1 Amp Schottky Barrier Rectifiers

1N5818UR-1, 1N5819UR-1, 1N6761UR-1, and CDLL Variants

Product Overview

This 1 amp schottky barrier rectifier is metallurgically bonded and offers military grade qualifications for the part numbers of 1N5819UR-1 and 1N6761UR-1 for high-reliability applications per MIL-PRF-19500/586. This small diode is hermetically sealed and bonded into a DO-213AB MELF glass package. Qualified Levels: JAN, JANTX, JANTXV, and JANS.

Figure 1. DO-213AB (MELF, LL41) Package

Also available in:

DO-41 package

(axial-leaded)

1N5818-1, 1N5819-1, 1N6759-1 – 1N6761-1, and DSB variants

Features

- JEDEC registered 1N5818, 1N5819, and 1N6761 numbers
- Hermetically sealed DO-41 glass package
- Metallurgically bonded
- 1N5819UR-1 and 1N6761UR-1 only are available in JAN, JANTX, JANTXV and JANS qualifications per MIL-PRF-19500/586.
  (See Part Nomenclature for all available options.)
- RoHS compliant versions available (commercial grade only)

Applications/Benefits

- Small size for high density mounting using flexible thru-hole leads (see Package Dimensions)
- Low reverse (leakage) currents
- Non-sensitive to ESD per MIL-STD-750 test method 1020 (human body model)
- Inherently radiation hard as described in MicroNote 050

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1. Maximum Ratings

Table 1-1. Maximum Ratings at 25 °C Unless Otherwise Noted [1]

Parameters/Test Conditions		Symbol	Value	Unit
Storage temperature		T_{STG}	–65 to +150	°C
Junction temperature	1N5819UR-1 1N6761UR-1	T_J	–65 to +125 –65 to +150	°C
Thermal resistance, junction-to-lead		$R_{\Theta JEC}$	40	°C/W
Thermal resistance, junction-to-ambient		$R_{\Theta JA}$	220	°C/W
Average rectified output current at T_A = 55 °C on PCB board		I_O	1.0	A
Surge peak forward current		I_{FSM}	25	A
Solder temperature at 10 seconds		—	260	°C

Note:

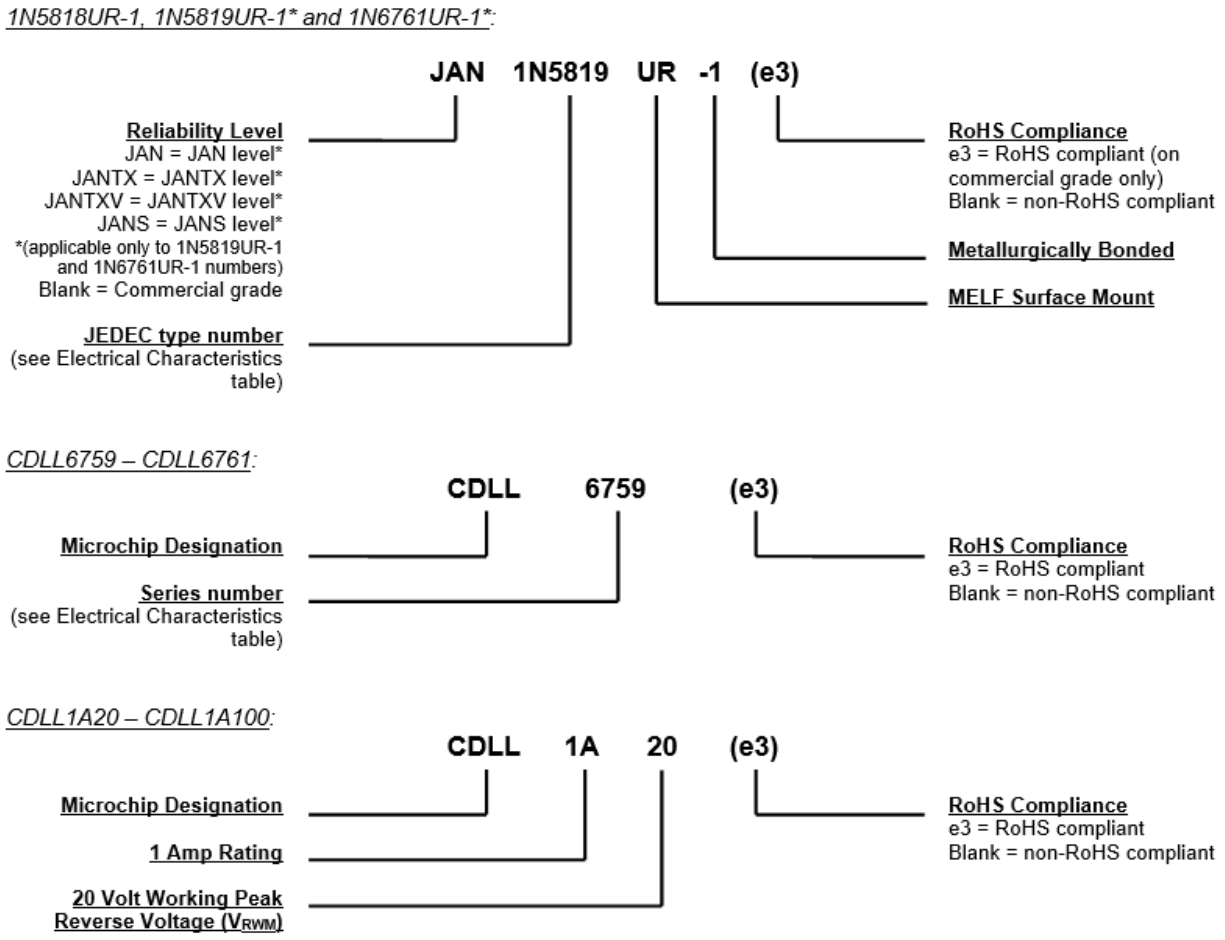
1. T_{EC} = 55 °C for the 1N5819UR-1 and T_{EC} = 37 °C for the 1N6761UR-1

