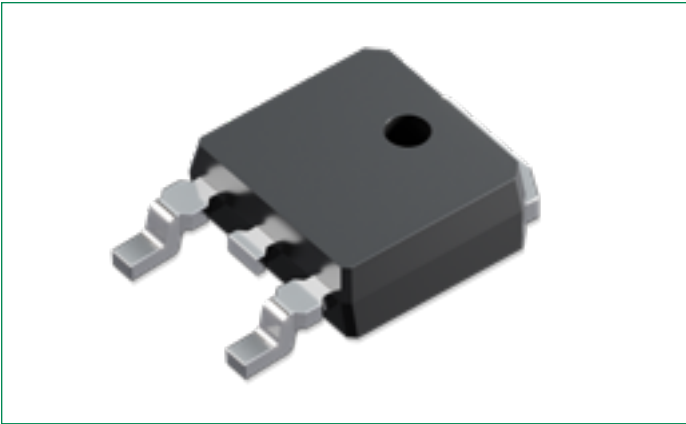


# DSA15IM45UC

## 45 V, 15 A Schottky Rectifier Diode

RoHS

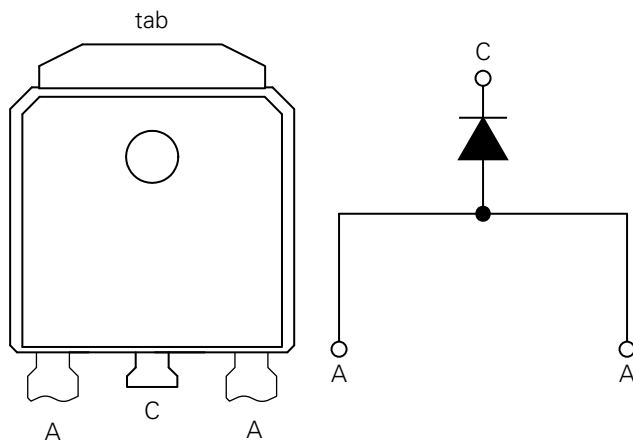
Pb



### Features:

- 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-252AA)



**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 @ $T_C=150^\circ\text{C}$ , rectangular wave form | 15   | A     |
| $I_{FSM}$   | Peak One Cycle Non-Repetitive Surge Current | 10 ms, Half Sine pulse, $T_J=25^\circ\text{C}$                   | 300  | A     |
| $P_{tot}$   | Total power dissipation                     | $T_C=25^\circ\text{C}$   | 75   | 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, $T_J = 25^\circ\text{C}$                                    | -    | 0.75 | V             |
| $V_{F2}$ |                                   | @ 15A, Pulse, $T_J = 125^\circ\text{C}$                                   | -    | 0.63 | V             |
| $I_{R1}$ | Reverse Current*                  | @ $V_R = \text{rated } V_{RR}$ , $T_J = 25^\circ\text{C}$                 | -    | 250  | $\mu\text{A}$ |
| $I_{R2}$ |                                   | @ $V_R = \text{rated } V_{RR}$ , $T_J = 125^\circ\text{C}$                | -    | 2.5  | mA            |
| $C_T$    | Junction Capacitance              | @ $V_R = 24\text{V}$ , $T_C = 25^\circ\text{C}$ , $f_{SIG} = 1\text{MHz}$ | 256  | -    | pF            |

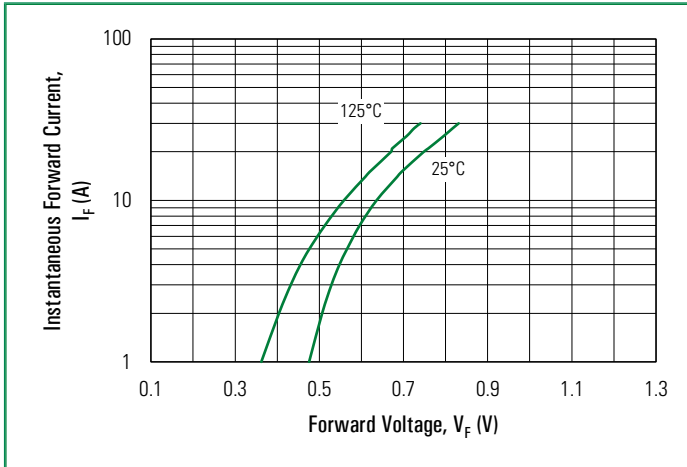
**Note 1:** Pulse width < 300  $\mu\text{s}$ , duty cycle < 2%

