

5A SURFACE MOUNT ULTRA-FAST RECOVERY RECTIFIER

Product Summary (@T_A = +25°C)

V _{RRM} (V)	I _o (A)	V _F (V)	I _R (μA)
600	5	3.0	30

Description and Applications

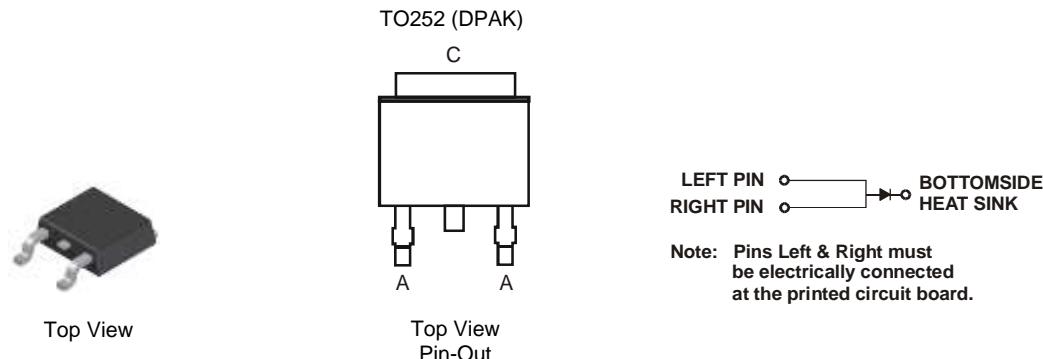
This device is intended for use as freewheeling and clamping diodes in a variety of switching power supplies and other power DCM and CCM PFC applications. It is especially suited for use in SMPS, home appliances, office equipment, and telecommunication applications.

Features and Benefits

- Soft, Ultra-Fast Switching Capability for High Efficiency
- Low Leakage Current
- High Current Capability
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

- Case: TO252 (DPAK)
- 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 208⁴
- Polarity: See Diagram



Ordering Information (Note 4)

Part Number	Case	Packaging
UF5JD1-13	TO252 (DPAK)	2,500 Pieces/Reel

Notes:

1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
2. See http://www.diodes.com/quality/lead_free.html 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 <http://www.diodes.com/products/packages.html>.

Marking Information



UF5J = Product Type Marking Code
 DII = Manufacturers' Code Marking
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 17 for 2017)
 WW = Week Code (01 - 53)

Maximum Ratings (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

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

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V_{RRM}		
Working Peak Reverse Voltage	V_{RWM}	600	V
DC Blocking Voltage	V_R		
RMS Reverse Voltage	$V_{R(\text{RMS})}$	420	V
Average Rectified Output Current	I_O	5	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	80	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance Junction to Case (Note 5)	$R_{\theta JC}$	18	$^\circ\text{C}/\text{W}$
Typical Thermal Resistance Junction to Ambient (Note 5)	$R_{\theta JA}$	80	$^\circ\text{C}/\text{W}$
Typical Thermal Resistance Junction to Case (Note 6)	$R_{\theta JC}$	2	$^\circ\text{C}/\text{W}$
Typical Thermal Resistance Junction to Ambient (Note 6)	$R_{\theta JA}$	18	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150	$^\circ\text{C}$

