

Product Summary (@T_A = +25°C)

V _{RRM} (V)	I _O (A)	V _{F(MAX)} (V)	I _{R(MAX)} (μA)
600	2	1.7	5

Features and Benefits

- Glass Passivated Die Construction
- Ultra-Fast Recovery Time for High Efficiency
- Surge Overload Rating to 50A Peak
- High Current Capability
- Low Profile Design, Package Height Less than 1.1mm
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standard for High Reliability**
- **PPAP Capable (Note 4)**

Description and Applications

The US2JDFQ 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 applications, such as:

- Reverse Protection
- Switching
- Blocking

Mechanical Data

- Case: D-FLAT
- Case 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: 0.036 grams (Approximate)

D-FLAT

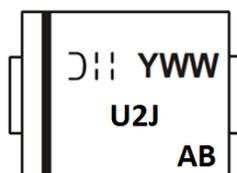


Top View

Ordering Information (Note 5)

Part Number	Qualification	Case	Packaging
US2JDFQ-13	Automotive	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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to <https://www.diodes.com/quality/>.
 5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information


- U2J= Product Type Marking Code
- U2J = Manufacturer's Code Marking
- YWW = Date Code Marking
- Y = Last Digit of Year (ex: 4 for 2014)
- WW = Week Code (01 to 53)
- AB = Foundry and Assembly Code

Maximum Ratings (@T_A = +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 _{RRM}	600	V
Working Peak Reverse Voltage	V _{RWM}		
DC Blocking Voltage (Note 6)	V _R		
RMS Reverse Voltage	V _{R(RMS)}	420	V
Average Rectified Output Current @ T _T = +75°C	I _O	2.0	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I _{FSM}	50	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance, Junction to Terminal	R _{θJT}	22	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

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

Characteristic	Symbol	Value	Unit
Minimum Reverse Breakdown Voltage (Note 6) @ I _R = 5μA	V _{(BR)R}	600	V
Maximum Forward Voltage Drop @ I _F = 2.0A	V _F	1.7	V
Peak Reverse Current @ T _A = +25°C	I _R	5.0	μA
at Rated DC Blocking Voltage (Note 6) @ T _A = +100°C		100	
Maximum Reverse Recovery Time (Note 7)	t _{RR}	75	ns
Typical Total Capacitance (Note 10)	C _T	10	pF

- Notes:
6. Short duration pulse test used to minimize self-heating effect.
 7. Measured with I_F = 0.5A, I_R = 1.0A, I_{RR} = 0.25A. See Figure 7.
 8. Device mounted on FR-4 substrate, 1inch x 1inch, 2oz, single-sided, PC boards with 0.1inch x 0.15inch copper pads.
 9. Device mounted on FR-4 substrate, 0.4inch x 0.5inch, 2oz, single-sided, PC boards with 0.2inch x 0.25inch copper pads.
 10. Measured at f=1.0MHz and applied reverse voltage of 4.0V DC.