1.1 Mechanical Packaging

- Case: Hermetically sealed glass DO-213AB MELF (LL41) package
- Terminals: Tin/lead or RoHS compliant matte-tin finished copper clad steel available (commercial grade only). Solderable per MIL-STD-750, method 2026.
- Marking: Cathode band
- Polarity: Diode to be operated with the banded end positive with respect to the opposite end for Zener regulation
- Mounting surface selection: The Axial Coefficient of Expansion (COE) of this device is approximately +6 PPM/°C. The COE of the mounting surface system should be selected to provide a suitable match with this device.
- Tape and reel optional: Standard per EIA-481-1-A with 12 mm tape. Consult factory for quantities.
- Weight: Approximately 0.05 grams
- See Package Dimensions.

2. Part Nomenclature

Figure 2-1. Part Nomenclature



3. Symbols and Definitions

Table 3-1. Symbols and Definitions

Symbol	Definition
C_T	Total capacitance: The total small signal capacitance between the diode terminals of a complete device.
f	Frequency
I_{FSM}	Surge peak forward current: The forward current including all nonrepetitive transient currents but excluding all repetitive transients (ref JESD282-B).
I_R	Reverse current: The DC current flowing from the external circuit into the cathode terminal at the specified voltage V_R.
I_O	Average rectified output current: The output current averaged over a full cycle with a 50 Hz or 60 Hz sine-wave input and a 180 degree conduction angle.
$V_{(BR)}$	Minimum breakdown voltage: The minimum voltage the device will exhibit at a specified current.
V_F	Forward voltage: The positive anode-cathode voltage the device will exhibit at a specified I_F current.
V_R	Reverse voltage: The DC voltage applied in the reverse direction below the breakdown region.
V_{RWM}	Working peak reverse voltage: The maximum peak voltage that can be applied over the operating temperature range excluding all transient voltages (ref JESD282-B). Also sometimes known as PIV.

