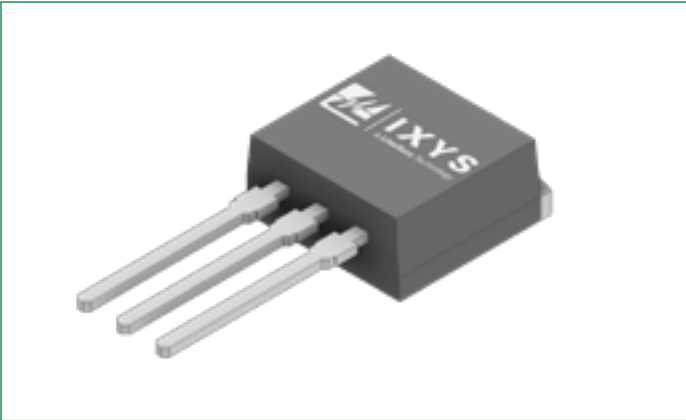


# DSB15IM45IB

## 45 V, 15 A Schottky Rectifier Diode

RoHS

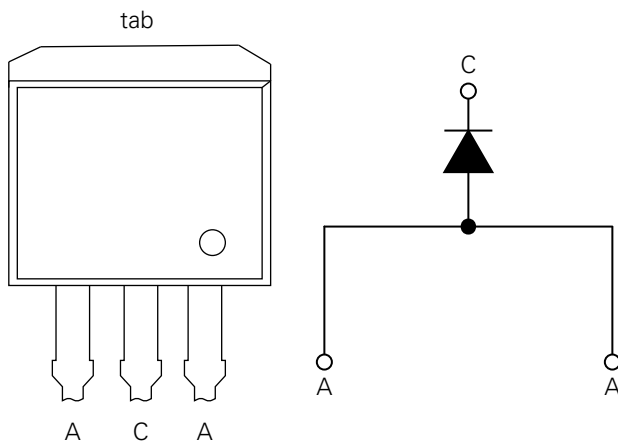
Pb



### Description:

- Very low  $V_f$
- Extremely low switching losses
- Low  $I_{rm}$  values
- Improved thermal behavior
- High reliability circuit operation
- Low voltage peaks for reduced protection circuits
- Low noise switching
- Terminals finish: 100% Pure Tin
- This is a Pb – Free Device
- Epoxy meets UL 94V-0

### Pinout Diagram (TO-262)



**C:** Cathode; **A:** Anode; **tab:** Cathode

### Applications:

- Rectifiers in switch mode power supplies (SMPS)
- Free wheeling diode in low voltage converters

**Maximum Ratings** ( $T_A = 25^\circ\text{C}$  unless otherwise specified)

| Symbol      | Characteristics                             | Condition                                                          | Max. | Units |
|-------------|---------------------------------------------|--------------------------------------------------------------------|------|-------|
| $V_{RRM}$   | Peak Repetitive Reverse Voltage             | —                                                                  | 45   | V     |
| $V_{RWM}$   | Working Peak Reverse Voltage                |                                                                    |      |       |
| $V_R$       | DC Blocking Voltage                         |                                                                    |      |       |
| $I_{F(AV)}$ | Average Rectified Forward Current           | 50% duty cycle @ $T_C = 130^\circ\text{C}$ , rectangular wave form | 15   | A     |
| $I_{FSM}$   | Peak One Cycle Non-Repetitive Surge Current | 10 ms, Half Sine pulse, $T_J = 25^\circ\text{C}$                   | 340  | A     |
| $P_{tot}$   | Total power dissipation                     | $T_C = 25^\circ\text{C}$                                           | 70   | W     |

**Electrical Characteristics** ( $T_A = 25^\circ\text{C}$  unless otherwise specified)

| Symbol   | Characteristics                   | Conditions                                                                | Typ. | Max. | Units         |
|----------|-----------------------------------|---------------------------------------------------------------------------|------|------|---------------|
| $V_{F1}$ | Forward Voltage Drop <sup>1</sup> | @ 15A, Pulse, $T_J = 25^\circ\text{C}$                                    | —    | 0.64 | V             |
| $V_{F2}$ |                                   | @ 15A, Pulse, $T_J = 125^\circ\text{C}$                                   | —    | 0.60 | V             |
| $I_{R1}$ | Reverse Current <sup>1</sup>      | @ $V_R = \text{rated } V_R$ , $T_J = 25^\circ\text{C}$                    | —    | 5    | $\mu\text{A}$ |
| $I_{R2}$ |                                   | @ $V_R = \text{rated } V_R$ , $T_J = 100^\circ\text{C}$                   | —    | 50   | mA            |
| $C_T$    | Junction Capacitance              | @ $V_R = 5\text{V}$ , $T_C = 25^\circ\text{C}$<br>$f_{SIG} = 1\text{MHz}$ | 522  | —    | pF            |

