

# ZMCRD...UM Series

## Silicon Epitaxial Planar Zener Diodes

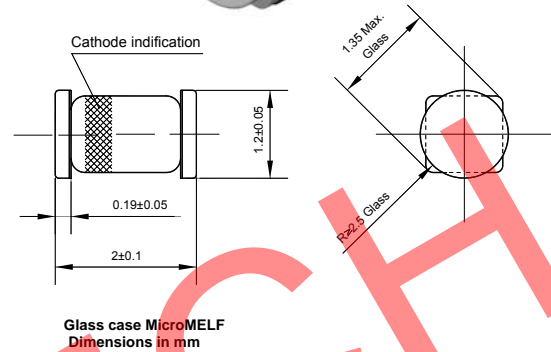
LS-31

### Features

- Sharp breakdown characteristics

### Applications

- Circuits for constant voltage, constant current wave form clipper, surge absorber, etc.

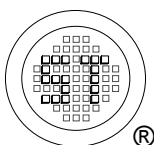


### Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

Parameter	Symbol	Value	Unit
Power Dissipation	$P_{tot}$	500	mW
Forward Current	$I_F$	100	mA
Reverse Surge Power (at $t = 10 \mu\text{s}$ / pulse)	$P_{RSM}$	85	W
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	- 55 to + 150	$^\circ\text{C}$

### Characteristics at $T_a = 25^\circ\text{C}$ ( $V_F = 1 \text{ V Max. at } I_F = 100 \text{ mA}$ )

Type	Zener Voltage <sup>1)</sup>			Dynamic Resistance		Reverse Leakage Current	
	$V_Z$		at $I_{ZT}$	$Z_{ZT}$	at $I_{ZT}$	$I_R$	at $V_R$
	Min. (V)	Max. (V)	(mA)	Max. ( $\Omega$ )	(mA)	Max. ( $\mu\text{A}$ )	(V)
ZMCRD2V0UMB	1.8	2.15	5	100	5	120	0.5
ZMCRD2V2UMB	2.1	2.4	5	100	5	120	0.7
ZMCRD2V4UMB	2.3	2.6	5	100	5	120	1
ZMCRD2V7UMB	2.5	2.9	5	110	5	120	1
ZMCRD2V7UMB1	2.5	2.75	5	110	5	120	1
ZMCRD2V7UMB2	2.65	2.9	5	110	5	120	1
ZMCRD3V0UMB	2.8	3.2	5	120	5	50	1
ZMCRD3V0UMB1	2.8	3.05	5	120	5	50	1
ZMCRD3V0UMB2	2.95	3.2	5	120	5	50	1
ZMCRD3V3UMB	3.1	3.5	5	130	5	20	1
ZMCRD3V3UMB1	3.1	3.35	5	130	5	20	1
ZMCRD3V3UMB2	3.25	3.5	5	130	5	20	1
ZMCRD3V6UMB	3.4	3.8	5	130	5	10	1
ZMCRD3V6UMB1	3.4	3.65	5	130	5	10	1
ZMCRD3V6UMB2	3.55	3.8	5	130	5	10	1



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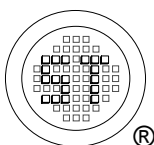


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Characteristics at  $T_a = 25^\circ\text{C}$  ( $V_F = 1\text{ V Max. at } I_F = 100\text{ mA}$ )

