

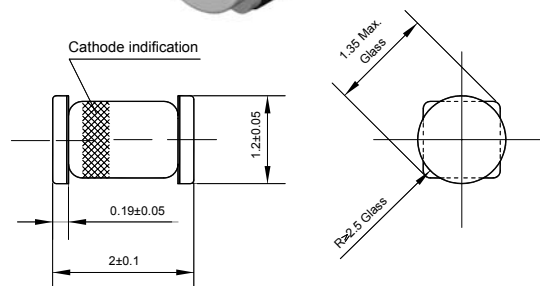
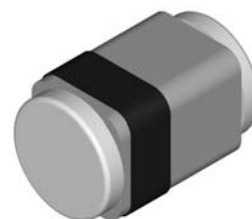
**Silicon Epitaxial Planar Zener Diodes**

**ZMCRD...M Series**

LS-31

**Applications**

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



Glass case MicroMELF  
Dimensions in mm

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

Parameter	Symbol	Value	Unit
Power Dissipation	$P_{tot}$	500	mW
Forward Current	$I_F$	150	mA
Reverse Surge Power (at $t = 10\text{ }\mu\text{s} / 1\text{ pulse}$ )	$P_{RSM}$	100	W
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	- 55 to + 150	$^\circ\text{C}$

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

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)
ZMCRD2V0MB	1.8	2.15	5	100	5	120	0.5
ZMCRD2V2MB	2.1	2.4	5	100	5	120	0.7
ZMCRD2V4MB	2.3	2.6	5	100	5	120	1
ZMCRD2V7MB	2.5	2.9	5	110	5	120	1
ZMCRD2V7MB1	2.5	2.75	5	110	5	120	1
ZMCRD2V7MB2	2.65	2.9	5	110	5	120	1
ZMCRD3V0MB	2.8	3.2	5	120	5	50	1
ZMCRD3V0MB1	2.8	3.05	5	120	5	50	1
ZMCRD3V0MB2	2.95	3.2	5	120	5	50	1
ZMCRD3V3MB	3.1	3.5	5	130	5	20	1
ZMCRD3V3MB1	3.1	3.35	5	130	5	20	1
ZMCRD3V3MB2	3.25	3.5	5	130	5	20	1
ZMCRD3V6MB	3.4	3.8	5	130	5	10	1
ZMCRD3V6MB1	3.4	3.65	5	130	5	10	1
ZMCRD3V6MB2	3.55	3.8	5	130	5	10	1

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**ZMCRD...M Series**

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

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)
ZMCRD3V9MB	3.7	4.1	5	130	5	10	1
ZMCRD3V9MB1	3.7	3.97	5	130	5	10	1
ZMCRD3V9MB2	3.87	4.1	5	130	5	10	1
ZMCRD4V3MB	4.01	4.48	5	130	5	10	1
ZMCRD4V3MB1	4.01	4.21	5	130	5	10	1
ZMCRD4V3MB2	4.15	4.34	5	130	5	10	1
ZMCRD4V3MB3	4.28	4.48	5	130	5	10	1
ZMCRD4V7MB	4.42	4.9	5	130	5	10	1
ZMCRD4V7MB1	4.42	4.61	5	130	5	10	1
ZMCRD4V7MB2	4.55	4.75	5	130	5	10	1
ZMCRD4V7MB3	4.69	4.9	5	130	5	10	1
ZMCRD5V1MB	4.84	5.37	5	130	5	5	1.5
ZMCRD5V1MB1	4.84	5.04	5	130	5	5	1.5
ZMCRD5V1MB2	4.98	5.2	5	130	5	5	1.5
ZMCRD5V1MB3	5.14	5.37	5	130	5	5	1.5
ZMCRD5V6MB	5.31	5.92	5	80	5	5	2.5
ZMCRD5V6MB1	5.31	5.55	5	80	5	5	2.5
ZMCRD5V6MB2	5.49	5.73	5	80	5	5	2.5
ZMCRD5V6MB3	5.67	5.92	5	80	5	5	2.5
ZMCRD6V2MB	5.86	6.53	5	50	5	2	3
ZMCRD6V2MB1	5.86	6.12	5	50	5	2	3
ZMCRD6V2MB2	6.06	6.33	5	50	5	2	3
ZMCRD6V2MB3	6.26	6.53	5	50	5	2	3
ZMCRD6V8MB	6.47	7.14	5	30	5	2	3.5
ZMCRD6V8MB1	6.47	6.73	5	30	5	2	3.5
ZMCRD6V8MB2	6.65	6.93	5	30	5	2	3.5
ZMCRD6V8MB3	6.86	7.14	5	30	5	2	3.5
ZMCRD7V5MB	7.06	7.84	5	30	5	2	4
ZMCRD7V5MB1	7.06	7.36	5	30	5	2	4
ZMCRD7V5MB2	7.28	7.6	5	30	5	2	4
ZMCRD7V5MB3	7.52	7.84	5	30	5	2	4
ZMCRD8V2MB	7.76	8.64	5	30	5	2	5
ZMCRD8V2MB1	7.76	8.1	5	30	5	2	5
ZMCRD8V2MB2	8.02	8.36	5	30	5	2	5
ZMCRD8V2MB3	8.28	8.64	5	30	5	2	5
ZMCRD9V1MB	8.56	9.55	5	30	5	2	6
ZMCRD9V1MB1	8.56	8.93	5	30	5	2	6
ZMCRD9V1MB2	8.85	9.23	5	30	5	2	6
ZMCRD9V1MB3	9.15	9.55	5	30	5	2	6
ZMCRD10MB	9.45	10.55	5	30	5	2	7
ZMCRD10MB1	9.45	9.87	5	30	5	2	7
ZMCRD10MB2	9.77	10.21	5	30	5	2	7
ZMCRD10MB3	10.11	10.55	5	30	5	2	7
ZMCRD11MB	10.44	11.56	5	30	5	2	8
ZMCRD11MB1	10.44	10.88	5	30	5	2	8

