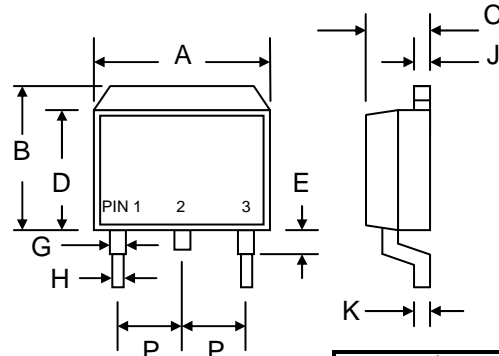


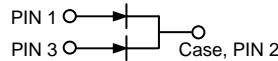
Features

- Low Forward Voltage
- Epitaxial Construction with Oxide Passivation
- Guard Ring for Transient and ESD Protection
- Surge Overload Rating to 250A Peak
- Low Power Loss, High Efficiency
- Fast Switching
- For Use in Low Voltage, High Frequency Inverters, Free Wheeling, and Switching Power Supplies



Mechanical Data

- Case: D²PAK/TO-263, Molded Plastic
- Terminals: Plated Leads Solderable per MIL-STD-202, Method 208
- Polarity: See Diagram
- Weight: 1.7 grams (approx.)
- Mounting Position: Any
- Marking: Type Number
- **Lead Free: For RoHS / Lead Free Version, Add "-LF" Suffix to Part Number, See Page 4**



| D ² PAK/TO-263 | | |
|---------------------------|------|-------|
| Dim | Min | Max |
| A | 9.80 | 10.40 |
| B | 9.60 | 10.60 |
| C | 4.40 | 4.80 |
| D | 8.50 | 9.10 |
| E | — | 2.80 |
| G | 1.00 | 1.40 |
| H | — | 0.99 |
| J | 1.20 | 1.40 |
| K | 0.30 | 0.70 |
| P | 2.35 | 2.75 |
| All Dimensions in mm | | |

Maximum Ratings and Electrical Characteristics @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 | SB | SB | SB | SB | SB | SB | SB | SB | Unit |
|---|--|--------------|--------|--------|--------------|--------|--------------|--------|---------|------|
| | | 4020DC | 4030DC | 4040DC | 4045DC | 4050DC | 4060DC | 4080DC | 40100DC | |
| Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage | V _{RRM} V _{RWM} V _R | 20 | 30 | 40 | 45 | 50 | 60 | 80 | 100 | V |
| RMS Reverse Voltage | V _{R(RMS)} | 14 | 21 | 28 | 32 | 35 | 42 | 56 | 70 | V |
| Average Rectified Output Current @T _C = 100°C | I _O | 40 20 | | | | | | | | A |
| Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load (JEDEC Method) | I _{FSM} | 250 | | | | | | | | A |
| Forward Voltage per diode @I _F = 20A, T _J = 25°C @I _F = 20A, T _J = 125°C | V _{FM} | 0.70 0.60 | | | 0.75 0.65 | | 0.85 0.75 | | | V |
| Peak Reverse Current At Rated DC Blocking Voltage | I _{RM} | 1.0 20 | | | | | | | | mA |
| Typical Junction Capacitance (Note 1) | C _J | 1100 | | | | 650 | | | | pF |
| Thermal Resistance Junction to Ambient (Note 2) Thermal Resistance Junction to Case (Note 2) | R _{JA} R _{JC} | 50 1.5 | | | | | | | | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | | | | | | | | °C |

Note: 1. Measured at 1.0 MHz and applied reverse voltage of 4.0V D.C.
2. Mounted on FR-4 PCB with minimum recommended pad layout per diode.

