




THE DATASHEET OF L78M12ABDT-TR



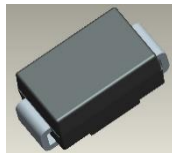
Features

- Guard Ring Die Construction for Transient Protection
- Ideally Suited for Automated Assembly
- Low Power Loss, High Efficiency
- Surge Overload Rating to 125A Peak
- For Use in Low Voltage, High Frequency Inverters, Free Wheeling, and Polarity Protection Applications
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. “Green” Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](https://www.diodes.com/quality/product-definitions/) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**
- **An Automotive-Compliant Part is Available Under Separate Datasheet ([B340BQ–B360BQ](#))**

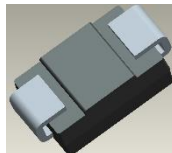
Mechanical Data

- Package: SMB
- Package Material: Molded Plastic. "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Lead Free Plating (Matte Tin Finish). Solderable per MIL-STD-202, Method 208 
- Polarity: Cathode Band
- Weight: 0.093 grams (Approximate)

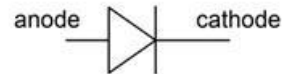
SMB



Top View



Bottom View



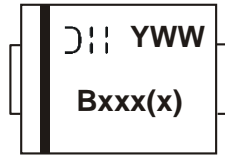
Ordering Information (Note 4)

| Part Number* | Compliance | Package | Packing | |
|--------------|------------|---------|---------|-------------|
| | | | Qty. | Carrier |
| B3xxB-13-F | Commercial | SMB | 3000 | Tape & Reel |

*xx = Device type, e.g. B320B-13-F (SMB package).

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



Bxxx(x) = Product Type Marking Code, ex: B320B
 ⏏|| = Manufacturer's Code Marking
 YWW = Date Code Marking
 Y = Last Digit of Year (ex: 2 for 2022)
 WW = Week Code (01 to 53)

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Single phase, half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%.

| Characteristic | Symbol | B320B | B330B | B340B | B350B | B360B | Unit |
|--|------------------|-------|-------|-------|-------|-------|------|
| Peak Repetitive Reverse Voltage | V _{RRM} | | | | | | |
| Working Peak Reverse Voltage | V _{RWM} | 20 | 30 | 40 | 50 | 60 | V |
| DC Blocking Voltage | V _R | | | | | | |
| Average Rectified Output Current @ T _T = +100°C | I _o | 3.0 | | | | | A |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load | I _{FSM} | 100 | | | | | A |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|------------------|-------------|------|
| Typical Thermal Resistance, Junction to Terminal (Note 5) | R _{θJT} | 25 | °C/W |
| Typical Thermal Resistance, Junction to Ambient (Note 5) | R _{θJA} | 95 | °C/W |
| Operating Temperature Range | T _J | -55 to +150 | °C |
| Storage Temperature Range | 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 B320B, B330B, B340B B350B, B360B | V _F | — | — | 0.50 0.70 | V | I _F = 3.0A, T _A = +25°C |
| Leakage Current (Note 6) | I _R | — | — | 0.5 20 | mA | @ Rated V _R , T _A = +25°C @ Rated V _R , T _A = +100°C |
| Total Capacitance | C _T | — | 200 | — | pF | V _R = 4V, f = 1MHz |

Notes: 5. Thermal resistance: Junction to terminal, unit mounted on glass epoxy substrate with 2 x 3mm copper pad.
 6. Short duration pulse test used to minimize self-heating effect.

