

**Product Summary** (@ T<sub>A</sub> = +25°C)

V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F(MAX)</sub> (V)	I <sub>R(MAX)</sub> (μA)
1200	1	1.7	5

**Features and Benefits**

- Low-Profile, Small Form Factor Package
- Low Leakage Current
- Glass Passivated Die Construction
- Ultra-Fast Recovery Time for High Efficiency
- Low Forward Voltage, Low Power Loss
- **Lead-Free Finish & RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The US1NDFQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF16949 certified facilities.**

<https://www.diodes.com/quality/product-definitions/>

**Description and Applications**

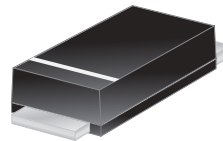
The US1NDFQ is a rectifier packaged in the low-profile D-FLAT package. Providing ultra-fast recovery time for high efficiency, this device is ideal for use in general rectification applications such as:

- Flat panel displays
- Switching power supplies/chargers
- LED lighting
- Freewheeling diodes

**Mechanical Data**

- Package: D-FLAT
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (E3)
- Polarity: Cathode Band
- Weight: 0.035 grams (Approximate)

D-FLAT

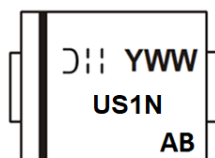


Top View

**Ordering Information** (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
US1NDFQ-13	D-FLAT	10,000	Tape & Reel

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
  2. See <https://www.diodes.com/quality/lead-free/> 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

**Marking Information**


US1N = Product Type Marking Code

YWW = Manufacturer's Code Marking

YWW = Date Code Marking

Y = Last Digit of Year (ex: 4 for 2024)

WW = Week Code (01 to 53)

AB = Foundry and Assembly Code

### Maximum Ratings (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Single phase, half wave, 60Hz, resistive or inductive load.  
For capacitive load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V <sub>RRM</sub>	1200	V
Working Peak Reverse Voltage	V <sub>RWM</sub>		
DC Blocking Voltage (Note 5)	V <sub>R</sub>		
RMS Reverse Voltage	V <sub>R(RMS)</sub>	840	V
Average Rectified Output Current @T <sub>T</sub> = +25°C	I <sub>O</sub>	1.0	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine Wave Superimposed on Rated Load	I <sub>FSM</sub>	30	A

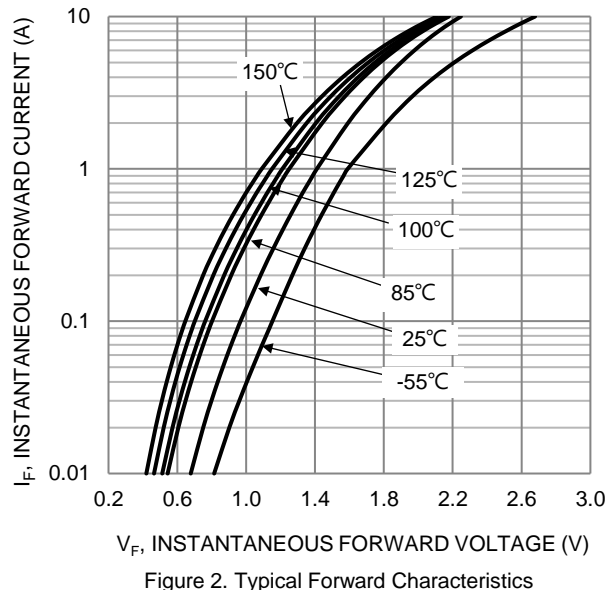
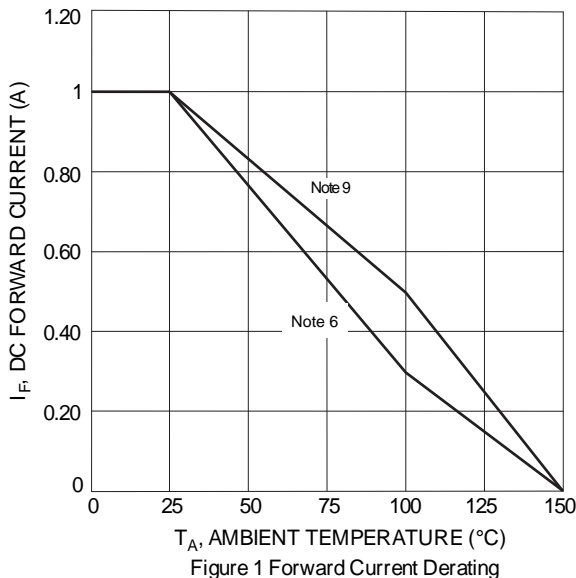
### Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance, Junction to Terminal (Note 6)	R <sub>θJT</sub>	44	°C/W
Typical Thermal Resistance, Junction to Ambient (Note 6)	R <sub>θJA</sub>	80	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

### Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage	V <sub>(BR)R</sub>	1200	—	—	V	I <sub>R</sub> = 10μA
Forward Voltage	V <sub>F</sub>	—	1.3 1.4 1.5	1.7 1.9 2.0	V	I <sub>F</sub> = 0.5A, T <sub>J</sub> = +25°C I <sub>F</sub> = 0.8A, T <sub>J</sub> = +25°C I <sub>F</sub> = 1A, T <sub>J</sub> = +25°C
Reverse Leakage Current	I <sub>R</sub>	—	0.5 10	5 100	μA	V <sub>R</sub> = 1200V, T <sub>J</sub> = +25°C V <sub>R</sub> = 1200V, T <sub>J</sub> = +125°C
Reverse Recovery Time (Note 7)	t <sub>RR</sub>	—	70	80	ns	I <sub>F</sub> = 0.5A, I <sub>R</sub> = 1.0A, I <sub>RR</sub> = 0.25A
Total Capacitance (Note 8)	C <sub>T</sub>	—	5	—	pF	V <sub>R</sub> = 4V, f = 1MHz

- Notes:
- Short duration pulse test used to minimize self-heating effect.
  - Device mounted on FR-4 substrate, 1" x 1", 2oz, single-sided, PC boards with 0.1" x 0.15" copper pads.
  - Measured with I<sub>F</sub> = 0.5A, I<sub>R</sub> = 1.0A, I<sub>RR</sub> = 0.25A. See Figure 7.
  - Measured at 1.0MHz and applied reverse voltage of 4.0V DC.
  - Device mounted on FR-4 substrate, 0.4" x 0.5", 2oz, single-sided, PC boards with 0.2" x 0.25" copper pads.



