

## 1W, 10V - 200V Zener Diode

### FEATURES

- AEC-Q101 qualified available
- Glass passivated chip junction
- Low profile package
- Built-in strain relief
- Low inductance
- Typical  $I_R$  less than 5 $\mu$ A above 11V
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

### APPLICATIONS

- For general purpose regulation and protection applications

### MECHANICAL DATA

- Case: DO-204AL (DO-41)
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Pure tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: Indicated by cathode band
- Weight: 0.300g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$V_Z$	10 - 200	V
Test current $I_{ZT}$	1.2 - 25	mA
$P_{tot}$	1	W
$T_{JMAX}$	150	°C
Package	DO-204AL (DO-41)	
Configuration	Single die	



DO-204AL (DO-41)



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Power dissipation at $T_A = 50^\circ\text{C}$	$P_{tot}$	1	W
Derate above $50^\circ\text{C}^{(1)}$		6.67	mW/°C
Operating junction temperature range	$T_J$	-55 to +150	°C
Storage temperature range	$T_{STG}$	-55 to +150	°C

**Note:**

1. Mounted on Cu-Pad size 5mm x 5mm

<b>MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS</b> (TA=25°C unless otherwise noted)										
<b>Device<sup>(1)</sup></b>	<b>Zener voltage</b>			<b>Test current</b>	<b>Zener Impedance</b>			<b>Leakage current</b>		<b>Surge current</b>
	V <sub>Z</sub> @ I <sub>ZT</sub>			I <sub>ZT</sub>	Z <sub>ZT</sub> @I <sub>ZT</sub>	Z <sub>ZK</sub> @I <sub>ZK</sub>		I <sub>R</sub> @V <sub>R</sub>		I <sub>R</sub>
	V			mA	Ω	Ω	mA	μA	V	mA
	Min	Nom <sup>(2)(3)</sup>	Max					Max		
1N4740A	9.50	10	10.50	25.0	7	700	0.25	10	7.6	454
1N4741A	10.45	11	11.55	23.0	8	700	0.25	5	8.4	414
1N4742A	11.40	12	12.60	21.0	9	700	0.25	5	9.1	380
1N4743A	12.35	13	13.65	19.0	10	700	0.25	5	9.9	344
1N4744A	14.25	15	15.75	17.0	14	700	0.25	5	11.4	304
1N4745A	15.20	16	16.80	15.5	16	700	0.25	5	12.2	285
1N4746A	17.10	18	18.90	14.0	20	750	0.25	5	13.7	250
1N4747A	19.00	20	21.00	12.5	22	750	0.25	5	15.2	225
1N4748A	20.90	22	23.10	11.5	23	750	0.25	5	16.7	205
1N4749A	22.80	24	25.20	10.5	25	750	0.25	5	18.2	190
1N4750A	25.65	27	28.35	9.5	35	750	0.25	5	20.6	170
1N4751A	28.50	30	31.50	8.5	40	1000	0.25	5	22.8	150
1N4752A	31.35	33	34.65	7.5	45	1000	0.25	5	25.1	135
1N4753A	34.20	36	37.80	7.0	50	1000	0.25	5	27.4	125
1N4754A	37.05	39	40.95	6.5	60	1000	0.25	5	29.7	115
1N4755A	40.85	43	45.15	6.0	70	1500	0.25	5	32.7	110
1N4756A	44.65	47	49.35	5.5	80	1500	0.25	5	35.8	95
1N4757A	48.45	51	53.55	5.0	95	1500	0.25	5	38.8	90
1N4758A	53.20	56	58.80	4.5	110	2000	0.25	5	42.6	80
1N4759A	58.90	62	65.10	4.0	125	2000	0.25	5	47.1	70
1N4760A	64.60	68	71.40	3.7	150	2000	0.25	5	51.7	65
1N4761A	71.25	75	78.75	3.3	175	2000	0.25	5	56.0	60
1N4762A	77.90	82	86.10	3.0	200	3000	0.25	5	62.2	55
1N4763A	86.45	91	95.55	2.8	250	3000	0.25	5	69.2	50
1N4764A	95.00	100	105.00	2.5	350	3000	0.25	5	76.0	45
1M110Z	104.50	110	115.50	2.3	450	4000	0.25	5	83.6	-
1M120Z	114.00	120	126.00	2.0	550	4500	0.25	5	91.2	-
1M130Z	123.50	130	136.50	1.9	700	5000	0.25	5	98.8	-
1M150Z	142.50	150	157.50	1.7	1000	6000	0.25	5	114.0	-
1M160Z	152.00	160	168.00	1.6	1100	6500	0.25	5	121.6	-
1M180Z	171.00	180	189.00	1.4	1200	7000	0.25	5	136.8	-
1M200Z	190.00	200	210.00	1.2	1500	8000	0.25	5	152.0	-

