

Product Summary

| V _{RRM} (V) | I _O (A) | V _F MAX(V) @+25°C | I _R MAX (mA) @+25°C |
|----------------------|--------------------|---------------------------------|-----------------------------------|
| 60 | 30 | 0.63 | 0.33 |

Description and Applications

This Super Barrier Rectifier (SBR) diode has been designed to meet the stringent requirements of Automotive Applications. It is ideally suited to use as :

- Polarity Protection Diode
- Re-circulating Diode
- Switching Diode

Features and Benefits

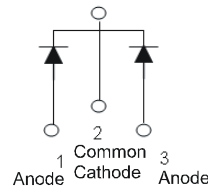
- 100% Avalanche Tested
- Patented SBR technology provides a superior avalanche capability than schottky diodes ensuring more rugged and reliable end applications.
- Reduced ultra-low forward voltage drop (V_F); better efficiency and cooler operation.
- Reduced high temperature reverse leakage; increased reliability against thermal runaway failure in high temperature operation
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: TO263 (D²PAK)
- Case Material: Molded Plastic, "Green" Molding compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Polarity: See Below
- Weight: 1.6 grams (approximate)



Top View



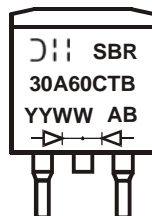
Package Pin-Out Configuration

Ordering Information (Note 4)

| Part Number | Compliance | Case | Packaging |
|-----------------|------------|-------|-----------------|
| SBR30A60CTBQ-13 | Automotive | TO263 | 800/Tape & Reel |

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>

Marking Information



SBR30A60CTB = Product Type Marking Code
 AB = Foundry and Assembly Code
 YYWW = Date Code Marking
 YY = Last two digits of year (ex: 13 = 2013)
 WW = Week (01 - 53)

Maximum Ratings (@T_A = +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 _{RRM} | 60 | V |
| Working Peak Reverse Voltage | V _{RWM} | | |
| DC Blocking Voltage | V _{RM} | | |
| Average Rectified Output Current | I _O | 30 | A |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | I _{FSM} | 180 | A |
| Repetitive Peak Avalanche Power (1μs, +25°C) | P _{ARM} | 6000 | W |
| Non-Repetitive Avalanche Energy (T _J = +25°C, I _{AS} = 12A, L = 10mH) | E _{AS} | 600 | mJ |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|-------------|------|
| Typical Thermal Resistance Junction to Case (Note 5) | R _{θJC} | 9 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--------------------------|----------------|-----|------|------|------|---|
| Forward Voltage Drop | V _F | - | 0.57 | 0.63 | V | I _F = 15.0A, T _J = +25°C |
| | | - | 0.55 | - | | I _F = 15.0A, T _J = +125°C |
| Leakage Current (Note 6) | I _R | - | 0.11 | 0.33 | mA | V _R = 60V, T _J = +25°C |
| | | - | 40 | - | | V _R = 60V, T _J = +125°C |

- Notes: 5. Device mounted on Polyimide substrate, 125mm² copper pad, double-sided, PC boards.
6. Short duration pulse test used to minimize self-heating effect.

