MOTOROLA

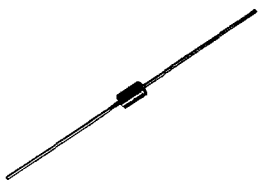
1N5913A thru 1N5956A

1.5 WATT SURMETIC 30 SILICON ZENER DIODES

. . . A complete line of 1.5-Watt Zener Diodes offering the following advantages:

- Complete Voltage Range – 3.3 to 200 Volts
- DO-41 Package – Smaller than Conventional Metal Devices
- Double Slug Type Construction – Mobile Particle Problem Eliminated
- Metallurgically Bonded Construction
- JEDEC Registered Parameters
- Oxide Passivated Diode

1.5 WATTS
ZENER DIODES
3.3 – 200 VOLTS



*MAXIMUM RATINGS

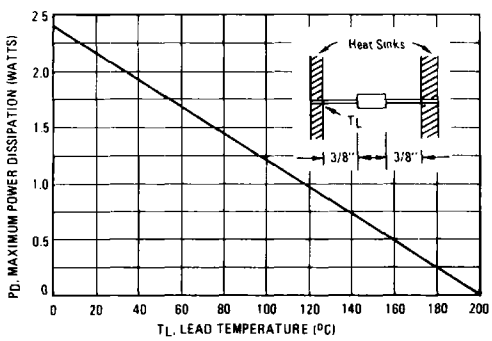
Rating	Symbol	Value	Unit
DC Power Dissipation @ T_L = 75°C, Lead Length = 3/8"	P_D	1.5	Watts
Derate above 75°C		12	mW/°C
Operating and Storage Junction Temperature Range	T_J,T_{stg}	-55 to +200	°C

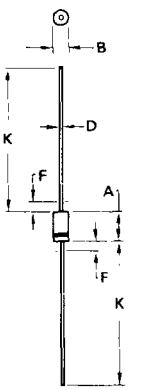
*Indicates JEDEC Registered Data

MECHANICAL CHARACTERISTICS

CASE: Double slug type, surmetic 30 void-free, transfer-molded, thermosetting-plastic
MAXIMUM LEAD TEMPERATURE FOR SOLDERING PURPOSES: 230°C, 1/16" from case for 10 seconds
FINISH: All external surfaces are corrosion resistant with readily solderable leads
POLARITY: Cathode indicated by color band. When operated in zener mode, cathode will be positive with respect to anode.
MOUNTING POSITION: Any

FIGURE 1 – STEADY STATE POWER DERATING





DIM	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	4.07	5.20	0.160	0.205
B	2.04	2.71	0.080	0.107
D	0.71	0.86	0.028	0.034
F	–	1.27	–	0.050
K	27.94	–	1.100	–

CASE 59-03
DO-41

NOTES.
1. ALL RULES AND NOTES ASSOCIATED WITH JEDEC DO-41 OUTLINE SHALL APPLY.
2. POLARITY DENOTED BY CATHODE BAND.
3. LEAD DIAMETER NOT CONTROLLED WITHIN "F" DIMENSION.

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***ELECTRICAL CHARACTERISTICS** (T_L = 30°C unless otherwise noted V_F = 1.5 Volts Max @ I_F = 200 mAdc for all types.)

Motorola Type Number (Note 1)	Nominal Zener Voltage V_Z @ I_{ZT} Volts (Note 2)	Test Current I_{ZT} mA	Max. Zener Impedance Z_{ZT} @ I_{ZT} Ohms	Max. Zener Impedance Z_{ZK} @ I_{ZK} Ohms	Max. Zener Impedance @ I_{ZK} mA	Max. Reverse Leakage Current I_R µA	Max. Reverse Leakage Current @ V_R Volts	Maximum DC Zener Current I_{ZM} mAdc
1N5913A	3.3	113 6	10	500	1 0	100	1.0	454
1N5914A	3 6	104.2	9 0	500	1.0	75	1 0	416
1N5915A	3.9	96.1	7.5	500	1.0	25	1 0	384
1N5916A	4 3	87.2	6 0	500	1 0	5.0	1 0	348
1N5917A	4 7	79 8	5 0	500	1 0	5 0	1 5	319
1N5918A	5 1	73 5	4.0	350	1 0	5.0	2 0	294
1N5919A	5 6	66 9	2.0	250	1 0	5 0	3 0	267
1N5920A	6 2	60 5	2.0	200	1 0	5 0	4 0	241
1N5921A	6.8	55 1	2 5	200	1 0	5 0	5 2	220
1N5922A	7.5	50 0	3.0	400	0.5	5 0	6.8	200
1N5923A	8.2	45 7	3.5	400	0.5	5 0	6 5	182
1N5924A	9 1	41.2	4 0	500	0 5	5 0	7 0	164
1N5925A	10	37 5	4 5	500	0.25	5 0	8 0	150
1N5926A	11	34 1	5.5	550	0 25	1 0	8 4	136
1N5927A	12	31 2	6 5	550	0 25	1.0	9 1	125
1N5928A	13	28 8	7 0	550	0 25	1.0	9 9	115
1N5929A	15	25 0	9.0	600	0 25	1 0	11 4	100
1N5930A	16	23.4	10	600	0 25	1 0	12 2	93
1N5931A	18	20.8	12	650	0 25	1 0	13 7	83
1N5932A	20	18 7	14	650	0 25	1 0	15 2	75
1N5933A	22	17.0	17 5	650	0 25	1 0	16 7	68
1N5934A	24	15.6	19	700	0 25	1 8	18 2	62
1N5935A	27	13 9	23	700	0 25	1.0	20.6	55
1N5936A	30	12 5	26	750	0 25	1 0	22 8	50
1N5937A	33	11 4	33	800	0 25	1 0	25 1	45
1N5938A	36	10 4	38	850	0 25	1 0	27 4	41
1N5939A	39	9 6	45	900	0 25	1 0	29 7	38
1N5940A	43	8 7	53	950	0 25	1 0	32 7	34
1N5941A	47	8 0	67	1000	0.25	1 0	35 8	31
1N5942A	51	7 3	70	1100	0.25	1 0	38 8	29
1N5943A	56	6 7	86	1300	0 25	1 0	42 6	26
1N5944A	62	6.0	100	1500	0 25	1 0	47 1	24
1N5945A	68	5 5	120	1700	0 25	1 0	51 7	22
1N5946A	75	5 0	140	2000	0 25	1 0	56 0	20
1N5947A	82	4 6	160	2500	0 25	1 0	62 2	18
1N5948A	91	4 1	200	3000	0.25	1 0	69 2	16
1N5949A	100	3 7	250	3100	0.25	1 0	76 0	15
1N5950A	110	3.4	300	4000	0.25	1 0	83 6	13
1N5951A	120	3 1	380	4500	0 25	1 0	91.2	12
1N5952A	130	2 9	450	5000	0 25	1 0	98 8	11
1N5953A	150	2 5	600	6000	0 25	1 0	114	10
1N5954A	160	2.3	700	6500	0 25	1 0	121 6	9 0
1N5955A	180	2 1	900	7000	0 25	1 0	136 8	8 0
1N5956A	200	1 9	1200	8000	0 25	1 0	152	7 0

