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Stocking Distributor

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[Diodes Incorporated](#)

[DSR6U600D1-13](#)

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PART OBSOLETE



**DSR6U600D1 / DSR6U600D1S**

**6A DIODESTAR RECTIFIER**

## Features

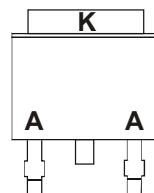
- DIODESTAR™ is a Proprietary Process for High Voltage Rectifiers which Delivers:
  - Ultra-Fast Reverse Recovery ( $t_{rr} < 30\text{ns}$ ) Giving a Rapid Switching Response
  - Soft Recovery for Low EMI Noise
  - Excellent High Temperature Stability
  - High Forward Surge Capability
- Enables High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

## Mechanical Data

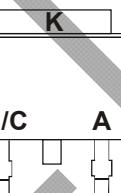
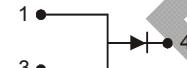
- Case: TO252 (DPAK)
- Case Material: Molded Plastic, UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208 (63)
- Weight: 0.4 grams (approximate)



Top View



Package Pin-Out Configuration  
DSR6U600D1



Package Pin-Out Configuration  
DSR6U600D1S

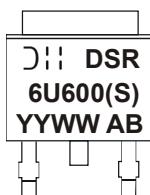


## Ordering Information (Note 2)

| Part Number    | Case  | Packaging        |
|----------------|-------|------------------|
| DSR6U600D1-13  | TO252 | 2500 pieces/reel |
| DSR6U600D1S-13 | TO252 | 2500 pieces/reel |

Notes: 1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2). All applicable RoHS exemptions applied.  
 2. For packaging details, go to our website at <http://www.diodes.com>.

## Marking Information



DSR600(S) = 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)



PART OBSOLETE



DSR6U600D1 / DSR6U600D1S

## 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                              | $V_{RM}$  |       |      |
| Average Rectified Output Current                 | $I_O$     | 6     | A    |
| Non-Repetitive Peak Forward Surge Current 8.3ms  | $I_{FSM}$ | 60    | A    |
| Single Half Sine-Wave Superimposed on Rated Load |           |       |      |
| Repetitive Peak Avalanche Power (1μs, 25°C)      | $P_{ARM}$ | 4,000 | W    |

## Thermal Characteristics

| Characteristic                                    | Symbol          | Value       | Unit |
|---|-----------------|-------------|------|
| Maximum Thermal Resistance                        |                 |             |      |
| Thermal Resistance Junction to Soldering (Note 3) | $R_{\theta JS}$ | 10          | °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 | °C   |

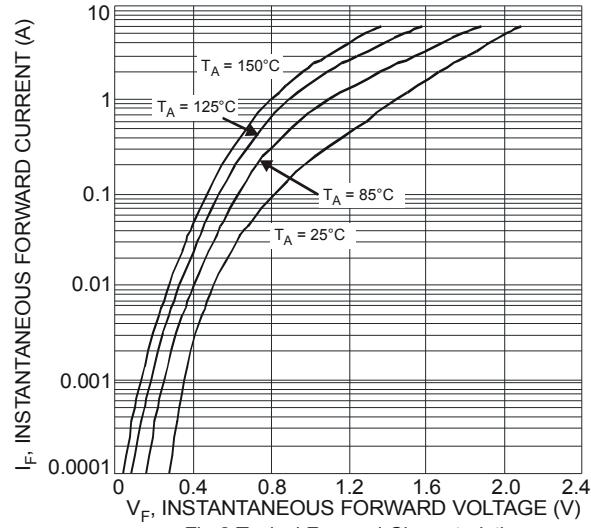
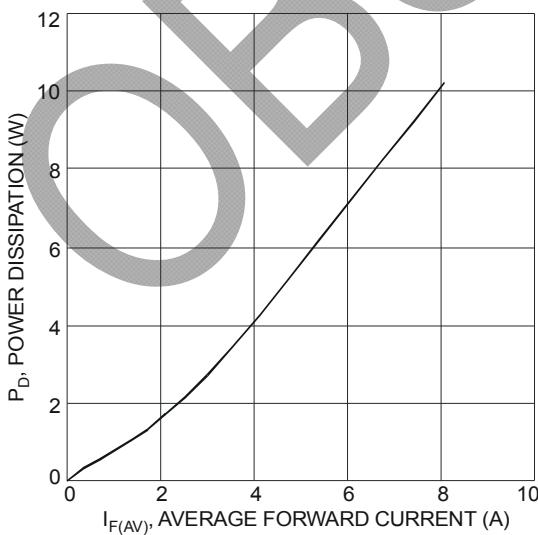
## Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| 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  |      | $I_F = 1\text{A}, V_R = 30\text{V}, \text{di/dt} = 50\text{A}/\mu\text{s}$                            |
| Softness Factor          | $S$      | -   | 0.5 | -   | -    |   |
| Reverse Recovery Current | $I_{RM}$ | -   | 4.3 | -   | A    | $I_F = 6\text{A}, \text{di/dt} = 200\text{A}/\mu\text{s}, V_R = 400\text{V}, T_J = 125^\circ\text{C}$ |
| Reverse Recovery Charges | $Q_{rr}$ | -   | 220 | -   | nC   |   |
| Junction Capacitance     | $C_J$    | -   | 30  | -   | pF   | $V_R = 4.0\text{V}, f = 1\text{MHz}$  |

