

Schottky Barrier Diodes for General Purpose Applications

Technical Data

1N5711
 1N5712
 5082-2300 Series
 5082-2800 Series
 5082-2900

Features

- **Low Turn-On Voltage**
 As Low as 0.34 V at 1 mA
- **Pico Second Switching Speed**
- **High Breakdown Voltage**
 Up to 70 V
- **Matched Characteristics Available**

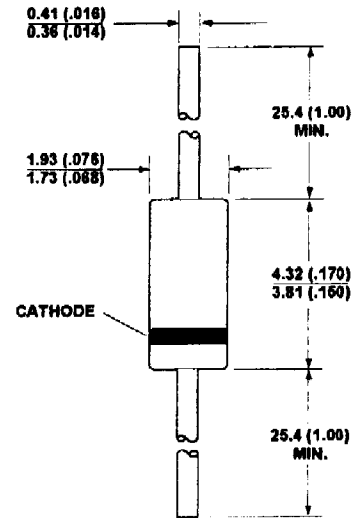
Description/Applications

The 1N5711, 1N5712, 5082-2800/10/11 are passivated Schottky barrier diodes which use a patented "guard ring" design to achieve a high breakdown voltage. Packaged in a low cost glass package, they are well suited for high level detecting, mixing, switching, gating, log or A-D converting, video detecting, frequency discriminating, sampling, and wave shaping.

The 5082-2835 is a passivated Schottky diode in a low cost glass package. It is optimized for low turn-on voltage. The 5082-2835 is particularly well suited for the UHF mixing needs of the CATV marketplace.

The 5082-2300 Series and 5082-2900 devices are unpassivated Schottky diodes in a glass package. These diodes have extremely low 1/f noise and are ideal for low noise mixing, and high sensitivity detecting. They are particularly well suited for use in Doppler or narrow band video receivers.

Outline 15



DIMENSIONS IN MILLIMETERS AND (INCHES).

Maximum Ratings

Junction Operating and Storage Temperature Range

| | |
|---------------------------------------|-----------------|
| 5082-2303, -2900 | -60°C to +100°C |
| 1N5711, 1N5712, 5082-2800/10/11 | -65°C to +200°C |
| 5082-2835 | -60°C to +150°C |

DC Power Dissipation

(Measured in an infinite heat sink at $T_{CASE} = 25^{\circ}C$)

Derate linearly to zero at maximum rated temperature

| | |
|---------------------------------------|--------|
| 5082-2303, -2900 | 100 mW |
| 1N5711, 1N5712, 5082-2800/10/11 | 250 mW |
| 5082-2835 | 150 mW |

Peak Inverse Voltage V_{BR}



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Package Characteristics

Outline 15

| | |
|----------------------------------|-----------------|
| Lead Material | Dumet |
| Lead Finish | 95-5% Tin-Lead |
| Max. Soldering Temperature | 260°C for 5 sec |
| Min. Lead Strength | 4 pounds pull |
| Typical Package Inductance | |
| 1N5711, 1N5712: | 2.0 nH |
| 2800 Series: | 2.0 nH |
| 2300 Series, 2900: | 3.0 nH |
| Typical Package Capacitance | |
| 1N5711, 1N5712: | 0.2 pF |
| 2800 Series: | 0.2 pF |
| 2300 Series, 2900: | 0.07 pF |

The leads on the Outline 15 package should be restricted so that the bend starts at least 1/16 inch from the glass body.

Outline 15 diodes are available on tape and reel. The tape and reel specification is patterned after RS-296-D.

Electrical Specifications at $T_A = 25^\circ\text{C}$

General Purpose Diodes

| Part Number | Package Outline | Min. Breakdown Voltage V_{BR} (V) | Max. Forward Voltage V_F (mV) | $V_F = 1$ V Max. at Forward Current I_F (mA) | Max. Reverse Leakage Current | | Max. Capacitance C_T (pF) |
|-----------------|-----------------|---|---------------------------------|--|------------------------------|----|--|
| | | | | | I_R (nA) at V_R (V) | | |
| 5082-2800 | 15 | 70 | 410 | 15 | 200 | 50 | 2.0 |
| 1N5711 | 15 | 70 | 410 | 15 | 200 | 50 | 2.0 |
| 5082-2810 | 15 | 20 | 410 | 35 | 100 | 15 | 1.2 |
| 1N5712 | 15 | 20 | 550 | 35 | 150 | 16 | 1.2 |
| 5082-2811 | 15 | 15 | 410 | 20 | 100 | 8 | 1.2 |
| 5082-2835 | 15 | 8* | 340 | 10* | 100 | 1 | 1.0 |
| Test Conditions | | $I_R = 10 \mu\text{A}$ * $I_R = 100 \mu\text{A}$ | $I_F = 1 \text{ mA}$ | * $V_F = 0.45 \text{ V}$ | | | $V_R = 0 \text{ V}$ $f = 1.0 \text{ MHz}$ |

