TAIWAN SEMICONDUCTOR

RoHS COMPLIANCE

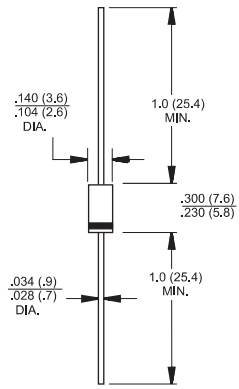
2M11Z - 2M200Z

2.0 Watts Glass Passivated Junction Silicon Zener Diodes

DO-15

Features

- ✧ UL Recognized File # E-96005
- ✧ Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- ✧ Low profile package
- ✧ Built-in strain relief
- ✧ Excellent clamping capability
- ✧ Typical to less than 1μA
- ✧ High temperature soldering guaranteed: 260°C / 10 seconds / .375",(9.5mm) lead length / 5lbs.,(2.3kg) tension



Dimensions in inches and (millimeters)

Mechanical Data

- ✧ Case: Molded plastic
- ✧ Terminals: Pure tin plated lead free,, solderable per mil-std-750, method 2026
- ✧ Polarity: Color band denotes positive end (cathode)
- ✧ Weight: 0.04gram, 0.015 ounce

Maximum Ratings and Electrical Characteristics

Rating at 25 °C ambient temperature unless otherwise specified.
Single phase, half wave, 60 Hz, resistive or inductive load.
For capacitive load, derate current by 20%

Type Number	Symbol	Value	Units
Steady State Power Dissipation at T_L=75°C Lead Lengths .375", 9.5mm (Note 1)	P_D	2.0	Watts
Peak Forward Surge Current, 8.3 ms Single Half Sine-wave Superimposed on Rated Load (JEDEC method) (Note 2)	I_{FSM}	15	Amps
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to + 175	°C

Notes: 1. Mounted on 5.0mm² (0.13mm thick) land areas.
2. Measured on 8.3ms Single half sine-wave of equivalent square wave, duty cycle=4 pulses per minute maximum.

ELECTRICAL CHARACTERISTICS (Ratings at TA=25°C ambient temperature unless otherwise specified).

Device	Nominal Zener Voltage V_Z @ I_{zt} Voltage (Notes 2)	Test Current IZT (mA)	Maximum Zener Impedance (Note 3)			Leakage Current		Maximum Zener Current	Surge Current @ TA=25℃
			Z_{ZT} @ I_{ZT} (Ohms)	Z_{ZK} @ I_{ZK} (Ohms)	I_{ZK} mA	I_R(uA)	V_R(V)	I_{ZM} (mA)	ir - mA
2M11Z	11	45.5	4.0	700	0.25	1.0	8.4	166	1.82
2M12Z	12	41.5	4.5	700	0.25	1.0	9.1	152	1.66
2M13Z	13	38.5	5.0	700	0.25	0.5	9.9	138	1.54
2M14Z	14	35.7	5.5	700	0.25	0.5	10.6	130	1.43
2M15Z	15	33.4	7.0	700	0.25	0.5	11.4	122	1.33
2M16Z	16	31.2	8.0	700	0.25	0.5	12.2	114	1.25
2M17Z	17	29.4	9.0	750	0.25	0.5	13.0	107	1.18
2M18Z	18	27.8	10	750	0.25	0.5	13.7	100	1.11
2M19Z	19	26.3	11	750	0.25	0.5	14.4	95	1.05
2M20Z	20	25.0	11	750	0.25	0.5	15.2	90	1.00
2M22Z	22	22.8	12	750	0.25	0.5	16.7	82	0.91
2M24Z	24	20.8	13	750	0.25	0.5	18.2	76	0.83
2M27Z	27	18.5	18	750	0.25	0.5	20.6	68	0.74
2M30Z	30	16.6	20	1000	0.25	0.5	22.5	60	0.67
2M33Z	33	15.1	23	1000	0.25	0.5	25.1	55	0.61
2M36Z	36	13.9	25	1000	0.25	0.5	27.4	50	0.56
2M39Z	39	12.8	30	1000	0.25	0.5	29.7	47	0.51
2M43Z	43	11.6	35	1500	0.25	0.5	32.7	43	0.45
2M47Z	47	10.6	40	1500	0.25	0.5	35.8	39	0.42
2M51Z	51	9.8	48	1500	0.25	0.5	38.8	36	0.39
2M56Z	56	9.0	55	2000	0.25	0.5	42.6	32	0.36
2M62Z	62	8.1	60	2000	0.25	0.5	47.1	29	0.32
2M68Z	68	7.4	75	2000	0.25	0.5	51.7	27	0.29
2M75Z	75	6.7	90	2000	0.25	0.5	56	24	0.27
2M82Z	82	6.1	100	3000	0.25	0.5	62.2	22	0.24
2M91Z	91	5.5	125	3000	0.25	0.5	69.2	20	0.22
2M100Z	100	5.0	175	3000	0.25	0.5	76	18	0.20
2M110Z	110	4.5	250	4000	0.25	0.5	83.6	17	0.18
2M120Z	120	4.2	325	4500	0.25	0.5	91.2	15	0.16
2M130Z	130	3.8	400	5000	0.25	0.5	98.8	14	0.15
2M140Z	140	3.6	500	5500	0.25	0.5	106.4	13	0.14
2M150Z	150	3.3	575	6000	0.25	0.5	114	12	0.13
2M160Z	160	3.1	650	6500	0.25	0.5	121.6	11	0.12
2M170Z	170	2.9	675	7000	0.25	0.5	130.4	11	0.12
2M180Z	180	2.8	725	7000	0.25	0.5	136.8	10	0.11
2M190Z	190	2.6	825	8000	0.25	0.5	144.8	10	0.10
2M200Z	200	2.5	900	8000	0.25	0.5	152.0	9.0	0.10

