



**THE DATASHEET OF
DSR6U600P5-13**



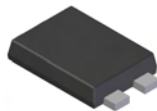
Product Summary

| V_{RRM} (V) | I_O (A) | V_F (V) | $T_{RR\ max}$ (nS) | $Q_{RR\ typ.}$ (nC) |
|---------------|-----------|-----------|--------------------|---------------------|
| 600 | 6 | 2.6 | 25 | 220 |

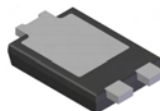
Description and Applications

This DIODESTAR rectifier has been optimized for Power Factor Correction circuits operating in Boundary Conduction Mode (BCM). It is also suitable for use as a re-circulating diode in High Intensity Discharge Lighting.

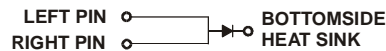
- Power Factor Correction
- High Intensity Discharge Lighting
- Motor control



Top View



Bottom View



Note: Pins Left & Right must be electrically connected at the printed circuit board.

Features and Benefits

- Optimized for V_F and t_{rr} to meet compromise requirements of Boundary conduction Mode (BCM) Power Factor Correction circuits
- Soft switching, low EMI
- 175°C maximum operating junction temperature
- Thermally efficient, small form factor package enables higher density designs
- **Lead Free Finish, RoHS Compliant (Note 1)**
- **“Green” Molding Compound (No Br, Sb)**

Mechanical Data

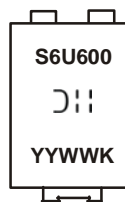
- Case: POWERDI[®]5
- Case Material: Molded Plastic, UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin annealed over Copper lead frame. Solderable per MIL-STD-202, Method 208 [Ⓔ]
- Weight 0.093 grams (approximate)

Ordering Information (Note 2)

| Part Number | Case | Packaging |
|---------------|------------------------|------------------|
| DSR6U600P5-13 | POWERDI [®] 5 | 5000/Tape & Reel |

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

Marking Information



S6U600 = Product Type Marking Code
 ⓂⓂⓂ = Manufacturers' Code Marking
 YYWW = Date Code Marking
 YY = Last Two Digits of Year (ex: 09 for 2009)
 WW = Week Code (01 – 53)
 K = Factory Designator

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} | 55 | A |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|-----------------|-------------|---------------------------|
| Maximum Thermal Resistance | | | |
| Thermal Resistance Junction to Ambient (Note 4) | $R_{\theta JA}$ | 104 | $^\circ\text{C}/\text{W}$ |
| Thermal Resistance Junction to Ambient (Note 5) | $R_{\theta JA}$ | 30 | $^\circ\text{C}/\text{W}$ |
| 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 3) | 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 | | |
| Softness Factor | S | - | 0.7 | - | - | |
| 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 | $V_R = 4.0\text{V}, 1\text{MHz}$ |

- Notes:
3. Short duration pulse test used to minimize self-heating effect.
 4. FR-4 PCB, 2oz. Copper, minimum recommended pad layout per <http://www.diodes.com>.
 5. Polyimide PCB, 2oz. Copper. Cathode pad dimensions 18.8mm x 14.4mm. Anode pad dimensions 5.6mm x 14.4mm.

