



**FUKUCOM COMPANY LTD.**

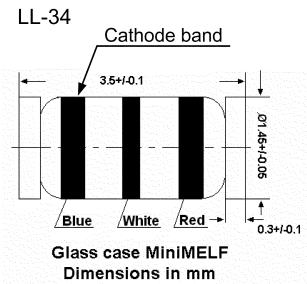
**福 靈 有 限 公 司**

FLAT P, 3/F., EVEREST INDUSTRIAL CENTRE, 396 KWUN TONG ROAD,  
KWUN TONG, KOWLOON, HONG KONG.

TEL: 852-2790 0314 FAX: 852-2790 0206

## ZMM...HS Series

### SILICON PLANAR ZENER DIODES



#### Absolute Maximum Ratings and Characteristics (T<sub>a</sub> = 25 °C)

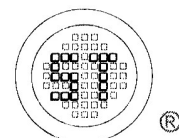
Parameter	Symbol	Value	Unit
Power Dissipation	P <sub>tot</sub>	500 <sup>1)</sup>	mW
Thermal Resistance Junction to Ambient Air	R <sub>thA</sub>	0.3 <sup>1)</sup>	K/mW
Junction Temperature	T <sub>j</sub>	175	°C
Storage Temperature Range	T <sub>s</sub>	- 55 to + 175	°C

<sup>1)</sup> Valid provided that electrodes are kept at ambient temperature

#### Characteristics at T<sub>a</sub> = 25 °C

Type	Zener Voltage		I <sub>ZT</sub> (mA)	Dynamic Resistance		Reverse Leakage Current (I <sub>R</sub> at V <sub>R</sub> )	
	Min. (V)	Max. (V)		Ohm at I <sub>ZT</sub>	I <sub>ZT</sub> (mA)	I <sub>R</sub> (μA) Max.	V <sub>R</sub> (V)
ZMM2V0HS	1.88	2.2	5	100	5	120	0.5
ZMM2V0HSA	1.88	2.1					
ZMM2V0HSB	2.02	2.2					
ZMM2V2HS	2.12	2.41	5	100	5	120	0.7
ZMM2V2HSA	2.12	2.3					
ZMM2V2HSB	2.22	2.41					
ZMM2V4HS	2.33	2.63	5	100	5	120	1
ZMM2V4HSA	2.33	2.52					
ZMM2V4HSB	2.43	2.63					
ZMM2V7HS	2.54	2.91	5	110	5	100	1
ZMM2V7HSA	2.54	2.75					
ZMM2V7HSB	2.69	2.91					
ZMM3V0HS	2.85	3.22	5	120	5	50	1
ZMM3V0HSA	2.85	3.07					
ZMM3V0HSB	3.01	3.22					
ZMM3V3HS	3.16	3.53	5	120	5	20	1
ZMM3V3HSA	3.16	3.38					
ZMM3V3HSB	3.32	3.53					
ZMM3V6HS	3.47	3.83	5	120	5	10	1
ZMM3V6HSA	3.47	3.68					
ZMM3V6HSB	3.62	3.83					

Tested with pulse t<sub>p</sub> = 20 ms



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Dated : 16/09/2006



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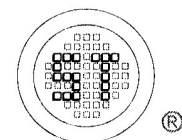
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ZMM...HS Series