**Notes :**

1. Tolerance and Type Number Designation. The type numbers listed have a standard tolerance on the nominal zener voltage of  $\pm 5\%$
2. Specials Available Include:
  - A. Nominal zener voltages between the voltages shown and tighter voltage tolerances
  - B. Matched sets
3. Zener Voltage ( $V_z$ ) Measurement. Guarantees the zener voltage when measured at 90 seconds while maintaining the lead temperature (TL) at  $30^\circ\text{C} \pm 1^\circ\text{C}$ , from the diode body
4. Zener Impedance ( $Z_z$ ) Derivation. The zener impedance is derived from the 60 cycle AC voltage, which results when an AC current having an rms value equal to 10% of the DC zener current ( $I_{zT}$  or  $I_{zK}$ ) is superimposed on  $I_{zT}$  or  $I_{zK}$ .
5. Surge Current ( $I_R$ ) Non-Repetitive. The rating listed in the electrical characteristics table is maximum peak, non-repetitive, reverse surge current of 1/2 square wave or equivalent sine wave pulse of 1/120 second duration superimposed on the test current,  $I_{zT}$  per JEDEC registration; however, actual device capability is as described in Fig.11

<b>ORDERING INFORMATION</b>		
<b>ORDERING CODE<sup>(1)(2)</sup></b>	<b>PACKAGE</b>	<b>PACKING</b>
1N47xA	DO-204AL (DO-41)	5,000 / Tape & Reel
1N47xA A0G	DO-204AL (DO-41)	3,000 / Ammo box
1N47xAH	DO-204AL (DO-41)	5,000 / Tape & Reel
1N47xAHA0G	DO-204AL (DO-41)	3,000 / Ammo box
1MxZ	DO-204AL (DO-41)	5,000 / Tape & Reel
1MxZ A0G	DO-204AL (DO-41)	3,000 / Ammo box
1MxZH	DO-204AL (DO-41)	5,000 / Tape & Reel
1MxZHA0G	DO-204AL (DO-41)	3,000 / Ammo box

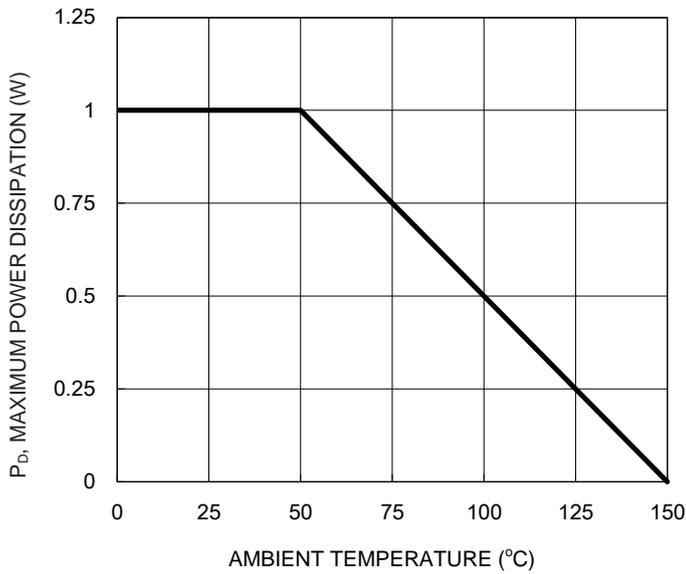
**Notes:**

1. "x" defines voltage from 10V (1N4740A) to 200V (1M200Z)
2. "H" means AEC-Q101 qualified