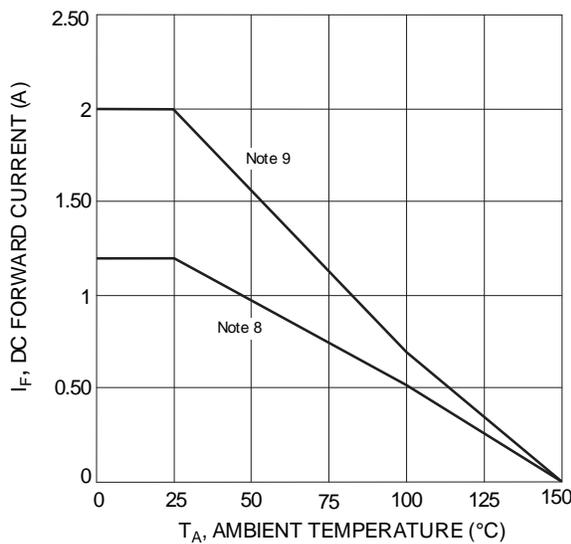


Figure 1 DC Forward Current Derating

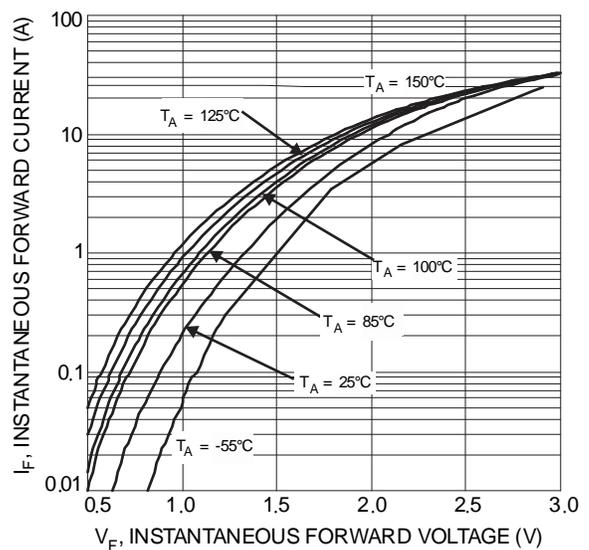


Figure 2 Typical Forward Characteristics

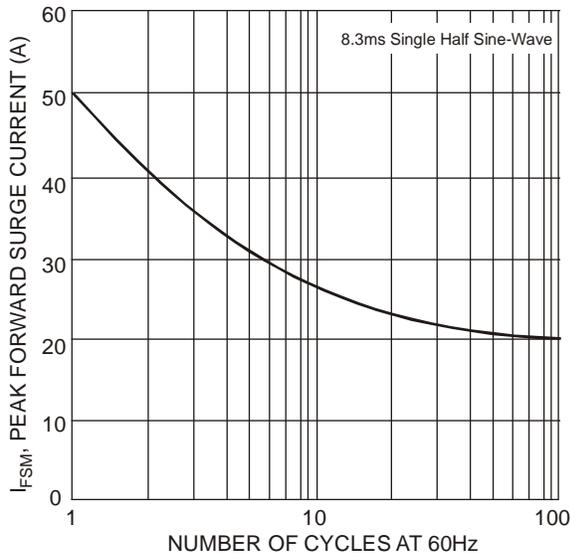


Fig. 3 Maximum Non-Repetitive Surge Current

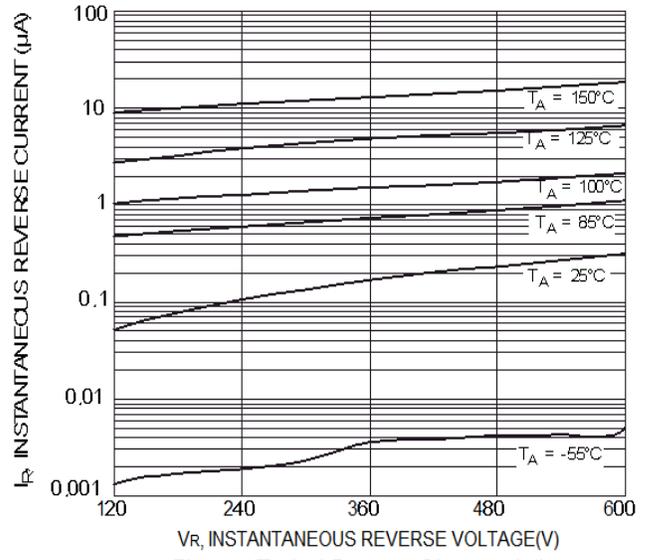


Figure 4 Typical Reverse Characteristics

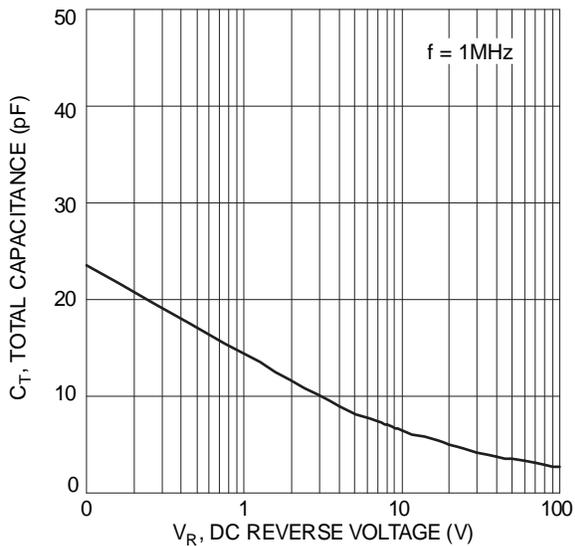


Figure 5 Total Capacitance vs. Reverse Voltage

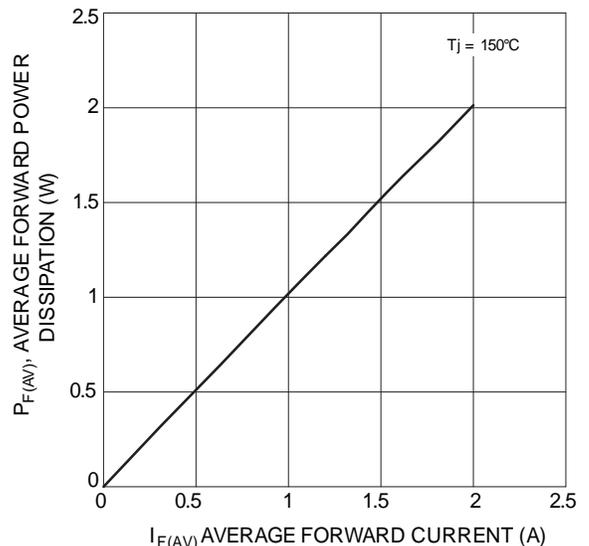
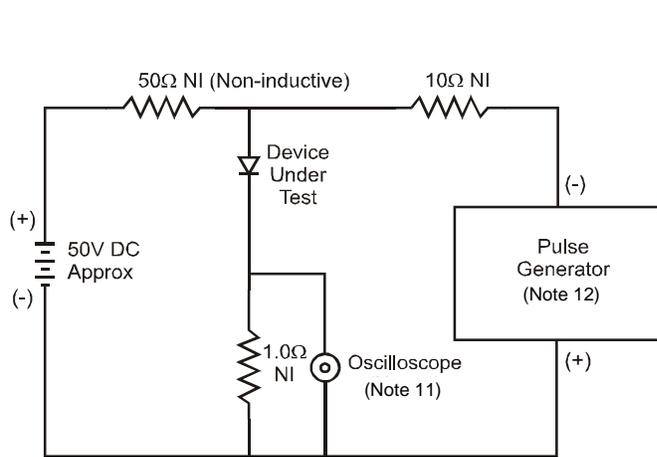
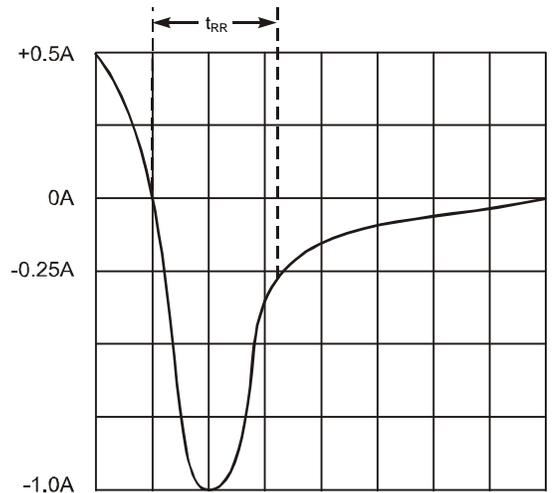


Figure 6 Forward Power Dissipation



