

ZENER DIODES

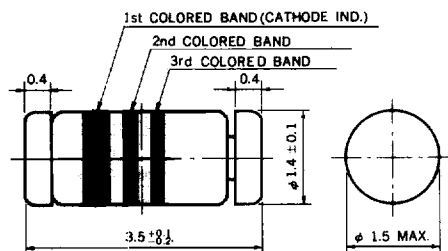
RD2.0L to RD39L

SILICON EPITAXIAL ZENER DIODES

Leadless Type

PACKAGE DIMENSIONS

(Unit: mm)



DESCRIPTION

The RD2.0L to RD39L Series are zener diodes in Leadless Type package with DHD (Double Heatsink Diode) construction having allowed power dissipation of 500 mW.

To meet various application at customers, V_Z (zener voltage) is classified into the tight tolerance under the specific suffix (B, B1, B2, B3, B4).

FEATURES

- DHD (Double Heatsink Diode) construction
- Leadless Type Glass sealed package
- V_Z Applied E24 standard

APPLICATIONS

Circuits for Constant Voltage, Constant Current, Waveform Clipper, Surge absorber, etc.

MAXIMUM RATINGS

Maximum Temperatures

Junction Temperature T_j +175 °C

Storage Temperature T_{stg} -65 to +175 °C

Maximum Power Dissipation ($T_a = 25$ °C)

Power Dissipation* P 500 mW

* When mounted on ceramic substrate of 0.9 cm² x 0.7 mm

ELECTRICAL CHARACTERISTICS ($T_a = 25 \pm 2^\circ\text{C}$)

Type Number	Suffix	Zener Voltage V_Z (V) *			Dynamic Impedance Z_Z (Ω) **		Knee Dynamic Impedance Z_{zk} (Ω) **		Reverse Current I_R (μA)		Type No. Color Indication		
		MIN.	MAX.	I_Z (mA)	MAX.	I_Z (mA)	MAX.	I_Z (mA)	MAX.	V_R (V)	1st	2nd	3rd
RD2.0L	B	1.88	2.20	5	100	5	1000	0.5	120	0.5	***		
	B1	1.88	2.10								Red	Black	Brown
	B2	2.02	2.20								Red	Black	Red
RD2.2L	B	2.12	2.41	5	100	5	1000	0.5	120	0.7	***		
	B1	2.12	2.30								Red	Red	Brown
	B2	2.22	2.41								Red	Red	Red
RD2.4L	B	2.33	2.63	5	100	5	1000	0.5	120	1.0	***		
	B1	2.33	2.52								Red	Yellow	Brown
	B2	2.43	2.63								Red	Yellow	Red
RD2.7L	B	2.64	2.91	5	110	5	1000	0.5	100	1.0	***		
	B1	2.54	2.75								Red	Purple	Brown
	B2	2.69	2.91								Red	Purple	Red
RD3.0L	B	2.85	3.22	5	120	5	1000	0.5	50	1.0	***		
	B1	2.85	3.07								Orange	Black	Brown
	B2	3.01	3.22								Orange	Black	Red
RD3.3L	B	3.16	3.53	5	120	5	1000	0.5	20	1.0	***		
	B1	3.16	3.38								Orange	Orange	Brown
	B2	3.32	3.53								Orange	Orange	Red
RD3.6L	B	3.47	3.83	5	120	5	1100	0.5	10	1.0	***		
	B1	3.47	3.68								Orange	Blue	Brown
	B2	3.62	3.83								Orange	Blue	Red
RD3.9L	B	3.77	4.14	5	120	5	1200	0.5	5	1.0	***		
	B1	3.77	3.98								Orange	White	Brown
	B2	3.92	4.14								Orange	White	Red
RD4.3L	B	4.05	4.53	5	120	5	1200	0.5	5	1.0	***		
	B1	4.05	4.26								Yellow	Orange	Brown
	B2	4.20	4.40								Yellow	Orange	Red
RD4.7L	B	4.47	4.91	5	100	5	1200	0.5	5	1.0	***		
	B1	4.47	4.65								Yellow	Purple	Brown
	B2	4.59	4.77								Yellow	Purple	Red
RD5.1L	B	4.85	5.35	5	70	5	1200	0.5	5	1.5	***		
	B1	4.85	5.03								Green	Brown	Brown
	B2	4.97	5.18								Green	Brown	Red
RD5.6L	B	5.12	5.35	5	40	5	900	0.5	5	2.5	***		
	B1	5.29	5.88								Green	Blue	Brown
	B2	5.46	5.70								Green	Blue	Red
	B3	5.64	5.88								Green	Blue	Orange