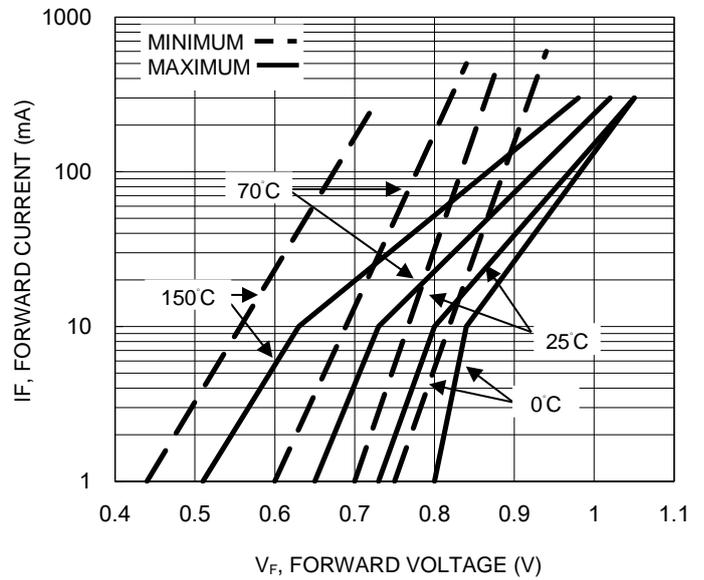
**CHARACTERISTICS CURVES**

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

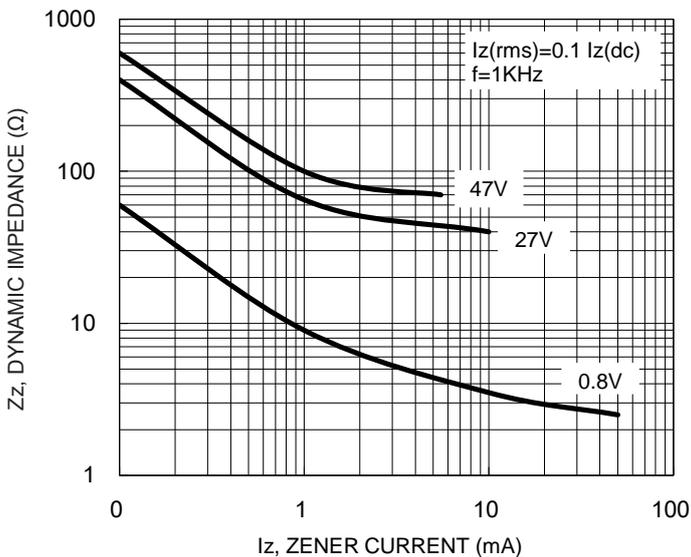
**Fig.1 Power Temperature Derating Curve**



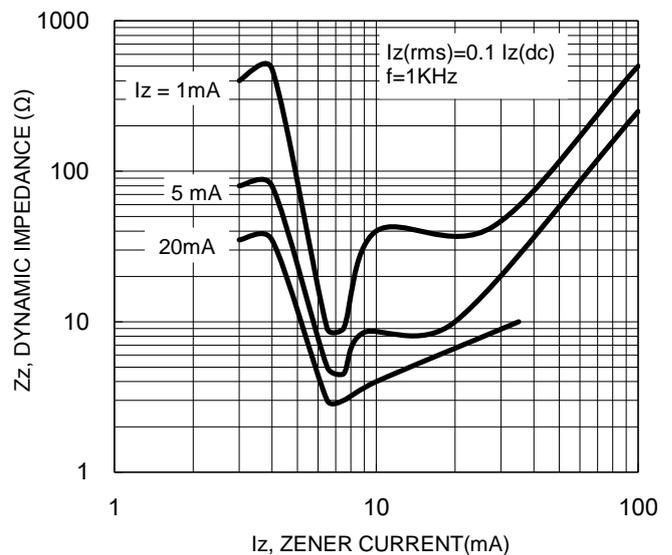
**Fig.2 Typical Forward Characteristics**



