

## ZENER DIODE

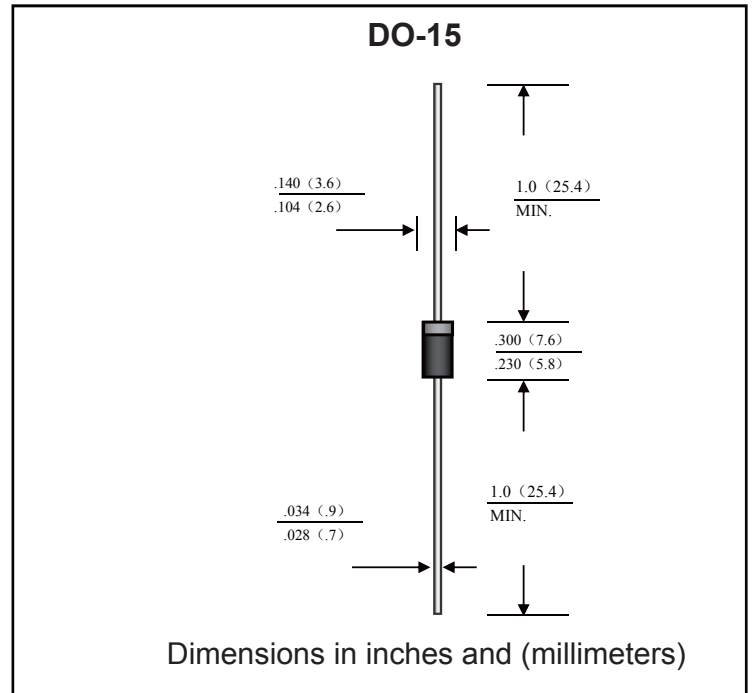
VOLTAGE RANGE: 3.3--- 200V  
PEAK PULSE POWER:5.0W

### FEATURES

- Low Reverse Leakage
- Low Zener Impedance
- High Stability and High Reliability

### MECHANICAL DATA

- Case: DO-15
- Molding material: UL94V-O approved flame retardant epoxy
- Lead: Plating Solderability in accordance with MIL-STD-202E, Method 208C



## MAXIMUM RATINGS AND CHARACTERISTICS

Ratings at 25 C ambient temperature unless otherwise specified

Parameters	SYMBOLS	VALUE	UNITS
Zener current	$I_Z$ MAX	See table	mA
Dissipated power @TL=75°C (Note 1)	$P_t$	5	W
Forward voltage @IF=1.0A	VF	1.2	V
Thermal impedance (knot to the surrounding environment, note 1)	$R_{\theta(ja)}$	20	°C/W
Use and storage temperature range (patch)	$T_I, T_{STG}$	-55~+150	°C
Use and storage temperature range (axial)		-55~+175	

Note: The temperature at the 9.5mm (axial) lead from the tube is set to the ambient temperature.

