

Features

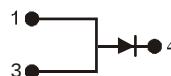
- DIODESTAR™ is a Proprietary Process for High Voltage Rectifiers which Delivers:
 - Ultra-Fast Reverse Recovery ($t_{rr} < 30\text{ns}$) Giving a Rapid Switching Response
 - Soft Recovery for Low EMI Noise
 - Excellent High Temperature Stability
 - High Forward Surge Capability
- Enables High Efficiency as the Boost Diode in PFC Circuits
- **Lead Free Finish, RoHS Compliant (Note 1)**

Mechanical Data

- Case: DPAK (TO252-3L)
- Case Material: Molded Plastic, UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.4 grams (approximate)



Top View



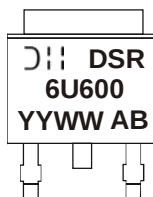
Package Pin Out Configuration

Ordering Information (Note 2)

Part Number	Case	Packaging
DSR6U600D1-13	DPAK (TO252-3L)	2500 pieces/reel

Notes: 1. No purposefully added lead.
2. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



DSR6U600 = Product Type Marking Code
AB = Foundry and Assembly Code
YYWW = Date Code Marking
YY = Last two digits of year (ex: 08 = 2008)
WW = Week (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}	600	V
Working Peak Reverse Voltage	V_{RWM}		
DC Blocking Voltage	V_{RM}		
Average Rectified Output Current	I_O	6	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	60	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Maximum Thermal Resistance			
Thermal Resistance Junction to Soldering (Note 3)	$R_{\theta JS}$	10	$^\circ\text{C/W}$
Thermal Resistance Junction to Ambient (Note 3)	$R_{\theta JA}$	47	
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +175	$^\circ\text{C}$

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	V_F	-	2.1	2.6	V	$I_F = 6\text{A}, T_J = 25^\circ\text{C}$
Leakage Current (Note 4)	I_R	-	-	50	μA	$V_R = 600\text{V}, T_J = 25^\circ\text{C}$
Reverse Recovery Time	t_{rr}	-	21	25	ns	$I_F = 0.5\text{A}, I_R = 1\text{A}, I_{RR} = 0.25\text{A}$
		-	33	45		$I_F = 1\text{A}, V_R = 30\text{V}, di/dt = 50\text{A}/\mu\text{s}$
Softness Factor	S	-	0.5	-	-	
Reverse Recovery Current	I_{RM}	-	4.3	-	A	$I_F = 6\text{A}, di/dt = 200\text{A}/\mu\text{s}, V_R = 400\text{V}, T_J = 125^\circ\text{C}$
Reverse Recovery Charges	Q_{rr}	-	220	-	nC	
Junction Capacitance	C_J	-	30	-	pF	4.0V, 1MHz

Notes: 3. Device mounted on Polymide substrate, 1" * 1", 2oz, copper, double-sided, PC boards.
 4. Short duration pulse test used to minimize self-heating effect.

