

# Silicon Avalanche Diodes

## 1500 Watt Metal Axial Leaded Transient Voltage Suppressors

### 1N60 Series



#### FEATURES

- Hermetically sealed
- Breakdown voltage range 6.8 - 200 volts
- Glass passivated junction
- Excellent clamping capability
- Low zener impedance
- 100% surge tested
- -55°C to +150°C
- Bi-directional

#### MAXIMUM RATING

- Peak Pulse Power (Ppk): 15000 Watts (10 x 1000µs)@25°C (see diagram on page 3 for wave form)
- 1 watt steady state
- Response time:  $1 \times 10^{-12}$  seconds (theoretical)
- Operating & storage temperature: -55°C to +150°C

#### MECHANICAL CHARACTERISTICS

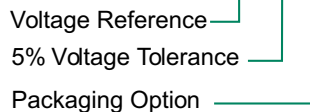
- Case: Metal hermetically sealed DO-13 package
- Terminals: Axial leads, solderable per MIL-STD-202 Method 208
- Solderable leads = 230°C for 10 seconds (1.59mm from case)
- Weight: 1.5 grammes (approx)

**Agency Approvals:** Recognized under the Components Program of Underwriters Laboratories.

**Agency File Number:** E128662

#### ORDERING INFORMATION

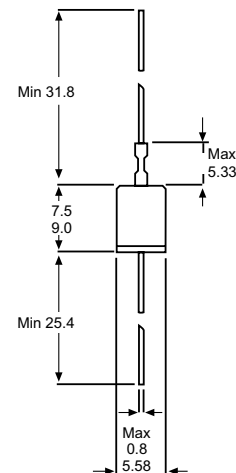
1N60 [X][X][A][ ]



B = Bulk (500 pcs)



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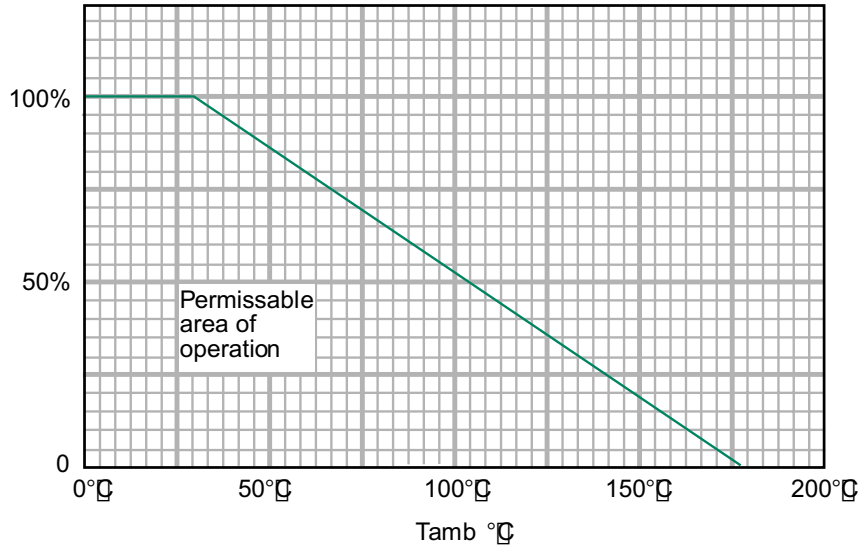


All dimensions in mm

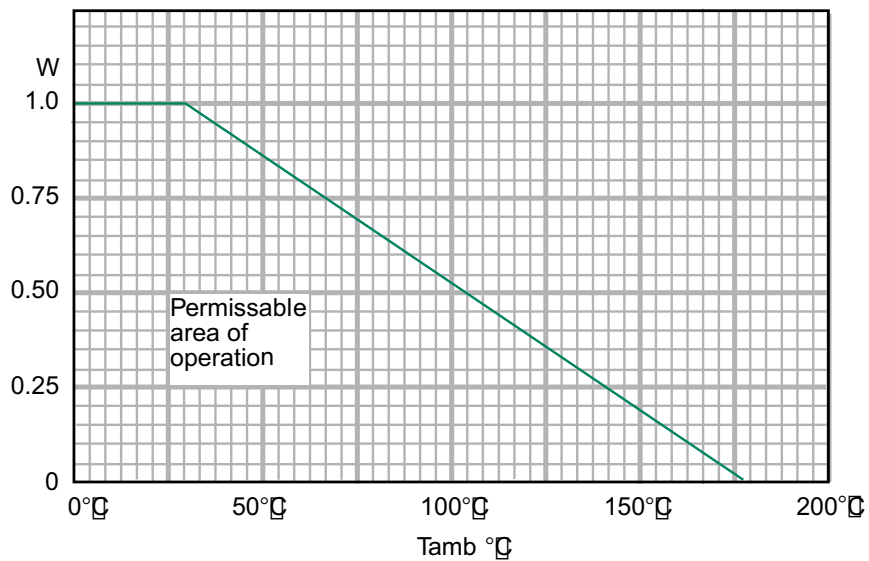
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**Figure 1 - Peak Power Derating Curve**  
Peak pulse power in percent of 25°C rating