**Fig.3 Effect Of Zener Current On Zener impedance**



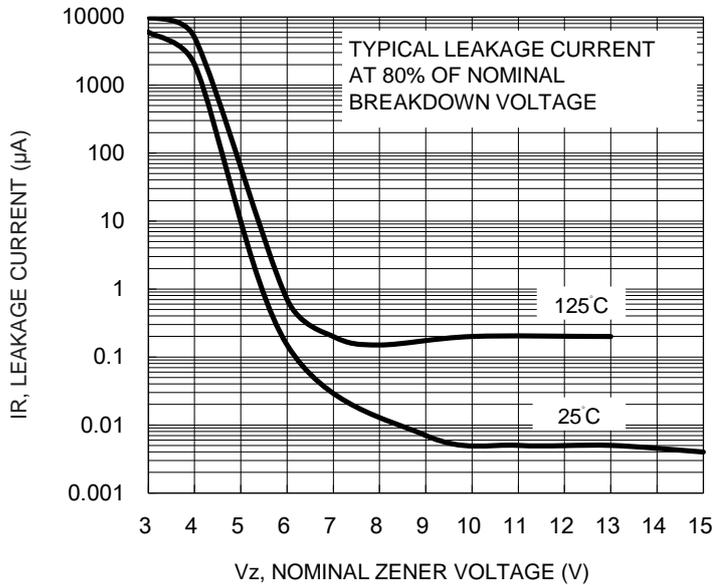
**Fig.4 Effect Of Zener Voltage On Zener Impedance**