Notes: 11. Rise Time = 7.0ns max. Input Impedance = 10MΩ, 22pF.
12. Rise Time = 10ns max. Input Impedance = 50Ω.



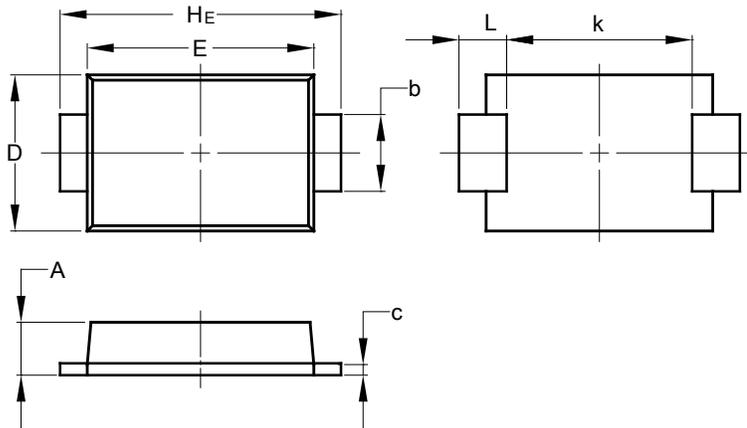
Set time base for 50/100 ns/cm

Figure 7 Reverse Recovery Time Characteristic and Test Circuit

Package Outline Dimensions

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

D-FLAT

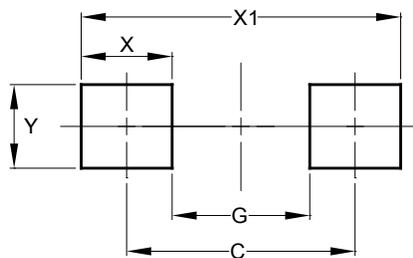


D-FLAT		
Dim	Min	Max
A	0.90	1.10
b	1.25	1.65
c	0.10	0.40
D	2.25	2.95
E	3.95	4.60
k	2.80	—
H_E	5.00	5.60
L	0.50	1.30
All Dimensions in mm		

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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