Notes:

1. **TOLERANCES - Suffix indicates 5% tolerance any other tolerance will be considered as a special device.**
2. **ZENER VOLTAGE (V_Z) MEASUREMENT - guarantees the zener voltage when measured at 40 ms ± 10ms from the diode body, and an ambient temperature of 25℃ (+ 68℃, -2 ℃).**
3. **ZENER IMPEDANCE (Z_Z) DERIVATION - The zener impedance is derived from the 60 cycle ac voltage, which results when an an current having an rms falue equal to 10% of the dc zener current (I_{ZT} or I_{ZK}) is superimposed on I_{ZT} or I_{ZK}.**
4. **SURGE CURRENT (Ir) NON_REPETITIVE - The rating listed in the electrical characteristics table is maximum peak, non-repetitive, reverse surge current of 1/2 square wave or equivalent sine wave pulse of 1/120 second duration superimposed on the test current, I_{ZT}, per JEDEC standards, however, actual device capability is as described in Figure 3.**

RATINGS AND CHARACTERISTIC CURVES (2M11Z THRU 2M200Z)

FIG.1- TYPICAL THERMAL RESPONSEL

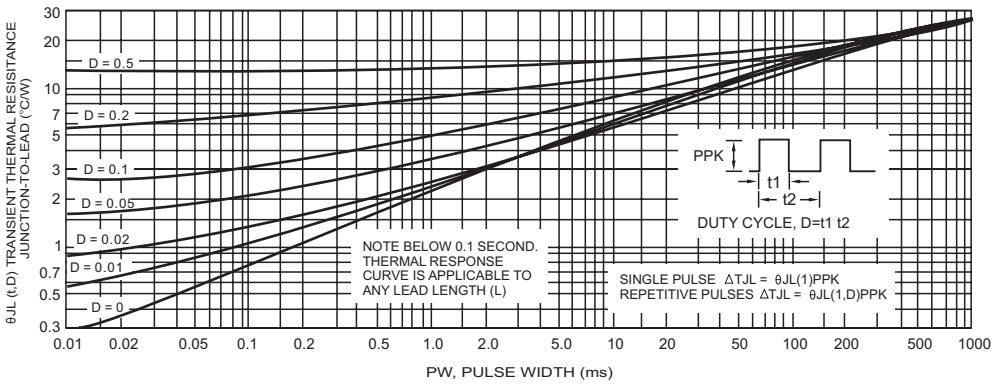


FIG.2- MAXIMUM SURGE POWER

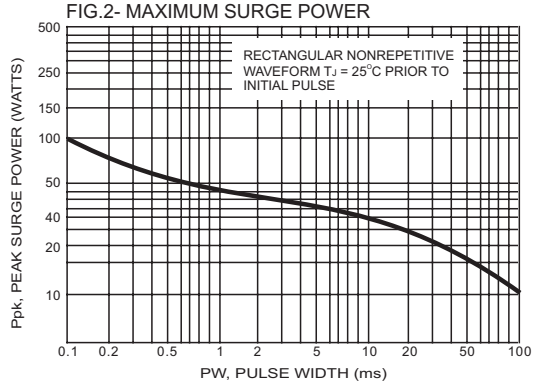


FIG.3- TYPICAL REVERSE LEAKAGE

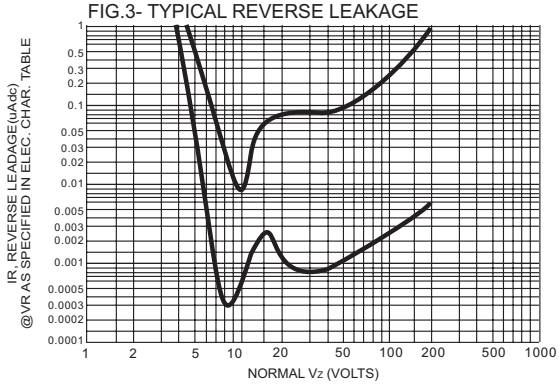


FIG.4- UNIT TO 12 VOLTS

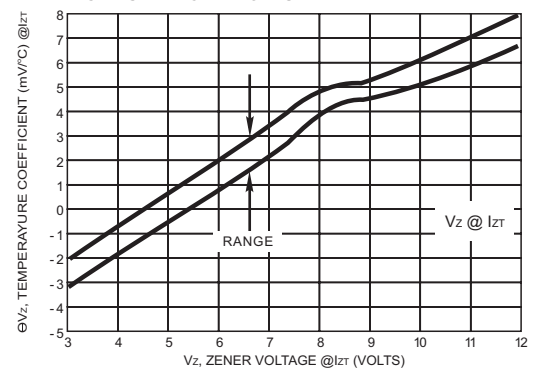
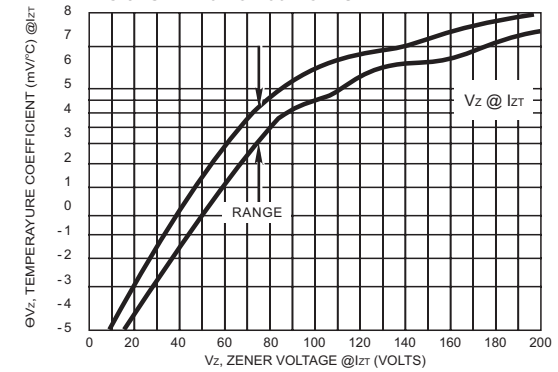


FIG.5- UNIT 10 TO 200 VOLTS



RATINGS AND CHARACTERISTIC CURVES (2M11Z THRU 2M200Z)

FIG.6- VZ = 3.9 THRU 10 VOLTS

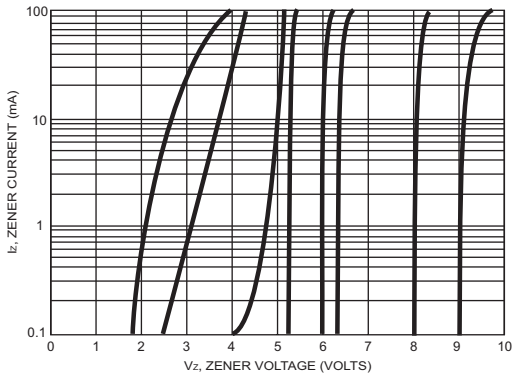


FIG.7- VZ = 12 THRU 82 VOLTS

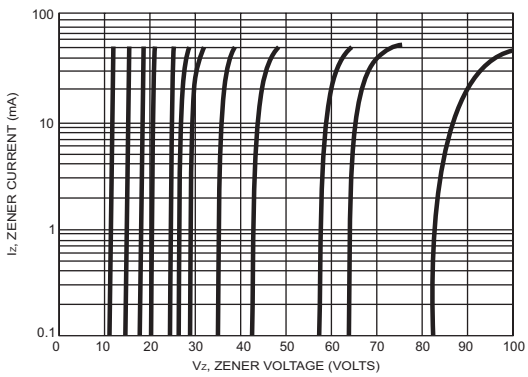


FIG.8- VZ = 3.9 THRU 10 VOLTS

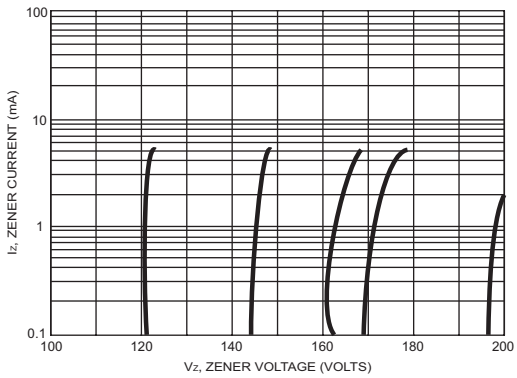


FIG.9- TYPICAL THERMAL RESISTANCE