

Features

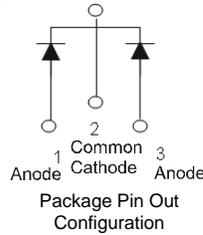
- Ultra Low Forward Voltage Drop
- Low Leakage Current
- Excellent High Temperature Stability
- Patented Super Barrier Rectifier Technology
- Soft, Fast Switching Capability
- 175°C Operating Junction Temperature
- **Lead Free Finish, RoHS Compliant (Note 1)**
- **Also Available in Green Molding Compound (Note 2)**

Mechanical Data

- Case: D²PAK
- 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: 1.6 grams (approximate)



D²PAK

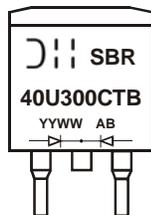


Ordering Information (Notes 2 & 3)

| Part Number | Case | Packaging |
|-------------------|--------------------|------------------------|
| SBR40U300CTB | D ² PAK | 50 pieces/tube |
| SBR40U300CTB-G | D ² PAK | 50 pieces/tube |
| SBR40U300CTB-13 | D ² PAK | 800 pieces/Tape & Reel |
| SBR40U300CTB-13-G | D ² PAK | 800 pieces/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 Green Molding Compound version part numbers, add "-G" suffix to part number above. Examples: SBR40U300CTB-G.
 3. For packaging details, go to our website at <http://www.diodes.com>.

Marking Information



SBR40U300CTB = 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 (Per Leg) @ $T_A = 25^\circ\text{C}$ 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} | 300 | V |
| Working Peak Reverse Voltage | V_{RWM} | | |
| DC Blocking Voltage | V_{RM} | | |
| Average Rectified Output Current | I_O | 20 | A |
| Per Leg | | 40 | |
| Total | | | |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | I_{FSM} | 200 | A |

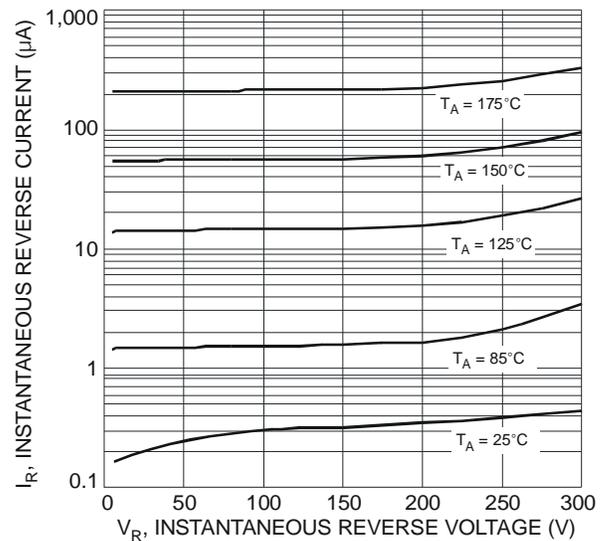
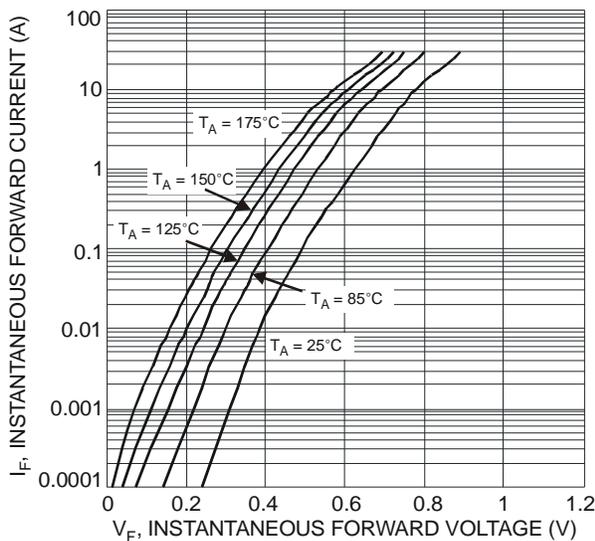
Thermal Characteristics (Per Leg)

| Characteristic | Symbol | Value | Unit |
|--|-----------------|-------------|--------------------|
| Typical Thermal Resistance | | | |
| Thermal Resistance Junction to Case (Note 4) | $R_{\theta JC}$ | 2 | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range | T_J, T_{STG} | -65 to +175 | $^\circ\text{C}$ |