Characteristics at T<sub>a</sub> = 25 °C

Type	Zener Voltage		Dynamic Resistance			Reverse Leakage Current (I <sub>R</sub> at V <sub>R</sub> )	
	Min. (V)	Max. (V)	I <sub>ZT</sub> (mA)	Ohm at I <sub>ZT</sub>	I <sub>ZT</sub> (mA)	I <sub>R</sub> (μA) Max.	V <sub>R</sub> (V)
ZMM3V9HS	3.77	4.14	5	120	5	5	1
ZMM3V9HSA	3.77	3.98					
ZMM3V9HSB	3.92	4.14					
ZMM4V3HS	4.05	4.53	5	120	5	5	1
ZMM4V3HSA	4.05	4.26					
ZMM4V3HSB	4.2	4.4					
ZMM4V3HSC	4.34	4.53					
ZMM4V7HS	4.47	4.91	5	100	5	5	1
ZMM4V7HSA	4.47	4.65					
ZMM4V7HSB	4.59	4.77					
ZMM4V7HSC	4.71	4.91					
ZMM5V1HS	4.85	5.35	5	70	5	5	1.5
ZMM5V1HSA	4.85	5.03					
ZMM5V1HSB	4.97	5.18					
ZMM5V1HSC	5.12	5.35					
ZMM5V6HS	5.29	5.88	5	40	5	5	2.5
ZMM5V6HSA	5.29	5.52					
ZMM5V6HSB	5.46	5.7					
ZMM5V6HSC	5.64	5.88					
ZMM6V2HS	5.81	6.4	5	30	5	5	3
ZMM6V2HSA	5.81	6.06					
ZMM6V2HSB	5.99	6.24					
ZMM6V2HSC	6.16	6.4					
ZMM6V8HS	6.32	6.97	5	25	5	2	3.5
ZMM6V8HSA	6.32	6.59					
ZMM6V8HSB	6.52	6.79					
ZMM6V8HSC	6.7	6.97					
ZMM7V5HS	6.88	7.64	5	25	5	0.5	4
ZMM7V5HSA	6.88	7.19					
ZMM7V5HSB	7.11	7.41					
ZMM7V5HSC	7.33	7.64					
ZMM8V2HS	7.56	8.41	5	20	5	0.5	5
ZMM8V2HSA	7.56	7.9					
ZMM8V2HSB	7.82	8.15					
ZMM8V2HSC	8.07	8.41					
ZMM9V1HS	8.33	9.29	5	20	5	0.5	6
ZMM9V1HSA	8.33	8.7					
ZMM9V1HSB	8.61	8.99					
ZMM9V1HSC	8.89	9.29					

Tested with pulse tp = 20 ms



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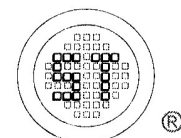
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**ZMM...HS Series**

**Characteristics at T<sub>a</sub> = 25 °C**

Type	Zener Voltage			Dynamic Resistance		Reverse Leakage Current (I <sub>R</sub> at V <sub>R</sub> )	
	Min. (V)	Max. (V)	I <sub>ZT</sub> (mA)	Ohm at I <sub>ZT</sub>	I <sub>ZT</sub> (mA)	I <sub>R</sub> (μA) Max.	V <sub>R</sub> (V)
ZMM10HS	9.19	10.3	5	20	5	0.2	7
ZMM10HSA	9.19	9.59					
ZMM10HSB	9.48	9.9					
ZMM10HSC	9.82	10.3					
ZMM11HS	10.18	11.26	5	20	5	0.2	8
ZMM11HSA	10.18	10.63					
ZMM11HSB	10.5	10.95					
ZMM11HSC	10.82	11.26					
ZMM12HS	11.13	12.3	5	25	5	0.2	9
ZMM12HSA	11.13	11.63					
ZMM12HSB	11.5	11.92					
ZMM12HSC	11.8	12.3					
ZMM13HS	12.18	13.62	5	25	5	0.2	10
ZMM13HSA	12.18	12.71					
ZMM13HSB	12.59	13.16					
ZMM13HSC	13.03	13.62					
ZMM15HS	13.48	15.02	5	25	5	0.2	11
ZMM15HSA	13.48	14.09					
ZMM15HSB	13.95	14.56					
ZMM15HSC	14.42	15.02					
ZMM16HS	14.87	16.5	5	25	5	0.2	12
ZMM16HSA	14.87	15.5					
ZMM16HSB	15.33	15.96					
ZMM16HSC	15.79	16.5					
ZMM18HS	16.34	18.3	5	30	5	0.2	13
ZMM18HSA	16.34	17.06					
ZMM18HSB	16.9	17.67					
ZMM18HSC	17.51	18.3					
ZMM20HS	18.14	20.45	5	30	5	0.2	15
ZMM20HSA	18.14	18.96					
ZMM20HSB	18.8	19.68					
ZMM20HSC	19.52	20.45					
ZMM22HS	20.23	22.61	5	30	5	0.2	17
ZMM22HSA	20.23	21.08					
ZMM22HSB	20.76	21.65					
ZMM22HSC	21.22	22.09					
ZMM22HSD	21.68	22.61					

