

Features

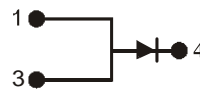
- Low Forward Voltage Drop
- Excellent High Temperature Stability
- Patented Super Barrier Rectifier Technology
- Soft, Fast Switching Capability
- **Lead Free Finish, RoHS Compliant (Note 1)**
- **“Green” Molding Compound (No Br, Sb)**
- **Qualified to AEC-Q101 Standards for High Reliability**

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 ⁽³⁾
- Weight: 0.33 grams (approximate)



Top View



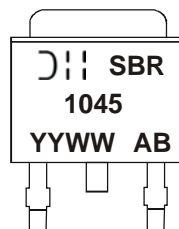
Polarity

Ordering Information (Note 2)

| Part Number | Qualification | Case | Packaging |
|---------------|---------------|--------------|---------------------------|
| SBR1045D1-13 | Commercial | TO252 (DPAK) | 2500/Tape & Reel, 13-inch |
| SBR1045D1Q-13 | Automotive | TO252 (DPAK) | 2500/Tape & Reel, 13-inch |

- 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



SBR1045 = 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} | 45 | V |
| Working Peak Reverse Voltage | V_{RWM} | | |
| DC Blocking Voltage | V_{RM} | | |
| RMS Reverse Voltage | $V_{R(RMS)}$ | 32 | V |
| Average Rectified Output Current @ $T_C = 140^\circ\text{C}$ | I_O | 10 | A |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | I_{FSM} | 90 | A |
| Repetitive Peak Avalanche Power (1 μs , 25 $^\circ\text{C}$) | P_{ARM} | 5000 | W |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|-----------------|-------------|---------------------------|
| Maximum Thermal Resistance | | | |
| Thermal Resistance Junction to Ambient (Note 3) | $R_{\theta JA}$ | 29 | $^\circ\text{C}/\text{W}$ |
| Thermal Resistance Junction to Case (Note 3) | $R_{\theta JC}$ | 3 | |
| 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 4) | $V_{(BR)R}$ | 45 | - | - | V | $I_R = 0.45\text{mA}$ |
| Forward Voltage Drop (per leg) | V_F | - | 0.42 | 0.48 | V | $I_F = 5\text{A}, T_J = 25^\circ\text{C}$ |
| | | - | 0.37 | 0.41 | | $I_F = 5\text{A}, T_J = 125^\circ\text{C}$ |
| | | - | - | 0.58 | | $I_F = 10\text{A}, T_J = 25^\circ\text{C}$ |
| | | - | 0.50 | 0.56 | | $I_F = 10\text{A}, T_J = 125^\circ\text{C}$ |
| Leakage Current (Note 4) | I_R | - | 50 | 500 | μA | $V_R = 45\text{V}, T_J = 25^\circ\text{C}$ |
| | | - | 12 | 40 | mA | $V_R = 45\text{V}, T_J = 125^\circ\text{C}$ |
| Total Capacitance | C_T | - | 400 | - | pF | $V_R = 5\text{V}, f = 1\text{MHz}$ $T_J = 25^\circ\text{C}$ |

- Notes:
- Device mounted on polyimide substrate, 240mm² Copper pad, double-sided PC Board.
 - Short duration pulse test used to minimize self-heating effect.
 - Device mounted on polyimide substrate, 2" * 2" Copper pad, double-sided PC Board with minimum recommended pad layout.