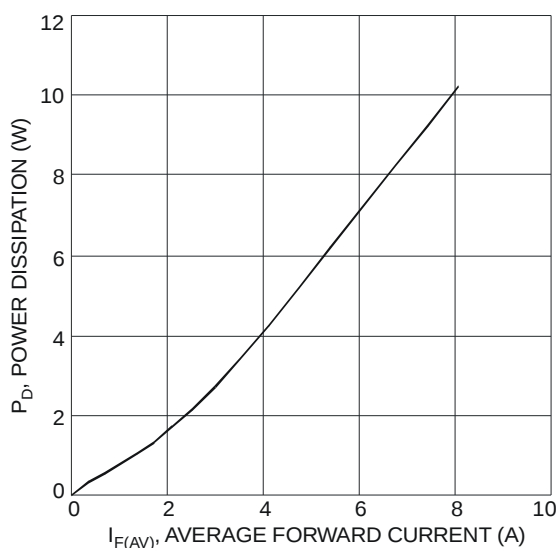


Fig. 1 Forward Power Dissipation

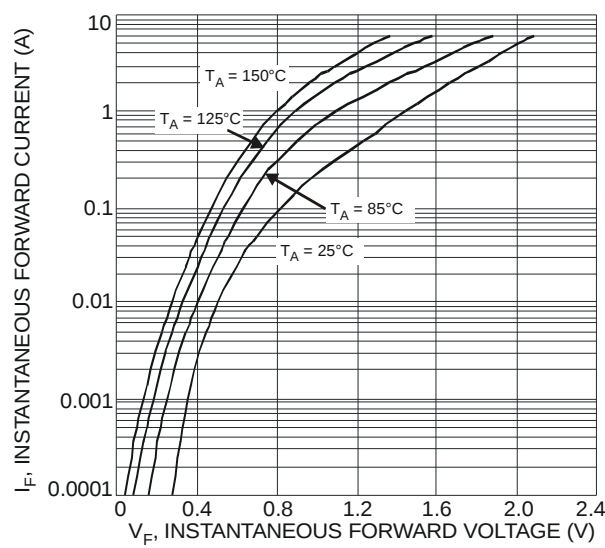


Fig. 2 Typical Forward Characteristics

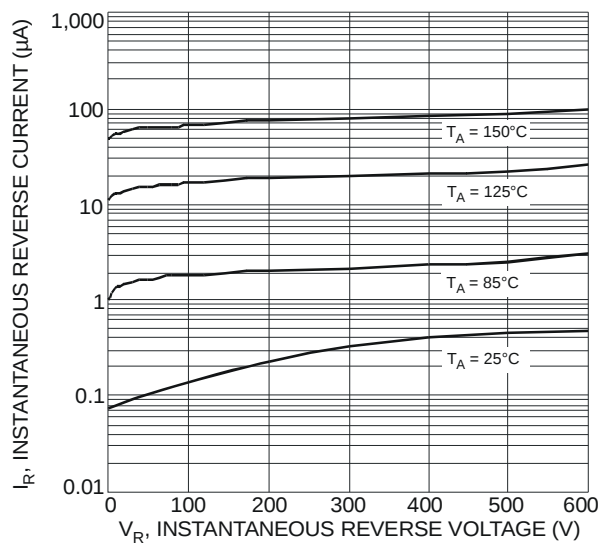


Fig. 3 Typical Reverse Characteristics

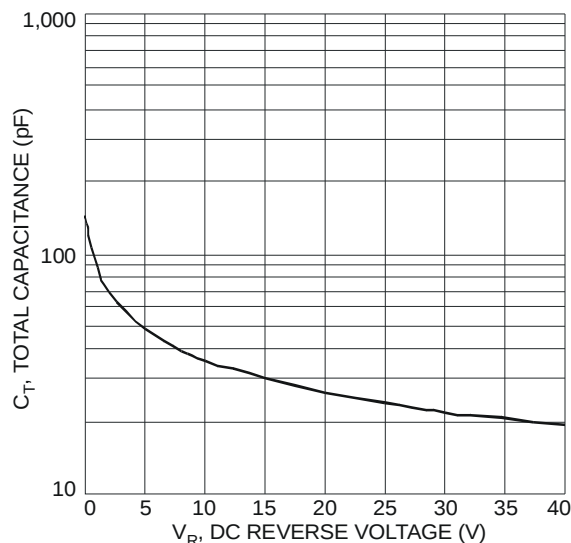


Fig. 4 Total Capacitance vs. Reverse Voltage

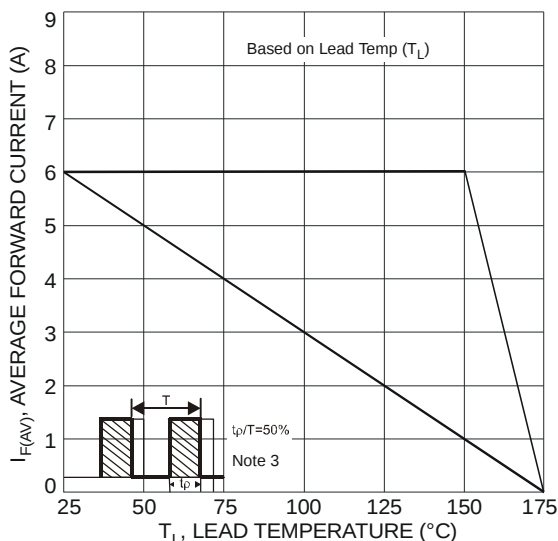


Fig. 5 Forward Current Derating Curve

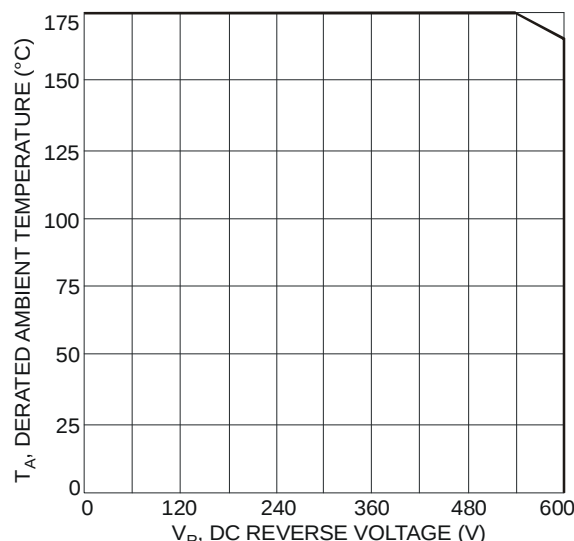
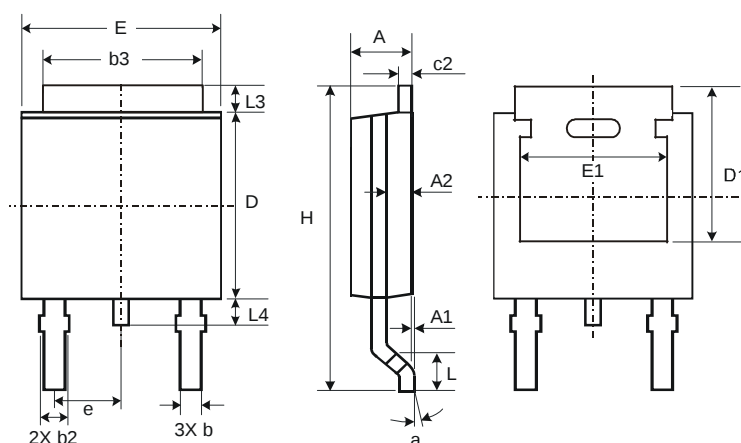


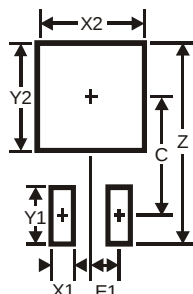
Fig. 6 Operating Temperature Derating

Package Outline Dimensions



TO252-3L			
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
c2	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



Dimensions	Value (in mm)
Z	11.6
X1	1.5
X2	7.0
Y1	2.5
Y2	7.0
C	6.9
E1	2.3

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