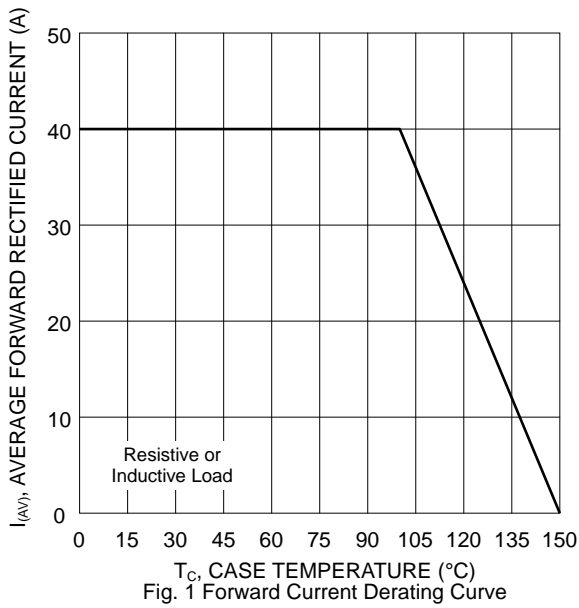


Fig. 1 Forward Current Derating Curve

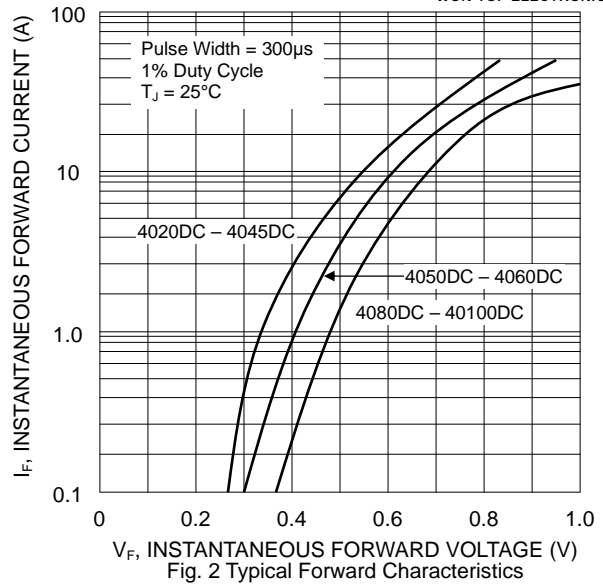


Fig. 2 Typical Forward Characteristics

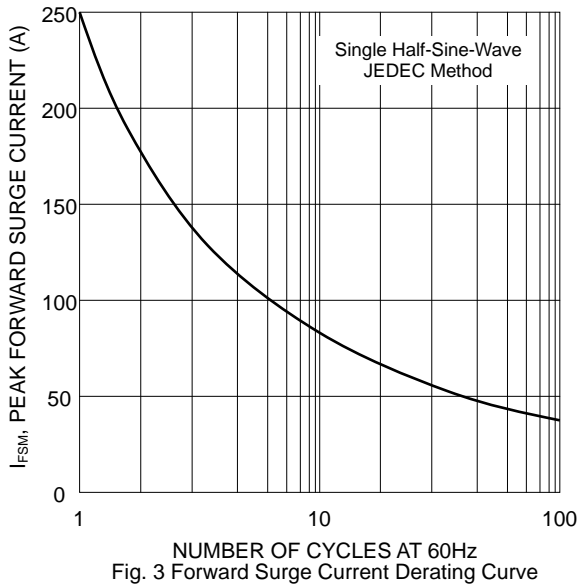


Fig. 3 Forward Surge Current Derating Curve

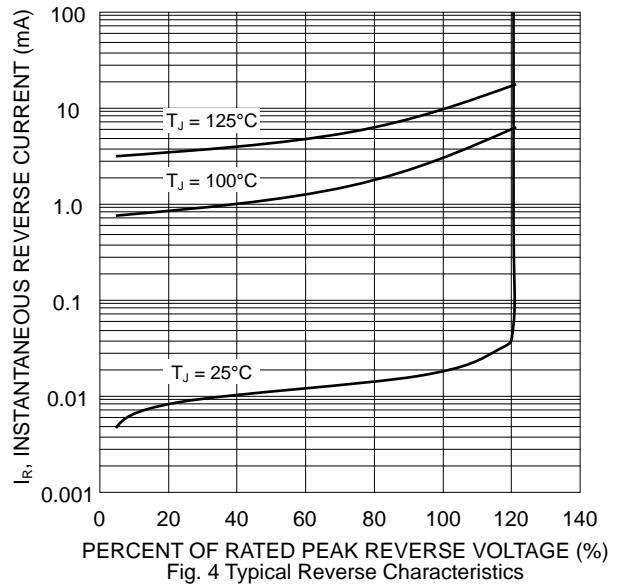


Fig. 4 Typical Reverse Characteristics

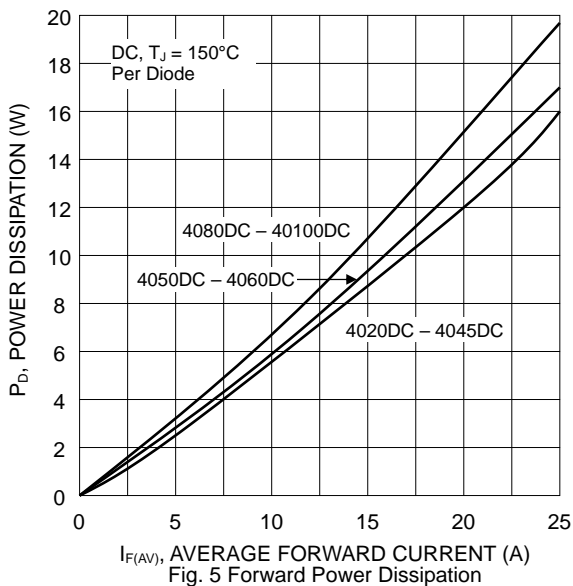


Fig. 5 Forward Power Dissipation

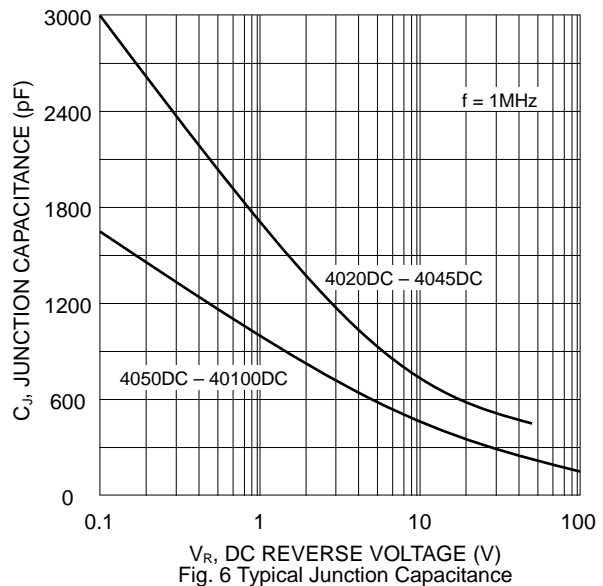
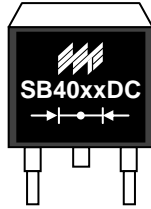


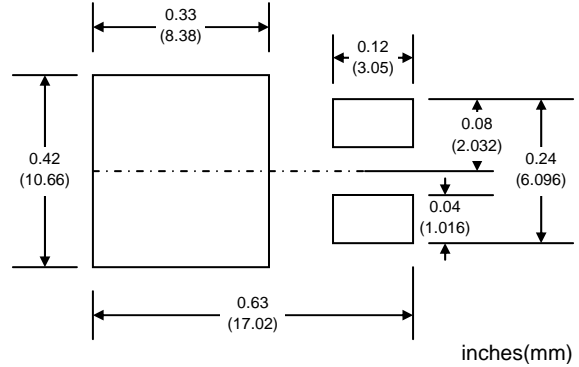
Fig. 6 Typical Junction Capacitance

MARKING INFORMATION



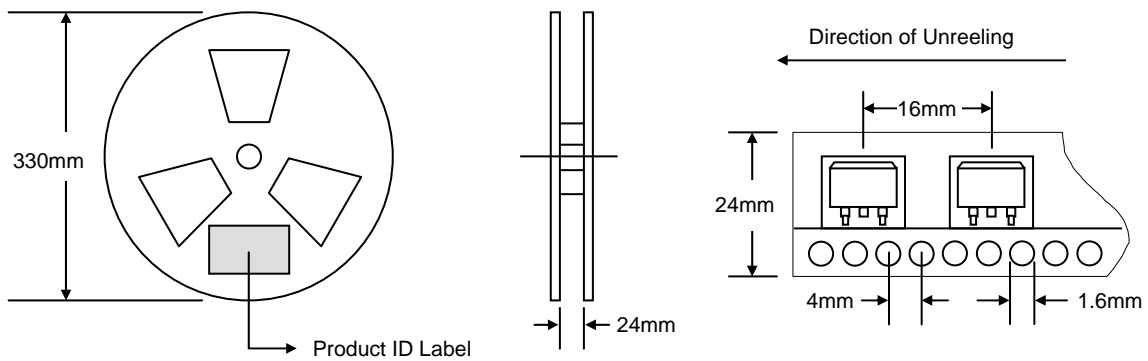
SB40xxDC = Device Number
 xx = 20, 30, 40, 45, 50, 60, 80 or 100
 Polarity = As Marked on Body

RECOMMENDED FOOTPRINT



PACKAGING INFORMATION

TAPE & REEL




| Reel Diameter (mm) | Quantity (PCS) | Inner Box Size L x W x H (mm) | Quantity (PCS) | Carton Size L x W x H (mm) | Quantity (PCS) | Approx. Gross Weight (KG) |
|--------------------|----------------|-------------------------------|----------------|----------------------------|----------------|---------------------------|
| 330 | 800 | 340 x 337 x 45 | 800 | 370 x 370 x 420 | 6,400 | 15.0 |

