



# ZENER DIODE

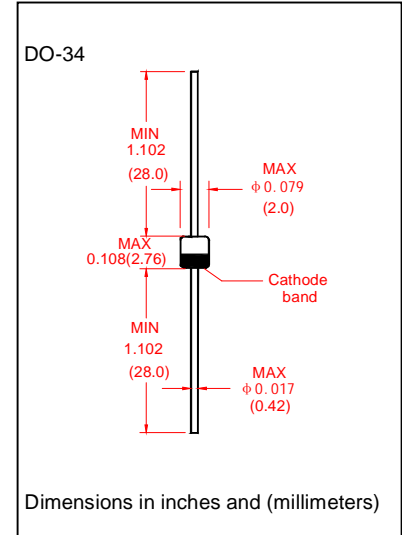
## MZ0.5GE SERIES

MZ0.5GE2V0-20 THRU MZ0.5GE75V-1.7  
MZ0.5GE2V THRU MZ0.5GE75V

### TECHHICAL SPECIFICATION

#### FEATURES

- Silicon Planar Power Zener Diodes
- Standard Zener Voltage Tolerance is  $\pm 5\%$
- DO-34 Glass Case
- High Reliability
- Weight: Approx. 0.09g



#### ABSOLUTE MAXIMUM RATINGE: ( $T_a=25^\circ\text{C}$ )

Parameter	Symbols	Limits	Unit
Power Dissipation at $T_{amb}=75^\circ\text{C}$	$P_{tot}$	500 <sup>(1)</sup>	mw
Maximum Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55~+150	$^\circ\text{C}$

	Symbols	Min	Typ	Max	Unit
Thermal Resistance Junction to Ambient Air	$R_{thJA}$	-	-	300 <sup>(1)</sup>	$^\circ\text{C}/\text{W}$
Forward Voltage at $I_F=100\text{mA}$	$V_F$	-	-	1.2	Volts

#### Notes

1. Valid provided that at a distance of 8mm from case are kept at ambient temperature :
2. Tested with pulse  $t_p=5\text{ms}$
3. Valid provided that leads are kept at ambient temperature at a distance of 8mm from case
4. Standard zener voltage tolerance is  $\pm 5\%$ . Add suffix "A" for  $\pm 10\%$  tolerance.
5. At  $I_z = 0.15\text{mA}$
6. At  $I_z = 0.125\text{mA}$ .



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### ELECTRICAL CHARACTERISTIC

