

# MMSZ4678 - MMSZ4717

$V_Z$  : 1.8 to 43 V

$P_D$  : 500 mW

## FEATURES :

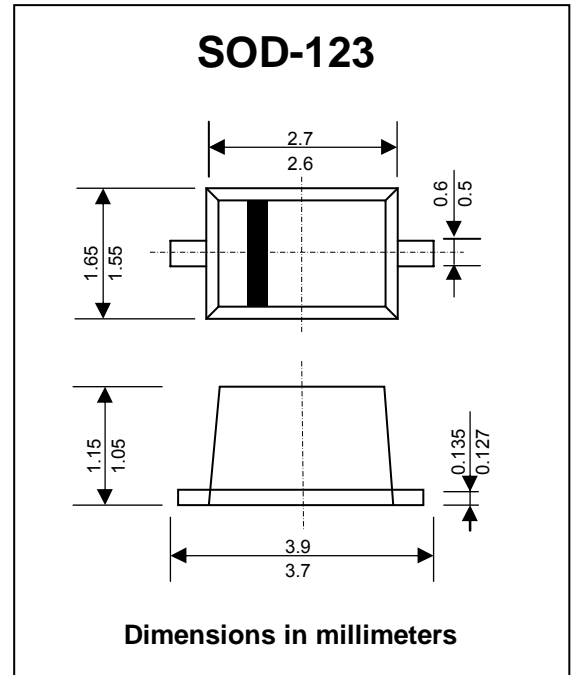
- \* Total Power Dissipation 500 mW on FR-4 or FR-5 Board
- \* Wide Zener Reverse Voltage Range 1.8 V to 43 V
- \* Package Designed for Optimal Automated Board Assembly
- \* Small Package Size for High Density Applications
- \* Pb / RoHS Free

## MECHANICAL DATA :

- \* Case : SOD-123
- \* Weight : 0.01 gram (approximately)

## ZENER DIODES

### SOD-123



## Maximum Ratings and Thermal Characteristics

Rating at 25 °C ambient temperature unless otherwise specified

Parameter	Symbol	Value	Unit
Zener Current see Table "Characteristics"			
Total Power Dissipation on FR-5 Board, at $T_L = 75\text{ °C}$	$P_D$	500 <sup>(1)</sup>	mW
Derated above 75 °C		6.7	mW/°C
Maximum Forward Voltage at $I_F = 10\text{ mA}$	$V_F$	0.95	V
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	340	°C/W
Thermal Resistance Junction to Lead	$R_{\theta JL}$	150	°C/W
Junction Temperature Range	$T_J$	-55 to + 150	°C
Storage Temperature Range	$T_{STG}$	-55 to + 150	°C

### Note :

(1) FR-5 = 3.5 x 1.5 inches, using the minimum recommended footprint.

## ELECTRICAL CHARACTERISTICS

Rating at 25 °C ambient temperature unless otherwise specified.