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 7)	$V_{(BR)R}$	600	—	—	V	$I_R = 30\mu\text{A}$
Forward Voltage	V_F	—	1.1	1.6	V	$I_F = 1\text{A}, T_J = +25^\circ\text{C}$
		—	0.7	—		$I_F = 1\text{A}, T_J = +125^\circ\text{C}$
		—	1.5	2.3		$I_F = 3\text{A}, T_J = +25^\circ\text{C}$
		—	1.0	—		$I_F = 3\text{A}, T_J = +125^\circ\text{C}$
		—	1.8	3.0		$I_F = 5\text{A}, T_J = +25^\circ\text{C}$
		—	1.2	—		$I_F = 5\text{A}, T_J = +125^\circ\text{C}$
Reverse Leakage Current (Note 7)	I_R	—	0.57	30	μA	$V_R = 600\text{V}, T_J = +25^\circ\text{C}$
		—	0.04	5	mA	$V_R = 600\text{V}, T_J = +125^\circ\text{C}$
Reverse Recovery Time	t_{RR}	—	15	25	ns	$I_F = 0.5\text{A}, I_R = 1.0\text{A}, I_{rr} = 0.25\text{A}$
		—	12	22		$I_F = 1\text{A}, V_R = 30\text{V}, dI/dt = 100\text{A}/\mu\text{s}$
Reverse Recovery Charge	Q_{RR}	—	5	—	nC	$I_F = 1\text{A}, V_R = 30\text{V}, dI/dt = 100\text{A}/\mu\text{s}$
Total Capacitance	C_T	—	45	50	pf	$V_R = 10\text{V}_{\text{DC}}, f = 1\text{MHz}$

Notes:

5. Device mounted on FR4 PCB with 1x recommended pad layout.
6. Device mounted on 2-inch Al substrate PCB.
7. Short duration pulse test used to minimize self-heating effect.

