

1N5913B Series

3 W DO-41 Surmetic™ 30 Zener Voltage Regulators

This is a complete series of 3 W Zener diodes with limits and excellent operating characteristics that reflect the superior capabilities of silicon-oxide passivated junctions. All this in an axial-lead, transfer-molded plastic package that offers protection in all common environmental conditions.

Features

- Zener Voltage Range – 3.3 V to 200 V
- ESD Rating of Class 3 (>16 KV) per Human Body Model
- Surge Rating of 98 W @ 1 ms
- Maximum Limits Guaranteed on up to Six Electrical Parameters
- Package No Larger than the Conventional 1 W Package
- Pb-Free Packages are Available

Mechanical Characteristics

CASE: Void free, transfer-molded, thermosetting plastic

FINISH: All external surfaces are corrosion resistant and leads are readily solderable

MAXIMUM LEAD TEMPERATURE FOR SOLDERING PURPOSES:

260°C, 1/16" from the case for 10 seconds

POLARITY: Cathode indicated by polarity band

MOUNTING POSITION: Any

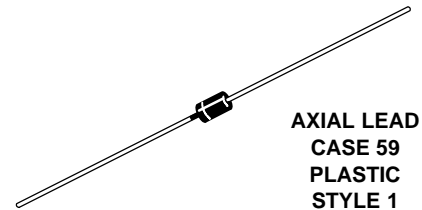
MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Max. Steady State Power Dissipation @ $T_L = 75^\circ\text{C}$, Lead Length = 3/8" Derate above 75°C	P_D	3	W
		24	mW/°C
Steady State Power Dissipation @ $T_A = 50^\circ\text{C}$ Derate above 50°C	P_D	1	W
		6.67	mW/°C
Operating and Storage Temperature Range	T_J, T_{stg}	-65 to +200	°C

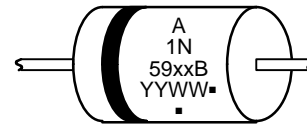
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.



ON Semiconductor®



MARKING DIAGRAM



A = Assembly Location
 1N59xxB = Device Number
 YY = Year
 WW = Work Week
 ■ = Pb-Free Package
 (Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping†
1N59xxB, G	Axial Lead (Pb-Free)	2000 Units/Box
1N59xxBRL, G	Axial Lead (Pb-Free)	6000/Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

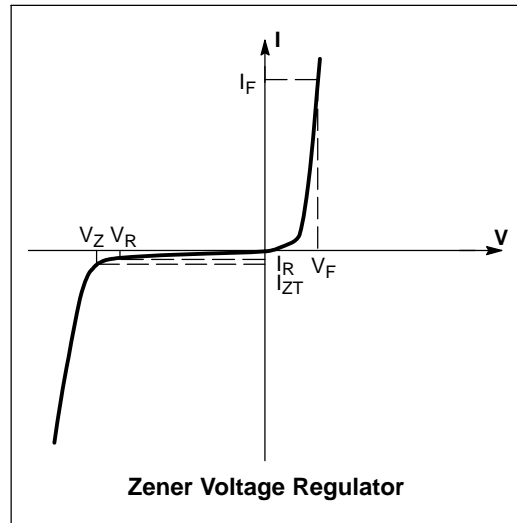
*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

1N5913B Series

ELECTRICAL CHARACTERISTICS

($T_L = 30^\circ\text{C}$ unless otherwise noted,
 $V_F = 1.5\text{ V Max @ } I_F = 200\text{ mAdc}$ for all types)

Symbol	Parameter
V_Z	Reverse Zener Voltage @ I_{ZT}
I_{ZT}	Reverse Current
Z_{ZT}	Maximum Zener Impedance @ I_{ZT}
I_{ZK}	Reverse Current
Z_{ZK}	Maximum Zener Impedance @ I_{ZK}
I_R	Reverse Leakage Current @ V_R
V_R	Breakdown Voltage
I_F	Forward Current
V_F	Forward Voltage @ I_F
I_{ZM}	Maximum DC Zener Current



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ELECTRICAL CHARACTERISTICS ($T_L = 30^\circ\text{C}$ unless otherwise noted, $V_F = 1.5\text{ V Max}$ @ $I_F = 200\text{ mAdc}$ for all types)