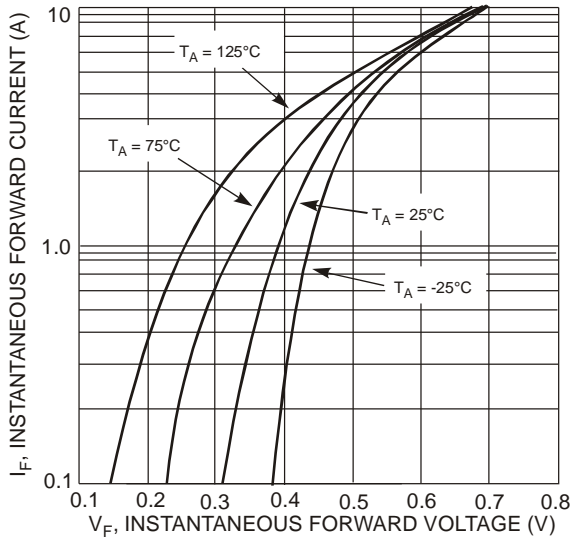


Figure 1 Typical Forward Characteristics - B320B thru B340B

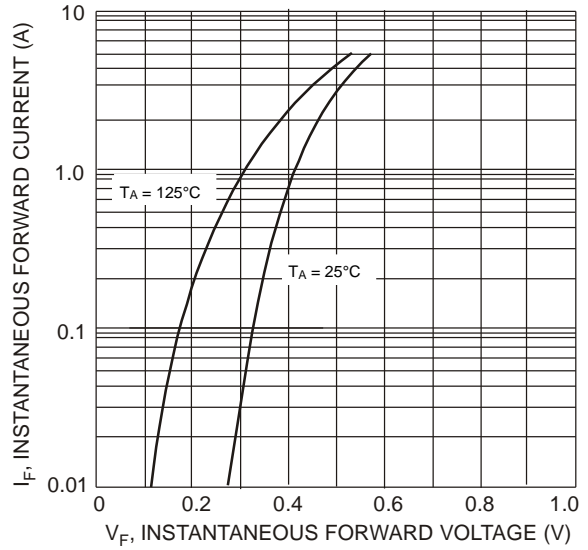


Figure 2 Typical Forward Characteristics - B350B thru B360B

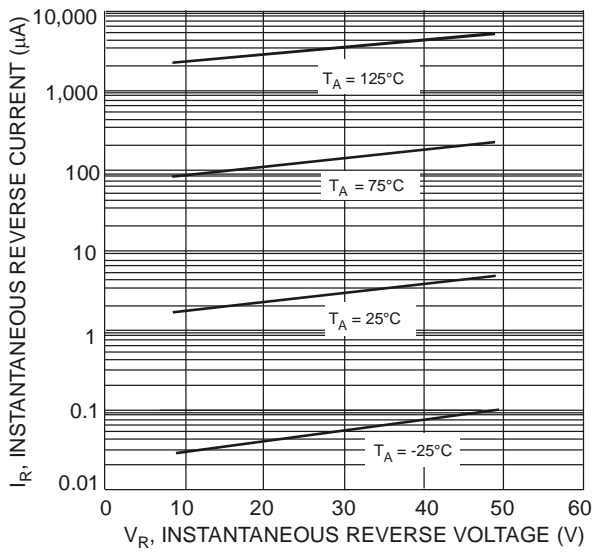


Figure 3 Typical Reverse Characteristics, B320B thru B340B

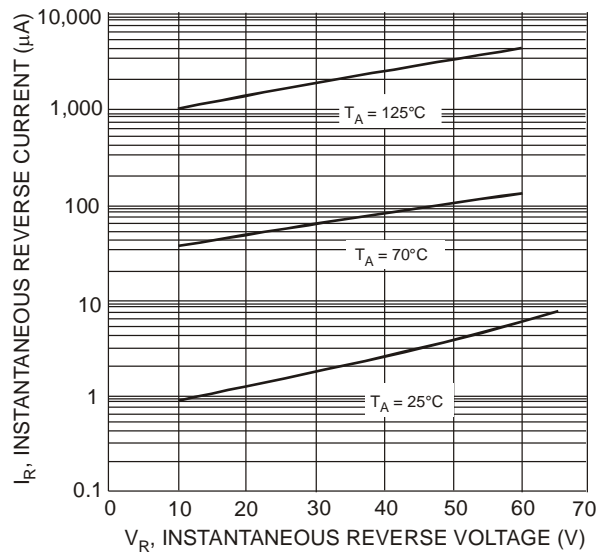


Figure 4 Typical Reverse Characteristics, B350B thru B360B

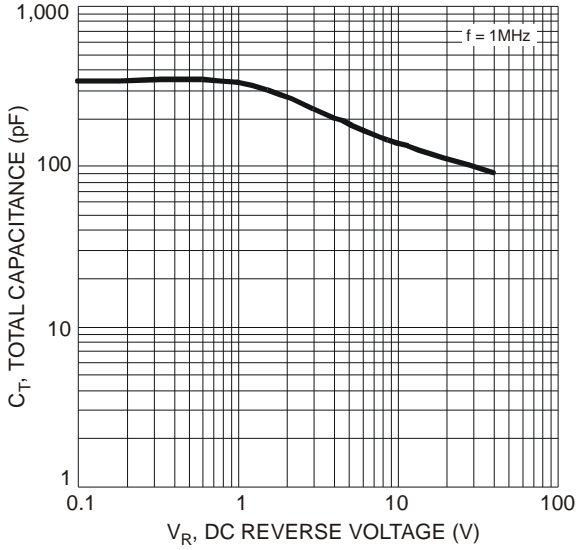


Figure 5 Total Capacitance vs. Reverse Voltage

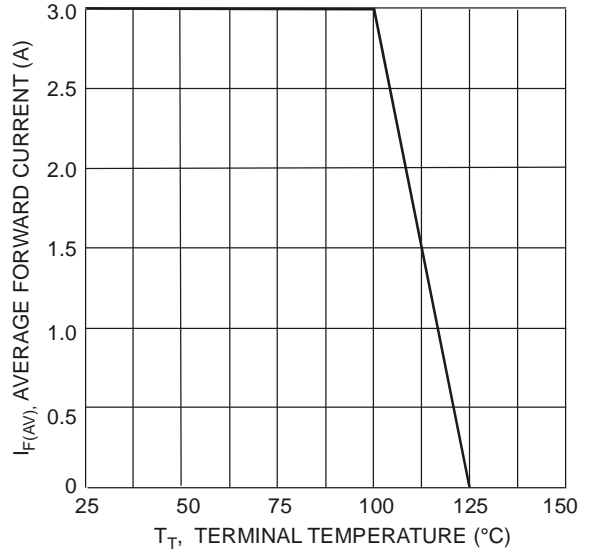


Figure 6 Forward Current Derating Curve

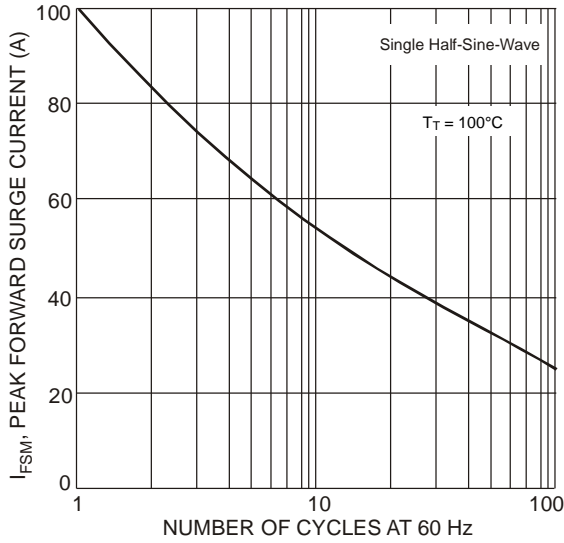
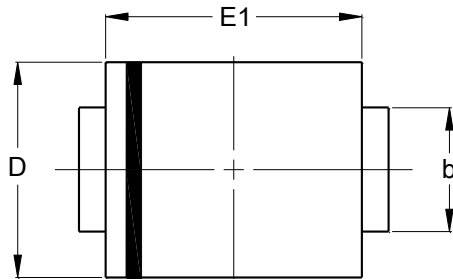