## RATINGS AND CHARACTERISTIC CURVES

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

Model (Note 1)	Zener voltage	Measuring current	Maximum Zener impedance			Maximum reverse leakage current		Maximum DC Zener current @V(BR)
	$V_{z@I_{zT}}$	$I_{zT}$	$Z_{zT}@I_{zT}$ (Note2)	$Z_{zK}@I_{zK}$ (Note 3)	$I_{zK}$	$I_{R@V_R}$	@ $V_R$	$I_{zM}@50^\circ\text{C}$ (注释4)
	V	mA	$\Omega$	$\Omega$	mA	$\mu\text{A}$	V	mA
1N5333	3.3	380	3	400	1	300	1.0	1440
1N5334	3.6	350	2.5	500	1	150	1.0	1320
1N5335	3.9	320	2	500	1	50	1.0	1220
1N5336	4.3	290	2	500	1	10	1.0	1100
1N5337	4.7	260	2	450	1	5	1.0	1010
1N5338	5.1	240	1.5	400	1	1	1.0	930
1N5339	5.6	220	1	400	1	1	2.0	856
1N5340	6.0	200	1	300	1	1	3.0	790
1N5341	6.2	200	1	200	1	1	4.0	765
1N5342	6.8	175	1	200	1	10	4.9	700
1N5343	7.5	175	1.5	200	1	10	5.4	630
1N5344	8.2	150	1.5	200	1	10	5.9	580
1N5345	8.7	150	2	200	1	10	6.3	545
1N5346	9.1	150	2	150	1	7.5	6.6	520
1N5347	10	125	2	125	1	5	7.2	475
1N5348	11	125	2.5	125	1	5	8	430
1N5349	12	100	2.5	125	1	2	8.6	395
1N5350	13	100	2.5	100	1	1	9.4	365
1N5351	14	100	2.5	75	1	1	10.1	340
1N5352	15	75	2.5	75	1	1	10.8	315
1N5353	16	75	2.5	75	1	1	11.5	295
1N5354	17	70	2.5	75	1	0.5	12.2	280
1N5355	18	65	2.5	75	1	0.5	13	265
1N5356	19	65	3	75	1	0.5	13.7	250
1N5357	20	50	3	75	1	0.5	14.4	237
1N5358	22	50	3.5	75	1	0.5	15.8	216
1N5359	24	50	3.5	100	1	0.5	17.3	198
1N5360	25	50	4	110	1	0.5	18	190
1N5361	27	50	5	120	1	0.5	19.4	176
1N5362	28	50	6	130	1	0.5	20.1	170
1N5363	30	40	8	140	1	0.5	21.6	158
1N5364	33	40	10	150	1	0.5	23.8	144
1N5365	36	30	11	160	1	0.5	25.9	132
1N5366	39	30	14	170	1	0.5	28.1	122
1N5367	43	30	20	190	1	0.5	31	110
1N5368	47	25	25	210	1	0.5	33.8	100
1N5369	51	25	27	230	1	0.5	36.7	93
1N5370	56	20	35	280	1	0.5	40.3	86
1N5371	60	20	40	350	1	0.5	43	79
1N5372	62	20	42	400	1	0.5	44.6	76
1N5373	68	20	44	500	1	0.5	49	70
1N5374	75	20	45	620	1	0.5	54	63

## RATINGS AND CHARACTERISTIC CURVES

### Electrical Specification ( $T_A = @25^\circ\text{C}$ unless otherwise specified)

Model (Note 1)	Zener voltage Measuring current		Maximum Zener impedance			Maximum reverse leakage current		Maximum DC Zener current @V(BR)
	$V_{Z@I_{ZT}}$	$I_{ZT}$	$Z_{ZT}@I_{ZT}$ (Note 2)	$Z_{ZK}@I_{ZK}$ (Note 3)	$I_{ZK}$	$I_{R@V_R}$	@ $V_R$	$I_{ZM}@50^\circ\text{C}$ (Note 4)
	V	mA	$\Omega$	$\Omega$	mA	$\mu\text{A}$	V	mA
1N5375	82	15	65	720	1	0.5	59	58
1N5376	87	15	75	760	1	0.5	63	54.5
1N5377	91	15	75	760	1	0.5	65.5	52.5
1N5378	100	12	90	800	1	0.5	72	47.5
1N5379	110	12	125	1000	1	0.5	79.2	43
1N5380	120	10	170	1150	1	0.5	86.4	39.5
1N5381	130	10	190	1250	1	0.5	93.2	36.6
1N5382	140	8	230	1500	1	0.5	101	34
1N5383	150	8	330	1500	1	0.5	108	31.6
1N5384	160	8	350	1650	1	0.5	115	29.4
1N5385	170	8	380	1750	1	0.5	122	28
1N5386	180	5	430	1750	1	0.5	130	26.4
1N5387	190	5	450	1850	1	0.5	137	25
1N5388	200	5	480	1850	1	0.5	144	23.6

- Note :
1. The standard type Zener voltage deviation is 10%; the special type with the subscript "B" is added with a deviation of 5%.
  2. For Zener impedance,  $I(\text{ac rms}) = 10\% I_{ZT}$
  3. For Zener knee impedance,  $I(\text{ac rms}) = 10\% I_{ZK}$
  4. The maximum Zener current value here is not absolute. In practical steady state applications, the product of voltage and current should not exceed the rated power value.