Ratings at 25°C ambient temperature unless otherwise specified

Type	Zener Voltage <sup>(2)</sup> V <sub>Z(V)</sub> ( $\Delta V_Z \leq \pm 5\%$ ) <sup>(4)</sup>		Dynamic Resistance		Temp coeff of Zener Volotage $\alpha V_Z(\%/k)$	Reverse leakage current I <sub>R(MA)</sub>		Admissible Zener Current <sup>(3)</sup> I <sub>ZT(MA)</sub>
			f=1KHz Z <sub>ZT</sub> ( $\Omega$ ) At I <sub>ZT</sub>	f=1KHZ I <sub>ZK</sub> =0.25Ma Z <sub>ZK</sub> ( $\Omega$ )		MAX	V <sub>R(VA)</sub>	
		at I <sub>ZT(MA)</sub>	MAX	MIN	MAX			MAX
MZO.5GE2V0-20	2.0	20	38	1500		150	0.5	205
MZO.5GE2V2-20	2.2	20	35	1500		150	0.5	192
MZO.5GE2V4-20	2.4	20	32	1200		100	0.7	189
MZO.5GE2V7-20	2.7	20	30	1300	-0.08...-0.06	75	0.7	165
MZO.5GE3V0-20	3.0	20	29	1600	-0.08...-0.06	50	1	152
MZO.5GE3V3-20	3.3	20	28	1600	-0.08...-0.05	25	1	138
MZO.5GE3V6-20	3.6	20	24	1700	-0.08...-0.04	15	1	126
MZO.5GE3V9-20	3.9	20	23	1900	-0.07...-0.03	10	1	115
MZO.5GE4V3-20	4.3	20	22	2000	-0.04...-0.01	5	1	106
MZO.5GE4V7-20	4.7	20	19	1900	-0.03...-0.01	5	2	97
MZO.5GE5V1-20	5.1	20	17	1600	-0.02...-0.05	5	2	89
MZO.5GE5V6-20	5.6	20	11	1600	-0.01...-0.06	5	3	81
MZO.5GE6V0-20	6.0	20	7	1600	-0.01...-0.07	5	3.5	76
MZO.5GE6V2-20	6.2	20	7	1000	-0...-0.07	5	4	73
MZO.5GE6V8-20	6.8	20	5	750	+0.01...+0.08	3	5	67
MZO.5GE7V5-20	7.5	20	6	500	+0.01...+0.09	3	6	61
MZO.5GE8V2-20	8.2	20	8	500	+0.01...+0.09	3	6.5	55
MZO.5GE8V7-20	8.7	20	8	600	+0.01...+0.10	3	6.5	52
MZO.5GE9V1-20	9.1	20	10	600	+0.02...+0.10	3	7	50
MZO.5GE10V-20	10	20	17	600	+0.03...+0.11	3	8	45
MZO.5GE11V-20	11	20	22	600	+0.03...+0.11	2	8.4	41
MZO.5GE12V-20	12	20	30	600	+0.03...+0.11	1	9.1	38
MZO.5GE13V-9.5	13	9.5	13	600	+0.03...+0.11	0.5	9.9	35
MZO.5GE14V-9.0	14	9	15	600	+0.03...+0.11	0.5	10	32
MZO.5GE15V-8.5	15	8.5	16	600	+0.03...+0.11	0.1	11	30
MZO.5GE16V-7.8	16	7.8	17	600	+0.03...+0.11	0.1	12	28
MZO.5GE17V-7.4	17	7.4	19	600	+0.03...+0.11	0.1	13	27
MZO.5GE18V-7.0	18	7	21	600	+0.03...+0.11	0.1	14	25
MZO.5GE19V-6.6	19	6.6	23	600	+0.03...+0.11	0.1	14	24
MZO.5GE20V-6.2	20	6.2	25	600	+0.03...+0.11	0.1	15	23
MZO.5GE22V-5.6	22	5.6	29	600	+0.03...+0.11	0.1	17	21
MZO.5GE24V-5.2	24	5.2	33	600	+0.04...+0.12	0.1	18	19.1
MZO.5GE25V-5.0	25	5	35	600	+0.03...+0.12	0.1	19	18.2
MZO.5GE27V-4.6	27	4.6	41	600	+0.04...+0.12	0.1	21	16.8
MZO.5GE28V-4.5	28	4.5	44	600	+0.03...+0.12	0.1	21	16.2
MZO.5GE30V-4.2	30	4.2	49	600	+0.04...+0.12	0.1	23	15.1
MZO.5GE33V-3.8	33	3.8	58	700	+0.04...+0.12	0.1	25	13.8
MZO.5GE36V-3.4	36	3.4	70	700	+0.04...+0.12	0.1	27	12.6
MZO.5GE39V-3.2	39	3.2	80	800	+0.04...+0.12	0.1	30	11.6
MZO.5GE43V-3	43	3	93	900	+0.04...+0.13	0.1	33	10.6
MZO.5GE47V-2.7	47	2.7	105	1000	+0.05...+0.13	0.1	36	9.7
MZO.5GE51V-2.5	51	2.5	125	1100	+0.05...+0.14	0.1	39	8.9
MZO.5GE56V-2.2	56	2.2	150	1300	+0.05...+0.14	0.1	43	-
MZO.5GE60V-2.1	60	2.1	170	1400	+0.05...+0.15	0.1	46	-
MZO.5GE62V-2.0	62	2	185	1500	+0.05...+0.15	0.1	47	-
MZO.5GE68V-1.8	68	1.8	230	1600	+0.05...+0.15	0.1	52	-
MZO.5GE75V-1.7	75	1.7	270	1700	+0.05...+0.15	0.1	56	-



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Ratings at 25°C ambient temperature unless otherwise specified

