1N5711, 1N5712, 5082-2800 Series

Schottky Barrier Diodes for
General Purpose Applications

Data Sheet

Description/Applications

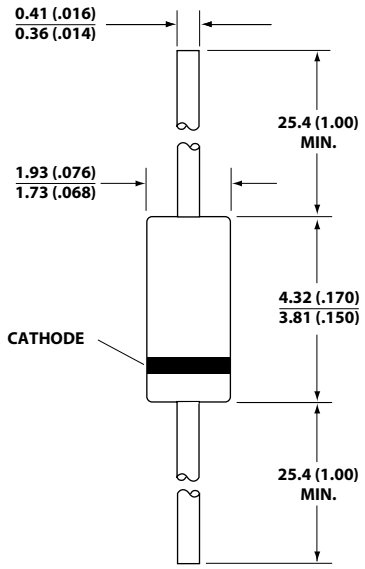
The 1N5711, 1N5712, 5082-2800/10/11 are passivated Schottky barrier diodes which use a patented "guard ring" design to achieve a high breakdown voltage. Packaged in a low cost glass package, they are well suited for high level detecting, mixing, switching, gating, log or A-D converting, video detecting,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

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

Outline 15



DIMENSIONS IN MILLIMETERS AND (INCHES).

Maximum Ratings

Junction Operating and Storage Temperature Range
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°C)
Derate linearly to zero at maximum rated temp.
1N5711, 1N5712, 5082-2800/10/11 .....250 mW
5082-2835 .....150 mW

Peak Inverse Voltage ..... V_{BR}

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
Typical Package Capacitance
  1N5711, 1N5712: ..... 0.2 pF
  2800 Series: ..... 0.2 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 $T_A = 25°C$

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 I_R (nA) at V_R (V)		Max. Capacitance C_T (pF)
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		$I_R = 10\ \mu A$ $*I_R = 100\ \mu A$	$I_F = 1$ mA	$*V_F = 0.45$ V			$V_R = 0$ V f = 1.0 MHz

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

Matched Pairs and Quads

Basic Part Number 5082-	Matched Pair Unconnected	Matched Quad Unconnected	Batch Matched[1]	Test Conditions
2800	5082-2804 $\Delta V_F = 20$ mV	5082-2805 $\Delta V_F = 20$ mV		ΔV_F at $I_F = 0.5, 5$ mA *$I_F = 10$ mA ΔC_O at f = 1.0 MHz
2811			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.

SPICE Parameters

Parameter	Units	5082-2800	5082-2810	5082-2811	5082-2835
B_V	V	75	25	18	9
C_{J0}	pF	1.6	0.8	1.0	0.7
E_G	eV	0.69	0.69	0.69	0.69
I_{BV}	A	10E - 5	10E-5	10E-5	10E-5
I_S	A	$2.2 \times 10E^{-9}$	$1.1 \times 10E^{-9}$	$0.3 \times 10E^{-8}$	$2.2 \times 10E^{-8}$
N		1.08	1.08	1.08	1.08
R_S	Ω	25	10	10	5
P_B	V	0.6	0.6	0.6	0.56
P_T		2	2	2	2
M		0.5	0.5	0.5	0.5

Typical Parameters

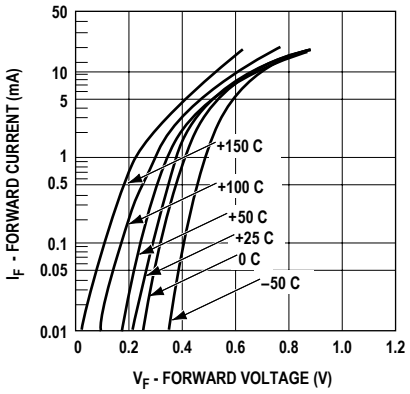


Figure 1. I-V Curve Showing Typical Temperature Variation for 5082-2800 or 1N5711 Schottky Diodes.