Notes:

3. Device mounted on Polyimide substrate, 1" x 1", 2oz, copper, double-sided, PC boards.

4. Short duration pulse test used to minimize self-heating effect.





**PART OBSOLETE**



**DSR6U600D1 / DSR6U600D1S**

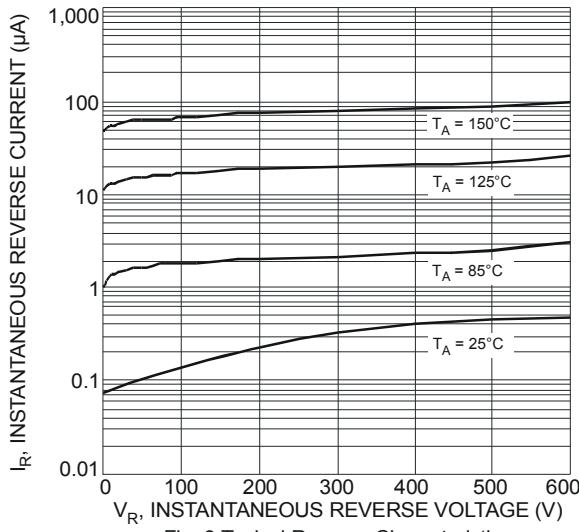


Fig. 3 Typical Reverse Characteristics

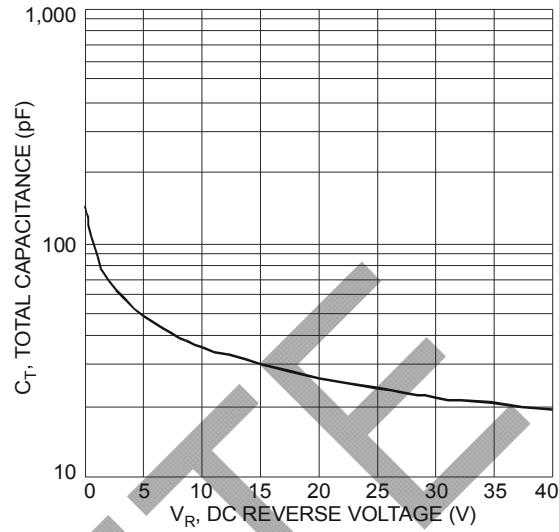


Fig. 4 Total Capacitance vs. Reverse Voltage

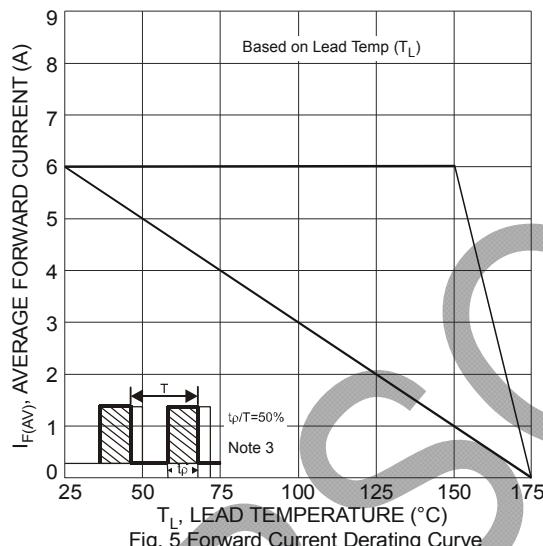


Fig. 5 Forward Current Derating Curve

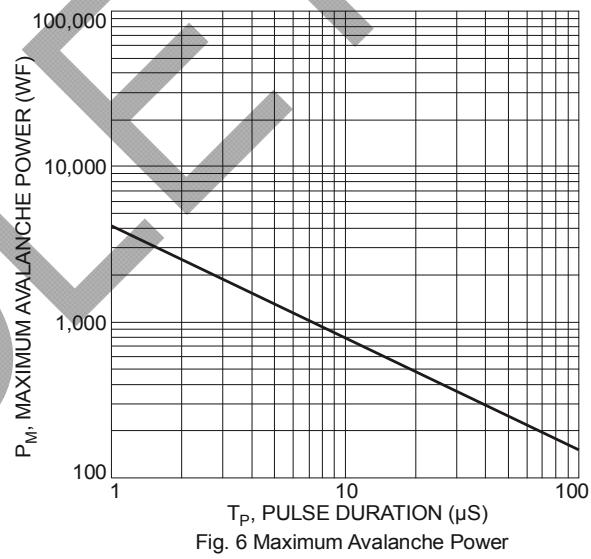


Fig. 6 Maximum Avalanche Power

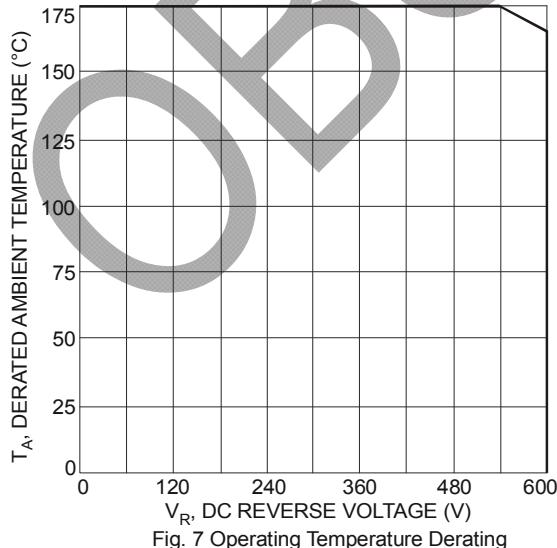
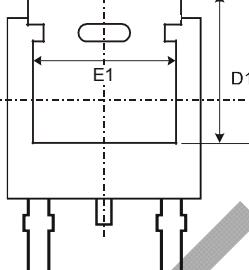
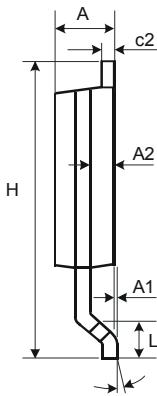
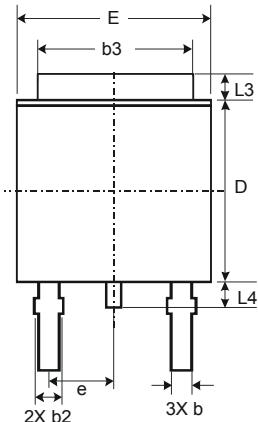


Fig. 7 Operating Temperature Derating

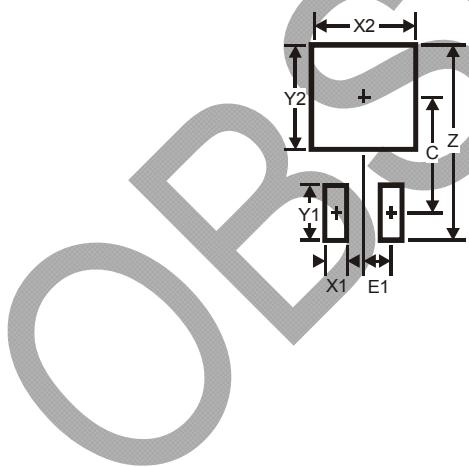
## Package Outline Dimensions



| TO252     |      |       |       |
|-----------|------|-------|-------|
| Dim       | Min  | Max   | Typ   |
| <b>A</b>  | 2.19 | 2.39  | 2.29  |
