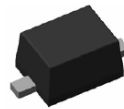


Features

- 500mW Power Dissipation on FR-4 PCB
- Very Tight Tolerance on V_z
- Ideally Suited for Automated Assembly Processes
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

- Case: SOD323F
- Case Material: Molded Plastic, "Green Molding Compound".
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: Cathode Band
- Terminals: Finish – Matte Tin Annealed over Copper Alloy
Leadframe. Solderable per MIL-STD-202, Method 208 Ⓔ
- Weight: 0.004 grams (Approximate)

SOD323F


Top View

Ordering Information (Note 4)

| Part Number | Compliance | Case | Packaging |
|---------------|------------|---------|-------------------|
| DDZxx(x)SF-7* | Commercial | SOD323F | 3,000/Tape & Reel |

*Add "-7" to the appropriate type number in Electrical Characteristics Table on Page 2. Example: DDZ10BSF-7.

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



XX = Product Type Marking Code
(See Electrical Characteristics Table)
YM = Date Code Marking
Y = Year (ex: D = 2016)
M = Month (ex: 9 = September)

Date Code Key

| Year | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Code | X | Y | Z | A | B | C | D | E | F | G | H |

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | O | N | D |

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|----------------------------------------|----------------|-------|------|
| Forward Voltage @I _F = 10mA | V _F | 0.9 | V |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|------------------------------------------------------|-----------------------------------|-------------|------|
| Power Dissipation (Note 5) | P _D | 500 | mW |
| Thermal Resistance, Junction to Ambient Air (Note 5) | R _{θJA} | 250 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -65 to +150 | °C |

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

| Type Number | Marking Code | Zener Voltage Range (Note 6) | | | Maximum Zener Impedance f = 1kHz | Maximum Reverse Current (Note 7) | |
|-------------|--------------|----------------------------------|---------|-----------------------------------|-------------------------------------|-------------------------------------|------------------|
| | | V _Z @ I _{ZT} | | Z _{zT} @ I _{ZT} | | I _R | @ V _R |
| | | Min (V) | Max (V) | I _{ZT} mA | Ω | μA | V |
| DDZ2V4ASF | 4C | 2.33 | 2.52 | 20 | 100 | 120 | 1 |
| DDZ2V4BSF | KD | 2.43 | 2.63 | 20 | 100 | 120 | 1 |
| DDZ2V7ASF | 4E | 2.54 | 2.75 | 20 | 110 | 120 | 1 |
| DDZ2V7BSF | KE | 2.69 | 2.91 | 20 | 110 | 120 | 1 |
| DDZ3V0ASF | 4F | 2.85 | 3.07 | 20 | 120 | 50 | 1 |
| DDZ3V0BSF | KF | 3.01 | 3.22 | 20 | 120 | 50 | 1 |
| DDZ3V3ASF | 4G | 3.16 | 3.38 | 20 | 130 | 20 | 1 |
| DDZ3V3BSF | KG | 3.32 | 3.53 | 20 | 130 | 20 | 1 |
| DDZ3V6ASF | 4H | 3.45 | 3.69 | 20 | 130 | 10 | 1 |
| DDZ3V6BSF | KH | 3.60 | 3.84 | 20 | 130 | 10 | 1 |
| DDZ3V9ASF | 4J | 3.74 | 4.01 | 20 | 130 | 10 | 1 |
| DDZ3V9BSF | KJ | 3.89 | 4.16 | 20 | 130 | 10 | 1 |
| DDZ4V3ASF | 4K | 4.04 | 4.29 | 20 | 130 | 10 | 1 |
| DDZ4V3BSF | KK | 4.17 | 4.43 | 20 | 130 | 10 | 1 |
| DDZ4V3CSF | YK | 4.30 | 4.57 | 20 | 130 | 10 | 1 |
| DDZ4V7ASF | 4L | 4.44 | 4.68 | 20 | 130 | 10 | 1 |
| DDZ4V7BSF | KL | 4.55 | 4.80 | 20 | 130 | 10 | 1 |
| DDZ4V7CSF | YL | 4.68 | 4.93 | 20 | 130 | 10 | 1 |
| DDZ5V1ASF | 4M | 4.81 | 5.07 | 20 | 130 | 7.5 | 2 |
| DDZ5V1BSF | KM | 4.94 | 5.20 | 20 | 130 | 7.5 | 2 |
| DDZ5V1CSF | YM | 5.09 | 5.37 | 20 | 130 | 7.5 | 2 |
| DDZ5V6ASF | 4N | 5.28 | 5.55 | 20 | 80 | 7.5 | 2 |
| DDZ5V6BSF | KN | 5.45 | 5.73 | 20 | 80 | 7.5 | 2 |
| DDZ5V6CSF | YN | 5.61 | 5.91 | 20 | 80 | 7.5 | 2 |
| DDZ6V2ASF | 4O | 5.78 | 6.09 | 20 | 50 | 7.5 | 3 |
| DDZ6V2BSF | KO | 5.96 | 6.27 | 20 | 50 | 7.5 | 3 |
| DDZ6V2CSF | YO | 6.12 | 6.44 | 20 | 50 | 7.5 | 3 |
| DDZ6V8ASF | 4P | 6.29 | 6.63 | 20 | 30 | 7.5 | 4 |
| DDZ6V8BSF | KP | 6.49 | 6.83 | 20 | 30 | 7.5 | 4 |
| DDZ6V8CSF | YP | 6.66 | 7.01 | 20 | 30 | 7.5 | 4 |
| DDZ7V5ASF | 4Q | 6.85 | 7.22 | 20 | 30 | 7.5 | 4 |
| DDZ7V5BSF | KQ | 7.07 | 7.45 | 20 | 30 | 7.5 | 4 |
| DDZ7V5CSF | YQ | 7.29 | 7.67 | 20 | 30 | 7.5 | 4 |
| DDZ8V2ASF | 4R | 7.53 | 7.92 | 20 | 30 | 7.5 | 7.15 |
| DDZ8V2BSF | KR | 7.78 | 8.19 | 20 | 30 | 7.5 | 7.39 |
| DDZ8V2CSF | YR | 8.03 | 8.45 | 20 | 30 | 7.5 | 7.63 |