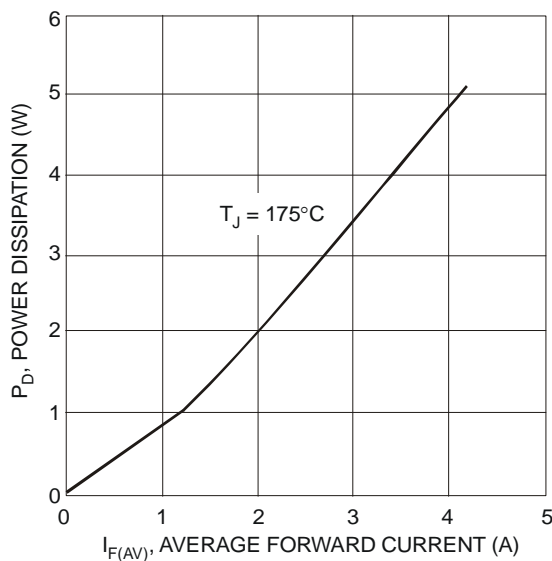


Fig. 1 Forward Power Dissipation

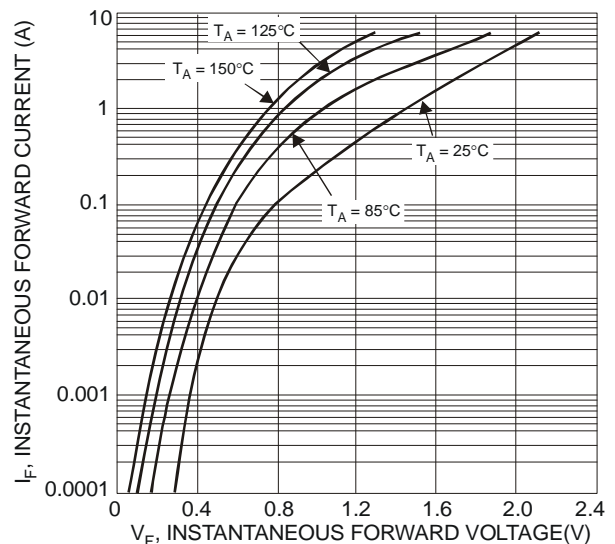
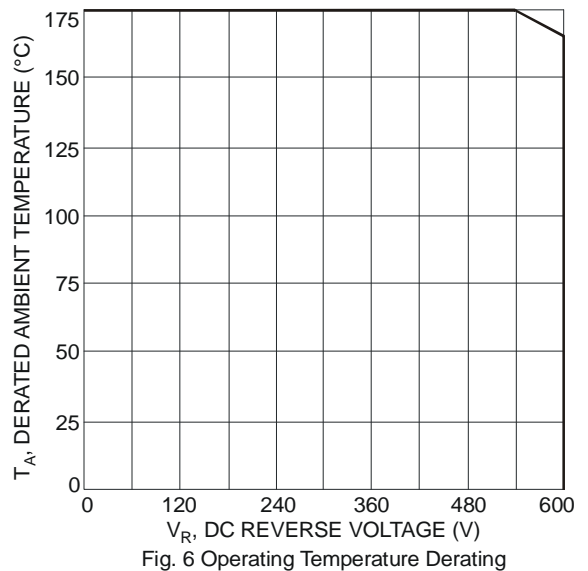
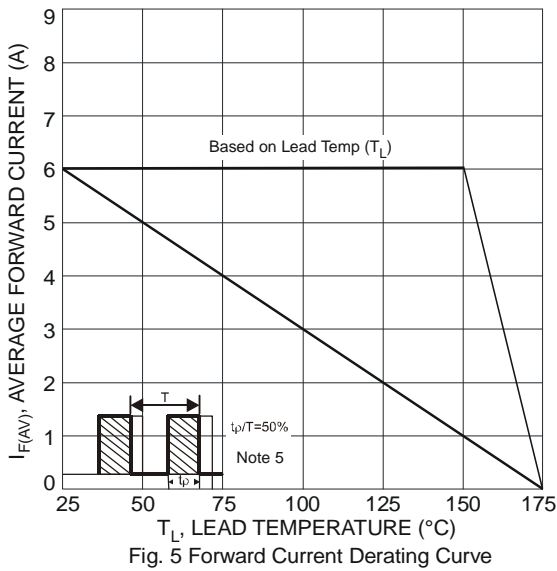
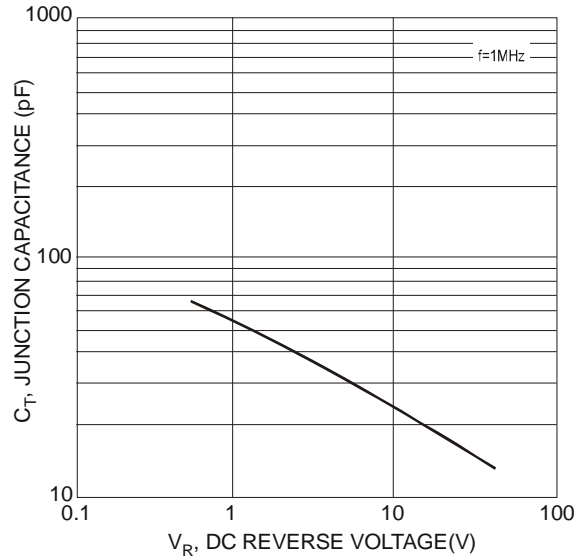
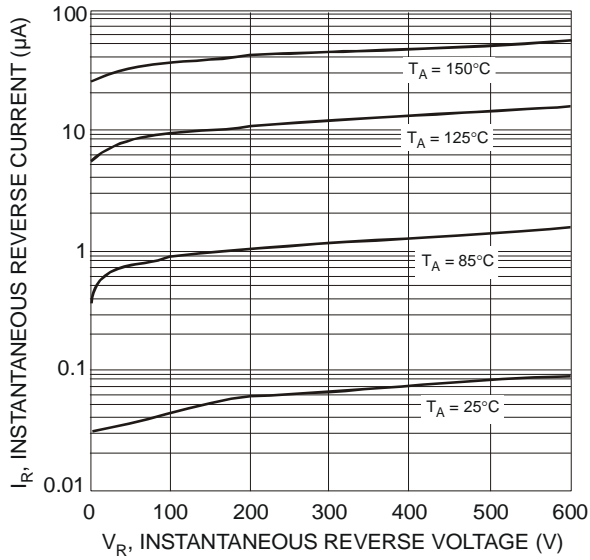
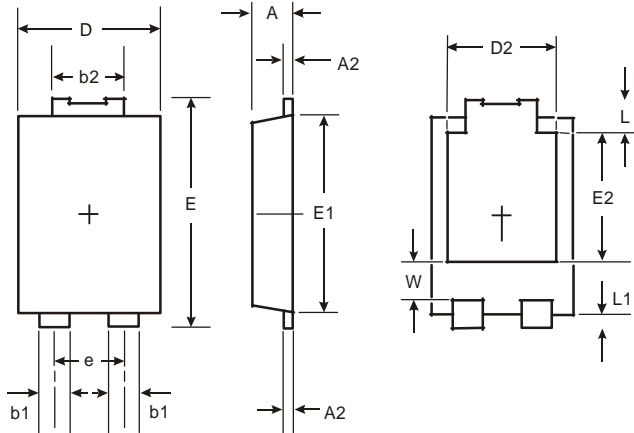