| <b>A1</b> | 0.00 | 0.13  | 0.08  |
| <b>A2</b> | 0.97 | 1.17  | 1.07  |
| <b>b</b>  | 0.64 | 0.88  | 0.783 |
| <b>b2</b> | 0.76 | 1.14  | 0.95  |
| <b>b3</b> | 5.21 | 5.46  | 5.33  |
| <b>c2</b> | 0.45 | 0.58  | 0.531 |
| <b>D</b>  | 6.00 | 6.20  | 6.10  |
| <b>D1</b> | 5.21 | —     | —     |
| <b>e</b>  | —    | —     | 2.286 |
| <b>E</b>  | 6.45 | 6.70  | 6.58  |
| <b>E1</b> | 4.32 | —     | —     |
| <b>H</b>  | 9.40 | 10.41 | 9.91  |
| <b>L</b>  | 1.40 | 1.78  | 1.59  |
| <b>L3</b> | 0.88 | 1.27  | 1.08  |
| <b>L4</b> | 0.64 | 1.02  | 0.83  |
| <b>a</b>  | 0°   | 10°   | —     |

All Dimensions in mm

## Suggested Pad Layout



| Dimensions | Value (in mm) |
|------------|---------------|
| <b>Z</b>   | 11.6          |
| <b>X1</b>  | 1.5           |
| <b>X2</b>  | 7.0           |
| <b>Y1</b>  | 2.5           |
| <b>Y2</b>  | 7.0           |
| <b>C</b>   | 6.9           |
| <b>E1</b>  | 2.3           |

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