Device [†] (Note 1)	Device Marking	Zener Voltage (Note 2)				Zener Impedance (Note 3)			Leakage Current		I _{ZM} mA
		V _Z (Volts)			@ I _{ZT}	Z _{ZT} @ I _{ZT}	Z _{ZK} @ I _{ZK}		I _R @ V _R		
		Min	Nom	Max	mA	Ω	Ω	mA	μA Max	Volts	
1N5913B, G	1N5913B	3.14	3.3	3.47	113.6	10	500	1	100	1	454
1N5917B, G	1N5917B	4.47	4.7	4.94	79.8	5	500	1	5	1.5	319
1N5919B, G	1N5919B	5.32	5.6	5.88	66.9	2	250	1	5	3	267
1N5920B, G	1N5920B	5.89	6.2	6.51	60.5	2	200	1	5	4	241
1N5921B, G	1N5921B	6.46	6.8	7.14	55.1	2.5	200	1	5	5.2	220
1N5923B, G	1N5923B	7.79	8.2	8.61	45.7	3.5	400	0.5	5	6.5	182
1N5924B, G	1N5924B	8.65	9.1	9.56	41.2	4	500	0.5	5	7	164
1N5925B, G	1N5925B	9.50	10	10.50	37.5	4.5	500	0.25	5	8	150
1N5926B, G	1N5926B	10.45	11	11.55	34.1	5.5	550	0.25	1	8.4	136
1N5927B, G	1N5927B	11.40	12	12.60	31.2	6.5	550	0.25	1	9.1	125
1N5929B, G	1N5929B	14.25	15	15.75	25.0	9	600	0.25	1	11.4	100
1N5930B, G	1N5930B	15.20	16	16.80	23.4	10	600	0.25	1	12.2	93
1N5931B, G	1N5931B	17.10	18	18.90	20.8	12	650	0.25	1	13.7	83
1N5932B, G	1N5932B	19.00	20	21.00	18.7	14	650	0.25	1	15.2	75
1N5933B, G	1N5933B	20.90	22	23.10	17.0	17.5	650	0.25	1	16.7	68
1N5934B, G	1N5934B	22.80	24	25.20	15.6	19	700	0.25	1	18.2	62
1N5935B, G	1N5935B	25.65	27	28.35	13.9	23	700	0.25	1	20.6	55
1N5936B, G	1N5936B	28.50	30	31.50	12.5	28	750	0.25	1	22.8	50
1N5937B, G	1N5937B	31.35	33	34.65	11.4	33	800	0.25	1	25.1	45
1N5938B, G	1N5938B	34.20	36	37.80	10.4	38	850	0.25	1	27.4	41
1N5940B, G	1N5940B	40.85	43	45.15	8.7	53	950	0.25	1	32.7	34
1N5941B, G	1N5941B	44.65	47	49.35	8.0	67	1000	0.25	1	35.8	31
1N5942B, G	1N5942B	48.45	51	53.55	7.3	70	1100	0.25	1	38.8	29
1N5943B, G	1N5943B	53.20	56	58.80	6.7	86	1300	0.25	1	42.6	26
1N5944B, G	1N5944B	58.90	62	65.10	6.0	100	1500	0.25	1	47.1	24
1N5946B, G	1N5946B	71.25	75	78.75	5.0	140	2000	0.25	1	56	20
1N5947B, G	1N5947B	77.90	82	86.10	4.6	160	2500	0.25	1	62.2	18
1N5948B, G	1N5948B	86.45	91	95.55	4.1	200	3000	0.25	1	69.2	16
1N5950B, G	1N5950B	104.5	110	115.5	3.4	300	4000	0.25	1	83.6	13
1N5951B, G	1N5951B	114	120	126	3.1	380	4500	0.25	1	91.2	12
1N5952B, G	1N5952B	123.5	130	136.5	2.9	450	5000	0.25	1	98.8	11
1N5953B, G	1N5953B	142.5	150	157.5	2.5	600	6000	0.25	1	114	10
1N5954B, G	1N5954B	152	160	168	2.3	700	6500	0.25	1	121.6	9
1N5955B, G	1N5955B	171	180	189	2.1	900	7000	0.25	1	136.8	8
1N5956B, G	1N5956B	190	200	210	1.9	1200	8000	0.25	1	152	7

Devices listed in **bold, italic** are ON Semiconductor **Preferred** devices. **Preferred** devices are recommended choices for future use and best overall value.

†The "G" suffix indicates Pb-Free package available.

1. TOLERANCE AND TYPE NUMBER DESIGNATION

Tolerance designation – device tolerance of ±5% are indicated by a "B" suffix.

2. ZENER VOLTAGE (V_Z) MEASUREMENT

ON Semiconductor guarantees the zener voltage when measured at 90 seconds while maintaining the lead temperature (T_L) at 30°C ±1°C, 3/8" from the diode body.

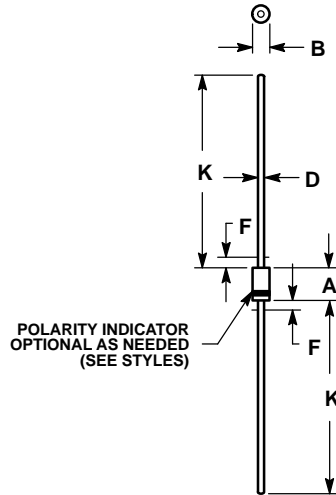
3. ZENER IMPEDANCE (Z_Z) DERIVATION

The zener impedance is derived from 60 seconds AC voltage, which results when an AC current having an rms value equal to 10% of the DC zener current (I_{ZT} or I_{ZK}) is superimposed on I_{ZT} or I_{ZK}.

1N5913B Series

PACKAGE DIMENSIONS

AXIAL LEAD
CASE 59-10
ISSUE U



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. ALL RULES AND NOTES ASSOCIATED WITH JEDEC DO-41 OUTLINE SHALL APPLY
4. POLARITY DENOTED BY CATHODE BAND.
5. LEAD DIAMETER NOT CONTROLLED WITHIN F DIMENSION.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.161	0.205	4.10	5.20
B	0.079	0.106	2.00	2.70
D	0.028	0.034	0.71	0.86
F	---	0.050	---	1.27
K	1.000	---	25.40	---

STYLE 1:

1. CATHODE (POLARITY BAND)
2. ANODE