

$$I_{F(AV)} = 0.5\text{Amp}$$

$$V_R = 40\text{V}$$

Major Ratings and Characteristics

| Characteristics | Value | Units |
|---|-------------|------------------|
| $I_{F(AV)}$ (DC) | 0.5 | A |
| V_{RRM} | 40 | V |
| I_{FSM} @ $t_p = 10\text{ms}$ sine | 6.0 | A |
| V_F @ 0.5Apk , $T_J = 100^\circ\text{C}$ | 0.42 | V |
| T_J range | - 65 to 150 | $^\circ\text{C}$ |

Description/ Features

This Schottky diode is ideally suited for low voltage, high frequency operation, as freewheeling and polarity protection. Small size of the package allows proper use in application where compact size is critical, fitting also the GSM and PCMCIA requirement.

- Surface mountable
- Very low forward voltage drop
- Extremely fast switching
- Negligible switching losses
- Guard ring for enhanced ruggedness and long term reliability
- Lead-Free ("PbF" suffix)

Case Styles



SOD123

Voltage Ratings

| Part number | Value |
|---|-------|
| V_R Max. DC Reverse Voltage (V) | 40 |
| V_{RWM} Max. Working Peak Reverse Voltage (V) | |

Absolute Maximum Ratings

| Parameters | Value | Units | Conditions |
|--|-------|-------|---|
| I_F Forward Current | 0.5 | A | DC, $T_L = 122^\circ\text{C}$ |
| I_{FSM} Max. Peak One Cycle Non-Repetitive Surge Current, @ $T_J = 25^\circ\text{C}$ | 50 | A | 5 μs Sine or 3 μs Rect. pulse |
| | 6.0 | A | 10ms Sine or 6ms Rect. pulse |

Following any rated load condition and with rated V_{RRM} applied

Electrical Specifications

| Parameters | Value | Units | Conditions |
|--|-------|------------------|--|
| V_{FM} Max. Forward Voltage Drop (1) | 0.480 | V | @ 0.5A |
| | 0.560 | V | @ 1A |
| V_{FM} Max. Forward Voltage Drop (1) | 0.420 | V | @ 0.5A |
| | 0.520 | V | @ 1A |
| I_{RM} Max. Reverse Leakage Current | 10 | μA | $V_R = 20\text{V}$ |
| | 5 | mA | $V_R = 20\text{V}$ |
| | 20 | μA | $V_R = 40\text{V}$ |
| | 13 | mA | $V_R = 40\text{V}$ |
| C_T Max. Junction Capacitance | 60 | pF | $V_R = 5V_{DC}$ (test signal range 100KHz to 1Mhz), $T_J = 25^\circ\text{C}$ |
| dv/dt Max. Voltage Rate of Change (Rated V_R) | 10000 | V/ μs | |

(1) Pulse Width < 300 μs , Duty Cycle < 2%

Thermal-Mechanical Specifications

| Parameters | Value | Units | Conditions |
|---|------------|---------------------------|--|
| T_J Max. Junction Temperature Range(*) | -65 to 150 | $^\circ\text{C}$ | |
| T_{stg} Max. Storage Temperature Range | -65 to 150 | $^\circ\text{C}$ | |
| $R_{th(j-l)}$ Max. Thermal Resistance Junction to Lead | 150 | $^\circ\text{C}/\text{W}$ | Mounted on PC board FR4 with minimum pad size |
| $R_{th(j-a)}$ Max. Thermal Resistance Junction to Ambient | 200 | $^\circ\text{C}/\text{W}$ | 1 inch square pad size (1 x 0.5 inch for each lead) on FR4 board |
| Wt Approximate Weight | 0.012 | g | |
| Case Style | SOD123 | | |
| Device Marking | CYWLC | | |

(*) $\frac{dP_{tot}}{dT_J} < \frac{1}{R_{th(j-a)}}$ thermal runaway condition for a diode on its own heatsink