Type	Zener Voltage <sup>1)</sup>			Dynamic Resistance		Reverse Leakage Current	
	$V_Z$		at $I_{ZT}$	$Z_{ZT}$	at $I_{ZT}$	$I_R$	at $V_R$
	Min. (V)	Max. (V)	(mA)	Max. ( $\Omega$ )	(mA)	Max. ( $\mu\text{A}$ )	(V)
ZMCRD3V9UMB	3.7	4.1	5	130	5	10	1
ZMCRD3V9UMB1	3.7	3.97	5	130	5	10	1
ZMCRD3V9UMB2	3.87	4.1	5	130	5	10	1
ZMCRD4V3UMB	4	4.49	5	130	5	10	1
ZMCRD4V3UMB1	4	4.22	5	130	5	10	1
ZMCRD4V3UMB2	4.14	4.35	5	130	5	10	1
ZMCRD4V3UMB3	4.27	4.49	5	130	5	10	1
ZMCRD4V7UMB	4.4	4.92	5	130	5	10	1
ZMCRD4V7UMB1	4.4	4.63	5	130	5	10	1
ZMCRD4V7UMB2	4.53	4.77	5	130	5	10	1
ZMCRD4V7UMB3	4.67	4.92	5	130	5	10	1
ZMCRD5V1UMB	4.82	5.39	5	130	5	5	1.5
ZMCRD5V1UMB1	4.82	5.06	5	130	5	5	1.5
ZMCRD5V1UMB2	4.96	5.22	5	130	5	5	1.5
ZMCRD5V1UMB3	5.12	5.39	5	130	5	5	1.5
ZMCRD5V6UMB	5.29	5.94	5	80	5	5	2.5
ZMCRD5V6UMB1	5.29	5.57	5	80	5	5	2.5
ZMCRD5V6UMB2	5.47	5.75	5	80	5	5	2.5
ZMCRD5V6UMB3	5.65	5.94	5	80	5	5	2.5
ZMCRD6V2UMB	5.84	6.55	5	50	5	2	3
ZMCRD6V2UMB1	5.84	6.14	5	50	5	2	3
ZMCRD6V2UMB2	6.04	6.35	5	50	5	2	3
ZMCRD6V2UMB3	6.24	6.55	5	50	5	2	3
ZMCRD6V8UMB	6.44	7.17	5	30	5	2	3.5
ZMCRD6V8UMB1	6.44	6.76	5	30	5	2	3.5
ZMCRD6V8UMB2	6.62	6.96	5	30	5	2	3.5
ZMCRD6V8UMB3	6.83	7.17	5	30	5	2	3.5
ZMCRD7V5UMB	7.03	7.87	5	30	5	2	4
ZMCRD7V5UMB1	7.03	7.39	5	30	5	2	4
ZMCRD7V5UMB2	7.25	7.63	5	30	5	2	4
ZMCRD7V5UMB3	7.49	7.87	5	30	5	2	4
ZMCRD8V2UMB	7.73	8.67	5	30	5	2	5
ZMCRD8V2UMB1	7.73	8.13	5	30	5	2	5
ZMCRD8V2UMB2	7.98	8.39	5	30	5	2	5
ZMCRD8V2UMB3	8.25	8.67	5	30	5	2	5
ZMCRD9V1UMB	8.53	9.58	5	30	5	2	6
ZMCRD9V1UMB1	8.53	8.96	5	30	5	2	6
ZMCRD9V1UMB2	8.81	9.26	5	30	5	2	6
ZMCRD9V1UMB3	9.12	9.58	5	30	5	2	6
ZMCRD10UMB	9.42	10.58	5	30	5	2	7
ZMCRD10UMB1	9.42	9.9	5	30	5	2	7
ZMCRD10UMB2	9.74	10.24	5	30	5	2	7
ZMCRD10UMB3	10.08	10.58	5	30	5	2	7
ZMCRD11UMB	10.4	11.6	5	30	5	2	8
ZMCRD11UMB1	10.4	10.92	5	30	5	2	8



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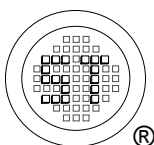
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Type	Zener Voltage <sup>1)</sup>			Dynamic Resistance		Reverse Leakage Current	
	$V_Z$		at $I_{ZT}$	$Z_{ZT}$	at $I_{ZT}$	$I_R$	at $V_R$
	Min. (V)	Max. (V)	(mA)	Max. ( $\Omega$ )	(mA)	Max. ( $\mu\text{A}$ )	(V)
ZMCRD11UMB2	10.72	11.26	5	30	5	2	8
ZMCRD11UMB3	11.06	11.6	5	30	5	2	8
ZMCRD12UMB	11.38	12.64	5	30	5	2	9
ZMCRD12UMB1	11.38	11.94	5	30	5	2	9
ZMCRD12UMB2	11.69	12.28	5	30	5	2	9
ZMCRD12UMB3	12.04	12.64	5	30	5	2	9
ZMCRD13UMB	12.43	14	5	35	5	2	10
ZMCRD13UMB1	12.43	13.07	5	35	5	2	10
ZMCRD13UMB2	12.87	13.53	5	35	5	2	10
ZMCRD13UMB3	13.33	14	5	35	5	2	10
ZMCRD15UMB	13.8	15.56	5	40	5	2	11
ZMCRD15UMB1	13.8	14.5	5	40	5	2	11
ZMCRD15UMB2	14.3	15.02	5	40	5	2	11
ZMCRD15UMB3	14.81	15.56	5	40	5	2	11
ZMCRD16UMB	15.31	17.14	5	40	5	2	12
ZMCRD16UMB1	15.31	16.07	5	40	5	2	12
ZMCRD16UMB2	15.78	16.58	5	40	5	2	12
ZMCRD16UMB3	16.3	17.14	5	40	5	2	12
ZMCRD18UMB	16.89	19.08	5	45	5	2	13
ZMCRD18UMB1	16.89	17.75	5	45	5	2	13
ZMCRD18UMB2	17.51	18.4	5	45	5	2	13
ZMCRD18UMB3	18.16	19.08	5	45	5	2	13
ZMCRD20UMB	18.8	21.14	5	50	5	2	15
ZMCRD20UMB1	18.8	19.76	5	50	5	2	15
ZMCRD20UMB2	19.46	20.45	5	50	5	2	15
ZMCRD20UMB3	20.15	21.14	5	50	5	2	15
ZMCRD22UMB	20.81	23.25	5	55	5	2	17
ZMCRD22UMB1	20.81	21.84	5	55	5	2	17
ZMCRD22UMB2	21.46	22.55	5	55	5	2	17
ZMCRD22UMB3	22.15	23.25	5	55	5	2	17
ZMCRD24UMB	22.86	25.66	5	60	5	2	19
ZMCRD24UMB1	22.86	24.03	5	60	5	2	19
ZMCRD24UMB2	23.65	24.85	5	60	5	2	19
ZMCRD24UMB3	24.45	25.66	5	60	5	2	19
ZMCRD27UMB	25.1	28.9	2	70	2	2	21
ZMCRD30UMB	28	32	2	80	2	2	23
ZMCRD33UMB	31	35	2	80	2	2	25
ZMCRD36UMB	34	38	2	90	2	2	27
ZMCRD39UMB	37	41	2	100	2	2	30

