100	0.01	14.0	15.3	22	20	0.20	0.01
1N5538	18.0	1.0	100	0.01	15.0	16.2	21	20	0.20	0.01
1N5539	19.0	1.0	100	0.01	16.0	17.1	20	20	0.20	0.01
1N5540	20.0	1.0	100	0.01	17.0	18.0	19	20	0.20	0.01
1N5541	22.0	1.0	100	0.01	18.0	19.8	17	20	0.25	0.01
1N5542	24.0	1.0	100	0.01	20.0	21.6	16	20	0.30	0.01
1N5543	25.0	1.0	100	0.01	21.0	22.4	15	20	0.35	0.01
1N5544	28.0	1.0	100	0.01	23.0	25.2	14	20	0.40	0.01
1N5545	30.0	1.0	100	0.01	24.0	27.0	13	20	0.45	0.01
1N5546	33.0	1.0	100	0.01	28.0	29.7	12	20	0.50	0.01

### NOTE 1 - TOLERANCE AND VOLTAGE DESIGNATION

The JEDEC type numbers shown are  $\pm 20\%$  with guaranteed limits for only  $V_Z$ ,  $I_R$ , and  $V_F$ . Units with A suffix are  $\pm 10\%$  with guaranteed limits for only  $V_Z$ ,  $I_R$ , and  $V_F$ . Units with guaranteed limits for all six parameters are indicated by a B suffix for  $\pm 5.0\%$  units, C suffix for  $\pm 2.0\%$  and D suffix for  $\pm 1.0\%$ .

### NOTE 2 - ZENER ( $V_Z$ ) VOLTAGE MEASUREMENT

Nominal zener voltage is measured with the device junction in thermal equilibrium with ambient temperature of  $25^\circ\text{C}$ .

### NOTE 3 - ZENER IMPEDANCE ( $Z_Z$ ) DERIVATION

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 4 - REVERSE LEAKAGE CURRENT ( $I_R$ )

Reverse leakage currents are guaranteed and are measured at  $V_R$  as shown on the table.

### NOTE 5 - MAXIMUM REGULATOR CURRENT ( $I_{ZM}$ )

The maximum current shown is based on the maximum voltage of a 5.0% type unit, therefore, it applies only to the B suffix device. The actual  $I_{ZM}$  for any device may not exceed the value of 400 milliwatts divided by the actual  $V_Z$  of the device.

### NOTE 6 - MAXIMUM REGULATION FACTOR ( $\Delta V_Z$ )

$\Delta V_Z$  is the maximum difference between  $V_Z$  at  $I_{ZT}$  and  $V_Z$  at  $I_{ZL}$  measured with the device junction in thermal equilibrium.

# RATINGS AND CHARACTERISTIC CURVES (1N5518 THRU 1N5546)

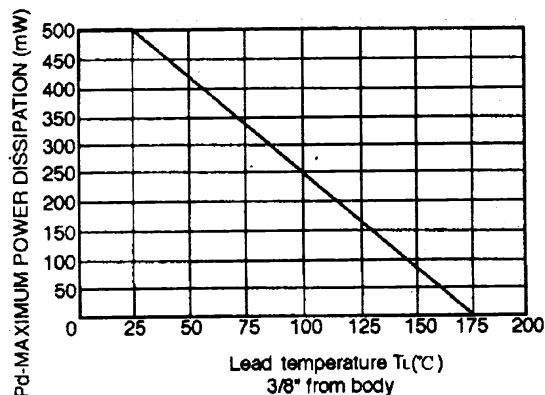


FIGURE 1 - POWER TEMPERATURE DERATING CURVE

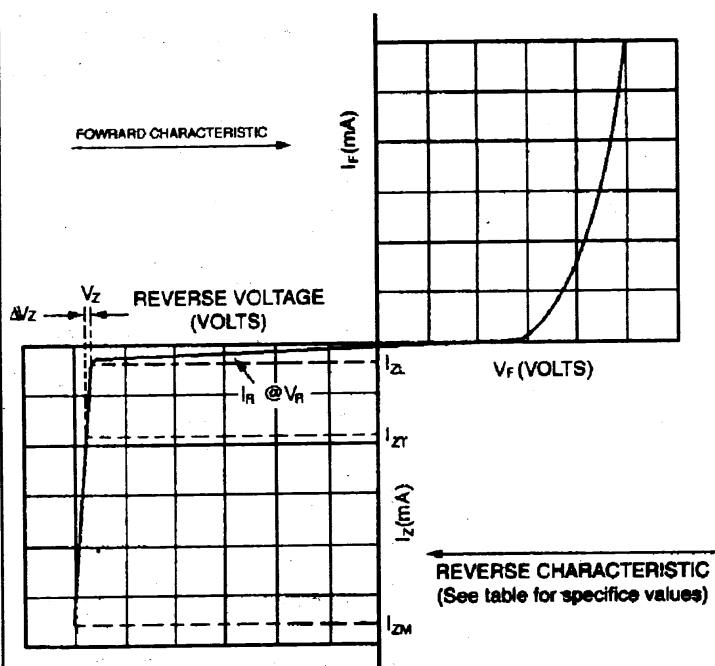


FIGURE 2 - ZENER DIODE CHARACTERISTICS AND SYMBOL IDENTIFICATION

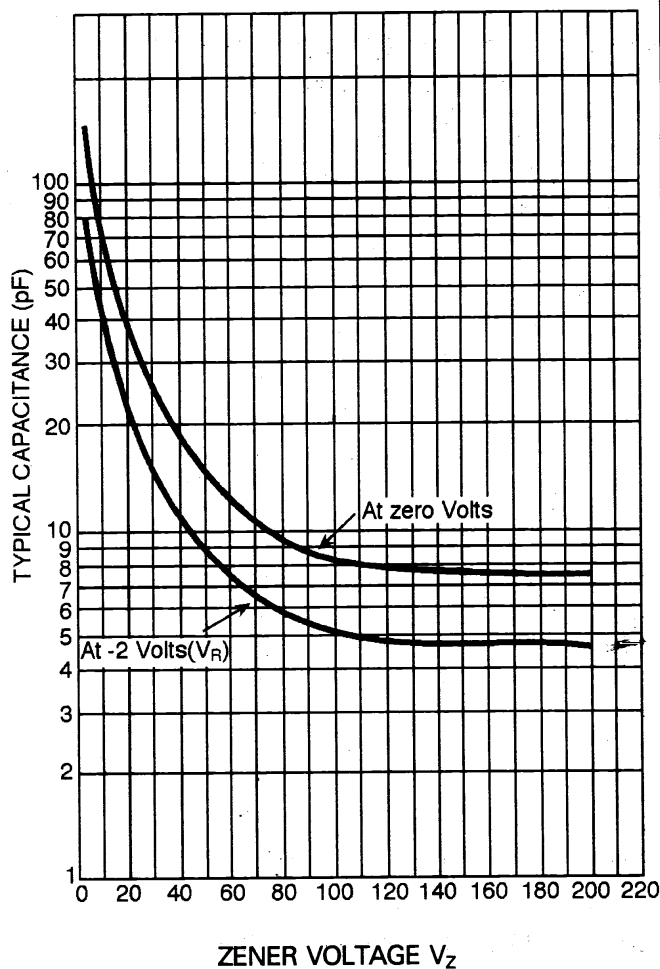


FIGURE 3 - CAPACITANCE VS.  $V_z$  CURVE