Type	Zener Voltage <sup>(2)</sup> V <sub>Z(V)</sub> ( $\Delta V_Z \leq \pm 5\%$ ) <sup>(4)</sup>	Dynamic Resistance		Temp coeff of Zener Volotage $\alpha V_Z(\%/k)$	Reverse leakage current I <sub>R(MA)</sub>		Admissible Zener Current <sup>(3)</sup> I <sub>ZT(MA)</sub>
		f=1KHz Z <sub>ZT</sub> ( $\Omega$ ) At I <sub>ZT</sub>	f=1KHZ I <sub>ZK</sub> =0.25Ma Z <sub>ZK</sub> ( $\Omega$ )		MAX	V <sub>R(VA)</sub>	
		MAX	MIN				
MZO.5GE2V0	2.0	100	2000		150	0.5	150
MZO.5GE2V2	2.2	100	2000		150	0.5	145
MZO.5GE2V4	2.4	100	1800		100	0.7	140
MZO.5GE2V7	2.7	100	1900	-0.08...-0.06	75	0.7	135
MZO.5GE3V0	3.0	95	2000	-0.08...-0.06	50	1	125
MZO.5GE3V3	3.3	95	2200	-0.08...-0.05	25	1	115
MZO.5GE3V6	3.6	90	2300	-0.08...-0.04	15	1	105
MZO.5GE3V9	3.9	90	2400	-0.07...-0.03	10	1	95
MZO.5GE4V3	4.3	88	2500	-0.04...-0.01	5	1	90
MZO.5GE4V7	4.7	70	2200	-0.03...-0.01	3	1.5	85
MZO.5GE5V1	5.1	50	2050	-0.02...0.05	2	2	80
MZO.5GE5V6	5.6	25	1800	-0.01...-0.06	2	3	70
MZO.5GE6V2	6.2	10	1300	0...0.07	1	4	64
MZO.5GE6V8	6.8	8	750	+0.01...+0.08	1	5.2	58
MZO.5GE7V5	7.5	7	600	+0.01...+0.09	0.5	6	53
MZO.5GE8V2	8.2	7	600	+0.01...+0.09	0.5	6.4	47
MZO.5GE9V1	9.1	10	600	+0.02...+0.10	0.1	7	43
MZO.5GE10V	10	15	600	+0.03...+0.11	0.1	8	40
MZO.5GE11V	11	18	600	+0.03...+0.11	0.1	8.1	36
MZO.5GE12V	12	22	600	+0.03...+0.11	0.1	9.1	32
MZO.5GE13V	13	25	600	+0.03...+0.11	0.1	9.9	29
MZO.5GE15V	15	32	600	+0.03...+0.11	0.1	11	27
MZO.5GE16V	16	36	600	+0.03...+0.11	0.1	12	24
MZO.5GE18V	18	42	600	+0.03...+0.11	0.1	14	21
MZO.5GE20V	20	48	600	+0.03...+0.11	0.1	15	20
MZO.5GE22V	22	55	600	+0.03...+0.11	0.1	17	18
MZO.5GE24V	24	62	600	+0.04...+0.12	0.1	18	16
MZO.5GE27V	27	70	600	+0.04...+0.12	0.1	21	14
MZO.5GE30V	30	78	600	+0.04...+0.12	0.1	23	13
MZO.5GE33V	33	88	700	+0.04...+0.12	0.1	25	12
MZO.5GE36V	36	95	700	+0.04...+0.12	0.1	27	11
MZO.5GE39V	39	130	800	+0.04...+0.12	0.1	30	10
MZO.5GE43V	43	130	900	+0.04...+0.13	0.1	33	10.6
MZO.5GE47V	47	130	1000	+0.05...+0.13	0.1	36	9.7
MZO.5GE51V	51	140	1100	+0.05...+0.14	0.1	39	8.9
MZO.5GE56V	56	160 <sup>(5)</sup>	1300 <sup>(6)</sup>	+0.05...+0.14 <sup>(5)</sup>	0.1	43	
MZO.5GE60V	60	180 <sup>(5)</sup>	1400 <sup>(6)</sup>	+0.05...+0.15 <sup>(5)</sup>	0.1	46	
MZO.5GE62V	62	210 <sup>(5)</sup>	1500 <sup>(6)</sup>	+0.05...+0.15 <sup>(5)</sup>	0.1	47	
MZO.5GE68V	68	240 <sup>(5)</sup>	1600 <sup>(6)</sup>	+0.05...+0.15 <sup>(5)</sup>	0.1	52	
MZO.5GE75V	75	280 <sup>(5)</sup>	1700 <sup>(6)</sup>	+0.05...+0.15 <sup>(5)</sup>	0.1	56	