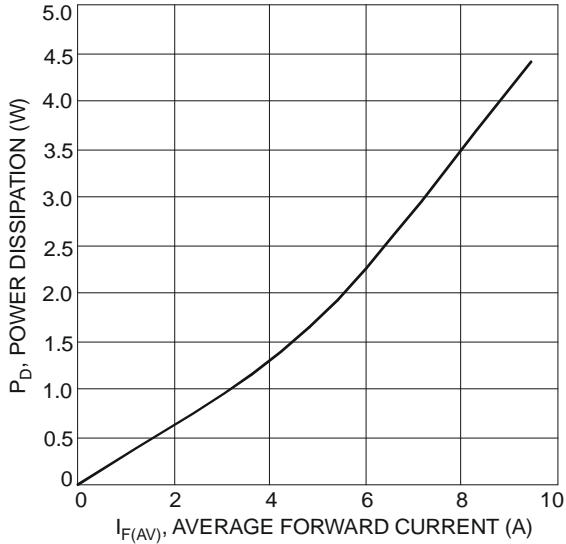


Fig. 1 Forward Power Dissipation

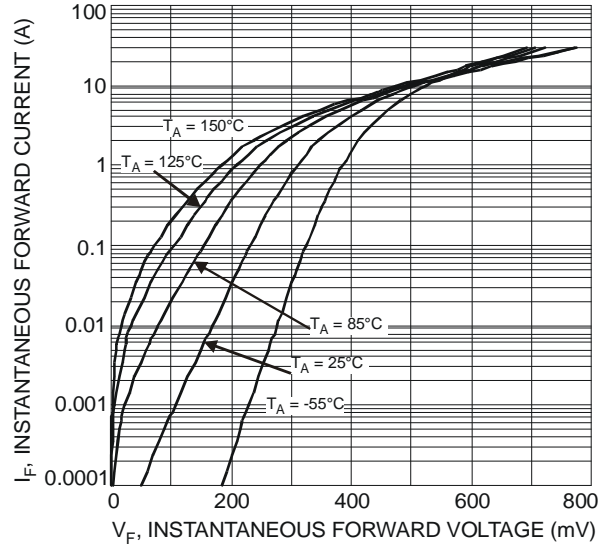


Fig. 2 Typical Forward Characteristics

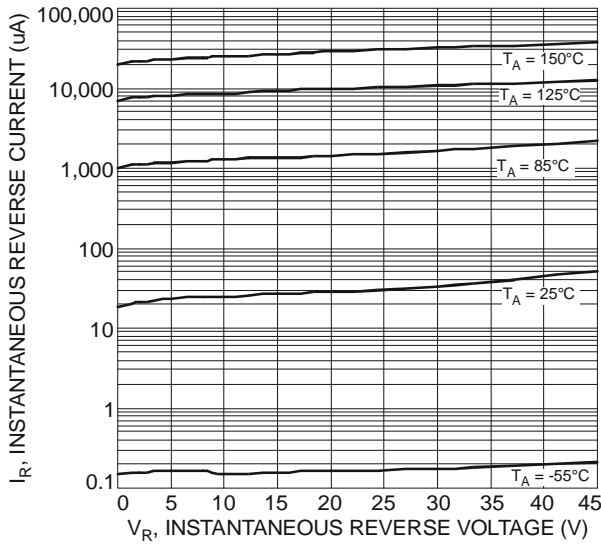


Fig. 3 Typical Reverse Characteristics

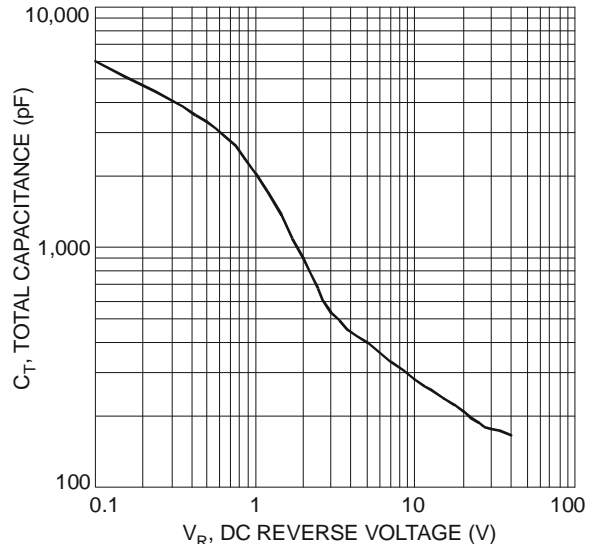


Fig. 4 Total Capacitance vs. Reverse Voltage

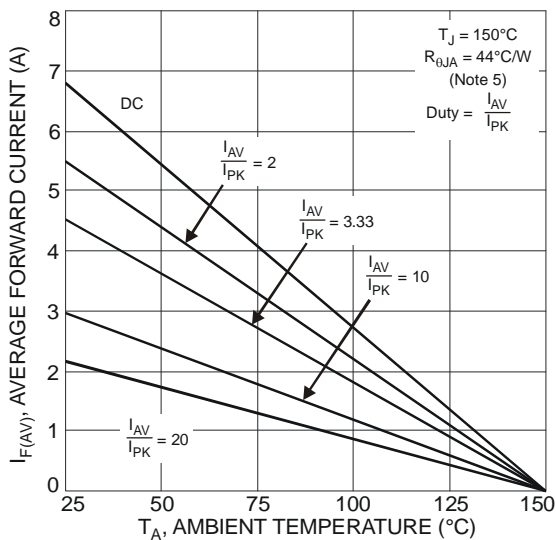


Fig. 5 Forward Current Derating Curve