3.1 Electrical Characteristics

Table 3-2. Electrical Characteristics at T_A = +25 °C, Unless Otherwise Noted

Type Number	Working Peak Reverse Voltage [1]	Maximum Forward Voltage		Maximum Reverse Leakage Current at Rated Voltage		Maximum Capacitance at V_r = 5V F ≤ 1.0 mHz
	V_{RWM}	V_F at 0.1A	V_F at 1.0A	I_{RM} at 25 °C	I_{RM} at 100 °C	C_T
	Volts	Volts	Volts	mA	mA	pF
1N5818UR-1 [1]	30	0.36	0.60	0.10	5.0	0.9
1N5819UR-1 [1, 2]	45	0.34	0.49	0.05	5.0	70
CDLL6759	60	0.38	0.69	0.10	6.0	NA
CDLL6760	80	0.38	0.69	0.10	6.0	NA
1N6761UR-1 [1, 2]	100	0.38	0.69	0.10	12.0	70
CDLL1A20	20	0.36	0.60	0.10	5.0	0.9
CDLL1A30	30	0.36	0.60	0.10	5.0	0.9
CDLL1A40	40	0.36	0.60	0.10	5.0	0.9
CDLL1A50	50	0.36	0.60	0.10	5.0	0.9
CDLL1A60	60	0.38	0.69	0.10	12.0	NA
CDLL1A80	80	0.38	0.69	0.10	12.0	NA
CDLL1A100	100	0.38	0.69	0.10	12.0	NA

Notes:

1. Part number may also be ordered as CDLL5818 or CDLL5819 or CDLL6761.
2. Also available with JAN, JANTX, JANTXV, and JANS military qualifications.

4. Graphs

Figure 4-1. Typical Reverse Leakage Current at Rated PIV (Pulsed)

