

## 20V, 3A SCHOTTKY BARRIER RECTIFIER

### Features

- Low forward voltage drop
- Low power loss and High efficiency
- Low leakage current
- High surge capability
- Full lead (Pb)-free and RoHS compliant device

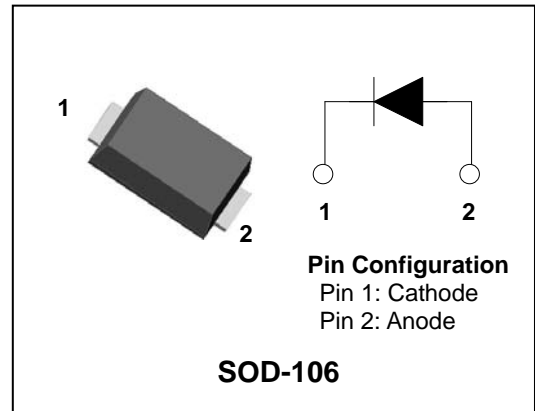
### Applications

- High efficiency SMPS
- Output rectification
- High frequency switching
- Freewheeling
- DC-DC converter systems

### Description

The SDB320 is suited for Switch Mode Power Supply and high frequency DC to DC converters.

This device is especially intended for use in low voltage, high frequency inverters, freewheeling and polarity protection applications.



### Product Characteristics

|                   |                     |
|-------------------|---------------------|
| $I_{F(AV)}$       | <b>3A</b>           |
| $V_{RRM}$         | <b>20V</b>          |
| $V_{FM}$ at 125°C | <b>0.40V (Typ.)</b> |
| $I_{FSM}$         | <b>30A</b>          |

### Ordering Information

| Device | Marking Code | Package | Packaging   |
|--------|--------------|---------|-------------|
| SDB320 | 32C          | SOD-106 | Tape & Reel |

### Marking Information



32C = Specific Device Code

YWW = Year & Week Code Marking

-. Y = Year Code

-. WW = Week Code

■ = Color band denote cathode

## Absolute Maximum Ratings (Rating at 25°C ambient temperature unless otherwise specified.)

| Characteristic                                                                                            | Symbol                          | Value           | Unit |
|-----------------------------------------------------------------------------------------------------------|---------------------------------|-----------------|------|
| Maximum repetitive reverse voltage<br>Maximum working peak reverse voltage<br>Maximum DC blocking voltage | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 20              | V    |
| Maximum average forward rectified current                                                                 | $I_{F(AV)}$                     | 3               | A    |
| Peak forward surge current 8.3ms single half sine-wave superimposed on rated load per diode               | $I_{FSM}$                       | 30              | A    |
| Storage temperature range                                                                                 | $T_{stg}$                       | -55°C to +150°C | °C   |
| Maximum operating junction temperature                                                                    | $T_J$                           | 150             | °C   |

## Thermal Characteristics

| Characteristic                                 | Symbol                      | Value | Unit |
|------------------------------------------------|-----------------------------|-------|------|
| Maximum thermal resistance junction to ambient | $R_{th(j-a)}$ <sup>1)</sup> | 100   | °C/W |

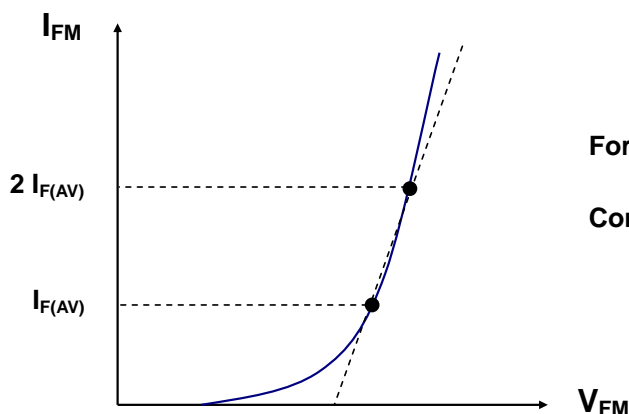
\* 1) Device mounted on FR-4 board with recommended pad layout.