<sup>1)</sup>  $V_Z$  is tested with pulse (20 ms).

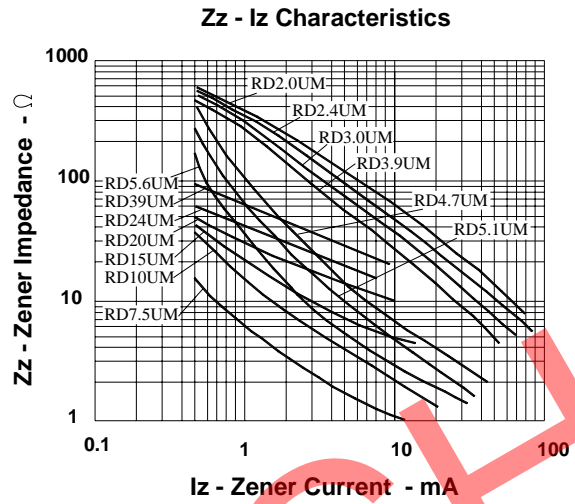
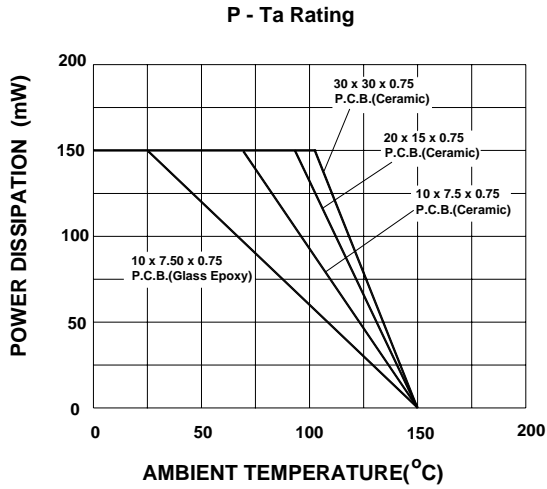


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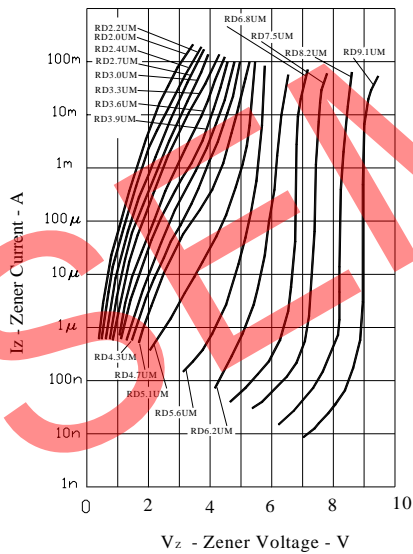


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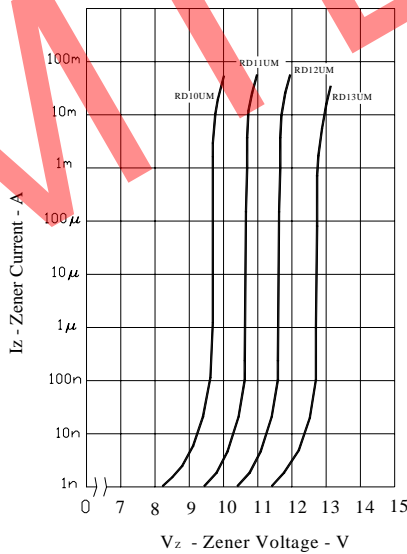
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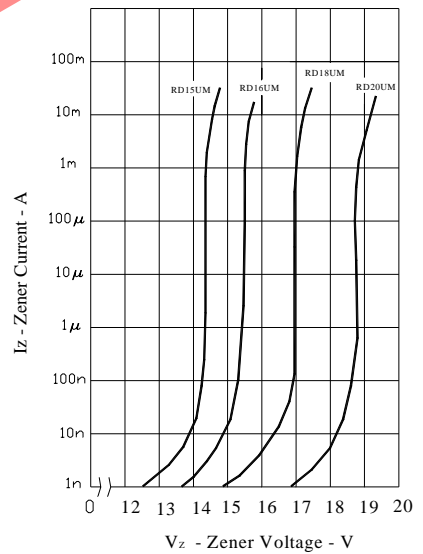
### Iz - Vz CHARACTERISTICS