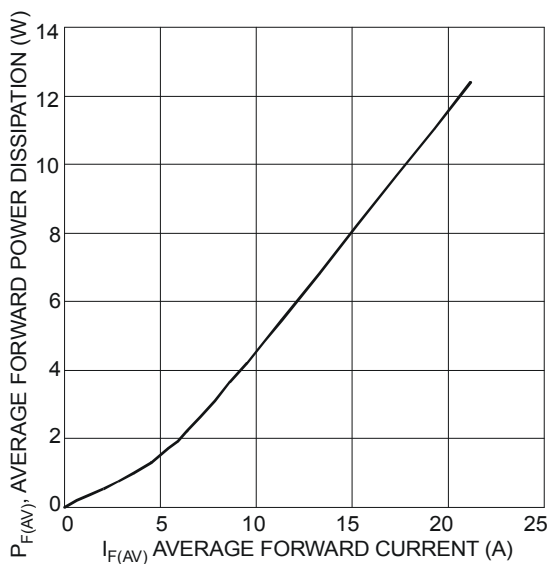


Figure 1 Forward Power Dissipation

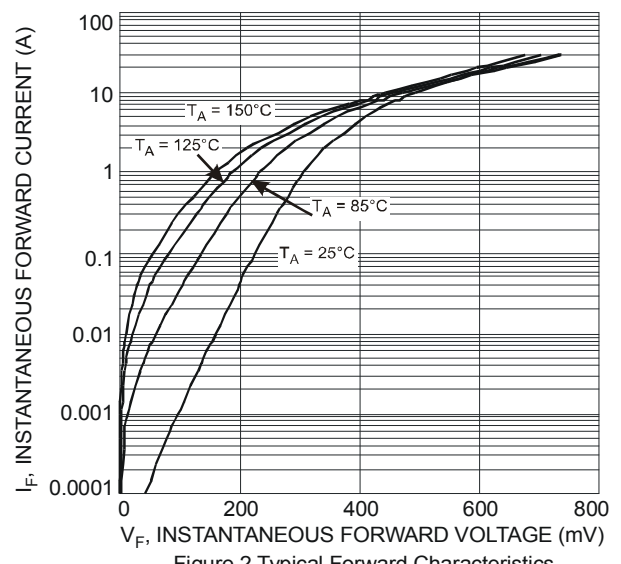


Figure 2 Typical Forward Characteristics

7. Device mounted on Polyimide substrate, 125mm² copper pad, double-sided, PC boards.

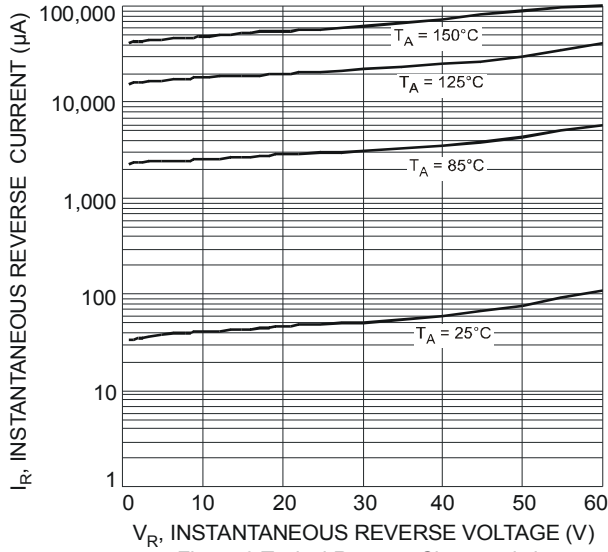


Figure 3 Typical Reverse Characteristics

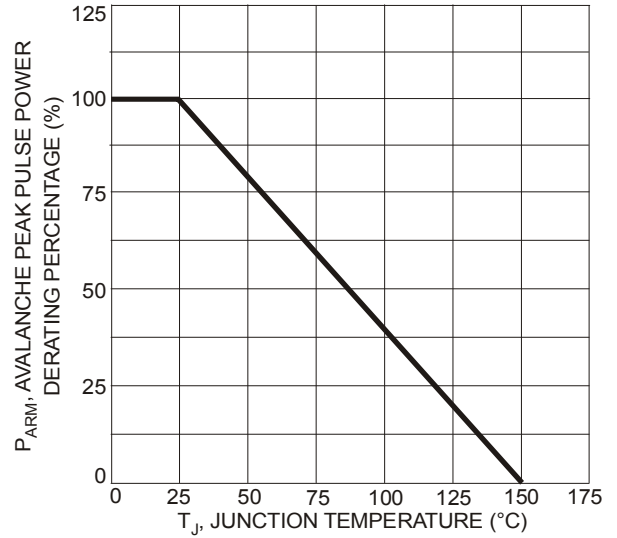


Figure 4 Pulse Derating Curve, Per Element

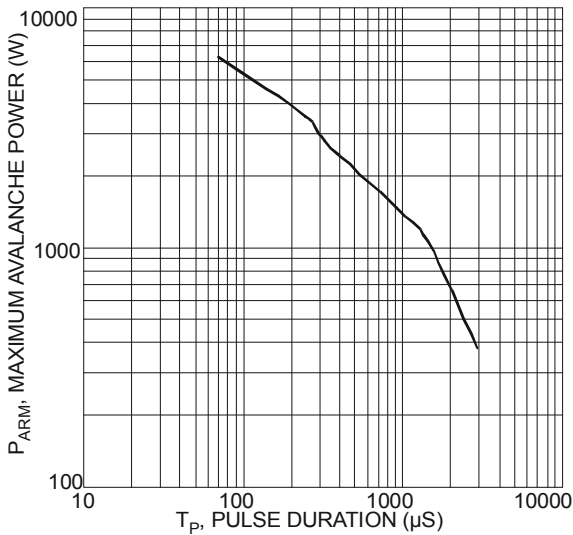


Figure 5 Maximum Avalanche Power Curve, Per Element

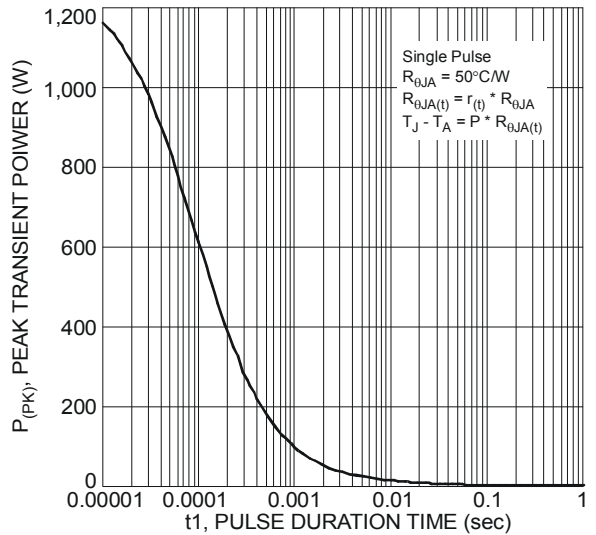


Figure 6 Single Pulse Maximum Power Dissipation

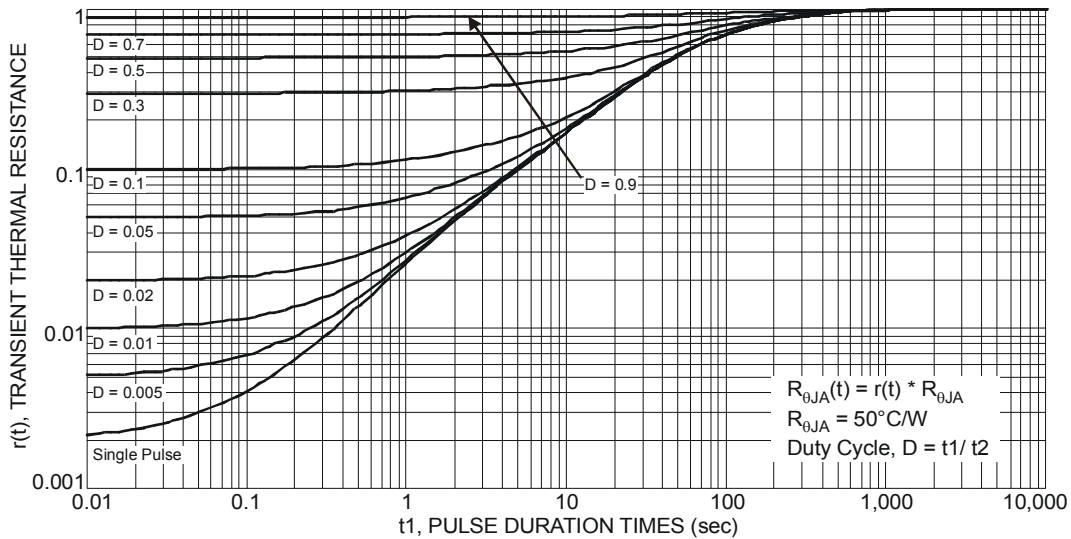