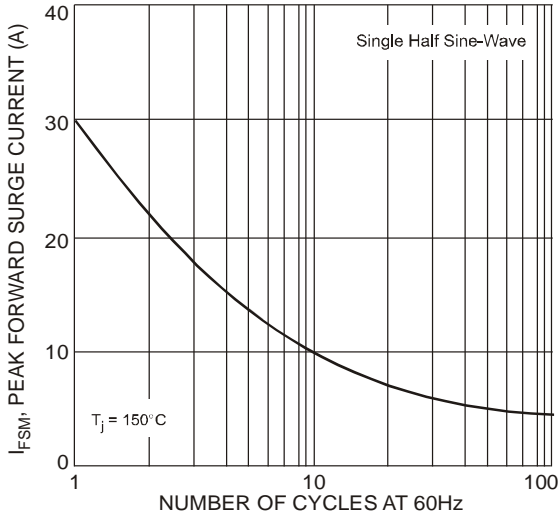


Figure 3. Forward Surge Current Derating Curve

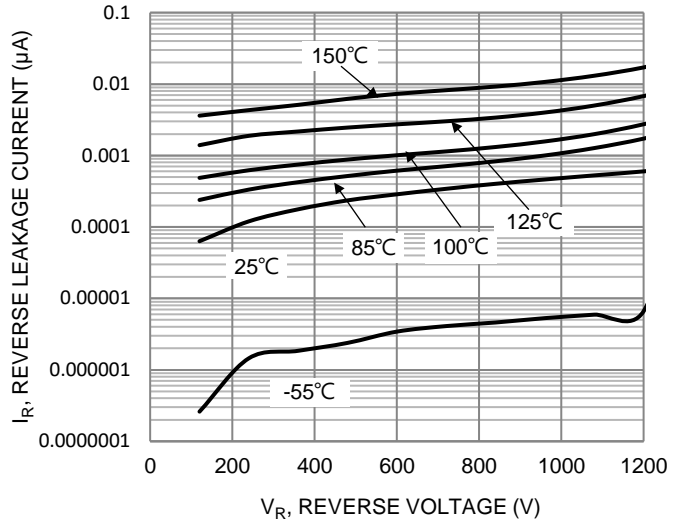


Figure 4. Typical Reverse Characteristics

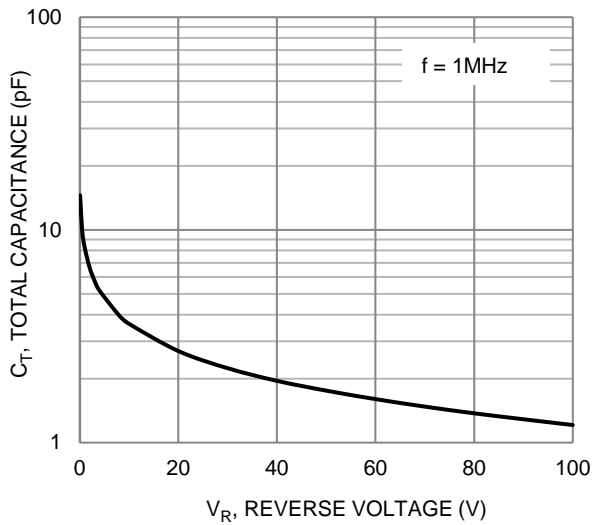


Figure 5. Typical Total Capacitance

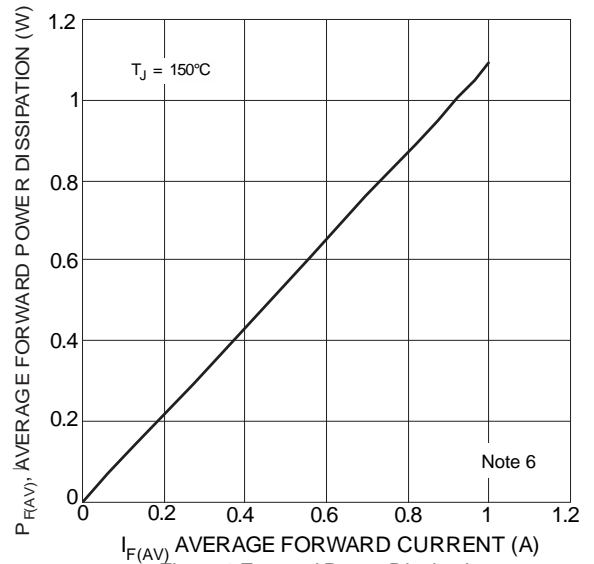
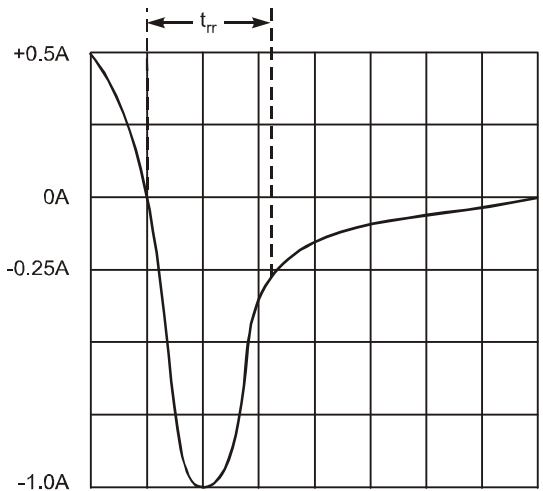
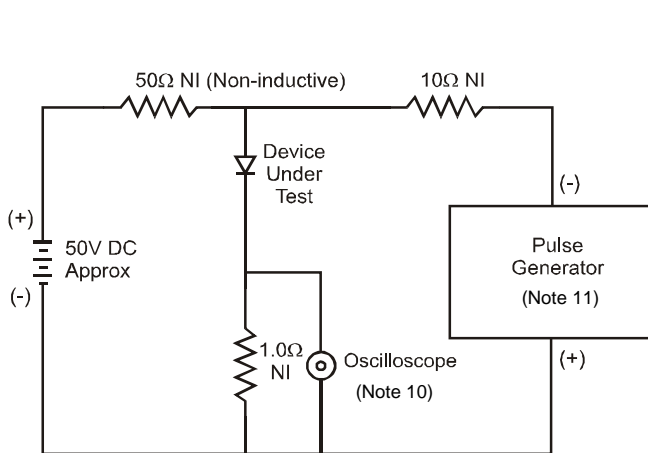