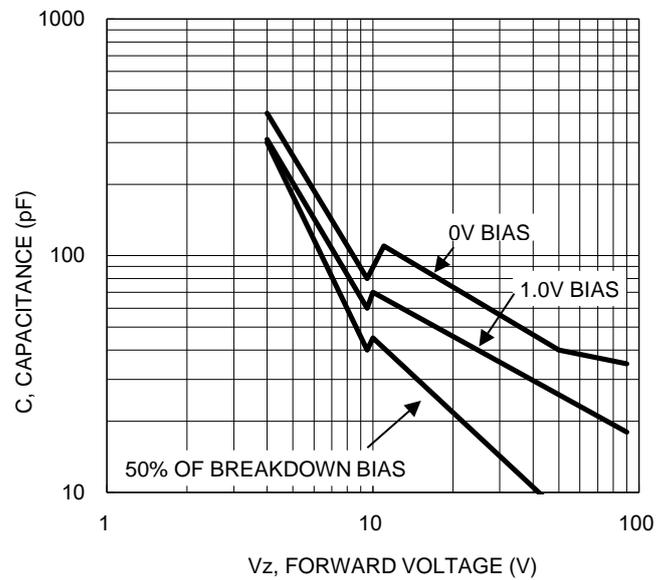
**CHARACTERISTICS CURVES**

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

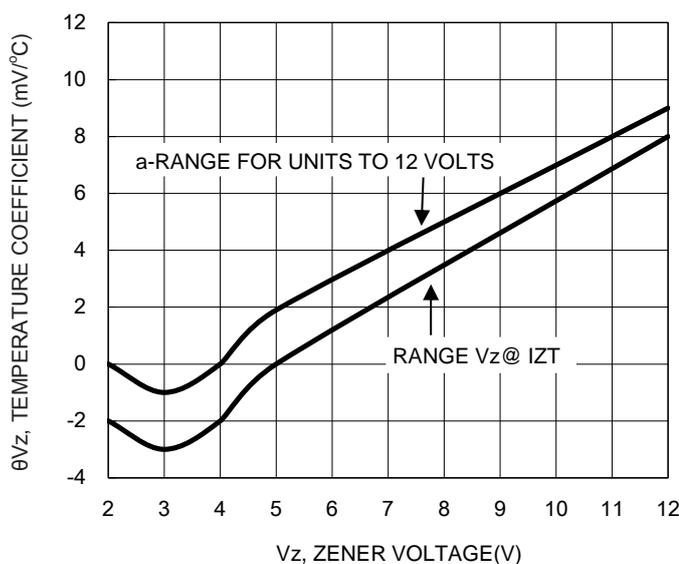
**Fig.5 Typical Leakage Current**



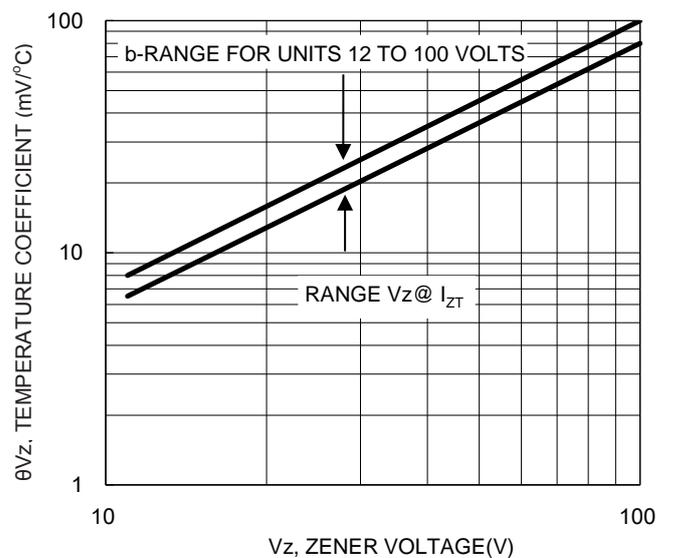
**Fig.6 Typical Capacitance versus  $V_z$**



