MOTOROLA

SEMICONDUCTORS

P.O. BOX 20912 • PHOENIX, ARIZONA 85036

MZT3305–MZT3350
MZT4549–MZT4554

Advance Information

50 WATT ZENER TRANSIENT SUPPRESSORS

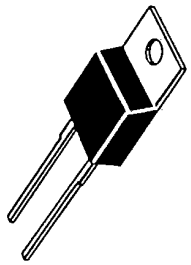
This series is designed to protect voltage sensitive components from high voltage and high energy transients. They have low zener impedance and fast response time. The highly reliable TO-220 package features low thermal resistance and high heat dissipation. The series is ideally suited for use in communication systems, numerical controls, process controls, medical equipment, business machines, power supplies and numerous other industrial/consumer applications.

- Voltage Range of 3.9 to 200 Volts
- Silicon Oxide Passivated Junctions
- 1500 Watts Peak Power Rating @ 1.0 ms
- TO-220 Package

50 WATT

ZENER TRANSIENT SUPRESSORS

3.9 TO 200 VOLTS



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Steady State Power Dissipation @ T_C = 75°C Derate above T_C = 75°C	P_D	50 667	Watts mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−65 to +150	°C

MECHANICAL CHARACTERISTICS

CASE: TO-220

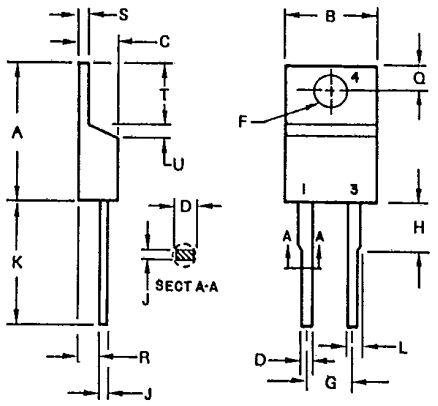
MAXIMUM LEAD TEMPERATURE FOR SOLDERING PURPOSES: 230°C, 1/16" from case for 10 seconds

FINISH: Leads are corrosion resistant and readily solderable

POLARITY: Cathode to case

THERMAL CHARACTERISTICS

Thermal Resistance Junction to Case	$R_{\theta JC}$	1.5	°C/W
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	80	°C/W



STYLE 1:
PIN 1. CATHODE
2. N/A
3. ANODE
4. CATHODE

DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	15.11	15.75	0.595	0.620
B	9.65	10.29	0.380	0.405
C	4.06	4.82	0.160	0.190
D	0.64	0.89	0.025	0.035
F	3.61	3.73	0.142	0.147
G	4.83	5.33	0.190	0.210
H	2.79	3.30	0.110	0.130
J	0.36	0.56	0.014	0.022
K	12.70	14.27	0.500	0.562
L	1.14	1.27	0.045	0.050
Q	2.54	3.04	0.100	0.120
R	2.04	2.79	0.080	0.110
S	1.14	1.39	0.045	0.055
T	5.97	6.48	0.235	0.255
U	0.76	1.27	0.030	0.050

CASE 221B-01
TO-220AC

This document contains information on a new product. Specifications and information herein

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ELECTRICAL CHARACTERISTICS (T_C = 30°C unless otherwise specified) V_F = 1.5 V max @ 10 A on all types.