# RATINGS AND CHARACTERISTIC CURVES

## 1N5333B Series

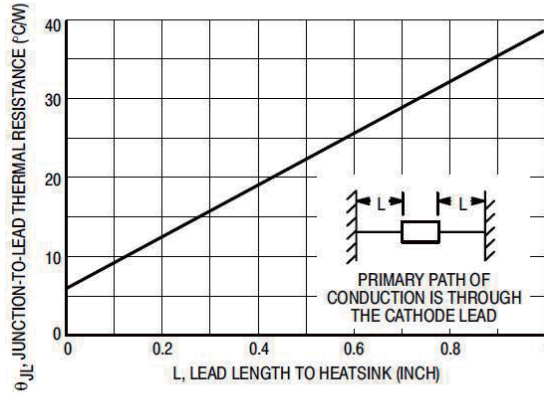


Figure 1. Typical Thermal Resistance

## TEMPERATURE COEFFICIENTS

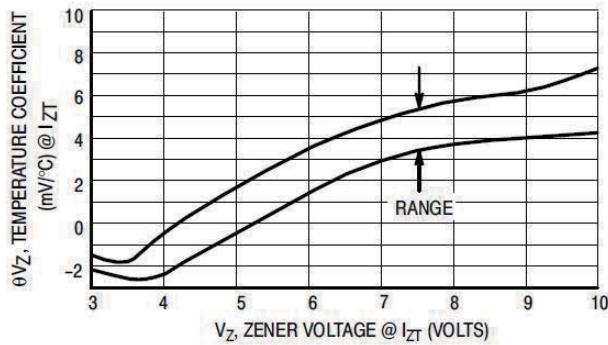


Figure 2. Temperature Coefficient-Range for Units 3 to 10 Volts

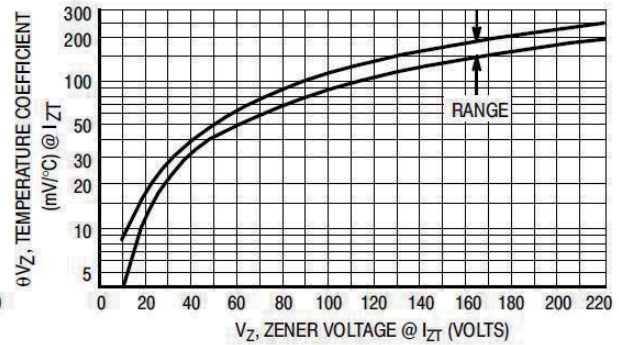


Figure 3. Temperature Coefficient-Range for Units 10 to 220 Volts

## 1N5333B Series

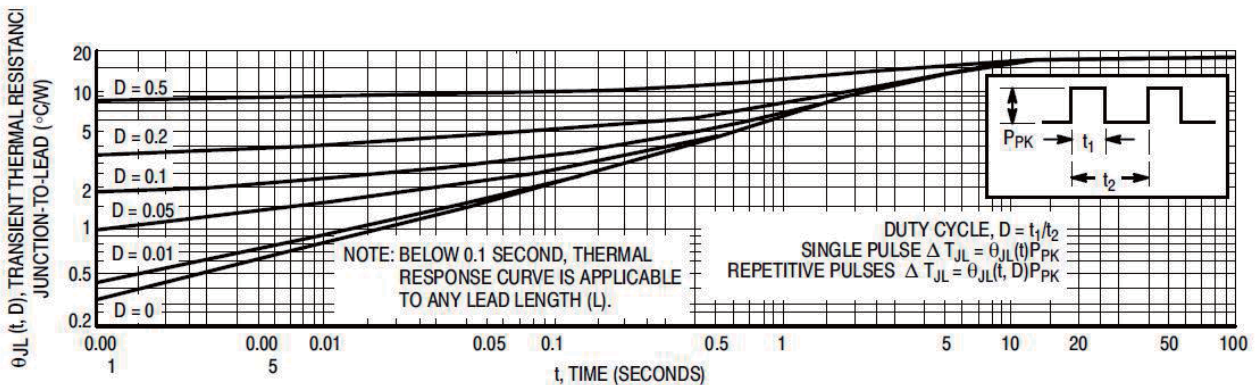


Figure 4. Typical Thermal Response  
L, Lead Length = 3/8 Inch

# RATINGS AND CHARACTERISTIC CURVES

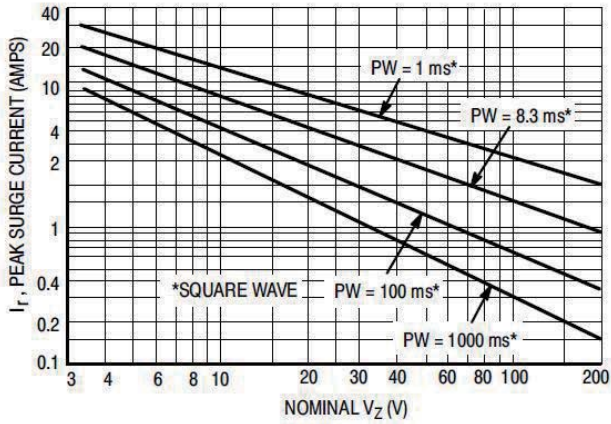