**Fig.7 Temperature Coefficients**



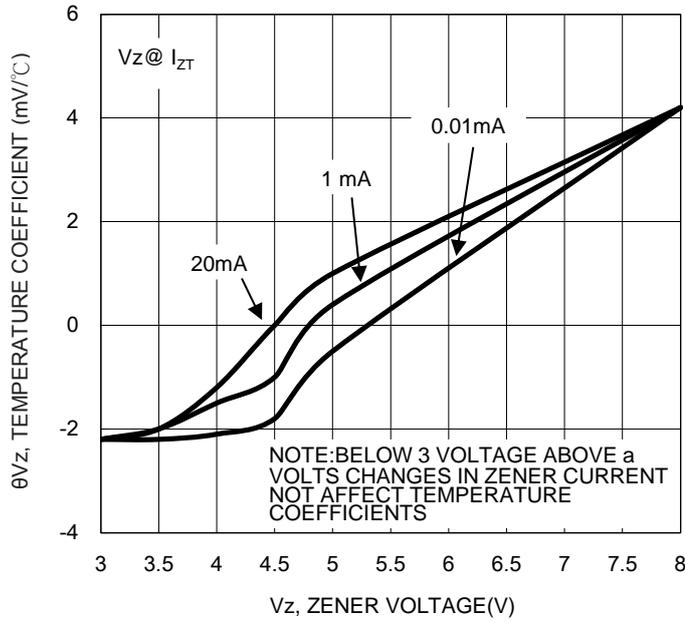
**Fig.8 Temperature Coefficients**



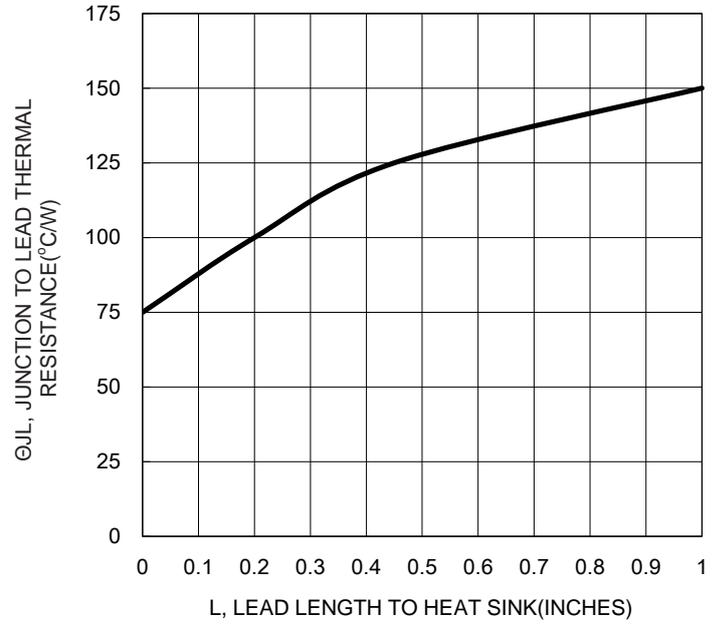
**CHARACTERISTICS CURVES**

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

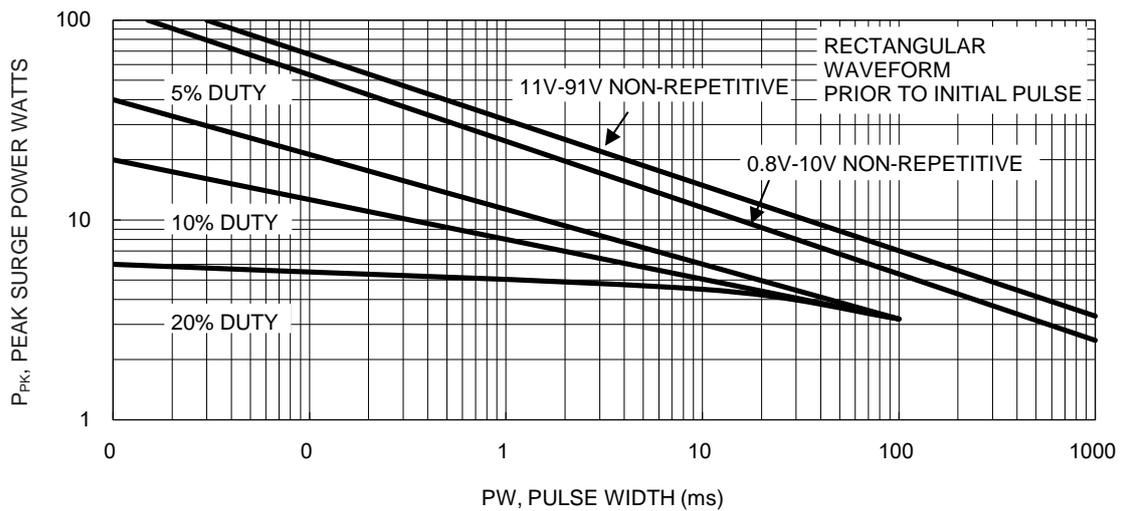
**Fig.9 Effect Of Zener Current**



**Fig.10 Typical Thermal Resistance versus Lead Length**

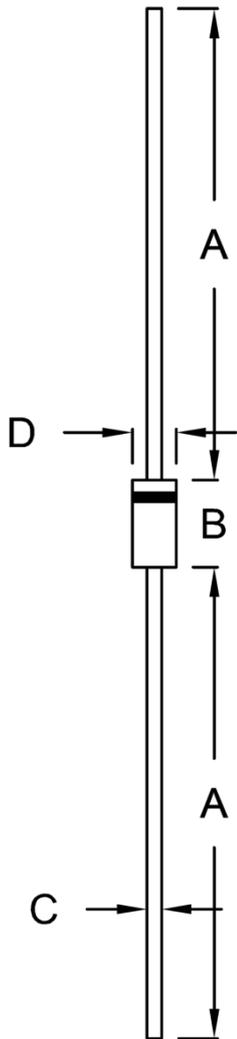


**Fig.11 Maximum Surge Power**



**PACKAGE OUTLINE DIMENSIONS**

DO-204AL (DO-41)



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	25.40	-	1.000	-
B	4.20	5.20	0.165	0.205
C	0.71	0.86	0.028	0.034
D	2.00	2.70	0.079	0.106

**MARKING DIAGRAM**



- P/N = Marking Code
- G = Green Compound
- YWW = Date Code
- F = Factory Code

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