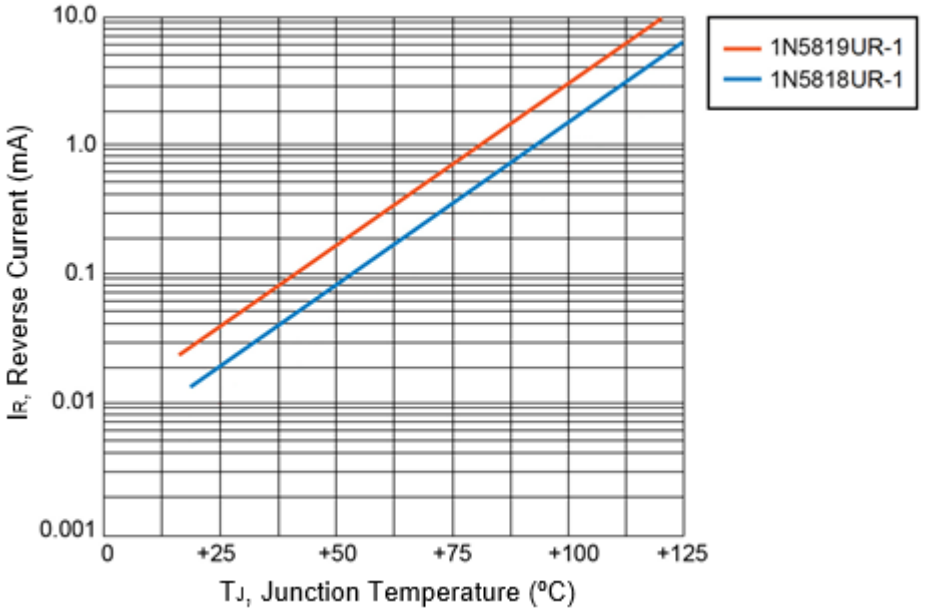


Figure 4-2. Typical Forward Voltage for 1N5819UR-1

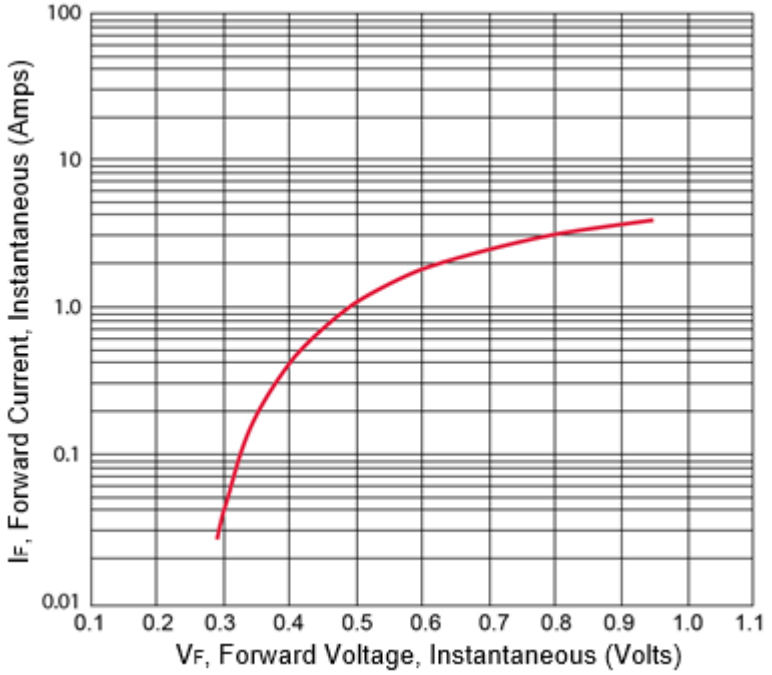


Figure 4-3. Thermal Impedance for 1N5819UR-1 and 1N6761UR-1 (DO-213AB)

