

## Features

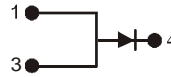
- DIODESTAR™ is a Proprietary Process for High Voltage Rectifiers which Delivers:
  - Ultra-Fast Reverse Recovery ( $t_{rr} < 30\text{ns}$ ) Giving a Rapid Switching Response
  - Soft Recovery for Low EMI Noise
  - Excellent High Temperature Stability
  - High Forward Surge Capability
- Enables High 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 ③
- Weight: 0.4 grams (approximate)



Top View



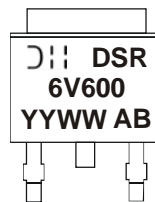
Package Pin Out Configuration

## Ordering Information (Note 2)

| Part Number   | Case            | Packaging        |
|---------------|-----------------|------------------|
| DSR6V600D1-13 | 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



DSR6V600 = 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<sub>A</sub> = 25°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 <sub>RRM</sub> | 600   | V    |
| Working Peak Reverse Voltage   | V <sub>RWM</sub> |       |      |
| DC Blocking Voltage  | V <sub>RM</sub>  |       |      |
| Average Rectified Output Current   | I <sub>O</sub>   | 6     | A    |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | I <sub>FSM</sub> | 60    | A    |

**Thermal Characteristics**

| Characteristic                                  | Symbol                            | Value       | Unit |
|---|-----------------------------------|-------------|------|
| Maximum Thermal Resistance                      |                                   |             |      |
| Thermal Resistance Junction to Case (Note 3)    | R <sub>θJC</sub>                  | 10          | °C/W |
| Thermal Resistance Junction to Ambient (Note 3) | R <sub>θJA</sub>                  | 47          |      |
| Operating and Storage Temperature Range         | T <sub>J</sub> , T <sub>STG</sub> | -65 to +175 | °C   |

**Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

| Characteristic           | Symbol          | Min | Typ | Max | Unit | Test Condition  |
|--------------------------|-----------------|-----|-----|-----|------|---|
| Forward Voltage Drop     | V <sub>F</sub>  | -   | -   | 3.0 | V    | I <sub>F</sub> = 6A, T <sub>J</sub> = 25°C  |
| Leakage Current (Note 4) | I <sub>R</sub>  | -   | -   | 50  | μA   | V <sub>R</sub> = 600V, T <sub>J</sub> = 25°C  |
| Reverse Recovery Time    | t <sub>rr</sub> | -   | 19  | 23  | ns   | I <sub>F</sub> = 0.5A, I <sub>R</sub> = 1A, I <sub>RR</sub> = 0.25A<br>I <sub>F</sub> = 1A, V <sub>R</sub> = 30V,<br>di/dt = 50A/μs |
|                          |                 | -   | 28  | 35  |      |   |
| Softness Factor          | S               | -   | 0.3 | -   | -    |   |
| Reverse Recovery Current | I <sub>RM</sub> | -   | 3.6 | -   | A    | I <sub>F</sub> = 6A, di/dt = 200A/μs,<br>V <sub>R</sub> = 400V, T <sub>J</sub> = 125°C  |
| Reverse Recovery Charges | Q <sub>rr</sub> | -   | 135 | -   | nC   |   |
| Junction Capacitance     | C <sub>J</sub>  | -   | 30  | -   | pF   | 4.0V, 1MHz  |