Type Number	Suffix	Zener Voltage V _Z (V) *		I _Z (mA)	Dynamic Impedance Z _Z (Ω) **		I _Z (mA)	Knee Dynamic Impedance Z _{Zk} (Ω) **		I _Z (mA)	Reverse Current I _R (μA)		V _R (V)	Type No. Color Indication		
		MIN.	MAX.		MAX.	I _Z (mA)		MAX.	I _Z (mA)		MAX.	I _R (μA)		1st	2nd	3rd
RD6.2L	B	5.81	6.40	5	30	5	500	0.5	5	3.0	***					
	B1	5.81	6.06								Blue	Red	Brown			
	B2	5.99	6.24								Blue	Red	Red			
	B3	6.16	6.40								Blue	Red	Orange			
RD6.8L	B	6.32	6.97	5	25	5	150	0.5	2	3.5	***					
	B1	6.32	6.59								Blue	Gray	Brown			
	B2	6.52	6.79								Blue	Gray	Red			
	B3	6.70	6.97								Blue	Gray	Orange			
RD7.5L	B	6.88	7.64	5	25	5	120	0.5	0.5	4.0	***					
	B1	6.88	7.19								Purple	Green	Brown			
	B2	7.11	7.41								Purple	Green	Red			
	B3	7.33	7.64								Purple	Green	Orange			
RD8.2L	B	7.56	8.41	5	20	5	120	0.5	0.5	5.0	***					
	B1	7.56	7.90								Gray	Red	Brown			
	B2	7.82	8.15								Gray	Red	Red			
	B3	8.07	8.41								Gray	Red	Orange			
RD9.1L	B	8.33	9.29	5	20	5	120	0.5	0.5	6.0	***					
	B1	8.33	8.70								White	Brown	Brown			
	B2	8.61	8.99								White	Brown	Red			
	B3	8.89	9.29								White	Brown	Orange			
RD10L	B	9.19	10.30	5	20	5	120	0.5	0.2	7.0	***					
	B1	9.19	9.59								Brown	Black	Blue			
	B2	9.48	9.90								Brown	Black	Purple			
	B3	9.82	10.30								Brown	Black	Gray			
RD11L	B	10.18	11.26	5	20	5	120	0.5	0.2	8.0	***					
	B1	10.18	10.63								Brown	Brown	Blue			
	B2	10.50	10.95								Brown	Brown	Purple			
	B3	10.82	11.26								Brown	Brown	Gray			
RD12L	B	11.13	12.30	5	25	5	110	0.5	0.2	9.0	***					
	B1	11.13	11.63								Brown	Red	Blue			
	B2	11.50	11.92								Brown	Red	Purple			
	B3	11.80	12.30								Brown	Red	Gray			
RD13L	B	12.18	13.62	5	25	5	110	0.5	0.2	10	***					
	B1	12.18	12.71								Brown	Orange	Blue			
	B2	12.59	13.16								Brown	Orange	Purple			
	B3	13.03	13.62								Brown	Orange	Gray			
RD15L	B	13.48	15.02	5	25	5	110	0.5	0.2	11	***					
	B1	13.48	14.09								Brown	Green	Blue			
	B2	13.95	14.56								Brown	Green	Purple			
	B3	14.42	15.02								Brown	Green	Gray			