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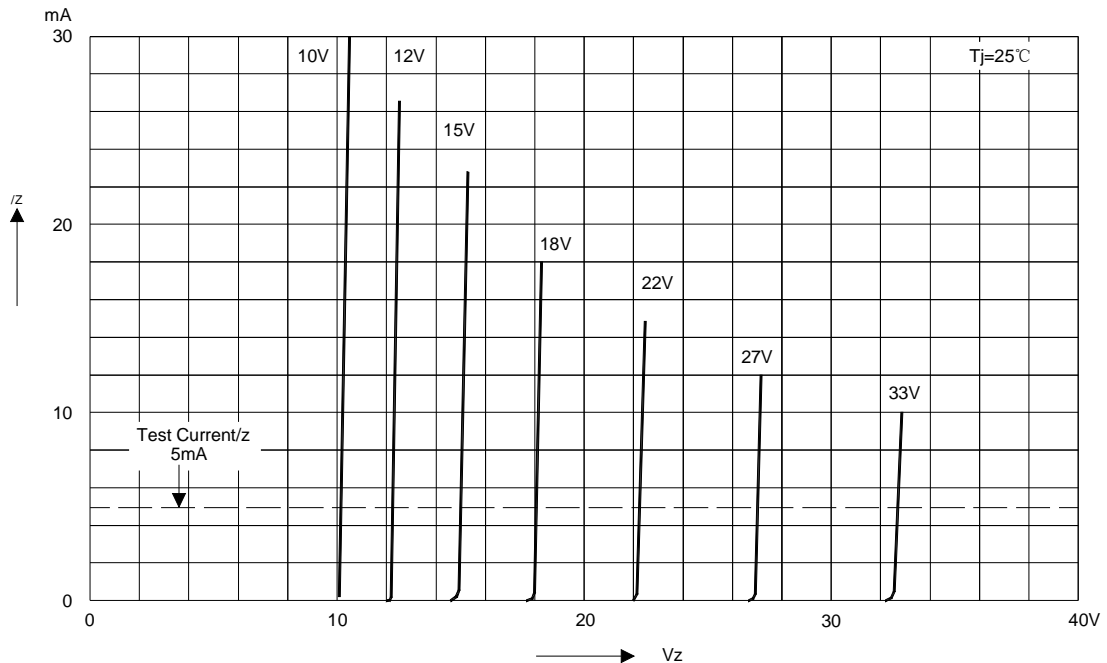
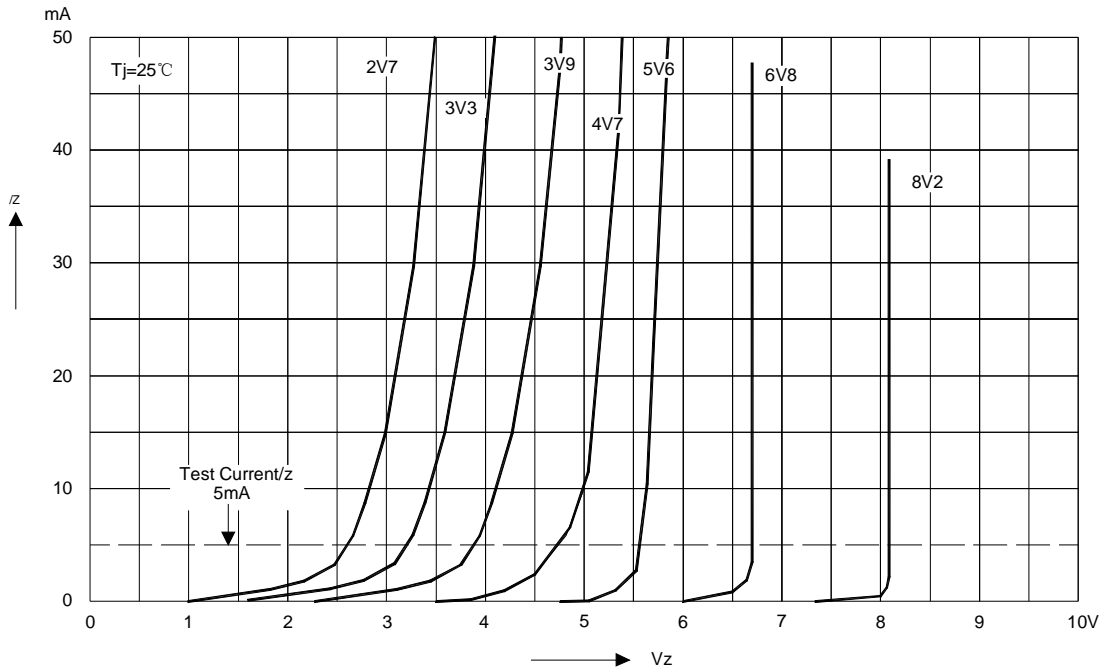
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MZ0.5GE2V THRU MZ0.5GE75V