- Notes:
- Device mounted on FR-4 PCB with 10mm x 10mm pad, board size 35mm x 25mm.
 - The Zener voltage is measured <40ms after power is supplied.
 - Short duration pulse test used to minimize self-heating effect.

Electrical Characteristics (Cont.) (@T_A = +25°C, unless otherwise specified.)

| Type Number | Marking Code | Zener Voltage Range (Note 6) | | | Maximum Zener Impedance f = 1kHz | Maximum Reverse Current (Note 7) | |
|-------------|--------------|----------------------------------|---------|-----------------------|----------------------------------------|-------------------------------------|-------|
| | | V _Z @ I _{ZT} | | I _R | | @ V _R | |
| | | Min (V) | Max (V) | I _{ZT} mA | Z _{ZT} @ I _{ZT} Ω | μA | V |
| DDZ9V1ASF | 4S | 8.29 | 8.73 | 20 | 30 | 7.5 | 7.88 |
| DDZ9V1BSF | KS | 8.57 | 9.01 | 20 | 30 | 7.5 | 8.14 |
| DDZ9V1CSF | YS | 8.83 | 9.30 | 20 | 30 | 7.5 | 8.39 |
| DDZ10ASF | 4T | 9.12 | 9.59 | 20 | 30 | 7.5 | 8.66 |
| DDZ10BSF | KT | 9.41 | 9.90 | 20 | 30 | 7.5 | 8.94 |
| DDZ10CSF | YT | 9.70 | 10.20 | 20 | 30 | 7.5 | 9.22 |
| DDZ10DSF | 7T | 9.94 | 10.44 | 20 | 30 | 7.5 | 9.44 |
| DDZ11ASF | 4U | 10.18 | 10.71 | 10 | 30 | 0.07 | 9.67 |
| DDZ11BSF | KU | 10.50 | 11.05 | 10 | 30 | 0.07 | 9.98 |
| DDZ11CSF | YU | 10.82 | 11.38 | 10 | 30 | 0.07 | 10.28 |
| DDZ12ASF | 4V | 11.13 | 11.71 | 10 | 35 | 0.07 | 10.60 |
| DDZ12BSF | KV | 11.44 | 12.03 | 10 | 30 | 0.07 | 10.90 |
| DDZ12CSF | YV | 11.74 | 12.35 | 10 | 35 | 0.07 | 11.20 |
| DDZ13ASF | 4W | 12.11 | 12.75 | 10 | 35 | 0.07 | 11.50 |
| DDZ13BSF | KW | 12.55 | 13.21 | 10 | 35 | 0.07 | 11.90 |
| DDZ13CSF | YW | 12.99 | 13.66 | 10 | 35 | 0.07 | 12.30 |
| DDZ15ASF | 4X | 13.44 | 14.13 | 10 | 40 | 0.07 | 12.80 |
| DDZ15BSF | KX | 13.89 | 14.62 | 10 | 40 | 0.07 | 13.20 |
| DDZ15CSF | YX | 14.35 | 15.09 | 10 | 40 | 0.07 | 13.60 |
| DDZ16ASF | 4Y | 14.80 | 15.57 | 10 | 40 | 0.07 | 14.10 |
| DDZ16BSF | KY | 15.25 | 16.04 | 10 | 40 | 0.07 | 14.50 |
| DDZ16CSF | YY | 15.69 | 16.51 | 10 | 40 | 0.07 | 14.90 |
| DDZ18ASF | 4Z | 16.22 | 17.06 | 10 | 45 | 0.07 | 15.40 |
| DDZ18BSF | KZ | 16.82 | 17.70 | 10 | 45 | 0.07 | 16.00 |
| DDZ18CSF | YZ | 17.42 | 18.33 | 10 | 45 | 0.07 | 16.50 |
| DDZ20ASF | RJ | 18.05 | 18.96 | 10 | 50 | 0.07 | 17.10 |
| DDZ20BSF | ZJ | 18.63 | 19.59 | 10 | 50 | 0.07 | 17.70 |
| DDZ20CSF | PJ | 19.23 | 20.22 | 10 | 50 | 0.07 | 17.70 |
| DDZ20DSF | 2J | 19.72 | 20.72 | 10 | 50 | 0.07 | 18.70 |
| DDZ22ASF | RK | 20.15 | 21.20 | 5 | 55 | 0.07 | 19.10 |