Device (Note 1)	Nominal Zener Voltage @ I_{ZT} (V_Z) Volts (Notes 1,2,3)	Test Current (I_{ZT}) mA	Max Zener Impedance (Note 4)		Max DC Zener Current 75°C Case Temp (I_{ZM}) mA (Note 5)	Max Reverse Current (Note 6)		
			Z_{ZT} @ I_{ZT} Ohms	Z_{ZK} @ I_{ZK} = 5.0 mA Ohms		I_R Max (μA)	V_{R1} 5%	V_{R2} 10%
MZT4549	3.9	3200	0.16	400	11900	150	0.5	0.5
MZT4550	4.3	2900	0.16	500	10650	150	0.5	0.5
MZT4551	4.7	2650	0.12	600	9700	100	1.0	1.0
MZT4552	5.1	2450	0.12	650	8900	20	1.0	1.0
MZT4553	5.6	2250	0.12	900	8100	20	1.0	1.0
MZT4554	6.2	2000	0.14	1000	7300	20	2.0	2.0
MZT3305	6.8	1850	0.2	70	6600	150	4.5	4.3
MZT3306	7.5	1700	0.3	70	5900	75	5.0	4.7
MZT3307	8.2	1500	0.4	70	5200	50	5.4	5.2
MZT3308	9.1	1370	0.5	70	4800	25	6.1	5.7
MZT3309	10	1200	0.6	80	4300	10	6.7	6.3
MZT3310	11	1100	0.8	80	3900	5	8.4	8.0
MZT3311	12	1000	1.0	80	3600	5	9.1	8.6
MZT3312	13	960	1.1	80	3300	5	9.9	9.4
MZT3313	14	890	1.2	80	3000	5	10.6	10.1
MZT3314	15	830	1.4	80	2800	5	11.4	10.8
MZT3315	16	780	1.6	80	2650	5	12.2	11.5
MZT3316	17	740	1.8	80	2500	5	13.0	12.2
MZT3317	18	700	2.0	80	2300	5	13.7	13.0
MZT3318	19	660	2.2	80	2200	5	14.4	13.7
MZT3319	20	630	2.4	80	2100	5	15.2	14.4
MZT3320	22	570	2.5	80	1900	5	16.7	15.8
MZT3321	24	520	2.6	80	1750	5	18.2	17.3
MZT3322	25	500	2.7	90	1550	5	19.0	18.0
MZT3323	27	460	2.8	90	1500	5	20.6	19.4
MZT3324	30	420	3.0	90	1400	5	22.8	21.6
MZT3325	33	380	3.2	90	1300	5	25.1	23.8
MZT3326	36	350	3.5	90	1150	5	27.4	25.9
MZT3327	39	320	4.0	90	1050	5	29.7	28.1
MZT3328	43	290	4.5	90	975	5	32.7	31.0
MZT3329	45	280	4.5	100	930	5	34.2	32.4
MZT3330	47	270	5.0	100	880	5	35.8	33.8
MZT3331	50	250	5.0	100	830	5	38.0	36.0
MZT3332	51	245	5.2	100	810	5	38.8	36.7
MZT3333	52	240	5.5	100	790	5	39.5	37.4
MZT3334	56	220	6	110	740	5	42.6	40.3
MZT3335	62	200	7	120	660	5	47.1	44.6
MZT3336	68	180	8	140	600	5	51.7	49.0
MZT3337	75	170	9	150	540	5	56.0	54.0
MZT3338	82	150	11	160	490	5	62.2	59.0
MZT3339	91	140	15	180	420	5	69.2	65.5
MZT3340	100	120	20	200	400	5	76.0	72.0
MZT3341	105	120	25	210	380	5	79.8	75.6
MZT3342	110	110	30	220	365	5	83.6	79.2
MZT3343	120	100	40	240	335	5	91.2	86.4
MZT3344	130	95	50	275	310	5	98.8	93.6
MZT3345	140	90	60	325	290	5	106.4	100.8
MZT3346	150	85	75	400	270	5	114.0	108.0
MZT3347	160	80	80	450	250	5	121.6	115.2
MZT3348	175	70	85	500	230	5	133.0	126.0
MZT3349	180	68	90	525	220	5	136.8	129.6
MZT3350	200	65	100	600	200	5	152.0	144.0

NOTE 1. Tolerance:
The type numbers shown indicate a tolerance of ±20% with guaranteed limits on only V_Z, I_R and V_F as shown in the electrical characteristics table. Units with guaranteed limits on all six parameters are indicated by suffix "A" for ±10% tolerance and suffix "B" for ±5.0% units.

NOTE 2. Special Selections Available Include:
1. Nominal zener voltages between those shown.
2. Two or more units for series connection with specified tolerance on total voltage. Series matched sets make zener voltages in excess of 200 volts possible as well as providing lower temperature coefficients, lower dynamic impedance and greater power handling ability.
3. Nominal voltages at non-standard test currents.

NOTE 3. Zener Voltage (V_Z) Measurement:
Nominal zener voltage is measured after the test current I_{ZT} has been applied for 1.0 ms while maintaining the case temperature at 30°C ± 1°C.

NOTE 4. Zener Impedance (Z_Z) Derivation:
Z_{ZT} and Z_{ZK} are measured by dividing the ac voltage drop across the device by the ac current applied. The specified limits are for $I_Z(ac) = 0.1 \times I_Z(dc)$ with the ac frequency = 1.0 kHz.

NOTE 5. Maximum Zener Current Ratings (I_{ZM}):
Maximum zener current ratings are based on maximum voltage of a 20% tolerance unit. For closer tolerance units (10% or 5%) or units where the actual zener voltage (V_Z) is known at the operating point, the maximum zener current may be increased and is limited by the derating curve.

NOTE 6. Reverse Leakage Current I_R:
Reverse leakage currents are guaranteed only for 5% and 10% 10 Watt silicon zener diodes and are measured at V_R as shown on the table.

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