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

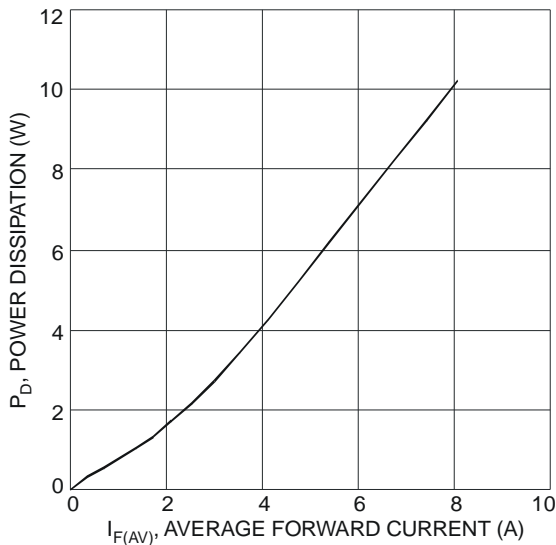


Fig. 1 Forward Power Dissipation

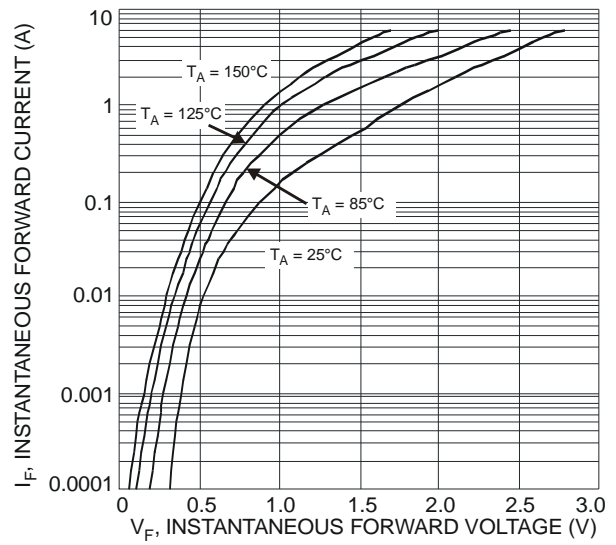


Fig.2 Typical Forward Characteristics

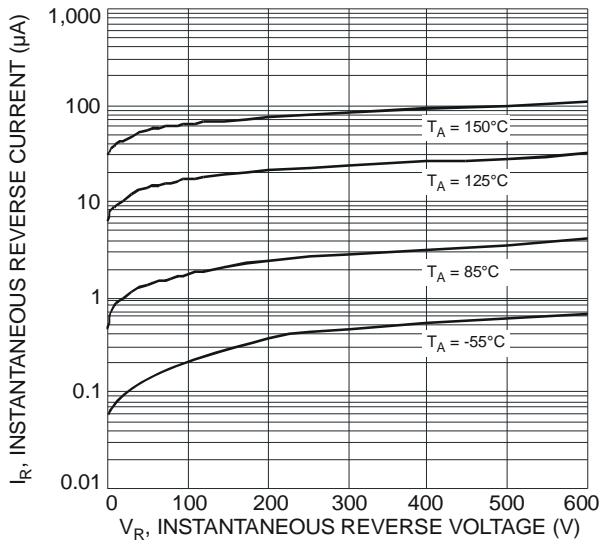


Fig. 3 Typical Reverse Characteristics

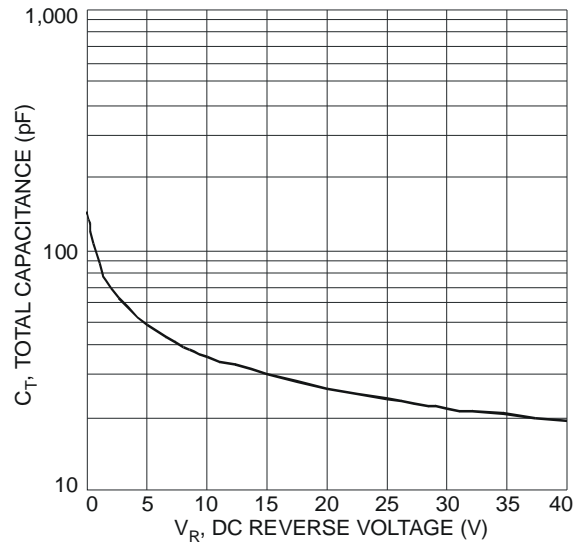


Fig. 4 Total Capacitance vs. Reverse Voltage

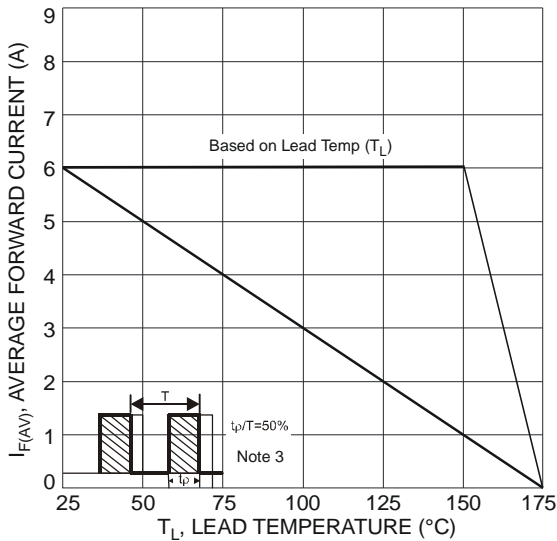


Fig. 5 Forward Current Derating Curve

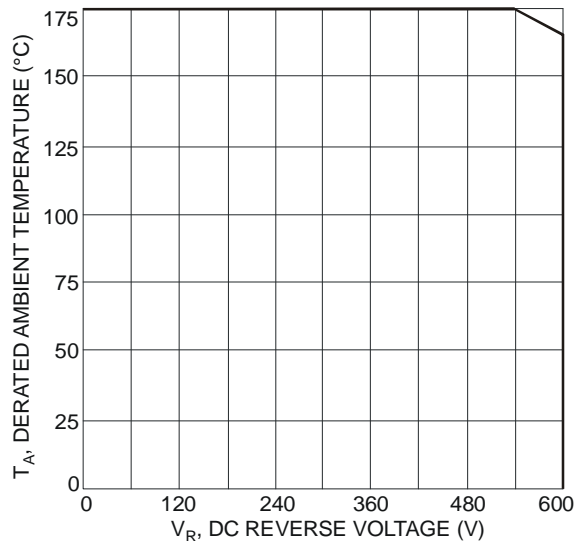
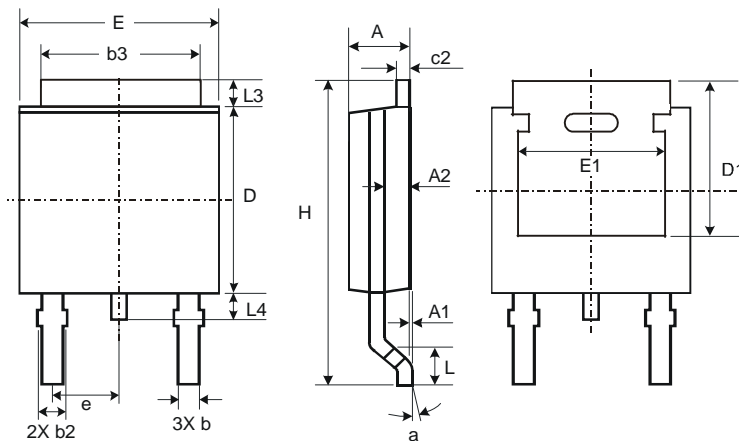


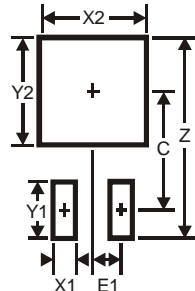
Fig. 6 Operating Temperature Derating

**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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