### RATINGS AND CHARACTERISTIC CURVES

Breakdown characteristics

$T_j = \text{constant (pulsed)}$





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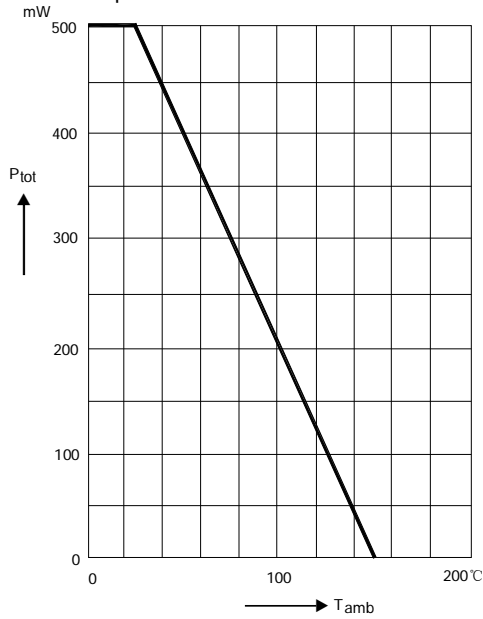
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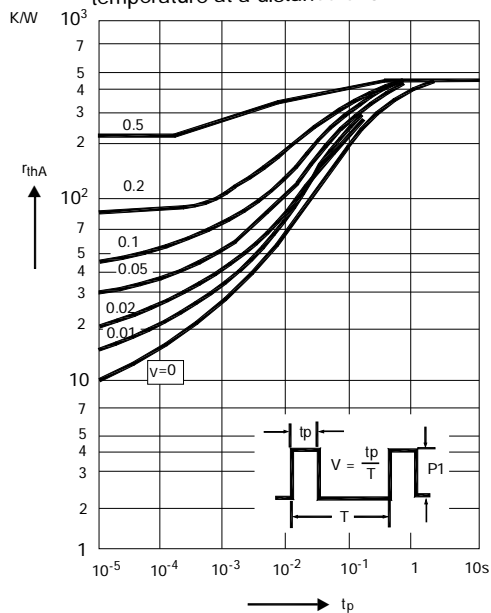
### RATINGS AND CHARACTERISTIC CURVES

Admissible power dissipation  
versus ambient temperature  
Valid provided that leads are kept ambient  
temperature at a distance of 8mm from case