**Note 1:** Pulse width < 300  $\mu\text{s}$ , duty cycle < 2%

**Thermal-Mechanical Specifications**

| Symbol          | Characteristics                              | Condition    | Specification    | Units              |
|-----------------|----------------------------------------------|--------------|------------------|--------------------|
| $T_J$           | Junction Temperature                         | —            | -55 to +150      | $^\circ\text{C}$   |
| $T_O$           | Operation Temperature                        | —            | -55 to +125      | $^\circ\text{C}$   |
| $T_{stg}$       | Storage Temperature                          | —            | -55 to +150      | $^\circ\text{C}$   |
| $F_C$           | Mounting force with clip                     | —            | Min 20<br>Max 60 | N                  |
| $R_{\theta JC}$ | Maximum Thermal Resistance Junction to Case  | DC operation | 1.75             | $^\circ\text{C/W}$ |
| $R_{\theta CS}$ | Typical Thermal Resistance Case to Heat Sink | —            | 0.5              | $^\circ\text{C/W}$ |
| wt              | Approximate Weight                           | —            | 1.85             | g                  |

Characteristic Curves

Fig. 1. Typical Forward Characteristics

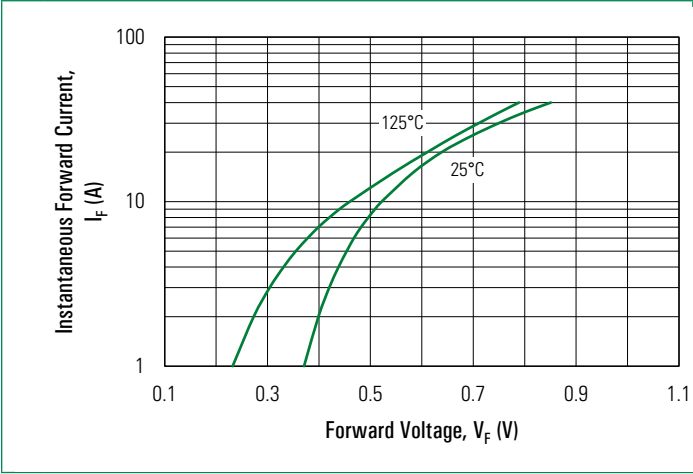


Fig. 2. Typical Reverse Characteristics

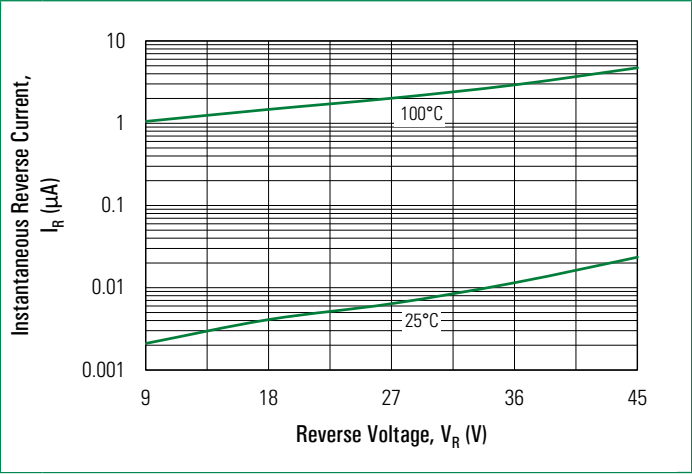
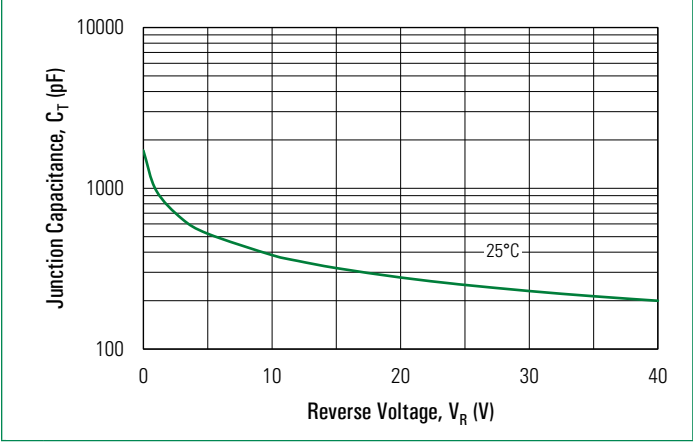
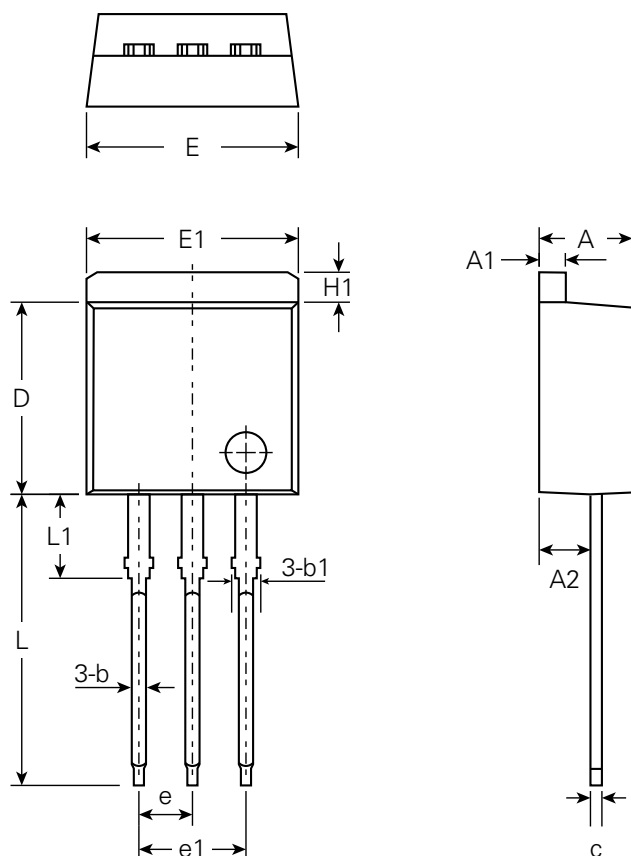