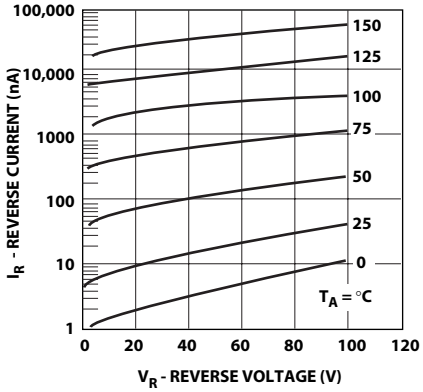


Figure 2. (5082-2800 OR 1N5711) Typical Variation of Reverse Current (I_R) vs. Reverse Voltage (V_R) at Various Temperatures.

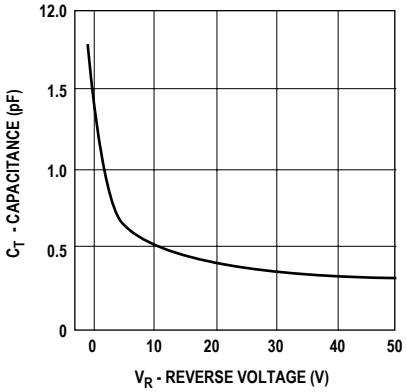


Figure 3. (5082-2800 or 1N5711) Typical Capacitance (C_T) vs. Reverse Voltage (V_R).

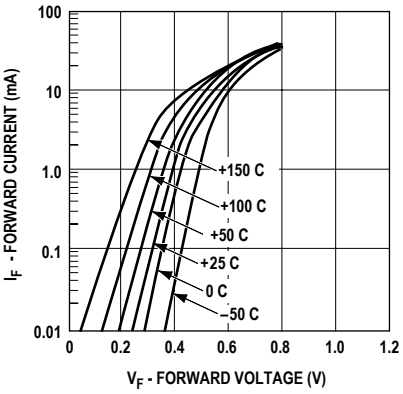


Figure 4. I-V Curve Showing Typical Temperature Variation for the 5082-2810 or 1N5712 Schottky Diode.

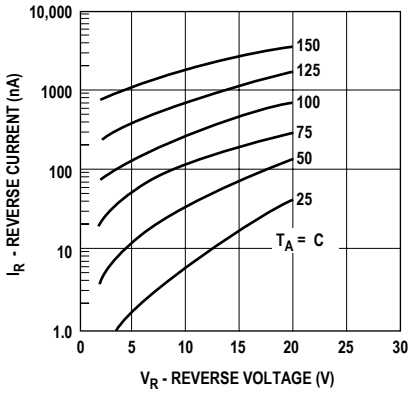


Figure 5. (5082-2810 or 1N5712) Typical Variation of Reverse Current (I_R) vs. Reverse Voltage (V_R) at Various Temperatures.

Notes:
Typical values were derived using limited samples during initial product characterization and may not be representative of the overall distribution

Typical Parameters, *continued*

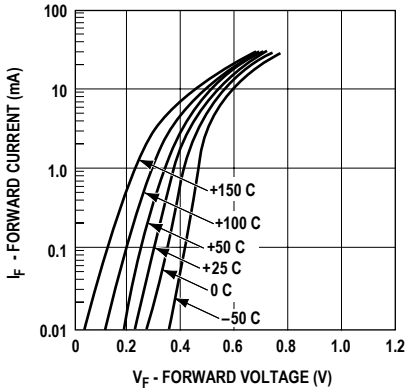


Figure 6. I-V Curve Showing Typical Temperature Variation for the 5082-2811 Schottky Diode.