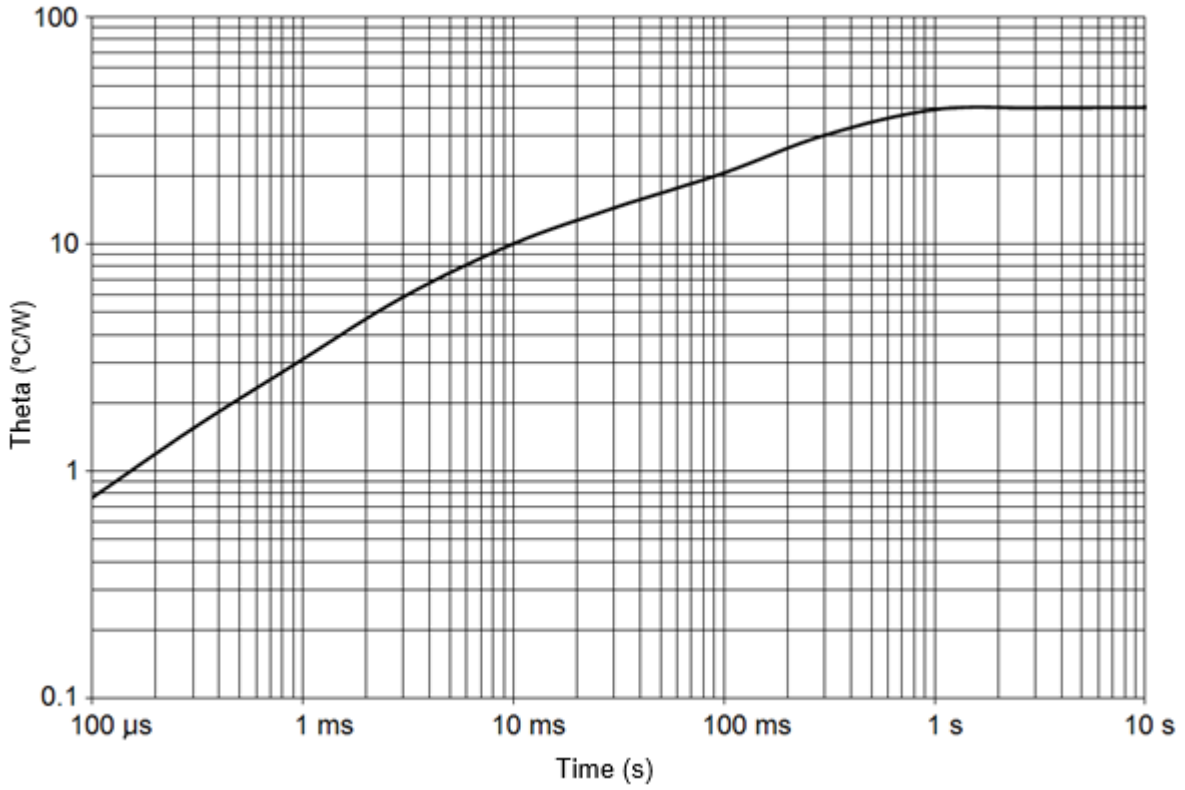


Figure 4-4. JANS1N5819UR-1 Forward Voltage

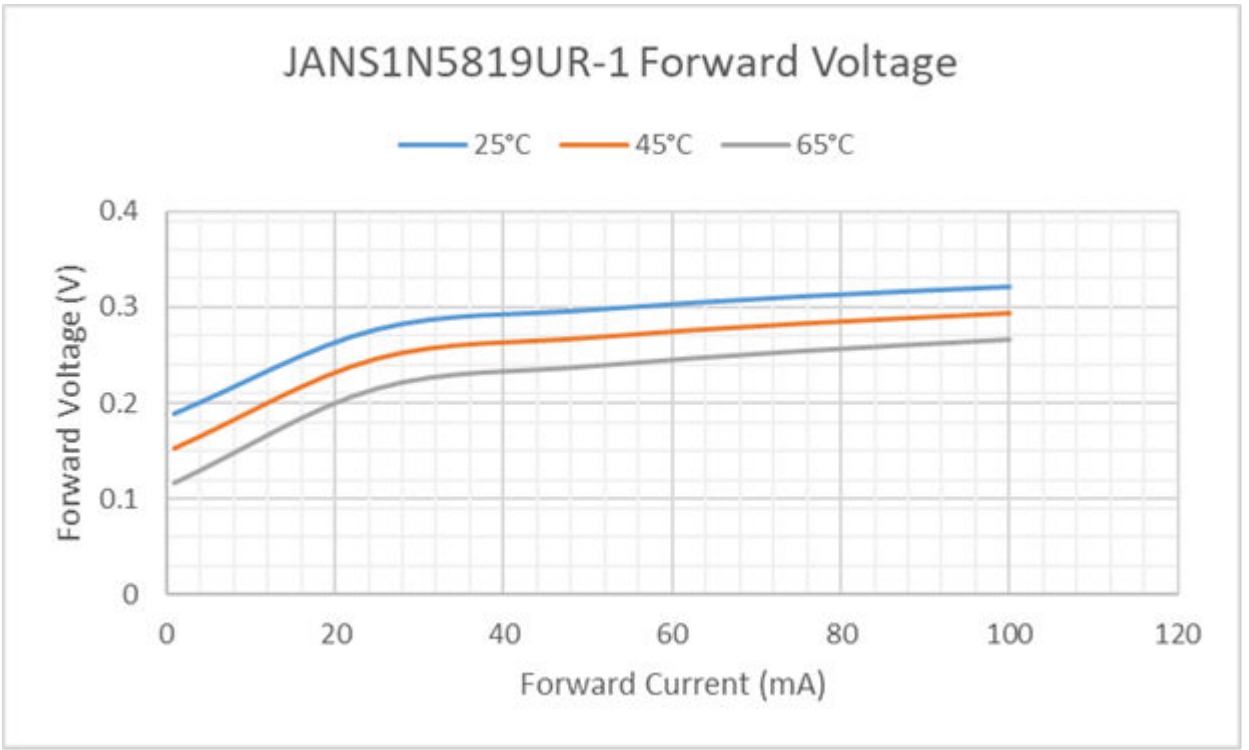
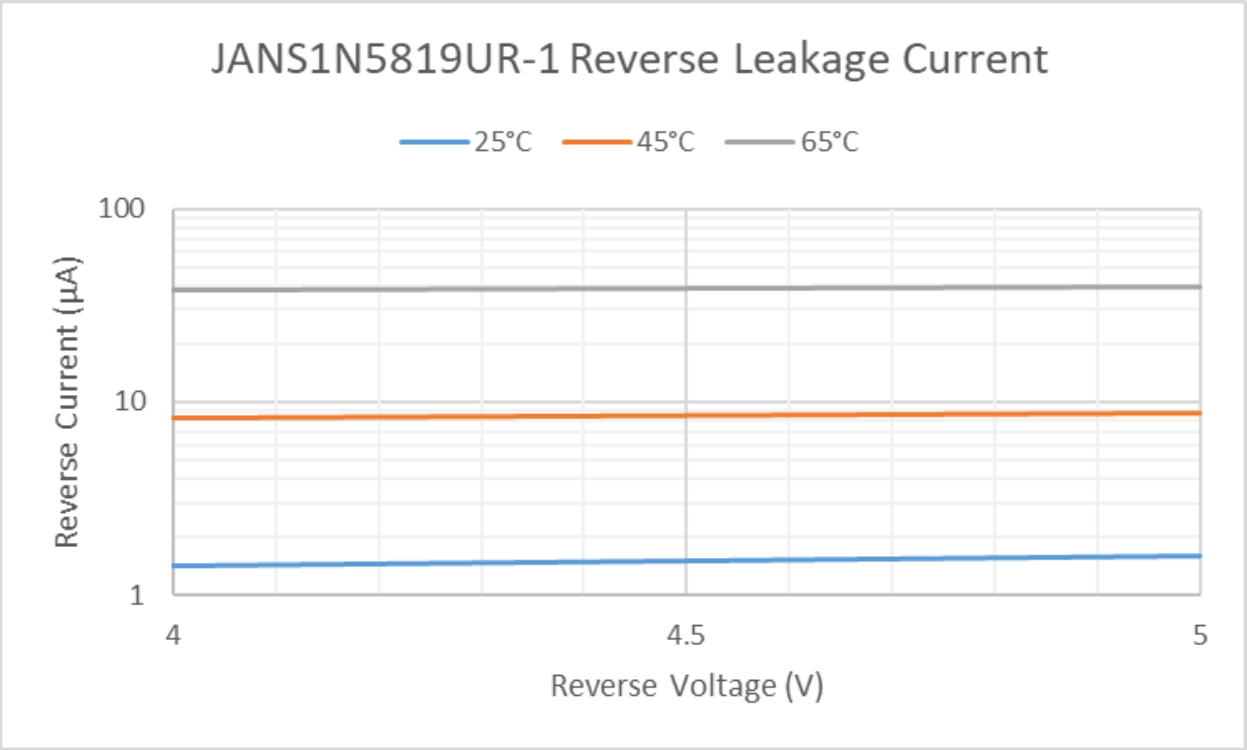