Fig. 3. Typical Junction Capacitance



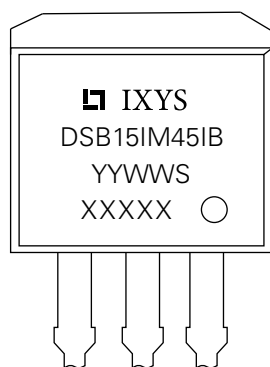
## Part Outline Drawing (TO-262)



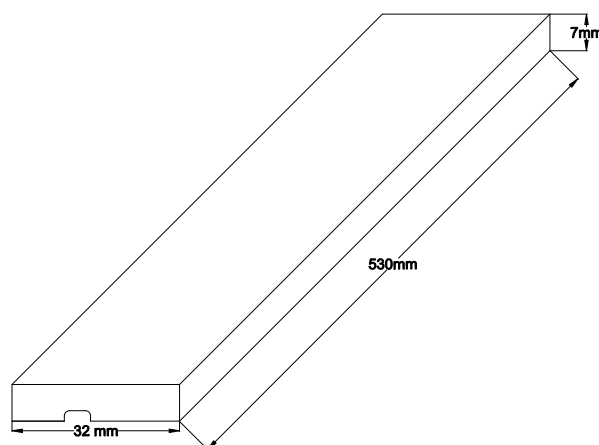
| Symbol | Inches |         |       | Millimeters |         |       |
|--------|--------|---------|-------|-------------|---------|-------|
|        | Min.   | Typical | Max.  | Min.        | Typical | Max.  |
| A      | 0.159  | 0.174   | 0.190 | 4.06        | 4.44    | 4.83  |
| A1     | 0.044  | 0.05    | 0.055 | 1.14        | 1.27    | 1.40  |
| A2     | 0.079  | 0.094   | 0.109 | 2.03        | 2.41    | 2.79  |
| b      | 0.025  | 0.029   | 0.037 | 0.64        | 0.76    | 0.96  |
| b1     | 0.044  | 0.053   | 0.057 | 1.14        | 1.37    | 1.47  |
| c      | 0.014  | 0.022   | 0.025 | 0.36        | 0.56    | 0.64  |
| D      | 0.336  | 0.359   | 0.379 | 8.55        | 9.14    | 9.65  |
| E      | 0.379  | 0.394   | 0.405 | 9.65        | 10.03   | 10.31 |
| E1     | 0.379  | 0.394   | 0.405 | 9.65        | 10.03   | 10.29 |
| e      | –      | 0.1     | –     | –           | 2.54    | –     |
| e1     | –      | –       | –     | –           | –       | –     |
| H1     | –      | –       | 0.055 | –           | –       | 1.40  |
| L      | 0.5    | 0.544   | 0.579 | 12.7        | 13.82   | 14.73 |
| L1     | –      | 0.149   | –     | –           | 3.8     | –     |

## Packing Specifications

## Part Number and Marking



D Diode  
 S = Schottky Diode  
 B = Ultra Low VF  
 15 = Forward Current  
 IM = Single Diode  
 45 = Reverse Voltage  
 IB = Package Code (TO-262)  
 YY = Year  
 WW = Work Week  
 S = Plant Location Code  
 XXXXX = Lot Number



## Ordering Information

| Part Number | Marking     | Packing Mode | Quantity     |
|-------------|-------------|--------------|--------------|
| DSB15IM45IB | DSB14IM45IB | Tube         | 50 pcs/ tube |

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