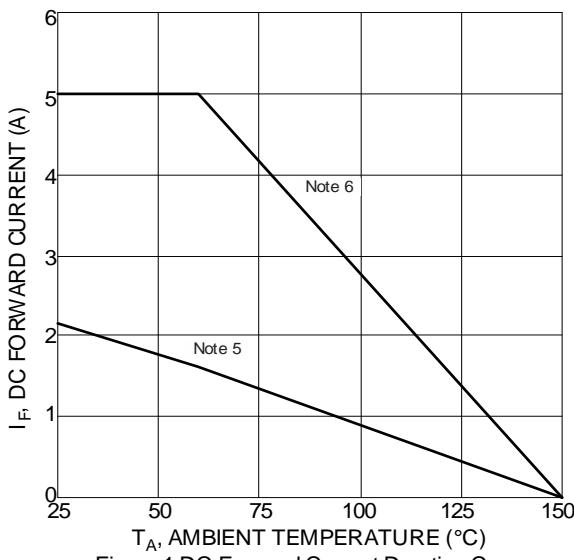


Figure 1 DC Forward Current Derating Curve

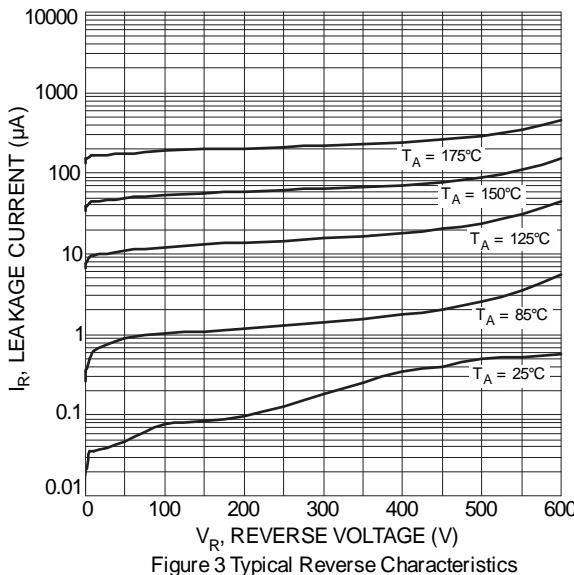


Figure 3 Typical Reverse Characteristics

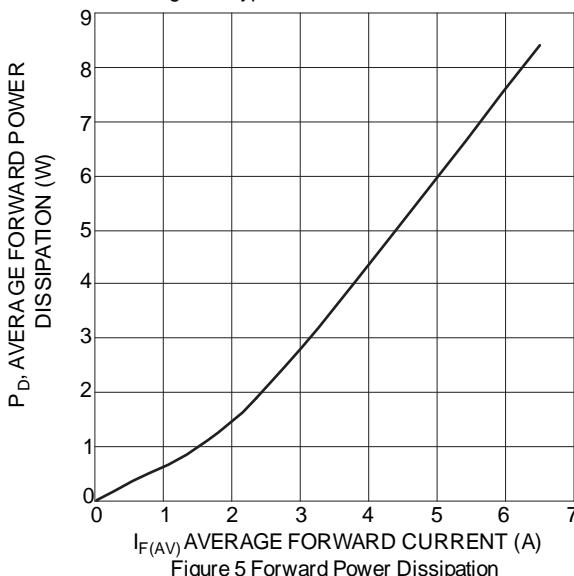


Figure 5 Forward Power Dissipation

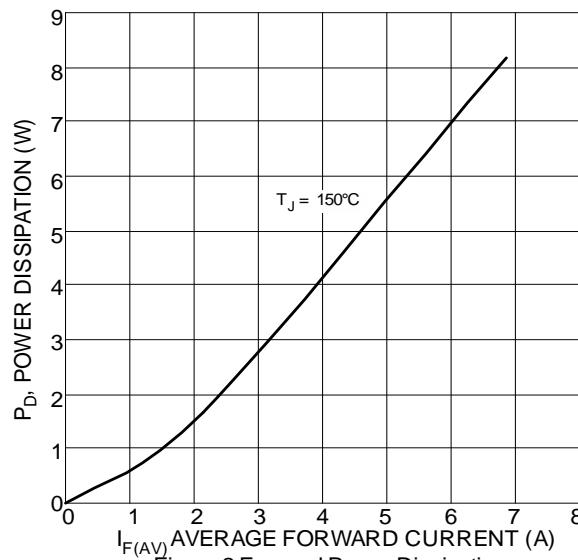


Figure 2 Forward Power Dissipation