Type Number	Suffix	Zener Voltage V_Z (V) *			Dynamic Impedance Z_Z (Ω) **		Knee Dynamic Impedance Z_{zk} (Ω) **		Reverse Current I_R (μ A)		Type No. Color Indication		
		MIN.	MAX.	I_Z (mA)	MAX.	I_Z (mA)	MAX.	I_Z (mA)	MAX.	V_R (V)	1st	2nd	3rd
RD16L	B	14.87	16.50	5	25	5	150	0.5	0.2	12	***		
	B1	14.87	15.50								Brown	Blue	Blue
	B2	15.33	15.96								Brown	Blue	Purple
	B3	15.79	16.50								Brown	Blue	Gray
RD18L	B	16.34	18.30	5	30	5	150	0.5	0.2	13	***		
	B1	16.34	17.06								Brown	Gray	Blue
	B2	16.90	17.67								Brown	Gray	Purple
	B3	17.51	18.30								Brown	Gray	Gray
RD20L	B	18.14	20.45	5	30	5	200	0.5	0.2	15	***		
	B1	18.14	18.96								Red	Black	Blue
	B2	18.80	19.68								Red	Black	Purple
	B3	19.52	20.45								Red	Black	Gray
RD22L	B	20.23	22.61	5	30	5	200	0.5	0.2	17	***		
	B1	20.23	21.08								Red	Red	Blue
	B2	20.76	21.65								Red	Red	Purple
	B3	21.22	22.09								Red	Red	Gray
	B4	21.68	22.61								Red	Red	White
RD24L	B	22.26	24.81	5	35	5	200	0.5	0.2	19	***		
	B1	22.26	23.12								Red	Yellow	Blue
	B2	22.75	23.73								Red	Yellow	Purple
	B3	23.29	24.27								Red	Yellow	Gray
	B4	23.81	24.81								Red	Yellow	White
RD27L	B	24.26	27.64	5	45	5	250	0.5	0.2	21	***		
	B1	24.26	25.52								Red	Purple	Blue
	B2	24.97	26.26								Red	Purple	Purple
	B3	25.63	26.95								Red	Purple	Gray
	B4	26.29	27.64								Red	Purple	White
RD30L	B	26.99	30.51	5	55	5	250	0.5	0.2	23	***		
	B1	26.99	28.39								Orange	Black	Blue
	B2	27.70	29.13								Orange	Black	Purple
	B3	28.36	29.82								Orange	Black	Gray
	B4	29.02	30.51								Orange	Black	White
RD33L	B	29.68	33.11	5	65	5	250	0.5	0.2	25	***		
	B1	29.68	31.22								Orange	Orange	Blue
	B2	30.32	31.88								Orange	Orange	Purple
	B3	30.90	32.50								Orange	Orange	Gray
	B4	31.49	33.11								Orange	Orange	White
RD36L	B	32.14	35.77	5	75	5	250	0.5	0.2	27	***		
	B1	32.14	33.79								Orange	Blue	Blue
	B2	32.79	34.49								Orange	Blue	Purple
	B3	33.40	35.13								Orange	Blue	Gray
	B4	34.01	35.77								Orange	Blue	White

