

## 500mW, 2V-56V Zener Diodes

### FEATURES

- Wide zener voltage range selection: 2.0V to 56V
- Hermetically sealed glass
- Compliant to RoHS directive 2011/65/EU and in accordance to WEEE 2002/96/EC

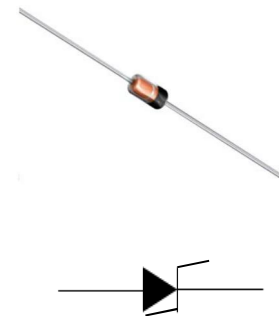
### APPLICATIONS

- Low voltage stabilizers or voltage references
- Adapters
- Lighting application
- On-board DC/DC converter

### MECHANICAL DATA

- Case: DO-34
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Polarity: Indicated by cathode band
- Weight: 92 mg (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$V_Z$	2.0 - 56	V
Test current $I_{ZT}$	5	mA
$P_D$	500	mW
$T_J$ MAX	175	°C
Package	DO-34	
Configuration	Single die	



ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Power dissipation	$P_D$	500	mW
Junction temperature range	$T_J$	-55 to +175	°C
Storage temperature	$T_{STG}$	-55 to +175	°C

**ELECTRICAL SPECIFICATIONS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

PART NUMBER	MARKING CODE	ZENER VOLTAGE			TEST CURRENT	REGULAR IMPEDANCE		TEST CURRENT	LEAKAGE CURRENT		
		$V_Z @ I_{ZT}$			$I_{ZT}$	$Z_{ZT} @ I_{ZT}$	$Z_{ZK} @ I_{ZK}$	$I_{ZK}$	$I_R @ V_R$		
		V			mA	$\Omega$	$\Omega$	mA	$\mu\text{A}$	V	
		Min.	Nom.	Max.		Max.	Max.		Max.		
MTZJ2V0S	A	2V0A	1.88	1.99	2.10	5	100	1000	0.5	120	0.5
	B	2V0B	2.02	2.11	2.20						
MTZJ2V2S	A	2V2A	2.12	2.21	2.30	5	100	1000	0.5	120	0.7
	B	2V2B	2.22	2.32	2.41						
MTZJ2V4S	A	2V4A	2.33	2.43	2.52	5	100	1000	0.5	120	1.0
	B	2V4B	2.43	2.53	2.63						
MTZJ2V7S	A	2V7A	2.54	2.65	2.75	5	110	1000	0.5	100	1.0
	B	2V7B	2.69	2.80	2.91						
MTZJ3V0S	A	3V0A	2.85	2.96	3.07	5	120	1000	0.5	50	1.0
	B	3V0B	3.01	3.12	3.22						
MTZJ3V3S	A	3V3A	3.16	3.27	3.38	5	120	1000	0.5	20	1.0
	B	3V3B	3.32	3.43	3.53						
MTZJ3V6S	A	3V6A	3.45	3.58	3.695	5	100	1000	1.0	10	1.0
	B	3V6B	3.60	3.72	3.845						
MTZJ3V9S	A	3V9A	3.74	3.88	4.01	5	100	1000	1.0	5	1.0
	B	3V9B	3.89	4.03	4.16						
MTZJ4V3S	A	4V3A	4.04	4.17	4.29	5	100	1000	1.0	5	1.0
	B	4V3B	4.17	4.30	4.43						
	C	4V3C	4.30	4.44	4.57						
MTZJ4V7S	A	4V7A	4.44	4.56	4.68	5	80	900	0.5	5	1.0
	B	4V7B	4.55	4.68	4.80						
	C	4V7C	4.68	4.81	4.93						
MTZJ5V1S	A	5V1A	4.81	4.94	5.07	5	80	1200	0.5	5	1.5
	B	5V1B	4.94	5.07	5.20						
	C	5V1C	5.09	5.23	5.37						
MTZJ5V6S	A	5V6A	5.28	5.42	5.55	5	60	900	0.5	5	2.5
	B	5V6B	5.45	5.59	5.73						
	C	5V6C	5.61	5.76	5.91						
MTZJ6V2S	A	6V2A	5.78	5.94	6.09	5	60	500	0.5	5	3.0
	B	6V2B	5.96	6.12	6.27						
	C	6V2C	6.12	6.28	6.44						
MTZJ6V8S	A	6V8A	6.29	6.46	6.63	5	20	150	0.5	2	3.5
	B	6V8B	6.49	6.66	6.83						
	C	6V8C	6.66	6.84	7.01						
MTZJ7V5S	A	7V5A	6.85	7.04	7.22	5	20	120	0.5	0.5	4.0
	B	7V5B	7.07	7.26	7.45						
	C	7V5C	7.29	7.48	7.67						
MTZJ8V2S	A	8V2A	7.53	7.73	7.92	5	20	120	0.5	0.5	5.0
	B	8V2B	7.78	7.99	8.19						
	C	8V2C	8.03	8.24	8.45						
MTZJ9V1S	A	9V1A	8.29	8.51	8.73	5	25	120	0.5	0.5	6.0
	B	9V1B	8.57	8.79	9.01						
	C	9V1C	8.83	9.07	9.30						
MTZJ10S	A	10A	9.12	9.36	9.59	5	30	120	0.5	0.2	7
	B	10B	9.41	9.66	9.90						
	C	10C	9.70	9.95	10.20						
	D	10D	9.97	10.21	10.44						
MTZJ11S	A	11A	10.18	10.45	10.71	5	30	120	0.5	0.2	8
	B	11B	10.50	10.78	11.05						
	C	11C	10.82	11.10	11.38						
MTZJ12S	A	12A	11.13	11.42	11.71	5	30	110	0.5	0.2	9
	B	12B	11.44	11.74	12.03						
	C	12C	11.74	12.05	12.35						
MTZJ13S	A	13A	12.11	12.43	12.75	5	35	110	0.5	0.2	10
	B	13B	12.55	12.88	13.21						
	C	13C	12.99	13.33	13.66						
MTZJ15S	A	15A	13.44	13.79	14.13	5	40	110	0.5	0.2	11
	B	15B	13.89	14.26	14.62						
	C	15C	14.35	14.72	15.09						
MTZJ16S	A	16A	14.80	15.19	15.57	5	40	150	0.5	0.2	12
	B	16B	15.25	15.65	16.04						
	C	16C	15.69	16.10	16.51						