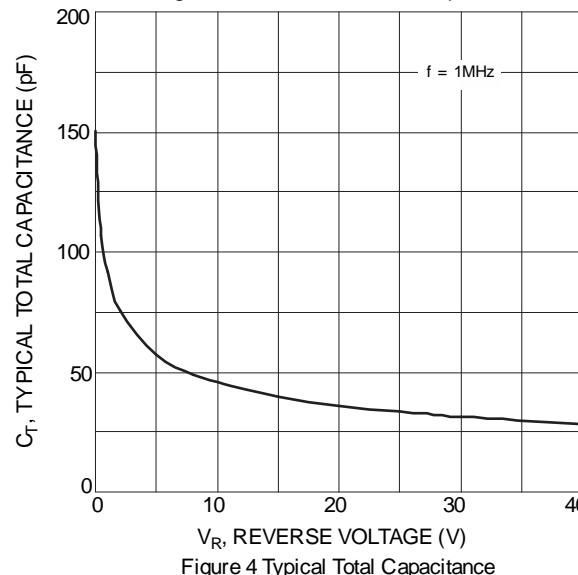


Figure 4 Typical Total Capacitance

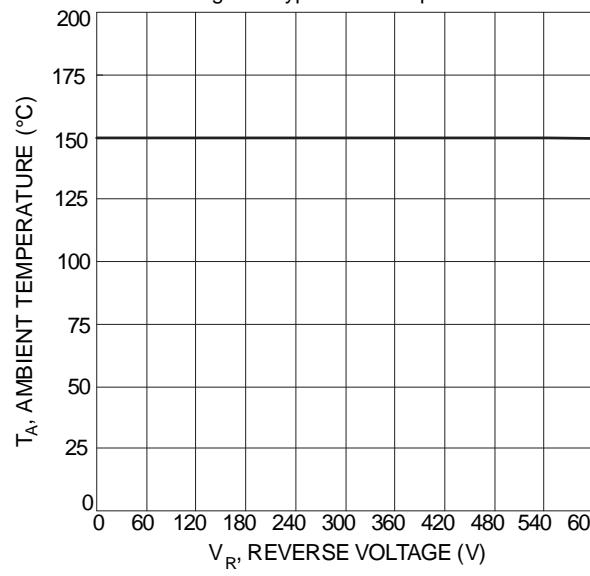


Figure 6 Operating Temperature Derating

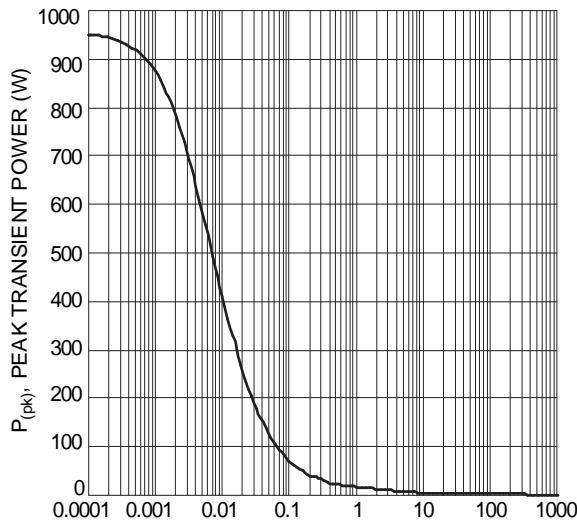


Figure 7 Single Pulse Maximum Power Dissipation

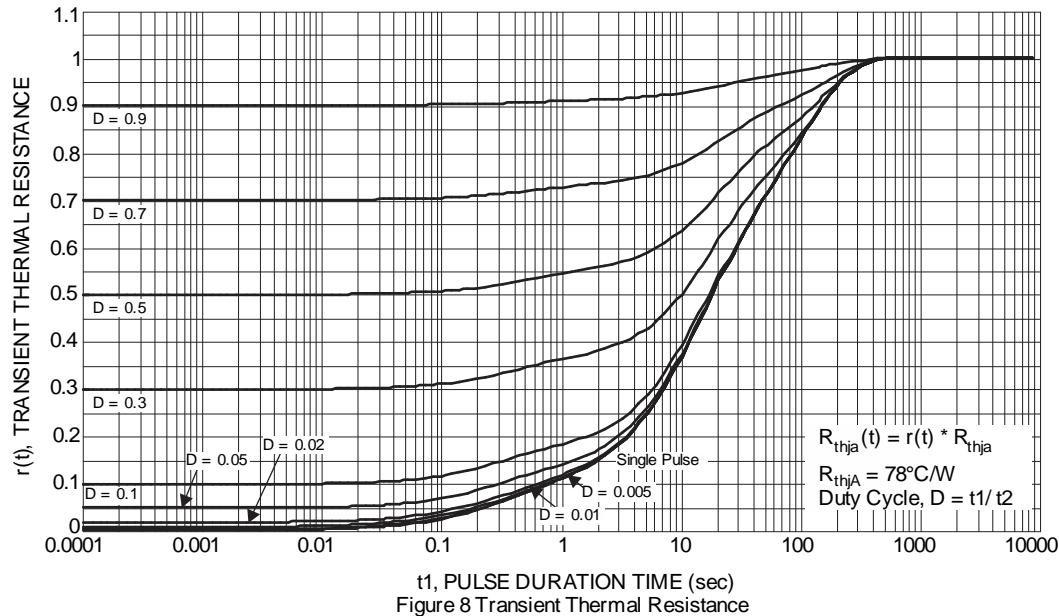
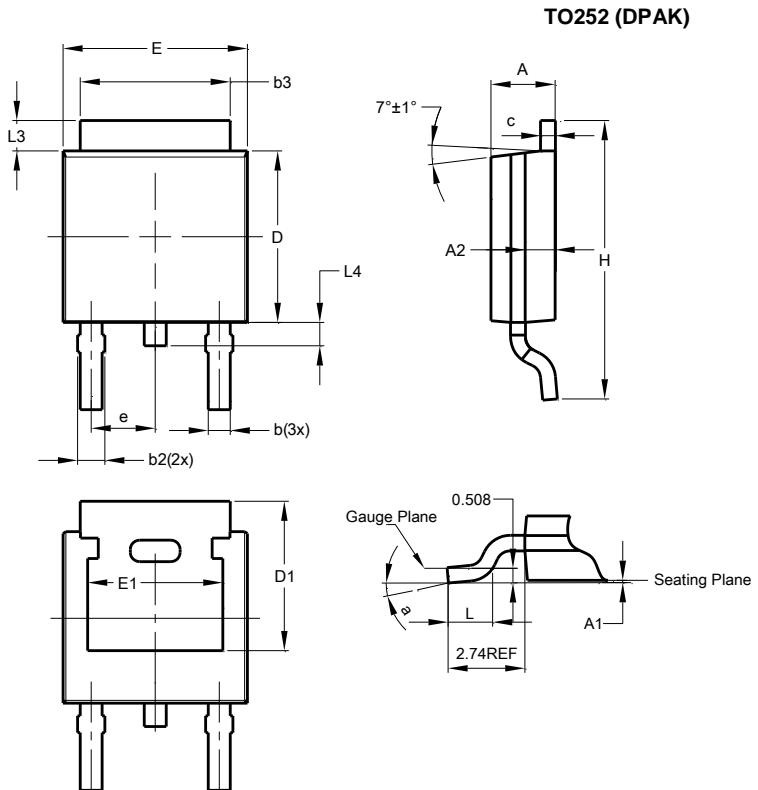