Note: Effective Carrier Lifetime (τ) for all these diodes is 100 ps maximum measured with Krakauer method at 5 mA except for 5082-2835 which is measured at 20 mA.

Low 1/f (Flicker) Noise Diodes

| Part Number 5082- | Package Outline | Min. Breakdown Voltage V_{BR} (V) | Max. Forward Voltage V_F (mV) | $V_F = 1$ V Max. at Forward Current I_F (mA) | Max. Reverse Leakage Current I_R (nA) at V_R (V) | Max. Capacitance C_T (pF) |
|-------------------|-----------------|-------------------------------------|---------------------------------|--|--|------------------------------|
| 2301 | 15 | 30 | 400 | 50 | 300 15 | 1.0 |
| 2302 | 15 | 30 | 400 | 35 | 300 15 | 1.0 |
| 2303 | 15 | 20 | 400 | 35 | 500 15 | 1.0 |
| 2900 | 15 | 10 | 400 | 20 | 100 5 | 1.2 |
| Test Conditions | | $I_R = 10 \mu A$ | $I_F = 1$ mA | | | $V_R = 0$ V $f = 1.0$ MHz |

Note: Effective Carrier Lifetime (τ) for all these diodes is 100 ps maximum measured with Krakauer method at 20 mA.

Matched Pairs and Quads

| Basic Part Number 5082- | Matched Pair Un-connected | Matched Quad Un-connected | Matched Ring Quad Encapsulated G-1 Outline | Matched Bridge Quad Encapsulated G-2 Outline | Batch Matched ⁽¹⁾ | Test Conditions |
|-------------------------|--|--|--|--|---|---|
| 2301 | 5082-2306 $\Delta V_F = 20$ mV $\Delta C_O = 0.2$ pF | | | | | ΔV_F at $I_F = 0.75, 20$ mA ΔC_O at $f = 1.0$ MHz |
| 2303 | 5082-2308 $\Delta V_F = 20$ mV $\Delta C_O = 0.2$ pF | 5082-2370 $\Delta V_F = 20$ mV $\Delta C_O = 0.2$ pF | 5082-2396 $\Delta V_F = 20$ mV $\Delta C_O = 0.2$ pF | 5082-2356 $\Delta V_F = 20$ mV $\Delta C_O = 0.2$ pF | | ΔV_F at $I_F = 0.75, 20$ mA ΔC_O at $f = 1.0$ MHz |
| 2900 | 5082-2912 $\Delta V_F = 30$ mV | 5082-2970 $\Delta V_F = 30$ mV | | 5082-2997 $\Delta V_F = 30$ mV | | ΔV_F at $I_F = 1.0, 10$ mA |
| 2800 | 5082-2804 $\Delta V_F = 20$ mV | 5082-2805 $\Delta V_F = 20$ mV | | | 5082-2836* $\Delta V_F = 20$ mV $\Delta C_O = 0.1$ pF | ΔV_F at $I_F = 0.5, 5$ mA * $I_F = 10$ mA ΔC_O at $f = 1.0$ MHz |
| 2811 | | 5082-2815 $\Delta V_F = 20$ mV $\Delta C_O = 0.2$ pF | 5082-2814 $\Delta V_F = 20$ mV $\Delta C_O = 0.2$ pF | 5082-2813 $\Delta V_F = 20$ mV $\Delta C_O = 0.2$ pF | 5082-2826 $\Delta V_F = 10$ mV $\Delta C_O = 0.1$ pF | ΔV_F at $I_F = 10$ mA ΔC_O at $f = 1.0$ MHz |
| 2835 | | | | | 5082-2080 $\Delta V_F = 10$ mV $\Delta C_O = 0.1$ pF | ΔV_F at $I_F = 10$ mA ΔC_O at $f = 1.0$ MHz |

Note:

1. Batch matched devices have a minimum batch size of 50 devices.