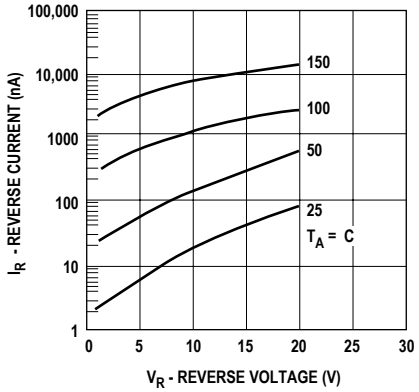


Figure 7. (5082-2811) Typical Variation of Reverse Current (I_R) vs. Reverse Voltage (V_R) at Various Temperatures.

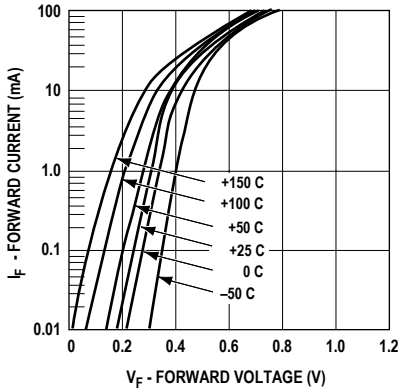


Figure 8. I-V Curve Showing Typical Temperature Variations for 5082-2835 Schottky Diode.

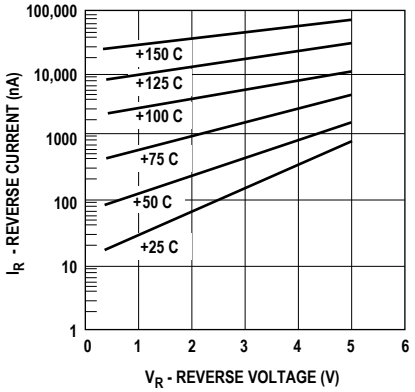


Figure 9. (5082-2835) Typical Variation of Reverse Current (I_R) vs. Reverse Voltage (V_R) at Various Temperatures.

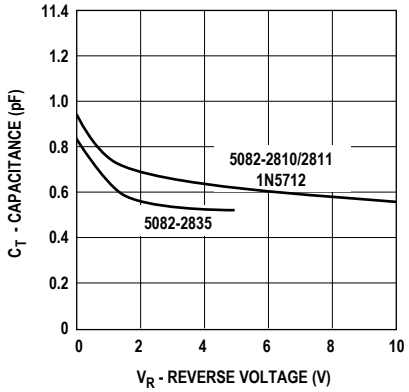


Figure 10. Typical Capacitance (C_T) vs. Reverse Voltage (V_R).

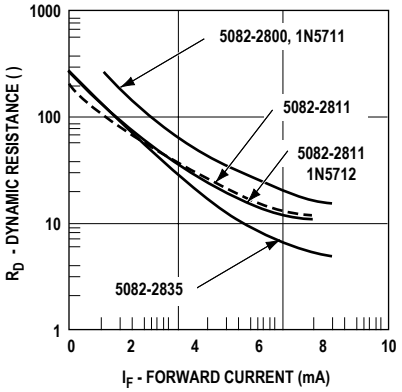


Figure 11. Typical Dynamic Resistance (R_D) vs. Forward Current (I_F).

Notes:
Typical values were derived using limited samples during initial product characterization and may not be representative of the overall distribution