Type No.	Marking	Zener Voltage <sup>(1,2)</sup>			Test Current	Maximum Reverse Leakage Current	
		$V_Z @ I_{ZT}$ (V)				$I_{ZT}$	$I_R @ V_R$
		Min.	Nom.	Max.	( $\mu A$ )	( $\mu A$ )	(V)
MMSZ4678	BC	1.71	1.8	1.89	50	7.5	1.0
MMSZ4679	BD	1.90	2.0	2.10	50	5.0	1.0
MMSZ4680	BE	2.09	2.2	2.31	50	4.0	1.0
MMSZ4681	BF	2.28	2.4	2.52	50	2.0	1.0
MMSZ4682	BH	2.565	2.7	2.835	50	1.0	1.0
MMSZ4683	BJ	2.85	3.0	3.15	50	0.8	1.0
MMSZ4684	BK	3.13	3.3	3.47	50	7.5	1.5
MMSZ4685	BM	3.42	3.6	3.78	50	7.5	2.0
MMSZ4686	BN	3.70	3.9	4.10	50	5.0	2.0
MMSZ4687	BP	4.09	4.3	4.52	50	4.0	2.0
MMSZ4688	BR	4.47	4.7	4.94	50	10	3.0
MMSZ4689	BX	4.85	5.1	5.36	50	10	3.0
MMSZ4690	BY	5.32	5.6	5.88	50	10	4.0
MMSZ4691	BZ	5.89	6.2	6.51	50	10	5.0
MMSZ4692	CA	6.46	6.8	7.14	50	10	5.1
MMSZ4693	CB	7.13	7.5	7.88	50	10	5.7
MMSZ4694	CC	7.79	8.2	8.61	50	1.0	6.2
MMSZ4695	CD	8.27	8.7	9.14	50	1.0	6.6
MMSZ4696	CE	8.65	9.1	9.56	50	1.0	6.9
MMSZ4697	CF	9.50	10	10.50	50	1.0	7.6
MMSZ4698	CH	10.45	11	11.50	50	0.05	8.4
MMSZ4699	CJ	11.40	12	12.60	50	0.05	9.1
MMSZ4700	CK	12.35	13	13.65	50	0.05	9.8
MMSZ4701	CM	13.30	14	14.70	50	0.05	10.6
MMSZ4702	CN	14.25	15	15.75	50	0.05	11.4
MMSZ4703	CP	15.20	16	16.80	50	0.05	12.1
MMSZ4704	CR	16.15	17	17.85	50	0.05	12.9
MMSZ4705	CX	17.10	18	18.90	50	0.05	13.6
MMSZ4706	CY	18.05	19	19.95	50	0.05	14.4
MMSZ4707	CZ	19.00	20	21.00	50	0.01	15.2
MMSZ4708	DA	20.90	22	23.10	50	0.01	16.7
MMSZ4709	DB	22.80	24	25.20	50	0.01	18.2
MMSZ4710	DC	23.75	25	26.25	50	0.01	19.0
MMSZ4711	DD	25.65	27	28.35	50	0.01	20.4
MMSZ4712	DE	26.60	28	29.40	50	0.01	21.2
MMSZ4713	DF	28.50	30	31.50	50	0.01	22.8
MMSZ4714	DH	31.35	33	34.65	50	0.01	25.0
MMSZ4715	DJ	34.20	36	37.80	50	0.01	27.3
MMSZ4716	DK	37.05	39	40.95	50	0.01	29.6
MMSZ4717	DM	40.85	43	45.15	50	0.01	32.6

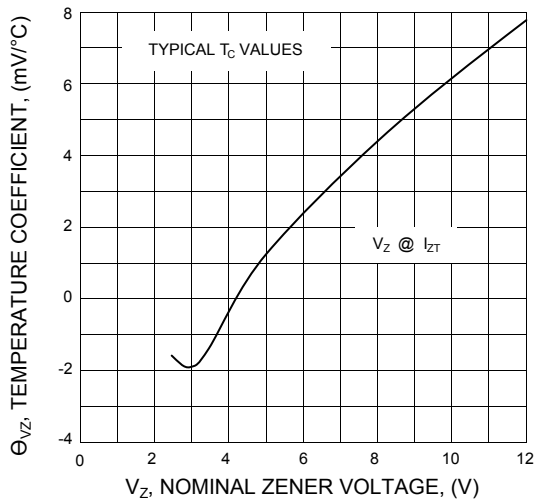
**Notes :**

(1) Tested with pulses  $t_p = 20$  ms

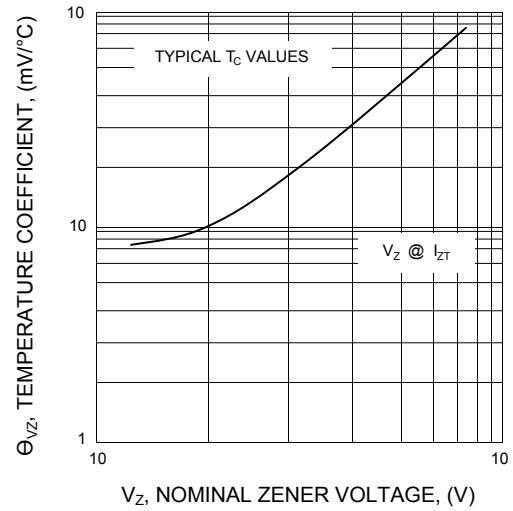
(2) Nominal Zener voltage is measured with the device junction in thermal equilibrium at  $T_j = 30^\circ C \pm 1^\circ C$

**RATING AND CHARACTERISTIC CURVES ( MMSZ4678 - MMSZ4717 )**

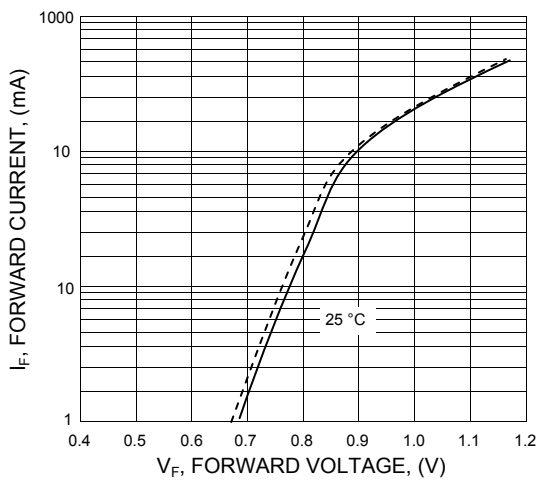
**FIG.1 - TEMPERATURE COEFFICIENTS  
(TEMPERATURE RANGE - 55 °C to +150 °C)**