Figure 6 Forward Power Dissipation



Set time base for 50/100 ns/cm

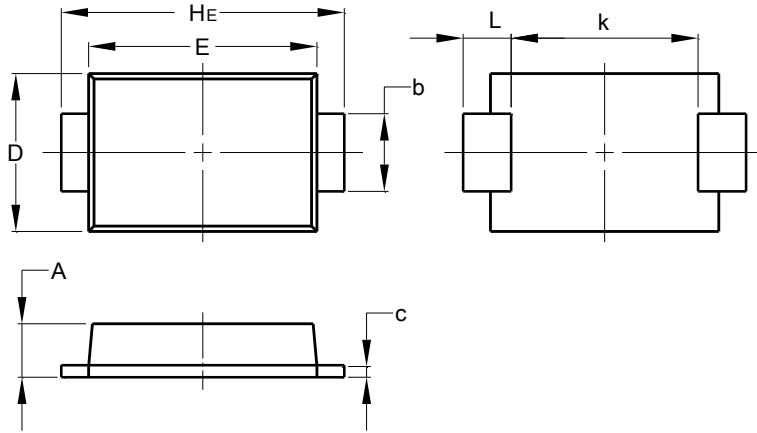
Figure 7. Reverse Recovery Time Characteristic and Test Circuit

Notes: 10. Rise time = 7.0ns max. Input impedance = 1.0MΩ, 22pF.  
11. Rise time = 10ns max. Input impedance = 50Ω.

## Package Outline Dimensions

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

### D-FLAT

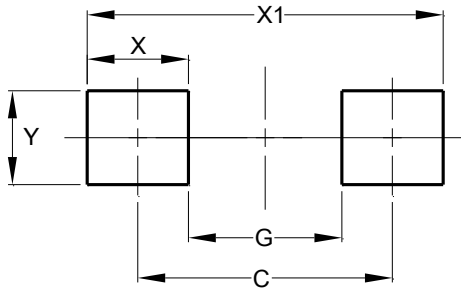


D-FLAT		
Dim	Min	Max
A	0.90	1.10
b	1.25	1.65
c	0.10	0.40
D	2.25	2.95
E	3.95	4.60
k	2.80	-
$H_E$	5.00	5.60
L	0.50	1.30
All Dimensions in mm		

## Suggested Pad Layout

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

### D-FLAT



Dimensions	Value (in mm)
C	4.65
G	2.80
X	1.85
$X_1$	6.50
Y	1.70

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