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

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--------------------------------|----------|-----|------|------|---------------|--|
| Forward Voltage Drop (per leg) | V_F | - | 0.87 | 0.92 | V | $I_F = 20\text{A}, T_J = 25^\circ\text{C}$ $I_F = 20\text{A}, T_J = 125^\circ\text{C}$ |
| Leakage Current (Note 5) | I_R | - | - | 100 | μA | $V_R = 300\text{V}, T_J = 25^\circ\text{C}$ |
| | | - | - | 50 | mA | $V_R = 300\text{V}, T_J = 125^\circ\text{C}$ |
| Reverse Recovery Time | t_{rr} | - | 32 | 50 | ns | $I_F = 0.5\text{A}, I_R = 1\text{A}, I_{RR} = 0.25\text{A}$ |
| | | - | 26 | 35 | | $I_F = 1\text{A}, V_R = 30\text{V}, di/dt = 100\text{A}/\mu\text{s}, T_J = 25^\circ\text{C}$ |

Notes: 4. FR-4 PCB, 2 oz. Copper, minimum recommended pad layout per <http://www.diodes.com/datasheets/ap02001.pdf>
5. Short duration pulse test used to minimize self-heating effect.



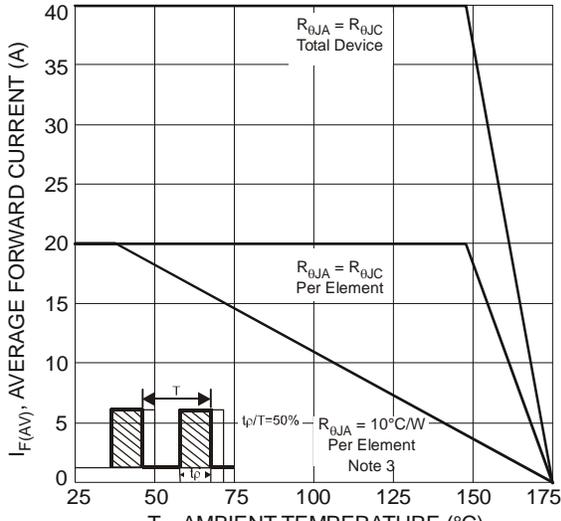
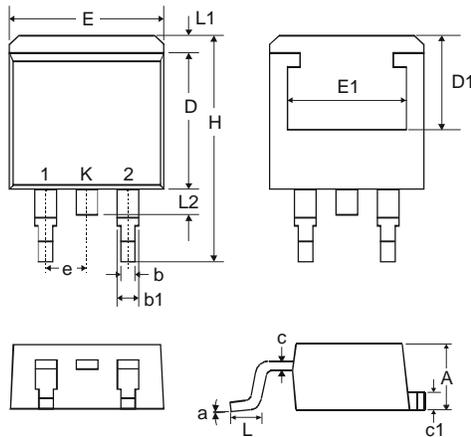


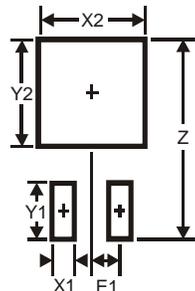
Fig. 3 Forward Current Derating Curve

Package Outline Dimensions



| D ² PAK | | |
|----------------------|----------|-------|
| Dim | Min | Max |
| A | 4.07 | 4.82 |
| b | 0.51 | 0.99 |
| b1 | 1.15 | 1.77 |
| c | 0.356 | 0.58 |
| c1 | 1.143 | 1.65 |
| D | 8.39 | 9.65 |
| D1 | 6.55 | — |
| E | 9.66 | 10.66 |
| E1 | 6.23 | — |
| e | 2.54 Typ | |
| H | 14.61 | 15.87 |
| L | 1.78 | 2.79 |
| L1 | — | 1.67 |
| L2 | — | 1.77 |
| a | 0° | 8° |
| All Dimensions in mm | | |

Suggested Pad Layout



| Dimensions | Value (in mm) |
|------------|---------------|
| Z | 16.9 |
| X1 | 1.1 |
| X2 | 10.8 |
| Y1 | 3.5 |
| Y2 | 7.01 |
| E1 | 2.5 |

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Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.