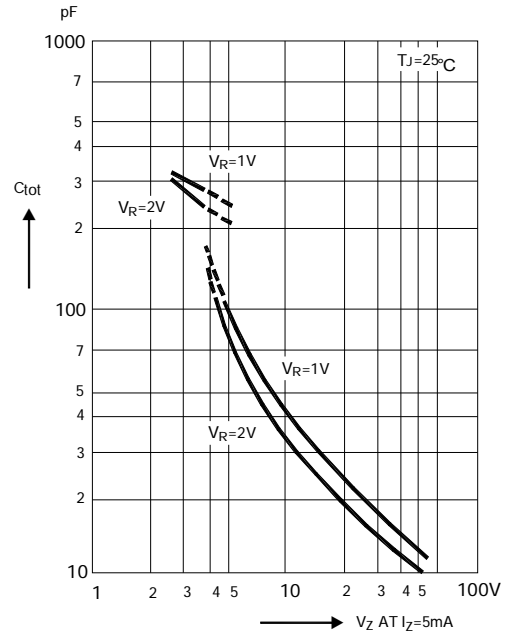


Pulse thermal resistance  
versus pulse duration

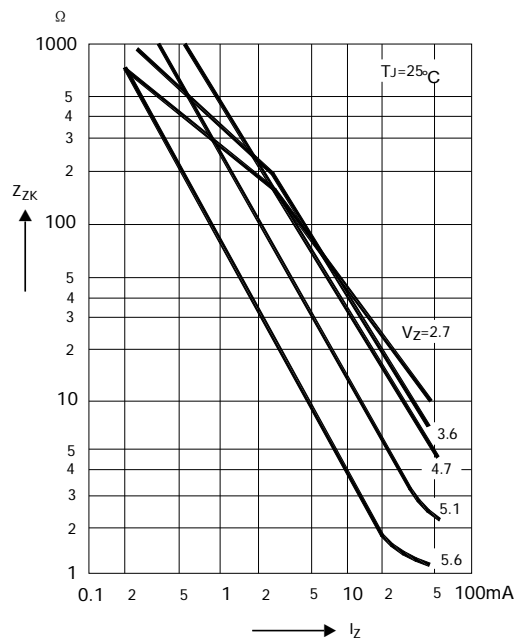
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Capacitance  
Zener voltage



Dynamic resistance  
versus Zener current





# ZENER DIODE

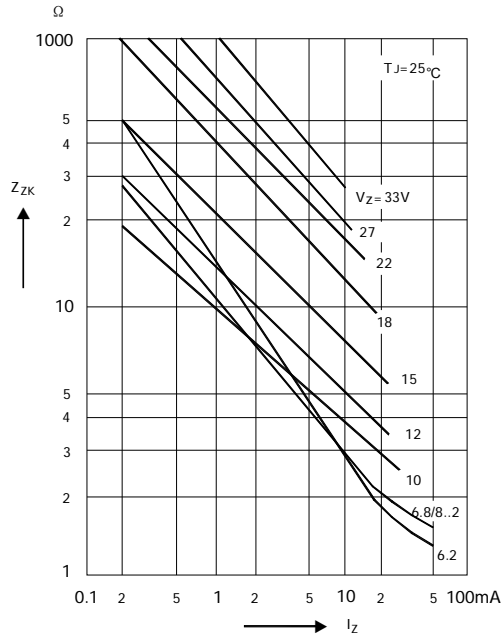
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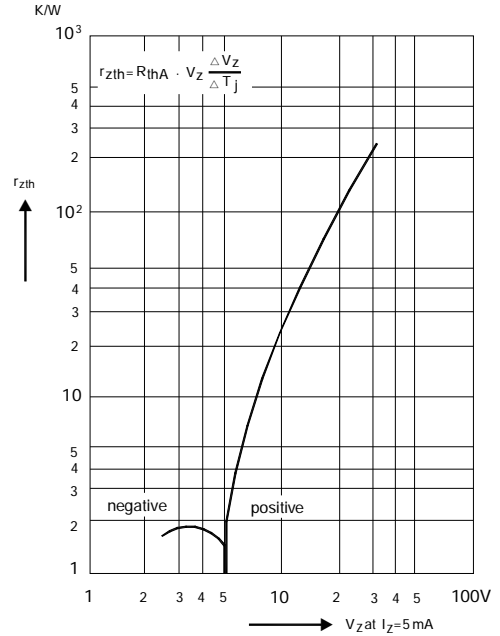
### RATINGS AND CHARACTERISTIC CURVES