Figure 4-5. JANS1N5819UR-1 Reverse Leakage Current



5. Package Dimensions

Figure 5-1. Package Dimensions

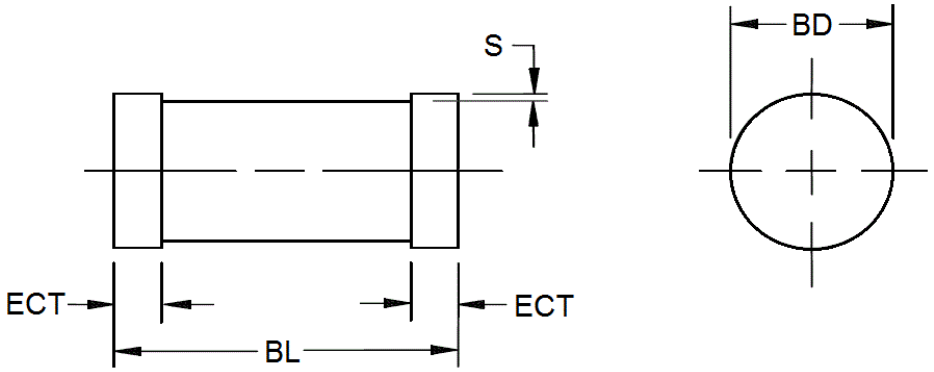


Table 5-1. Package Dimensions [1–3]

Symbol	Dimensions			
	Inch		Millimeters	
	Min.	Max.	Min.	Max.
BD	0.094	0.105	2.39	2.67
BL	0.189	0.205	4.80	5.21
ECT	0.016	0.022	0.41	0.56
S	0.001 min		0.03 min	

Notes:

1. Dimensions are in inches. Millimeters are given for information only.
2. Gap not controlled, shape of body and gap not controlled.
3. In accordance with ASME Y14.5M, diameters are equivalent to Φx symbology.

5.1 Pad Layout

Figure 5-2. Pad Layout

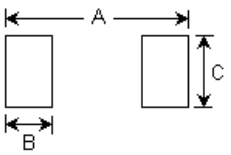


Table 5-2. Pad Layout

Ltr	Inch	Millimeter
A	0.276	7.00
B	0.070	1.8
C	0.110	2.8

6. Revision History

The revision history describes the changes that were implemented in the document. The changes are listed by revision, starting with the most current publication.

Revision	Date	Description
A	01/2025	Converted to Microchip template and assigned literature number DS00005758.
Rev. 1	06/2013	Microsemi document was created and assigned literature number LDS-0301.

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