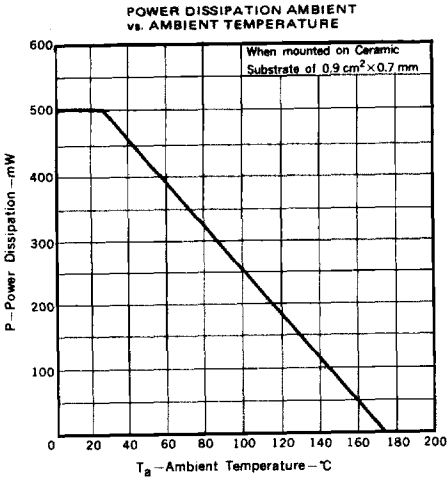
Type Number	Suffix	Zener Voltage V_Z (V) *			Dynamic Impedance Z_Z (Ω) **		Knee Dynamic Impedance Z_{Zk} (Ω) **		Reverse Current I_R (μA)		Type No. Color Indication		
		MIN.	MAX.	I_Z (mA)	MAX.	I_Z (mA)	MAX.	I_Z (mA)	MAX.	V_R (V)	1st	2nd	3rd
RD39L	B	34.68	38.52	5	85	5	250	0.5	0.2	30	***		
	B1	34.68	36.47								Orange	White	Blue
	B2	35.36	37.19								Orange	White	Purple
	B3	36.00	37.85								Orange	White	Gray
	B4	36.63	38.52								Orange	White	White

* tested with pulse (40 ms)

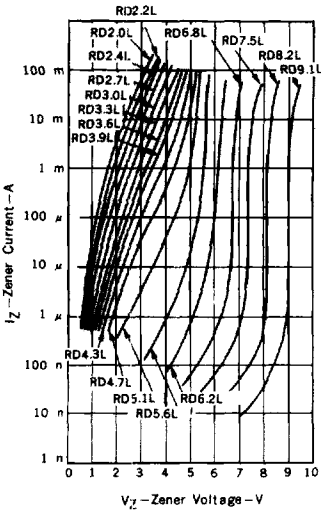
** Z_Z and Z_{Zk} are measured at I_Z by given a very small A.C. current signal.

*** Suffix B is Suffix B1, B2, B3 or Suffix B4

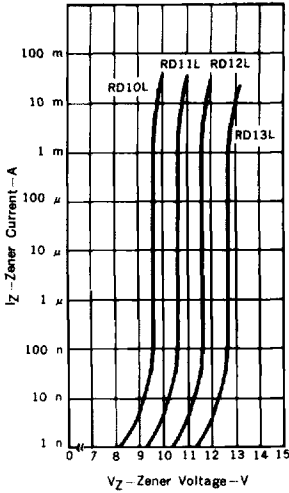
TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)



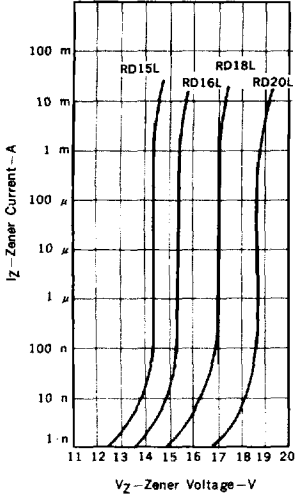
ZENER CURRENT vs. ZENER VOLTAGE



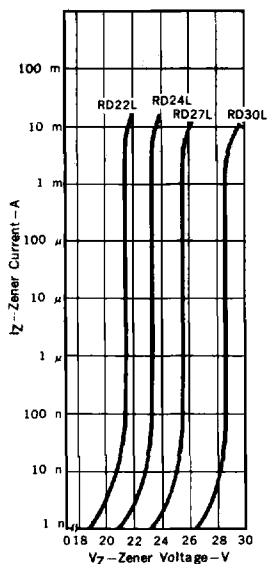
(a)



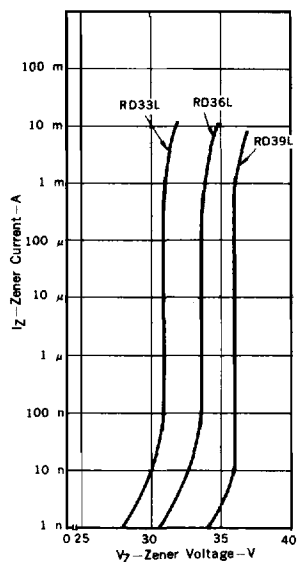
(b)



(c)



(d)



(e)