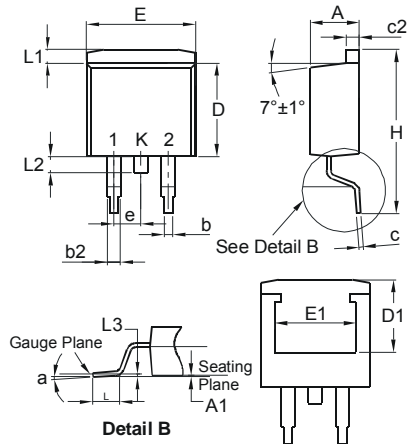


Figure 7 Transient Thermal Resistance

Package Outline Dimensions

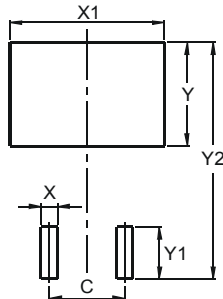
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



| TO263 | | |
|-----------------------------|----------|-------|
| Dim | Min | Max |
| A | 4.07 | 4.82 |
| A1 | 0.00 | 0.25 |
| b | 0.51 | 0.99 |
| b2 | 1.15 | 1.77 |
| c | 0.356 | 0.73 |
| c2 | 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

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 5.08 |
| X | 1.10 |
| X1 | 10.41 |
| Y | 3.50 |
| Y1 | 7.01 |
| Y2 | 15.99 |

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