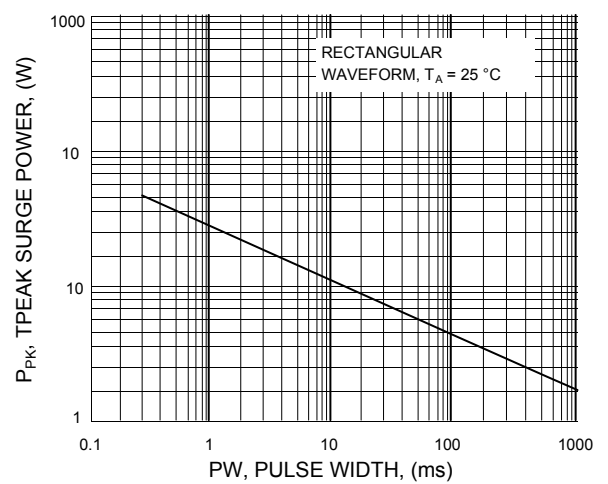
**FIG.2 - TEMPERATURE COEFFICIENTS  
(TEMPERATURE RANGE - 55 °C to +150 °C)**



**FIG.3 - TYPICAL FORWARD VOLTAGE**

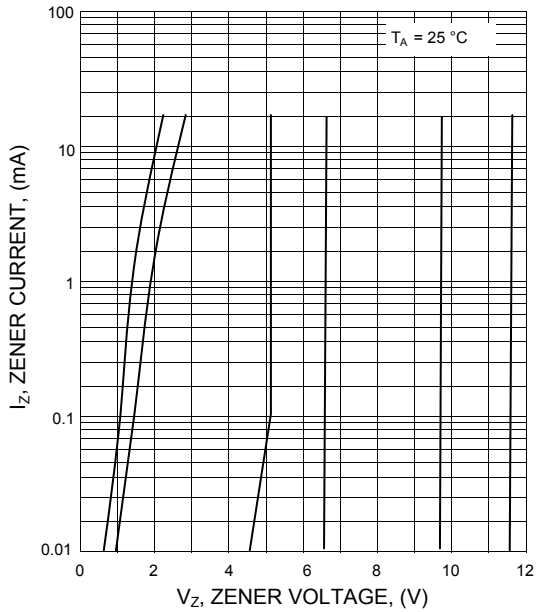


**FIG.4 - MAXIMUM NON-REPETITIVE SURGE POWER**

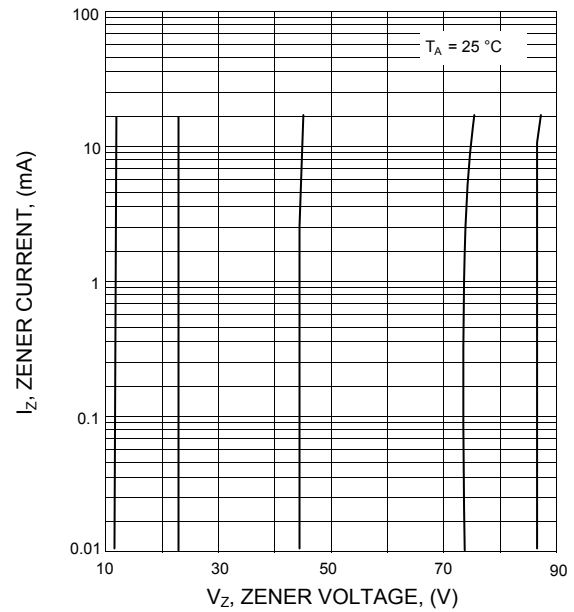


**RATING AND CHARACTERISTIC CURVES ( MMSZ4678 - MMSZ4717 )**

**FIG.5 - ZENER VOLTAGE VS. ZENER CURRENT  
( $V_Z$  Up to 12 V)**



**FIG.6 - ZENER VOLTAGE VS. ZENER CURRENT  
( $V_Z$  12 V to 91 V)**



**FIG.7 - STEADY STATE POWER DERATING**