## Silicon Epitaxial Planar Zener Diodes

## ZMCRD...M Series

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

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)
ZMCRD11MB2	10.76	11.22	5	30	5	2	8
ZMCRD11MB3	11.1	11.56	5	30	5	2	8
ZMCRD12MB	11.42	12.6	5	35	5	2	9
ZMCRD12MB1	11.42	11.9	5	35	5	2	9
ZMCRD12MB2	11.74	12.24	5	35	5	2	9
ZMCRD12MB3	12.08	12.6	5	35	5	2	9
ZMCRD13MB	12.47	13.96	5	35	5	2	10
ZMCRD13MB1	12.47	13.03	5	35	5	2	10
ZMCRD13MB2	12.91	13.49	5	35	5	2	10
ZMCRD13MB3	13.37	13.96	5	35	5	2	10
ZMCRD15MB	13.84	15.52	5	40	5	2	11
ZMCRD15MB1	13.84	14.46	5	40	5	2	11
ZMCRD15MB2	14.34	14.98	5	40	5	2	11
ZMCRD15MB3	14.85	15.52	5	40	5	2	11
ZMCRD16MB	15.37	17.09	5	40	5	2	12
ZMCRD16MB1	15.37	16.01	5	40	5	2	12
ZMCRD16MB2	15.85	16.51	5	40	5	2	12
ZMCRD16MB3	16.35	17.09	5	40	5	2	12
ZMCRD18MB	16.94	19.03	5	45	5	2	13
ZMCRD18MB1	16.94	17.7	5	45	5	2	13
ZMCRD18MB2	17.56	18.35	5	45	5	2	13
ZMCRD18MB3	18.21	19.03	5	45	5	2	13
ZMCRD20MB	18.86	21.08	5	50	5	2	15
ZMCRD20MB1	18.86	19.7	5	50	5	2	15
ZMCRD20MB2	19.52	20.39	5	50	5	2	15
ZMCRD20MB3	20.21	21.08	5	50	5	2	15
ZMCRD22MB	20.88	23.17	5	55	5	2	17
ZMCRD22MB1	20.88	21.77	5	55	5	2	17
ZMCRD22MB2	21.54	22.47	5	55	5	2	17
ZMCRD22MB3	22.23	23.17	5	55	5	2	17
ZMCRD24MB	22.93	25.57	5	60	5	2	19
ZMCRD24MB1	22.93	23.96	5	60	5	2	19
ZMCRD24MB2	23.72	24.78	5	60	5	2	19
ZMCRD24MB3	24.54	25.57	5	60	5	2	19
ZMCRD27MB	25.1	28.9	2	70	2	2	21
ZMCRD30MB	28	32	2	80	2	2	23
ZMCRD33MB	31	35	2	80	2	2	25
ZMCRD36MB	34	38	2	90	2	2	27
ZMCRD39MB	37	41	2	100	2	2	30
ZMCRD43MB	40	45	2	130	2	2	33
ZMCRD47MB	44	49	2	150	2	2	36

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