Figure 7 Max Non-Repetitive Peak Forward Surge Current

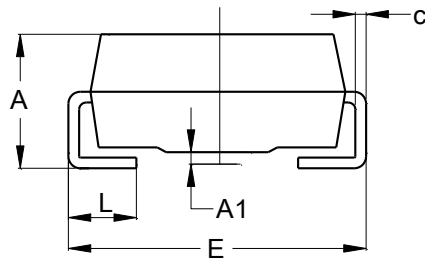
Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SMB



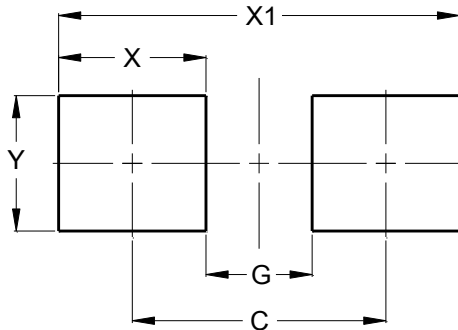
| SMB | | |
|----------------------|------|------|
| Dim | Min | Max |
| A | 2.00 | 2.50 |
| A1 | 0.05 | 0.20 |
| b | 1.96 | 2.21 |
| c | 0.15 | 0.31 |
| D | 3.30 | 3.94 |
| E | 5.00 | 5.59 |
| E1 | 4.06 | 4.57 |
| L | 0.76 | 1.52 |
| All Dimensions in mm | | |



Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SMB



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 4.30 |
| G | 1.80 |
| X | 2.50 |
| X1 | 6.80 |
| Y | 2.30 |

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