Figure 8 Transient Thermal Resistance

Package Outline Dimensions

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

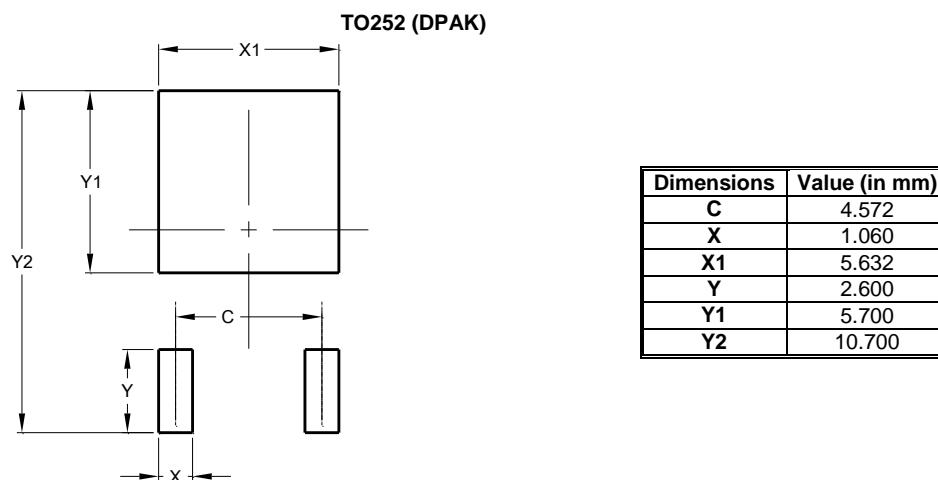


TO252 (DPAK)			
Dim	Min	Max	Typ
A	2.19	2.39	2.29
A1	0.00	0.13	0.08
A2	0.97	1.17	1.07
b	0.64	0.88	0.783
b2	0.76	1.14	0.95
b3	5.21	5.46	5.33
c	0.45	0.58	0.531
D	6.00	6.20	6.10
D1	5.21	-	-
e	-	-	2.286
E	6.45	6.70	6.58
E1	4.32	-	-
H	9.40	10.41	9.91
L	1.40	1.78	1.59
L3	0.88	1.27	1.08
L4	0.64	1.02	0.83
a	0°	10°	-

All Dimensions in mm

Suggested Pad Layout

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



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