## Electrical Characteristics (Rating at 25°C ambient temperature unless otherwise specified.)

| Characteristic               | Symbol                 | Test Condition       | Min.                | Typ. | Max. | Unit |    |
|------------------------------|------------------------|----------------------|---------------------|------|------|------|----|
| Peak forward voltage drop    | $V_{FM}$ <sup>2)</sup> | $I_{FM} = 3A$        | $T_J = 25^\circ C$  | -    | 0.46 | 0.50 | V  |
|                              |                        |                      | $T_J = 125^\circ C$ | -    | 0.40 | 0.43 | V  |
| Reverse leakage current      | $I_{RM}$ <sup>2)</sup> | $V_R = V_{RRM}$      | $T_J = 25^\circ C$  | -    | -    | 2    | mA |
|                              |                        |                      | $T_J = 125^\circ C$ | -    | -    | 50   | mA |
| Typical junction capacitance | $C_J$                  | $V_R = 1V, f = 1MHz$ | -                   | 650  | -    | pF   |    |

\* 2) Pulse test:  $t_p \leq 380 \mu s$ , Duty cycle  $\leq 2\%$

To evaluate the conduction losses use the following equation :  $P_F = 0.37 I_{F(AV)} + 0.0276 I_F^2 (RMS)$

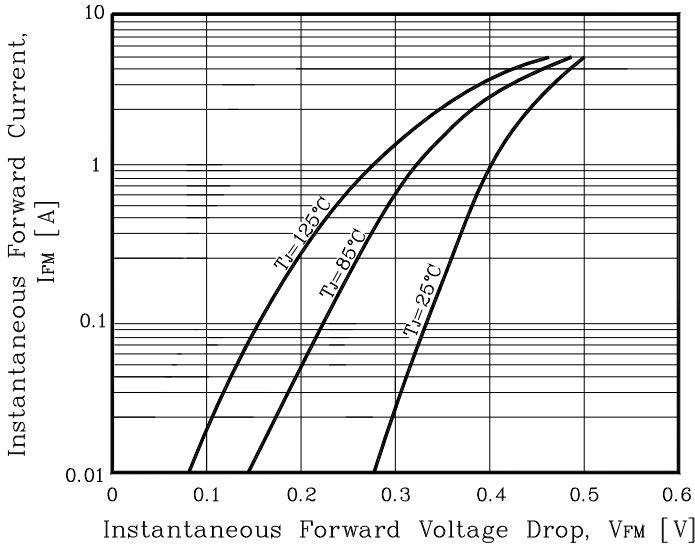


$$\text{Forward Voltage : } V_{FM} = V_{to} + rd I_{FM}$$

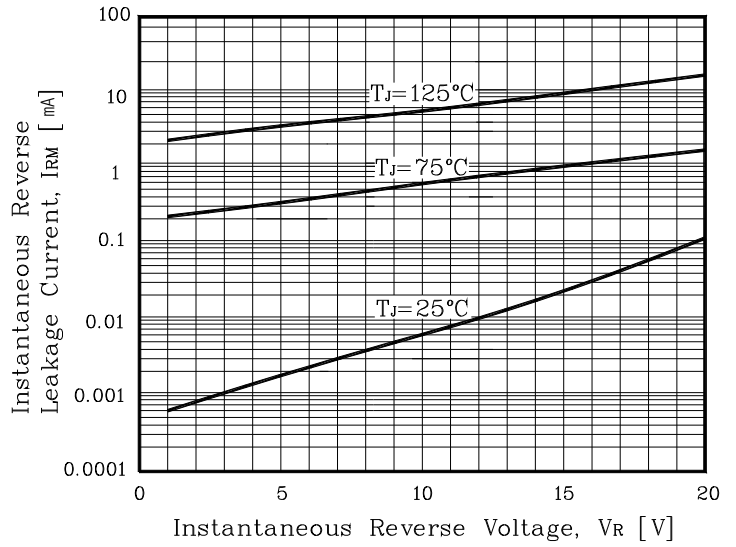
$$\text{Conduction Loss : } P_F = V_{to} I_{F(AV)} + rd I_F^2 (RMS)$$