| DDZ22BSF | ZK | 20.64 | 21.71 | 5 | 55 | 0.07 | 19.60 |
| DDZ22CSF | PK | 21.08 | 22.17 | 5 | 55 | 0.07 | 20.00 |
| DDZ22DSF | 2K | 21.52 | 22.63 | 5 | 55 | 0.07 | 20.40 |
| DDZ24ASF | RL | 22.05 | 23.18 | 5 | 60 | 0.07 | 20.90 |
| DDZ24BSF | ZL | 22.61 | 23.77 | 5 | 60 | 0.07 | 21.50 |
| DDZ24CSF | PL | 23.12 | 24.31 | 5 | 60 | 0.07 | 22.00 |
| DDZ24DSF | 2L | 23.63 | 24.85 | 5 | 60 | 0.07 | 22.40 |
| DDZ27ASF | RM | 24.26 | 25.52 | 5 | 70 | 0.07 | 23.00 |
| DDZ27BSF | ZM | 24.97 | 26.26 | 5 | 70 | 0.07 | 23.70 |
| DDZ27CSF | PM | 25.63 | 26.95 | 5 | 70 | 0.07 | 24.30 |
| DDZ27DSF | 2M | 26.29 | 27.64 | 5 | 70 | 0.07 | 25.00 |
| DDZ30ASF | RN | 26.99 | 28.39 | 5 | 80 | 0.07 | 25.60 |
| DDZ30BSF | ZN | 27.70 | 29.13 | 5 | 80 | 0.07 | 26.00 |
| DDZ30CSF | PN | 28.36 | 29.82 | 5 | 55 | 0.07 | 26.90 |
| DDZ30DSF | 2N | 29.02 | 30.51 | 5 | 80 | 0.07 | 27.60 |
| DDZ33ASF | RO | 29.68 | 31.22 | 5 | 80 | 0.07 | 28.20 |
| DDZ33BSF | ZO | 30.32 | 31.88 | 5 | 80 | 0.07 | 28.80 |
| DDZ33CSF | PO | 30.90 | 32.50 | 5 | 65 | 0.07 | 29.40 |
| DDZ33DSF | 2O | 31.49 | 33.11 | 5 | 65 | 0.07 | 29.90 |
| DDZ36ASF | RP | 32.14 | 33.79 | 5 | 90 | 0.07 | 30.50 |
| DDZ36BSF | ZP | 32.79 | 34.49 | 5 | 90 | 0.07 | 31.20 |
| DDZ36CSF | PP | 33.40 | 35.13 | 5 | 75 | 0.07 | 31.70 |
| DDZ36DSF | 2P | 34.01 | 35.77 | 5 | 90 | 0.07 | 32.30 |
| DDZ39ASF | RQ | 34.68 | 36.47 | 5 | 85 | 0.2 | 30.00 |
| DDZ39BSF | ZQ | 35.36 | 37.19 | 5 | 85 | 0.2 | 30.00 |
| DDZ39CSF | PQ | 36.00 | 37.85 | 5 | 85 | 0.2 | 30.00 |
| DDZ39DSF | 2Q | 36.63 | 38.52 | 5 | 85 | 0.2 | 30.00 |

Notes: 6. The Zener voltage is measured <40ms after power is supplied.
7. Short duration pulse test used to minimize self-heating effect.



Fig. 3 Temperature Coefficient vs. Zener Voltage



Fig. 4 Typical Zener Breakdown Characteristics

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOD323F



| SOD323F | | | |
|-----------|------|------|------|
| Dim | Min | Max | Typ |
| A | 0.60 | 0.75 | – |
| b | 0.25 | 0.35 | – |
| c | 0.05 | 0.26 | – |
| D | 1.15 | 1.35 | 1.25 |
| E | 1.60 | 1.80 | 1.70 |
| He | 2.30 | 2.70 | 2.50 |
| L1 | 0.30 | 0.50 | 0.40 |
| L2 | 0.41 | 0.61 | 0.51 |
| α1 | – | – | 7° |
| α2 | – | – | 3° |
| β1 | – | – | 7° |
| β2 | – | – | 3° |

All Dimensions in mm

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOD323F



| Dimensions | Value (in mm) |
|------------|---------------|
| G | 1.280 |
| X | 0.710 |
| X1 | 2.700 |
| Y | 0.403 |

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