**Figure 2 - Continuous D.C. Power Derating Curve**  
Continuous d.c. power dissipation

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### ELECTRICAL SPECIFICATION @ Tamb 25°C

Part Number	Reverse Stand Off Voltage $V_R$ (Volts)	Breakdown Voltage $V_{BR}$ (Volts) @ $I_T$			Maximum Reverse Leakage $I_R$ @ $V_R$ ( $\mu A$ )	Maximum Clamping Voltage $V_C$ @ $I_{PP}$ (Volts)	Maximum Peak Pulse Current $I_{PP}$ (A)	Max Voltage Temperature Variation of $V_{BR}$ (mV/°C)
		MIN	MAX	(mA)				
1N6036*	5.5	6.75	8.25	10	1000.0	11.7	128.0	5.0
1N6036A*	6.0	7.13	7.88	10	1000.0	11.3	132.0	5.0
1N6037*	6.5	7.38	9.02	10	500.0	12.5	120.0	5.0
1N6037A*	7.0	7.79	8.61	10	500.0	12.1	124.0	5.0
1N6038	7.0	8.19	10.00	1.0	200.0	13.8	109.0	7.0
1N6038A	7.5	8.65	9.55	1.0	200.0	13.4	112.0	7.0
1N6039	8.0	9.00	11.00	1.0	50.0	15.0	100.0	7.0
1N6039A	8.5	9.50	10.50	1.0	50.0	14.5	103.0	7.0
1N6040*	8.5	9.90	12.10	1.0	10.0	16.2	93.0	8.0
1N6040A*	9.0	10.50	11.60	1.0	10.0	15.6	96.0	8.0
1N6041*	9.0	10.80	13.20	1.0	5.0	17.3	87.0	9.0
1N6041A*	10.0	11.40	12.60	1.0	5.0	16.7	90.0	9.0
1N6042	10.0	11.70	14.30	1.0	5.0	19.0	79.0	10.0
1N6042A	11.0	12.40	13.70	1.0	5.0	18.2	82.0	10.0
1N6043	11.0	13.50	16.50	1.0	5.0	22.0	68.0	11.0
1N6043A	12.0	14.30	15.80	1.0	5.0	21.2	71.0	12.0
1N6044	12.0	14.40	17.60	1.0	5.0	23.5	64.0	12.0
1N6044A	13.0	15.20	16.80	1.0	5.0	22.5	67.0	13.0
1N6045*	14.0	16.20	19.80	1.0	5.0	26.5	56.5	14.0
1N6045A*	15.0	17.10	18.90	1.0	5.0	25.2	59.5	15.0
1N6046	16.0	18.00	22.00	1.0	5.0	29.1	51.5	17.0
1N6046A	17.0	19.00	21.00	1.0	5.0	27.7	54.0	18.0
1N6047	17.0	19.80	24.20	1.0	5.0	31.9	47.0	19.0
1N6047A	18.0	20.90	23.10	1.0	5.0	30.6	49.0	20.0
1N6048	19.0	21.60	26.40	1.0	5.0	34.7	43.0	24.0
1N6048A	20.0	22.80	25.20	1.0	5.0	33.2	45.0	24.0
1N6049*	21.0	24.30	29.70	1.0	5.0	39.1	38.5	27.0
1N6049A*	22.0	25.70	28.40	1.0	5.0	37.5	40.0	28.0
1N6050	24.0	27.00	33.00	1.0	5.0	43.5	34.5	36.0
1N6050A	25.0	28.50	31.50	1.0	5.0	41.4	36.0	31.0
1N6051*	26.0	29.70	36.30	1.0	5.0	47.7	31.5	32.0
1N6051A*	28.0	31.40	34.70	1.0	5.0	45.7	33.0	34.0
1N6052	29.0	32.40	39.60	1.0	5.0	52.0	29.0	36.0
1N6052A	30.0	34.20	37.80	1.0	5.0	49.9	30.0	37.0

Suffix 'A' denotes 5% tolerance device, no suffix denotes a 10% tolerance device.

\* Preferred voltages.