## Rating and Characteristic Curves

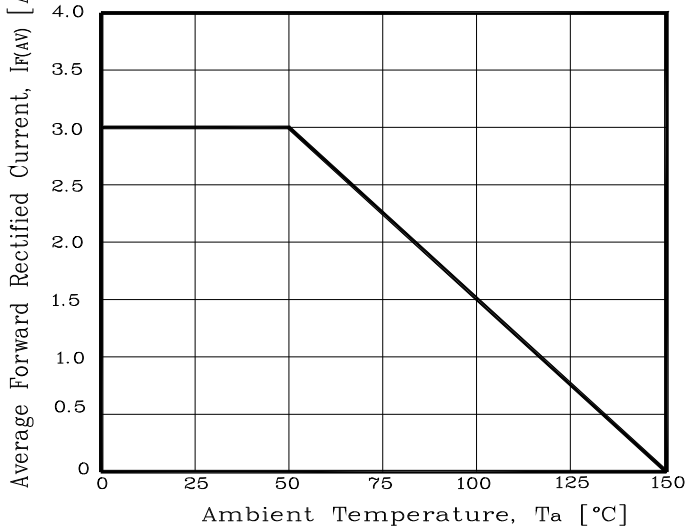
**Fig. 1) Typical Forward Characteristics**



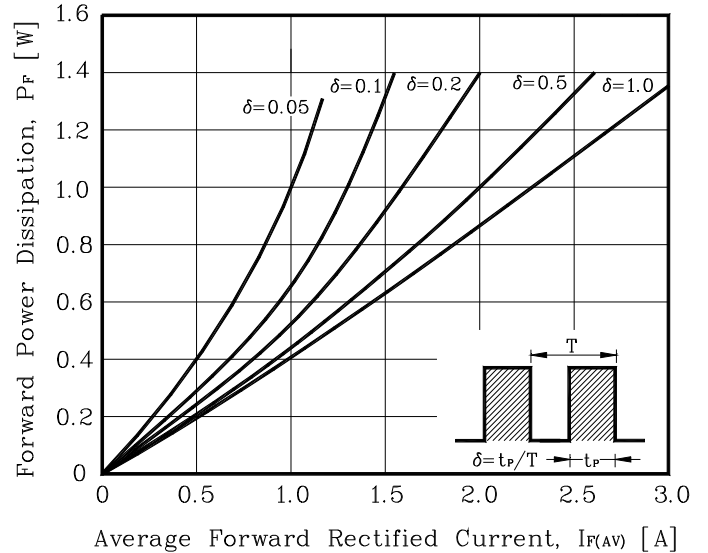
**Fig. 2) Typical Reverse Characteristics**



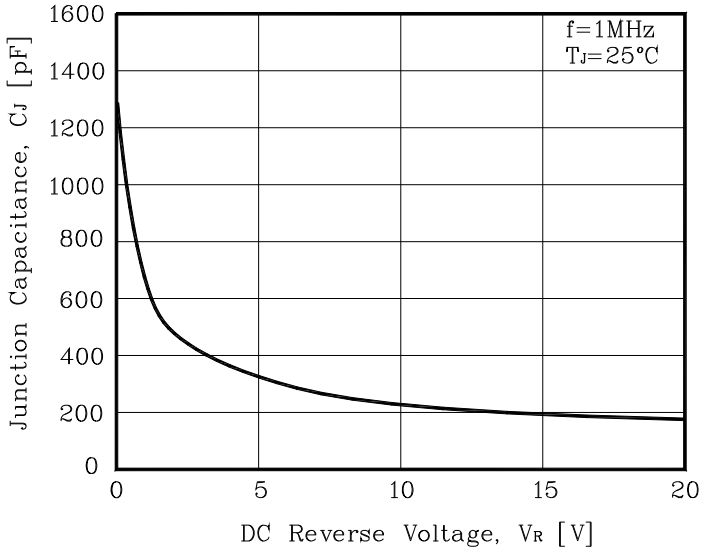
**Fig. 3) Maximum Forward Derating Curve**