*Indicates JEDEC Registered Data.

NOTE 1 – TOLERANCE AND VOLTAGE DESIGNATION

Tolerance designation — Device tolerances of ±10% are indicated by an "A" suffix, ±5% by a "B" suffix, ±2% by a "C" suffix, ±1% by a "D" suffix.

Non-Standard voltage designation – To designate units with zener voltages other than those assigned the Motorola type number should be used.

EXAMPLE

M (Motorola) Z (Zener) G 41 (Series) – 6.0 (Nominal Voltage) A (Tolerance (±%))

NOTE 2 – SPECIAL SELECTIONS AVAILABLE INCLUDE

(a) Nominal zener voltages between those shown.

(b) Matched sets (Standard Tolerances are ±5.0% ±2.0% ±1.0%.)

a *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.

b Two or more units matched to one another with any *specified tolerance.*

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TYPICAL CHARACTERISTICS

TEMPERATURE COEFFICIENTS (-55°C to +150°C temperature range)

FIGURE 2 – ZENER VOLTAGE – TO 12 VOLTS

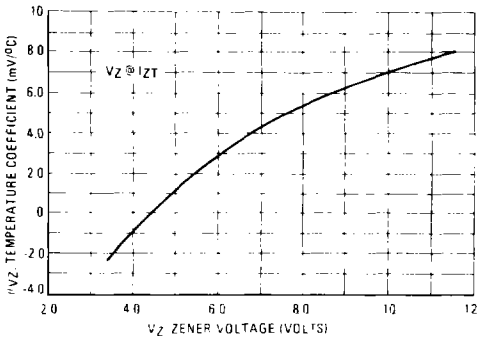
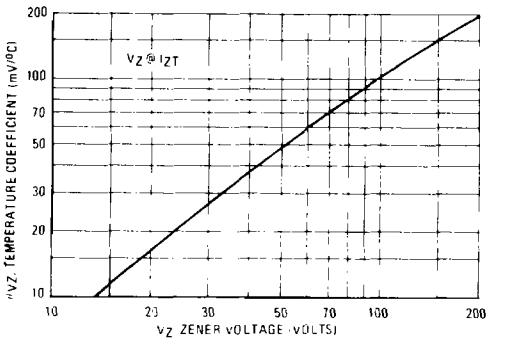


FIGURE 3 – ZENER VOLTAGE – 14 TO 200 VOLTS



ZENER IMPEDANCE

FIGURE 4 – EFFECT OF ZENER CURRENT

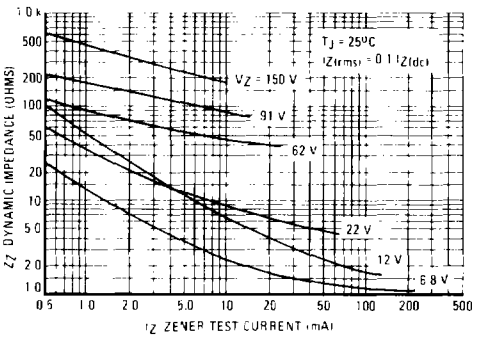
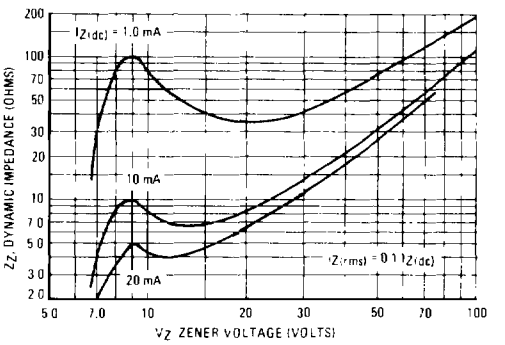


FIGURE 5 – EFFECT OF ZENER VOLTAGE



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