**Thermal-Mechanical Specifications**

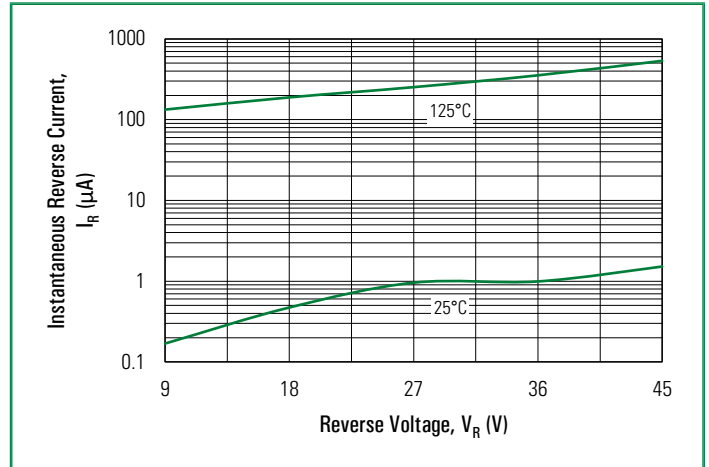
| Symbol          | Characteristics                              | Condition    | Specification    | Units              |
|-----------------|--|--------------|------------------|--------------------|
| $T_J$           | Junction Temperature                         | -            | -55 to +175      | $^\circ\text{C}$   |
| $T_O$           | Operation Temperature                        | -            | -55 to +150      | $^\circ\text{C}$   |
| $T_{stg}$       | 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 | 2                | $^\circ\text{C/W}$ |
| $R_{\theta CS}$ | Typical Thermal Resistance Case to Heat Sink | -            | 0.50             | $^\circ\text{C/W}$ |
| wt              | Approximate Weight                           | -            | 0.39             | g                  |

## Characteristic Curves

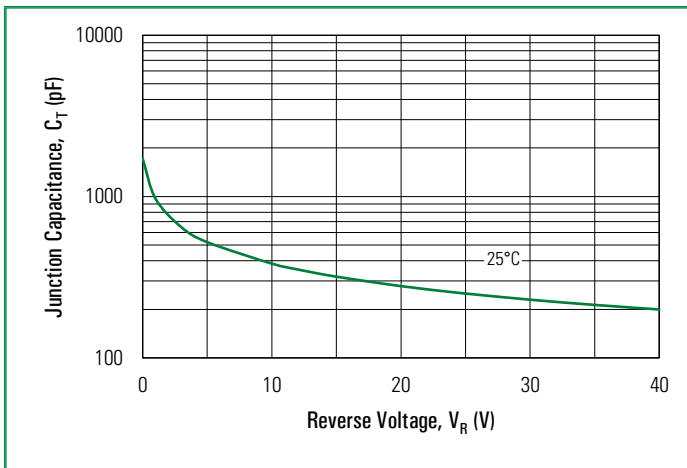
**Fig. 1. Typical Forward Characteristics**



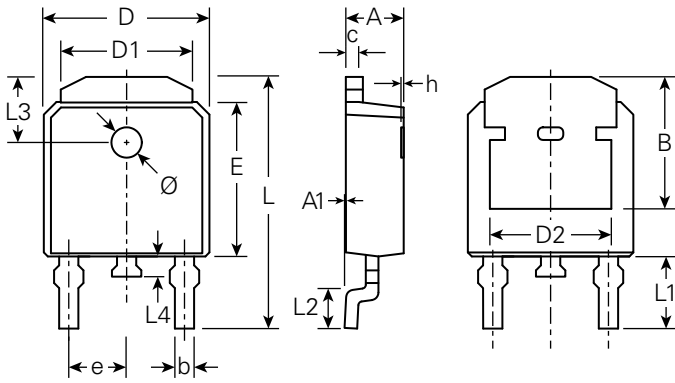
**Fig. 2. Typical Reverse Characteristics**



**Fig. 3. Typical Junction Capacitance**

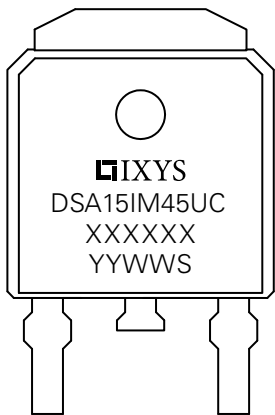


Part Outline Drawing (TO-252AA)