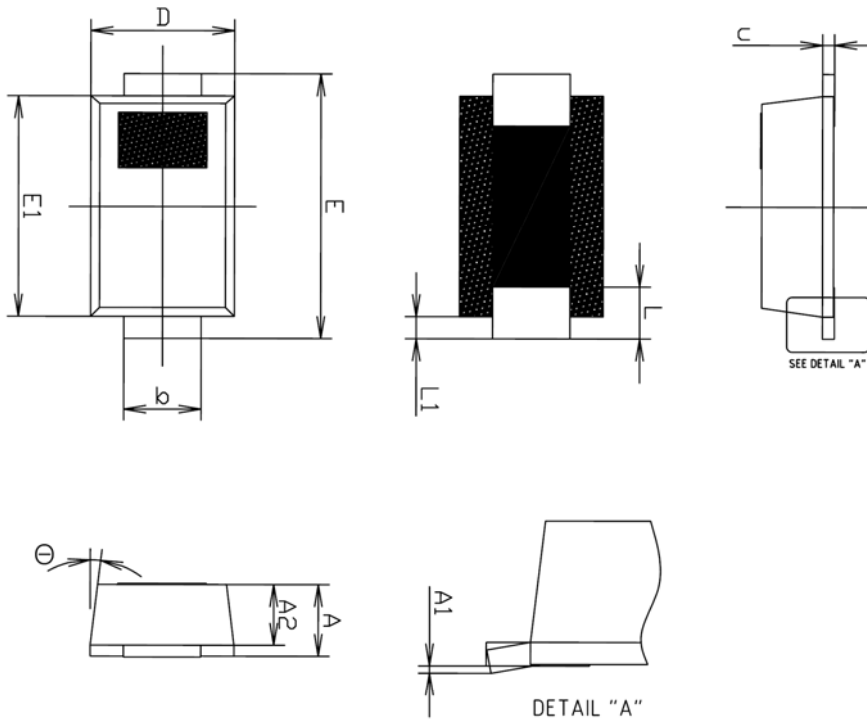
**Fig. 4) Forward Power Dissipation**



**Fig. 5) Typical Junction Capacitance**

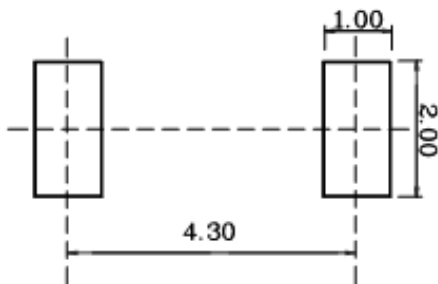


Package Outline Dimension



| SYMBOL | MILLIMETERS |         |         | NOTE |
|--------|-------------|---------|---------|------|
|        | MINIMUM     | NOMINAL | MAXIMUM |      |
| A      | 1.25        | 1.30    | 1.35    |      |
| A1     | 0.00        | —       | 0.10    |      |
| A2     | 1.05        | 1.10    | 1.15    |      |
| b      | 1.35        | 1.42    | 1.49    |      |
| c      | 0.17        | 0.22    | 0.27    |      |
| D      | 2.50        | 2.60    | 2.70    |      |
| E      | 4.60        | 4.80    | 5.00    |      |
| E1     | 3.90        | 4.00    | 4.10    |      |
| L      | 0.79        | 0.94    | 1.09    |      |
| L1     | 0.30        | 0.40    | 0.50    |      |
| Θ      | 4°          | —       | 10°     |      |

Recommend PCB Solder Land Dimension (Unit: mm)



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