Fig. 2 Typical Forward Characteristics

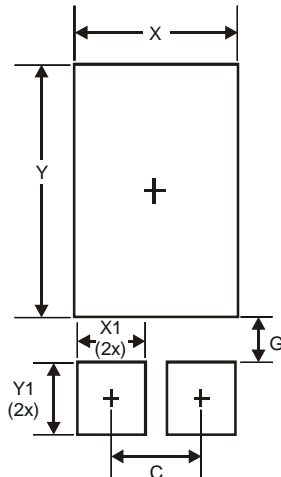


Package Outline Dimensions



| POWERDI [®] 5 | | |
|------------------------|-----------|------|
| Dim | Min | Max |
| A | 1.05 | 1.15 |
| A2 | 0.33 | 0.43 |
| b1 | 0.80 | 0.99 |
| b2 | 1.70 | 1.88 |
| D | 3.90 | 4.05 |
| D2 | 3.054 Typ | |
| E | 6.40 | 6.60 |
| e | 1.84 Typ | |
| E1 | 5.30 | 5.45 |
| E2 | 3.549 Typ | |
| L | 0.75 | 0.95 |
| L1 | 0.50 | 0.65 |
| W | 1.10 | 1.41 |
| All Dimensions in mm | | |

Suggested Pad Layout



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 1.840 |
| G | 0.852 |
| X | 3.360 |
| X1 | 1.390 |
| Y | 4.860 |
| Y1 | 1.400 |

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