| Symbol | Inches    |         |       | Millimeters |         |       |
|--------|-----------|---------|-------|-------------|---------|-------|
|        | Min.      | Typical | Max.  | Min.        | Typical | Max   |
| A      | 0.085     | -       | 0.094 | 2.18        | -       | 2.39  |
| A1     | -         | -       | 0.005 | -           | -       | 0.13  |
| b      | 0.025     | -       | 0.035 | 0.64        | -       | 0.89  |
| c      | 0.018     | -       | 0.035 | 0.46        | -       | 0.89  |
| D      | 0.250     | -       | 0.264 | 6.35        | -       | 6.73  |
| D1     | 0.195     | -       | 0.215 | 4.95        | -       | 5.46  |
| D2     | 0.170     | -       | -     | 4.32        | -       | -     |
| E      | 0.235     | 0.240   | 0.245 | 5.97        | 6.10    | 6.22  |
| e      | 0.090 BSC |         |       | 2.29 BSC    |         |       |
| L      | 0.370     | -       | 0.410 | 9.40        | -       | 10.41 |
| L1     | 0.114     |         |       | 2.90 REF    |         |       |
| L2     | 0.055     | 0.060   | 0.070 | 1.40        | 1.52    | 1.78  |
| L3     | 0.063 REF |         |       | 1.60 REF    |         |       |
| L4     | -         | -       | 0.040 | -           | -       | 1.02  |
| Ø      | 0.043     | -       | 0.051 | 1.10        | -       | 1.30  |

Part Number and Marking

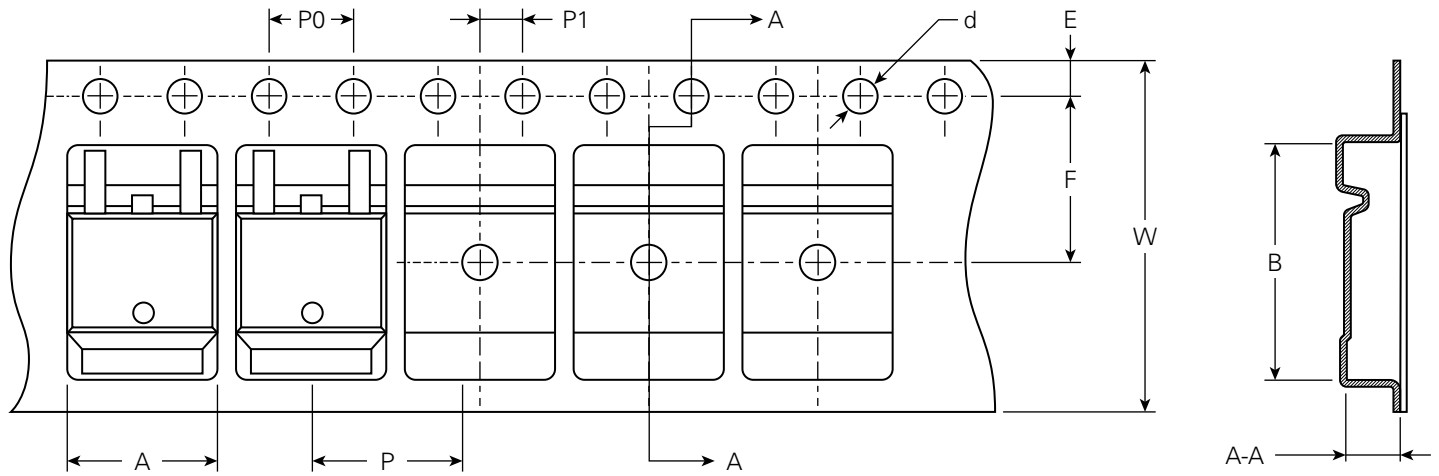


- DS = Schottky Diode
- A = Low VF
- 15 = Current Rate (15A)
- IM = Single Diode
- 45 = Voltage Rating (45V)
- UC = Package Code
- YY = Year
- WW = Work Week
- S = Plant Location Code
- XXXXXX = Lot Number

Ordering Information

| Part Number     | Marking     | Packing Mode | Quantity       |
|-----------------|-------------|--------------|----------------|
| DSA15IM45UC-TRL | DSA15IM45UC | Reel         | 2500 pcs/ reel |

Carrier Tape Specification (TO-252AA)



| Symbol | Inches |         |        | Millimeters |         |       |
|--------|--------|---------|--------|-------------|---------|-------|
|        | Min.   | Typical | Max.   | Min.        | Typical | Max.  |
| A      | 0.267  | -       | 0.276  | 6.80        | -       | 7.00  |
| B      | 0.409  | -       | 0.417  | 10.40       | -       | 10.60 |
| C      | 0.102  | -       | 0.110  | 2.60        | -       | 2.80  |
| d      | Ø0.057 | -       | Ø0.065 | Ø1.45       | -       | Ø1.65 |
| E      | 0.065  | -       | 0.073  | 1.65        | -       | 1.85  |
| F      | 0.291  | -       | 0.299  | 7.40        | -       | 7.60  |
| P0     | 0.154  | -       | 0.161  | 3.90        | -       | 4.10  |
| P      | 0.311  | -       | 0.319  | 7.90        | -       | 8.10  |
| P1     | 0.075  | -       | 0.083  | 1.90        | -       | 2.10  |
| W      | 0.626  | -       | 0.642  | 15.90       | -       | 16.30 |

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