**ELECTRICAL SPECIFICATIONS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

PART NUMBER	MARKING CODE	ZENER VOLTAGE			TEST CURRENT	REGULAR IMPEDANCE		TEST CURRENT	LEAKAGE CURRENT		
		$V_Z @ I_{ZT}$			$I_{ZT}$	$Z_{ZT} @ I_{ZT}$	$Z_{ZK} @ I_{ZK}$	$I_{ZK}$	$I_R @ V_R$		
		V			mA	$\Omega$	$\Omega$	mA	$\mu\text{A}$	V	
		Min.	Nom.	Max.		Max.	Max.		Max.		
MTZJ18S	A	18A	16.22	16.64	17.06	5	45	150	0.5	0.2	13
	B	18B	16.82	17.26	17.70						
	C	18C	17.42	17.88	18.33						
MTZJ20S	A	20A	18.02	18.49	18.96	5	55	200	0.5	0.2	15
	B	20B	18.63	19.11	19.59						
	C	20C	19.23	19.73	20.22						
	D	20D	19.72	20.22	20.72						
MTZJ22S	A	22A	20.15	20.68	21.2	5	30	200	0.5	0.2	17
	B	22B	20.64	21.18	21.71						
	C	22C	21.08	21.63	22.17						
	D	22D	21.52	22.08	22.63						
MTZJ24S	A	24A	22.05	22.62	23.18	5	35	200	0.5	0.2	19
	B	24B	22.61	23.19	23.77						
	C	24C	23.12	23.72	24.31						
	D	24D	23.63	24.24	24.85						
MTZJ27S	A	27A	24.26	24.89	25.52	5	45	250	0.5	0.2	21
	B	27B	24.97	25.62	26.26						
	C	27C	25.63	26.29	26.95						
	D	27D	26.29	26.97	27.64						
MTZJ30S	A	30A	26.99	27.69	28.39	5	55	250	0.5	0.2	23
	B	30B	27.70	28.42	29.13						
	C	30C	28.36	29.09	29.82						
	D	30D	29.02	29.77	30.51						
MTZJ33S	A	33A	29.68	30.45	31.22	5	65	250	0.5	0.2	25
	B	33B	30.32	31.10	31.88						
	C	33C	30.90	31.70	32.50						
	D	33D	31.49	32.30	33.11						
MTZJ36S	A	36A	32.14	32.97	33.79	5	75	250	0.5	0.2	27
	B	36B	32.79	33.64	34.49						
	C	36C	33.40	34.27	35.13						
	D	36D	34.01	34.89	35.77						
MTZJ39S	A	39A	34.68	35.58	36.47	5	85	250	0.5	0.2	30
	B	39B	35.36	36.28	37.19						
	C	39C	36.00	36.93	37.85						
	D	39D	36.63	37.58	38.52						
	E	39E	37.36	38.33	39.29						
	F	39F	38.14	39.13	40.11						
	G	39G	38.94	39.87	40.80						
MTZJ43S		43S	40.00	42.50	45.00	5	90	250	0.5	0.2	33
MTZJ47S		47S	44.00	46.50	49.00		90	250	0.5	0.2	36
MTZJ51S		51S	48.00	51.00	54.00		110	250	0.5	0.2	39
MTZJ56S		56S	53.00	56.50	60.00		110	250	0.5	0.2	43