Tested with pulse tp = 20 ms



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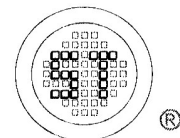
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## ZMM...HS Series

### Characteristics at $T_a = 25^\circ\text{C}$

Type	Zener Voltage		Dynamic Resistance		Reverse Leakage Current ( $I_R$ at $V_R$ )		
	Min. (V)	Max. (V)	$I_{ZT}$ (mA)	Ohm at $I_{ZT}$	$I_{ZT}$ (mA)	$I_R$ ( $\mu\text{A}$ ) Max.	$V_R$ (V)
ZMM24HS	22.26	24.81	5	35	5	0.2	19
ZMM24HSA	22.26	23.12					
ZMM24HSB	22.75	23.73					
ZMM24HSC	23.29	24.27					
ZMM24HSD	23.81	24.81					
ZMM27HS	24.26	27.64	5	45	5	0.2	21
ZMM27HSA	24.26	25.52					
ZMM27HSB	24.97	26.26					
ZMM27HSC	25.63	26.95					
ZMM27HSD	26.29	27.64					
ZMM30HS	26.99	30.51	5	55	5	0.2	23
ZMM30HSA	26.99	28.39					
ZMM30HSB	27.7	29.13					
ZMM30HSC	28.36	29.82					
ZMM30HSD	29.02	30.51					
ZMM33HS	29.68	33.11	5	65	5	0.2	25
ZMM33HSA	29.68	31.22					
ZMM33HSB	30.32	31.88					
ZMM33HSC	30.9	32.5					
ZMM33HSD	31.49	33.11					
ZMM36HS	32.14	35.77	5	75	5	0.2	27
ZMM36HSA	32.14	33.79					
ZMM36HSB	32.79	34.49					
ZMM36HSC	33.4	35.13					
ZMM36HSD	34.01	35.77					
ZMM39HS	34.68	38.52	5	85	5	0.2	30
ZMM39HSA	34.68	36.47					
ZMM39HSB	35.36	37.19					
ZMM39HSC	36	37.85					
ZMM39HSD	36.63	38.52					

Tested with pulse  $t_p = 20$  ms



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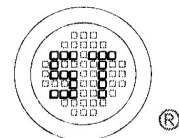
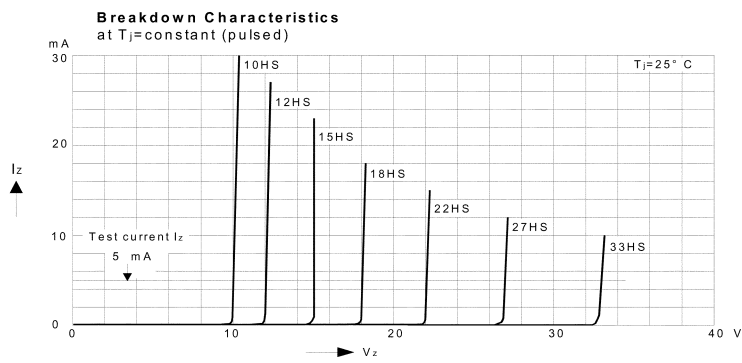
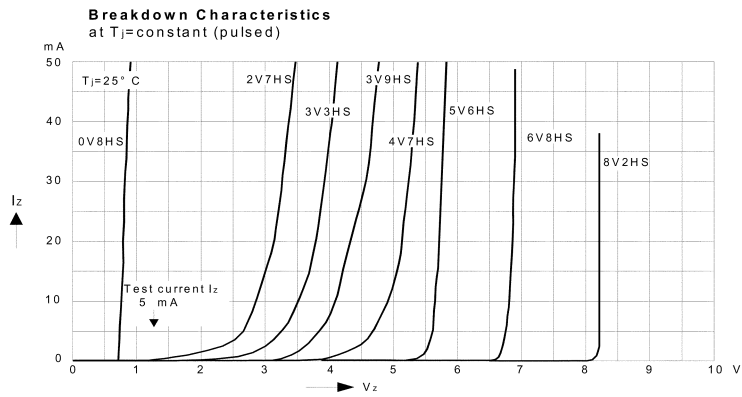
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