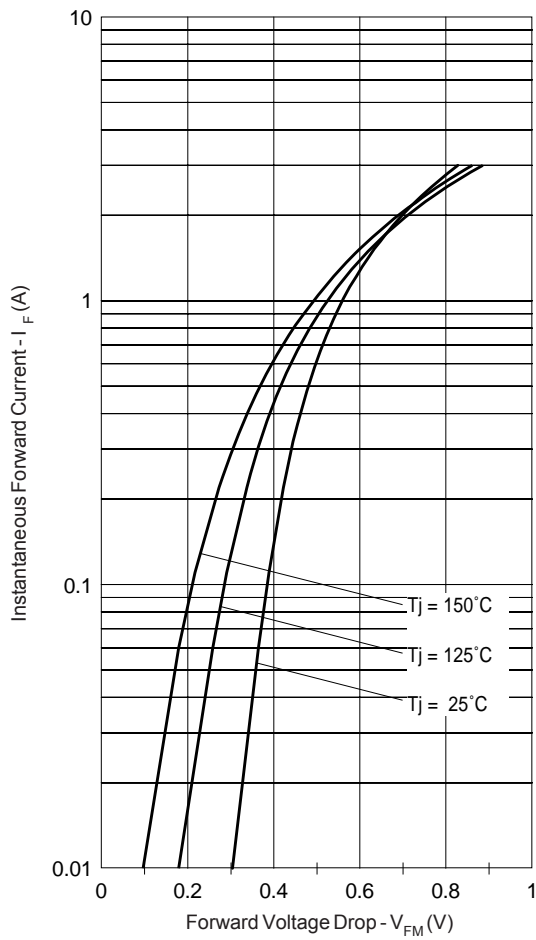


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

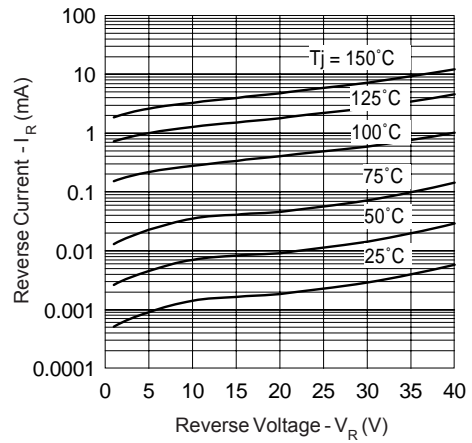


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

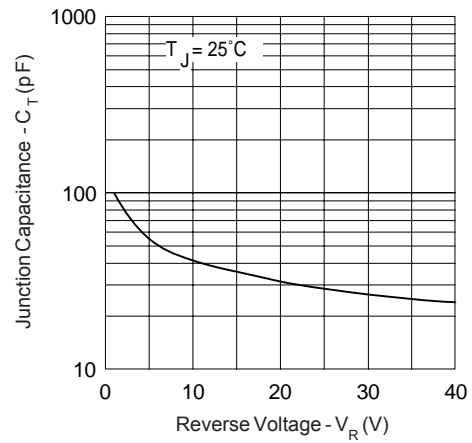


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

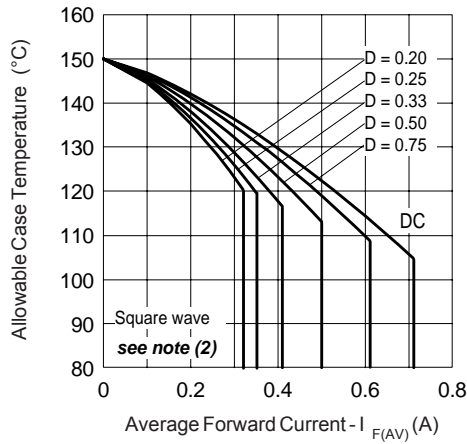


Fig. 4 - Max. Allowable Case Temperature Vs. Average Forward Current

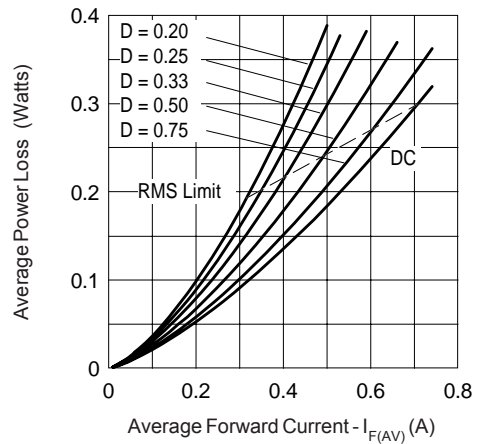


Fig. 5 - Forward Power Loss Characteristics

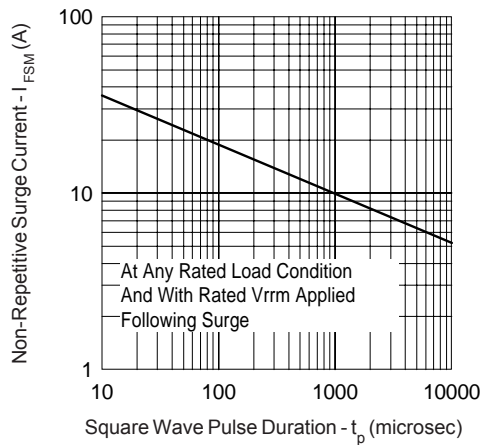
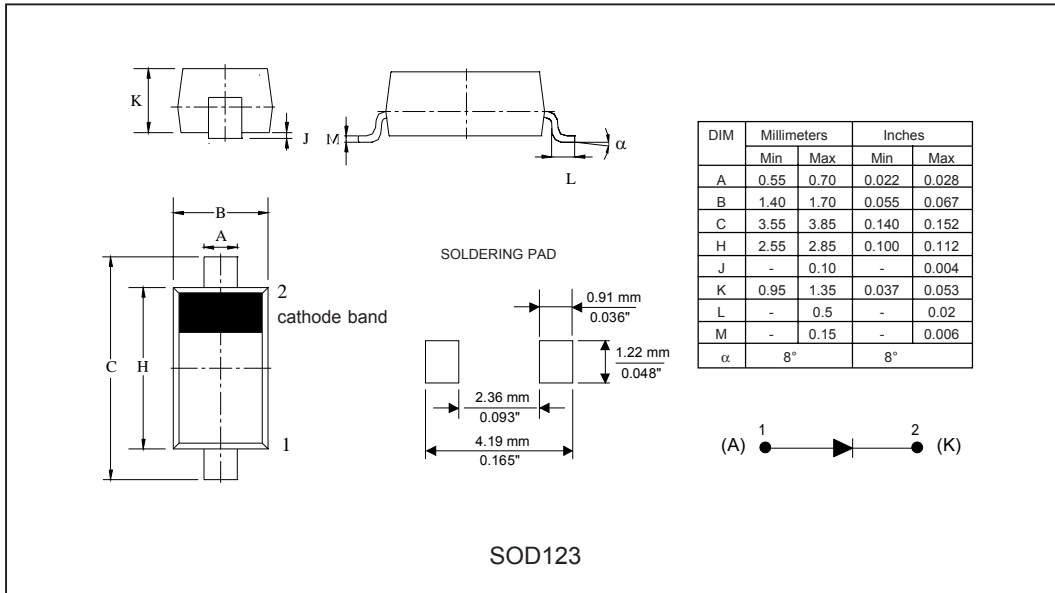


Fig. 6 - Max. Non-Repetitive Surge Current

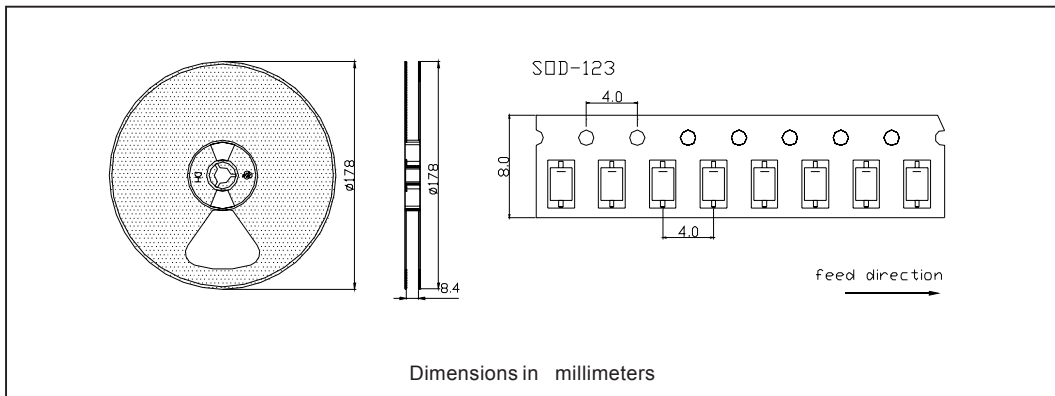
(2) Formula used: $T_c = T_j - Pd \times R_{thJC}$

Pd = Forward Power Loss = $I_{F(AV)} \times V_{FM} @ (I_{F(AV)}/D)$ (see Fig. 4)

Outline Table



Tape & Reel Information



Ordering Information Table

| Device | Package | Marking | Base qty | Delivery mode |
|---------|---------|----------------------|----------|---------------|
| MBR0540 | SOD-123 | CY \overline{W} LC | 3000 | Tape & Reel |

MBR0540PbF

Bulletin PD-21132 rev. A 08/06

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Data and specifications subject to change without notice.
This product has been designed and qualified for Industrial Level for Industrial Level.
Qualification Standards can be found on IR's Web site.

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