Dynamic resistance versus Zener current

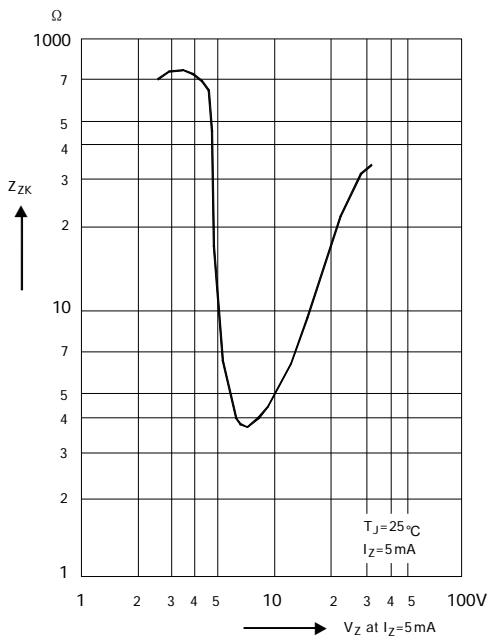


Thermal differential resistance versus Zener voltage

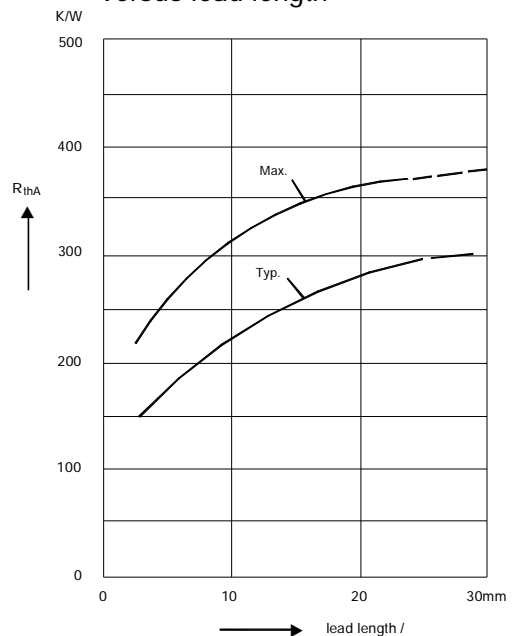
Valid provided that leads are kept at ambient temperature at a distance of 8mm from case



Dynamic resistance versus Zener voltage



Thermal resistance versus lead length





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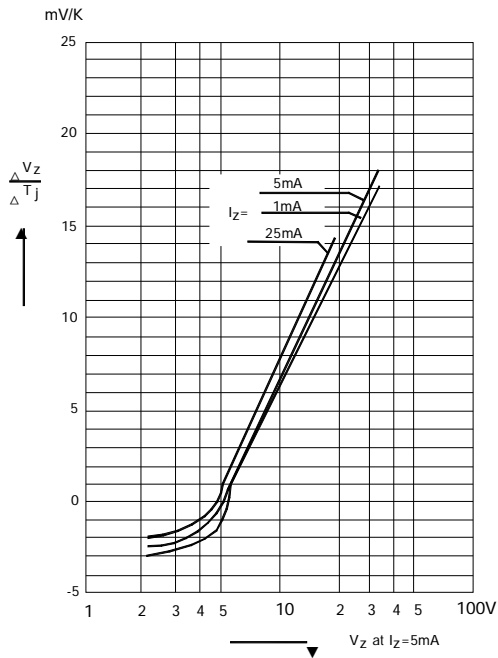
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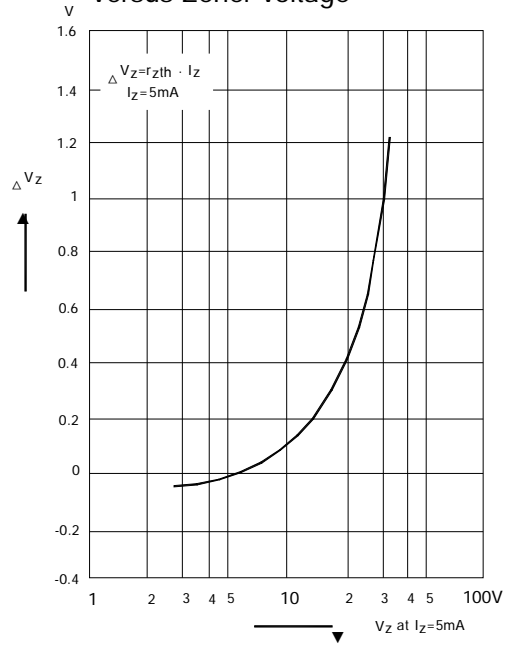
MZ0.5GE2V THRU MZ0.5GE75V

### RATINGS AND CHARACTERISTIC CURVES

Temperature dependence of Zener voltage versus Zener voltage



Change of Zener voltage from turn-on up to the point of thermal equilibrium versus Zener voltage



Change of Zener voltage versus junction temperature