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### 1N60 Series



#### ELECTRICAL SPECIFICATION @ Tamb 25°C

Part Number	Reverse Stand Off Voltage V <sub>R</sub> (Volts)	Breakdown Voltage V <sub>BR</sub> (Volts) @ I <sub>T</sub>			Maximum Reverse Leakage I <sub>R</sub> @ V <sub>R</sub> (µA)	Maximum Clamping Voltage V <sub>c</sub> @ I <sub>PP</sub> (Volts)	Maximum Peak Pulse Current I <sub>PP</sub> (A)	Max Voltage Temperature Variation of V <sub>BR</sub> (mV/°C)
		MIN	MAX	(mA)				
1N6053*	31.0	35.10	42.90	1.0	5.0	56.4	26.5	39.0
1N6053A*	33.0	37.10	41.00	1.0	5.0	53.9	28.0	40.0
1N6054*	34.0	38.70	47.30	1.0	5.0	61.9	24.0	44.0
1N6054A*	36.0	40.90	45.20	1.0	5.0	59.3	25.3	43.0
1N6055*	38.0	42.30	51.70	1.0	5.0	67.8	22.2	49.0
1N6055A*	40.0	44.70	49.40	1.0	5.0	64.8	23.2	47.0
1N6056*	41.0	45.90	56.10	1.0	5.0	73.5	20.4	53.0
1N6056A*	43.0	48.50	53.60	1.0	5.0	70.1	21.4	51.0
1N6057	45.0	50.4	61.6	1.0	5.0	80.5	18.6	58.0
1N6057A	47.0	53.2	58.8	1.0	5.0	77.0	19.5	56.0
1N6058*	48.0	55.8	68.2	1.0	5.0	89.0	16.9	64.0
1N6058A*	53.0	58.9	65.1	1.0	5.0	85.0	17.7	62.0
1N6059*	55.0	61.2	74.8	1.0	5.0	98.0	15.3	70.0
1N6059A*	58.0	64.6	71.4	1.0	5.0	92.0	16.3	68.0
1N6060*	60.0	67.5	82.5	1.0	5.0	108.0	13.9	77.0
1N6060A*	64.0	71.3	78.8	1.0	5.0	103.0	14.6	75.0
1N6061*	66.0	73.8	90.2	1.0	5.0	118.0	12.7	84.0
1N6061A*	70.0	77.9	86.1	1.0	5.0	113.0	13.3	82.0
1N6062	73.0	81.9	100.0	1.0	5.0	131.0	11.4	90.0
1N6062A	75.0	86.5	95.5	1.0	5.0	125.0	12.0	86.0
1N6063*	81.0	90.0	110.0	1.0	5.0	144.0	10.4	99.0
1N6063A*	82.0	95.0	105.0	1.0	5.0	137.0	11.0	94.0
1N6064*	90.0	99.0	121.0	1.0	5.0	158.0	9.5	109.0
1N6064A*	94.0	105.0	116.0	1.0	5.0	152.0	9.9	104.0
1N6065	95.0	108.0	132.0	1.0	5.0	173.0	8.7	120.0
1N6065A	100.0	114.0	126.0	1.0	5.0	165.0	9.1	115.0
1N6066	105.0	117.0	143.0	1.0	5.0	187.0	8.0	131.0
1N6066A	110.0	124.0	137.0	1.0	5.0	179.0	8.4	125.0
1N6067	121.0	135.0	165.0	1.0	5.0	215.0	7.0	142.0
1N6067A	128.0	143.0	158.0	1.0	5.0	207.0	7.2	136.0
1N6068	137.0	153.0	187.0	1.0	5.0	258.0	5.8	164.0
1N6068A	145.0	162.0	179.0	1.0	5.0	245.0	6.1	157.0
1N6069*	145.0	162.0	198.0	1.0	5.0	274.0	5.5	175.0
1N6069A*	150.0	171.0	189.0	1.0	5.0	261.0	5.7	167.0
1N6070	155.0	171.0	210.0	1.0	5.0	292.0	5.1	186.0
1N6070A	160.0	181.0	200.0	1.0	5.0	278.0	5.4	188.0
1N6071*	165.0	180.0	220.0	1.0	5.0	308.0	4.9	197.0
1N6071A*	170.0	190.0	210.0	1.0	5.0	294.0	5.1	188.0
1N6072	175.0	198.0	242.0	1.0	5.0	344.0	4.3	219.0
1N6072A	185.0	209.0	231.0	1.0	5.0	328.0	4.6	209.0

Suffix 'A' denotes 5% tolerance device, no suffix denotes a 10% tolerance device.

\* Preferred voltages.