Note: 1. Paper reel, white or gray color.
 2. Components are packed in accordance with EIA standard 481-1 and 481-2.

ORDERING INFORMATION

| Product No. | Package Type | Shipping Quantity |
|--------------|--------------------|-------------------|
| SB4020DC-T3 | D ² PAK | 800/Tape & Reel |
| SB4030DC-T3 | D ² PAK | 800/Tape & Reel |
| SB4040DC-T3 | D ² PAK | 800/Tape & Reel |
| SB4045DC-T3 | D ² PAK | 800/Tape & Reel |
| SB4050DC-T3 | D ² PAK | 800/Tape & Reel |
| SB4060DC-T3 | D ² PAK | 800/Tape & Reel |
| SB4080DC-T3 | D ² PAK | 800/Tape & Reel |
| SB40100DC-T3 | D ² PAK | 800/Tape & Reel |

1. Shipping quantity given is for minimum packing quantity only. For minimum order quantity, please consult the Sales Department.
2. **To order RoHS / Lead Free version (with Lead Free finish), add "-LF" suffix to part number above. For example, SB4020DC-T3-LF.**

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WARNING: DO NOT USE IN LIFE SUPPORT EQUIPMENT. WTE power semiconductor products are not authorized for use as critical components in life support devices or systems without the express written approval.

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