**Notes:**

1. The zener voltage subdivision ( $V_Z$ ) is measured 30ms after diode is powered up
2. The operating resistance ( $Z_{ZT}$  or  $Z_{ZK}$ ) is measured by superimposing a minute alternation current in the regulated current ( $I_Z$ )
3. When ordering, please specify tolerance A, B, C, D, E, F, G

<b>ORDERING INFORMATION</b>		
<b>ORDERING CODE</b> (Note 1, 2)	<b>PACKAGE</b>	<b>PACKING</b>
MTZJxxxSx R0	DO-34	10K / 14" Reel
MTZJxxxSx R0G	DO-34	10K / 14" Reel
MTZJxxxSx A0	DO-34	5K / Box (Ammo)
MTZJxxxSx A0G	DO-34	5K / Box (Ammo)

**Note:**

1. "xxx" defines voltage from 2.0V (MTZJ2V0SA) to 56V (MTZJ56S)
2. "G" means green compound (Halogen free)

**CHARACTERISTICS CURVES**

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Fig. 1  $V_Z - I_Z$  Characteristics

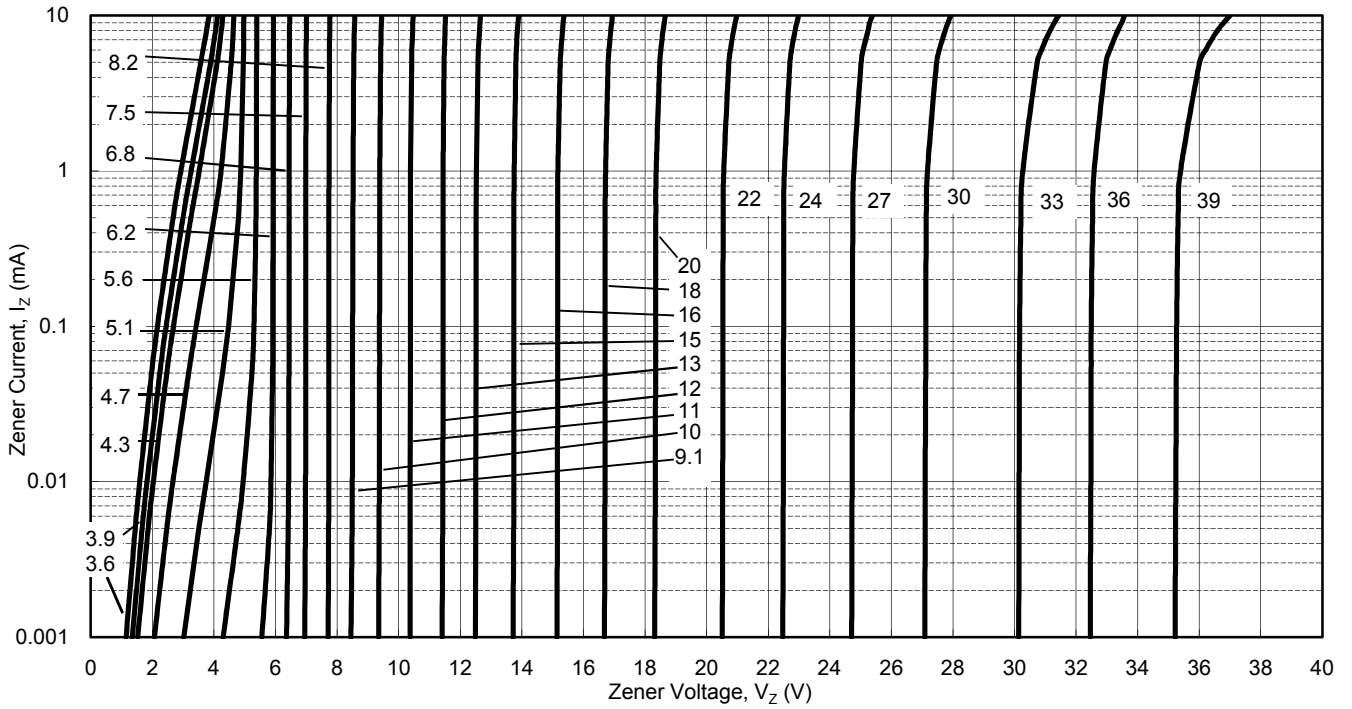


Fig. 2  $P_D - T_A$  Characteristics

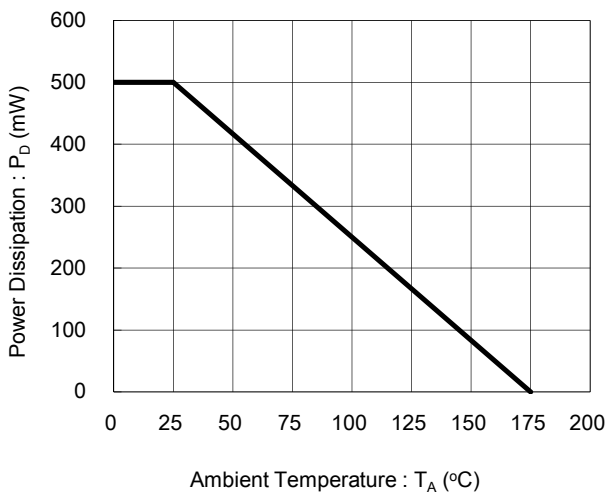
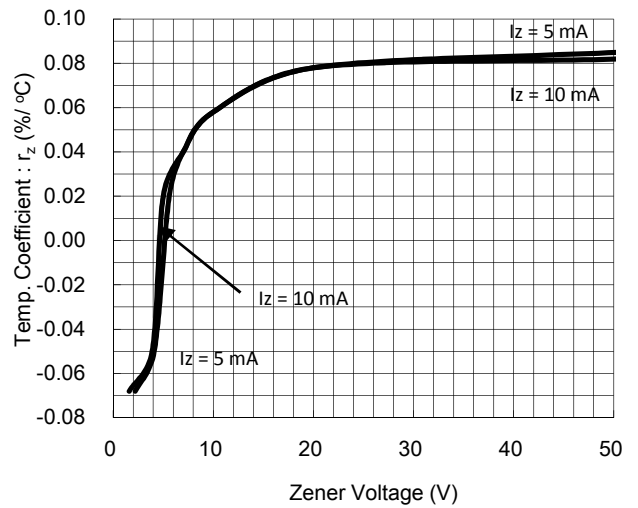
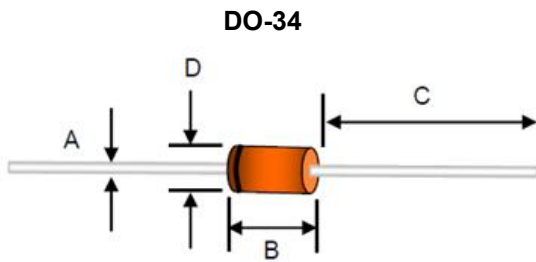


Fig. 3  $r_z - V_Z$  Characteristics



**PACKAGE OUTLINE DIMENSION**



DIM	Unit (mm)		Unit (inch)	
	Min	Max	Min	Max
A	0.30	0.55	0.012	0.022
B	2.16	3.04	0.085	0.120
C	25.40	38.10	1.000	1.500
D	1.27	2.00	0.050	0.079

**MARKING DIAGRAM**



xxx = Marking code

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