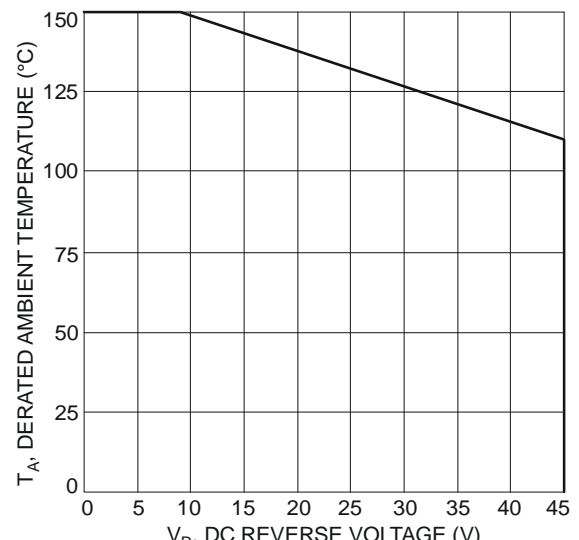


Fig. 6 Operating Temperature Derating

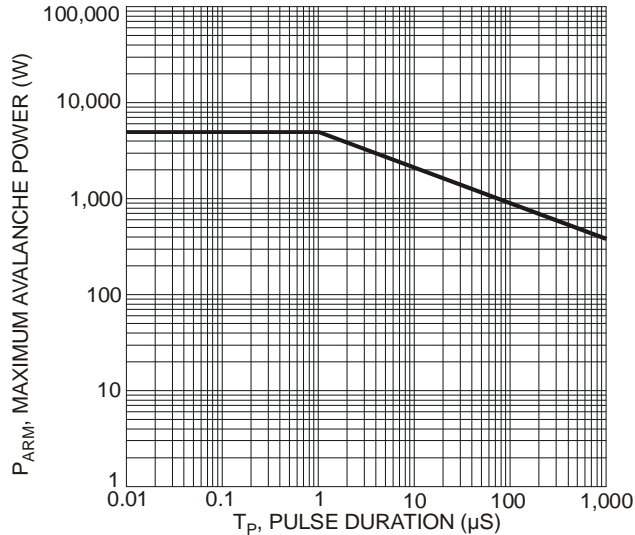
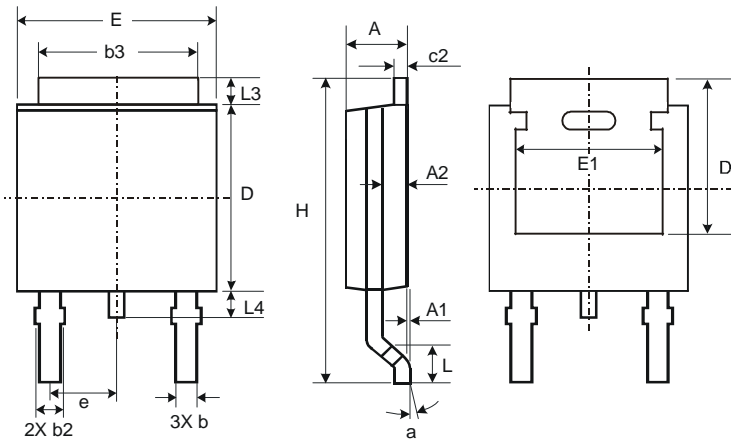


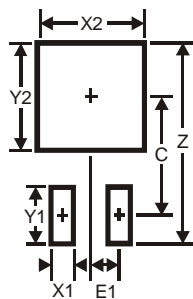
Fig. 7 Maximum Avalanche Power Curve

Package Outline Dimensions



| TO252 | | | |
|----------------------|------|-------|-------|
| 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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