Figure 5. Maximum Non-Repetitive Surge Current versus Nominal Zener Voltage

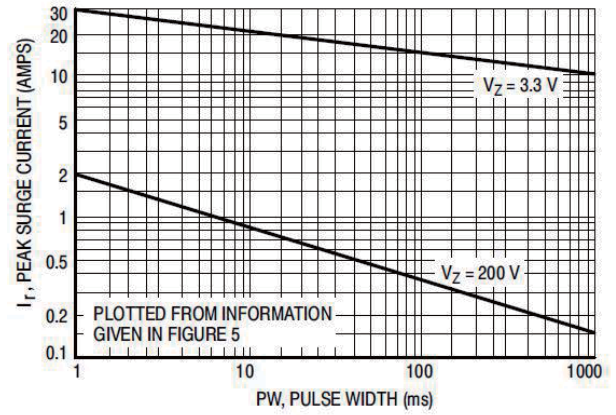


Figure 6. Peak Surge Current versus Pulse Width

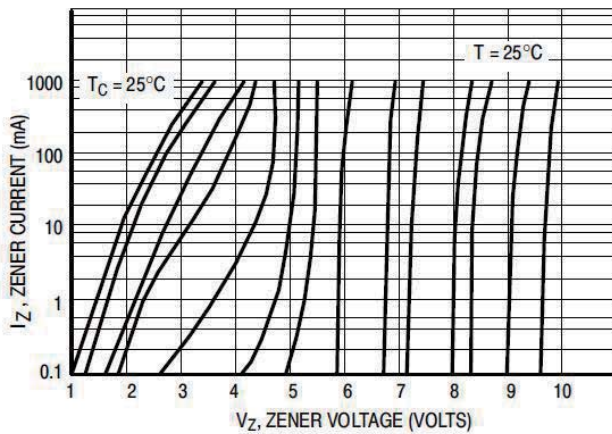


Figure 7. Zener Voltage versus Zener Current  
 $V_Z = 3.3$  thru 10 Volts

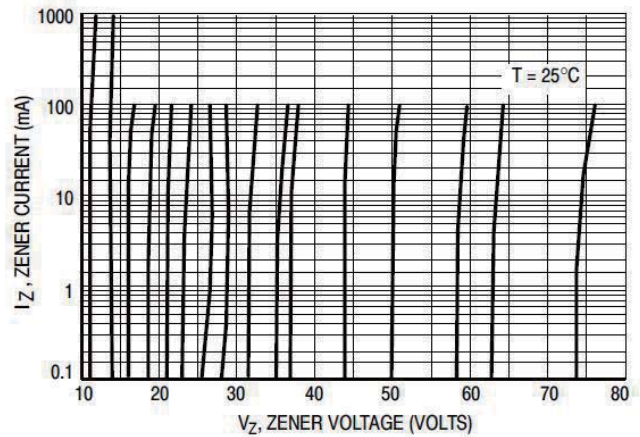


Figure 8. Zener Voltage versus Zener Current  
 $V_Z = 11$  thru 75 Volts

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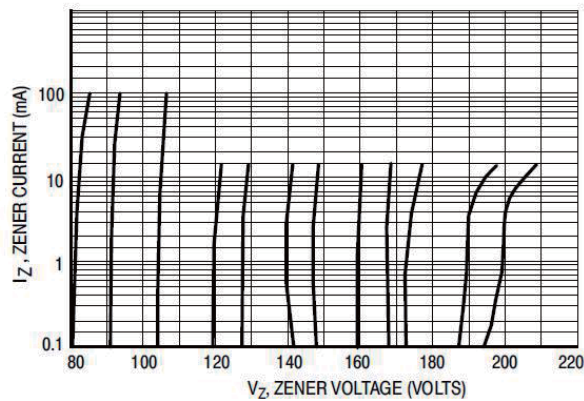


Figure 9. Zener Voltage versus Zener Current  
 $V_Z = 82$  thru 200 Volts