Tape Dimensions and Product Orientation

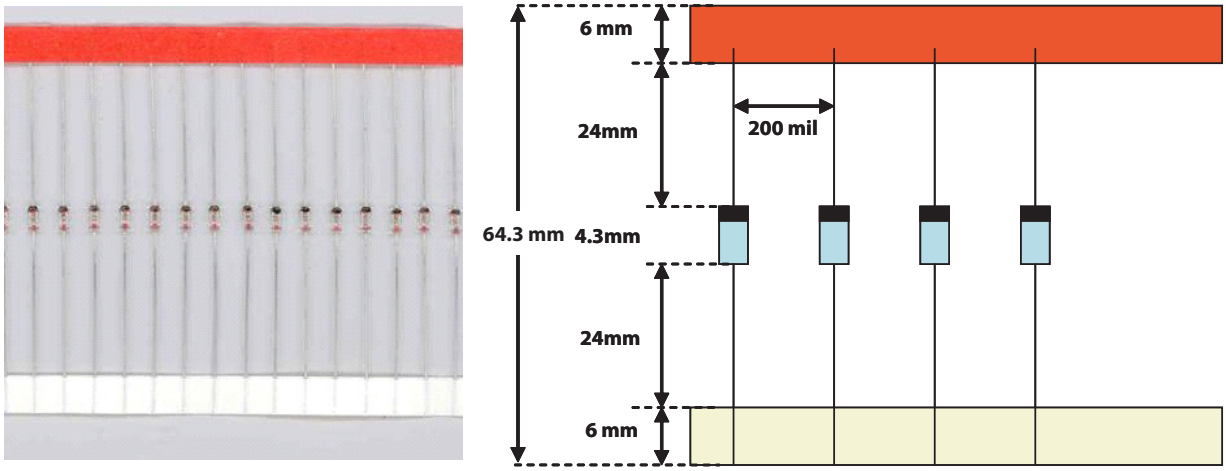


Figure 13.

RFD Reel Dimensions for T25/T50

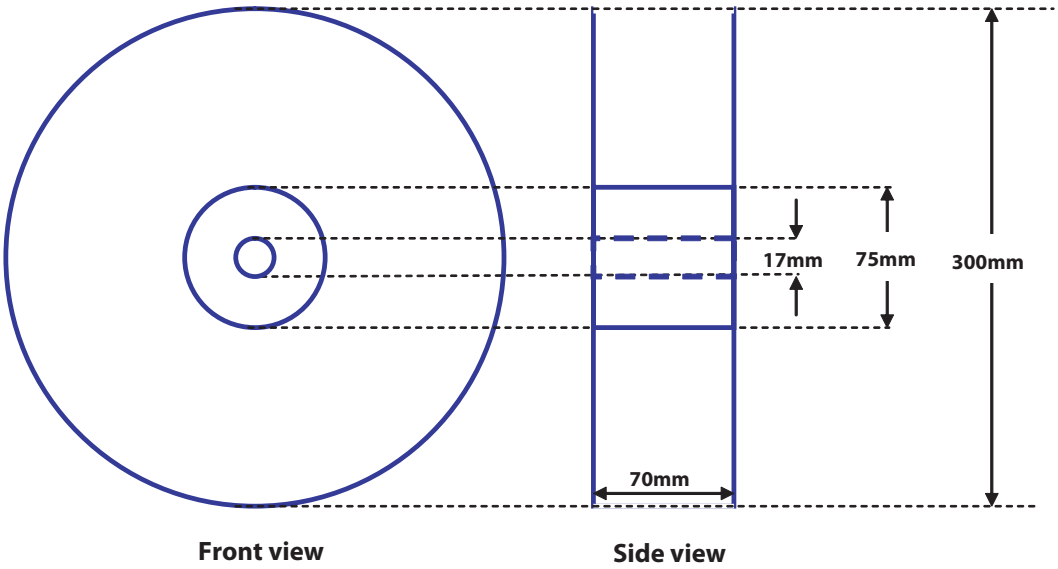


Figure 14.

Diode Package Marking

1N5xxx	5082-xxxx
would be marked:	
1Nx	xx
xxx	xx
YWW	YWW

where xxxx are the last four digits of the 1Nxxxx or the 5082-xxxx part number.
Y is the last digit of the calendar year. WW is the work week of manufacture.

Examples of diodes manufactured during workweek 45 of 1999:

1N5712	5082-3080
would be marked:	
1N5	30
712	80
945	945

Part Number Ordering Information

Part Number	No. of devices	Container
5082-28xx#T25/1N57xx#T25	2500	Tape & Reel
5082-28xx#T50/ 1N57xx#T50	5000	Tape & Reel
5082-28xx/ 1N57xx	100	Antistatic bag

For product information and a complete list of distributors, please go to our web site: **www.avagotech.com**

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