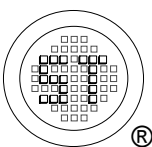
(a)



(b)



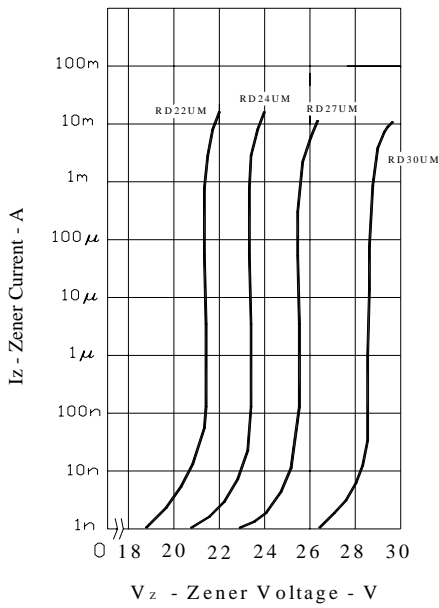
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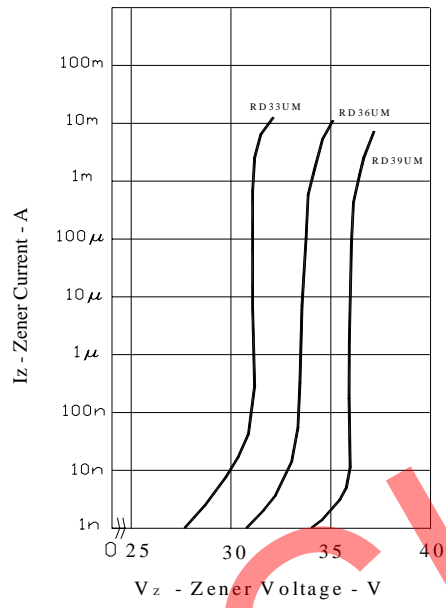
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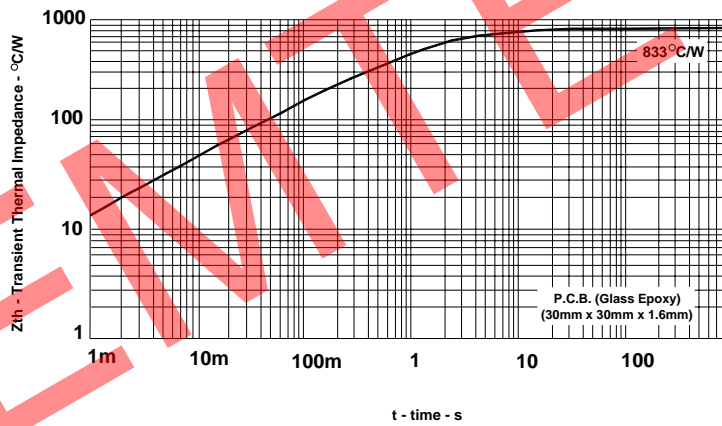


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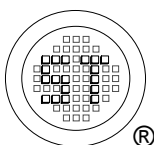
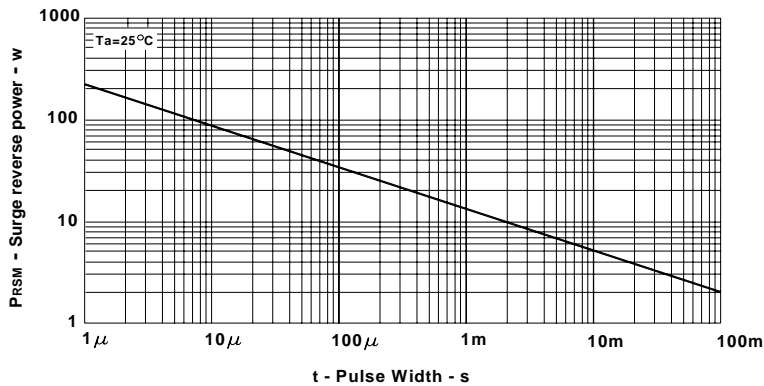


(e)

## TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS



## SURGE REVERSE POWER RATINGS



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