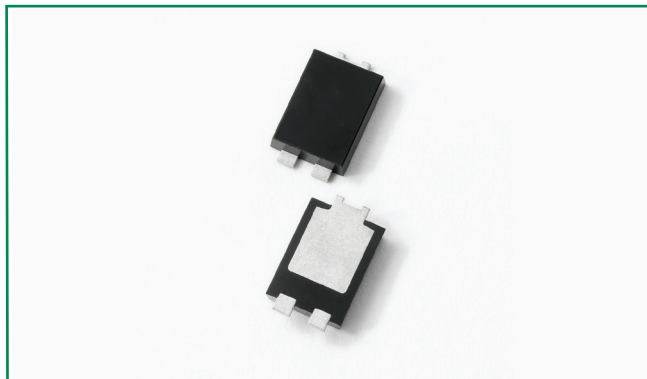


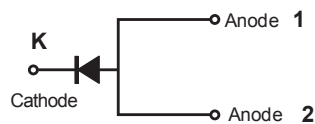
# Schottky Barrier Rectifier

## DST1045S, 10A, 45V, TO-277B, Single

### DST1045S



#### Pin out



#### Description

Littelfuse DST series Ultra Low  $V_F$  Schottky Barrier Rectifier is designed to meet the general requirements of commercial and industry applications by providing high temperature, low leakage and lower  $V_F$  products.

It is suitable for high frequency switching mode power supply, free-wheeling diodes and polarity protection diodes.

#### Features

- Ultra low forward voltage drop
- High frequency operation
- High junction temperature capability
- Guard ring for enhanced ruggedness and long term reliability
- Single die in TO-277B Package

#### Applications

- Switching mode power supply
- DC/DC converters
- Free-Wheeling diodes
- Polarity Protection Diodes

#### Maximum Ratings

| Parameters                                            | Symbol      | Test Conditions                                                     | Max | Unit |
|-------------------------------------------------------|-------------|---------------------------------------------------------------------|-----|------|
| Peak Inverse Voltage                                  | $V_{RWM}$   | -                                                                   | 45  | V    |
| Average Forward Current (per device) *                | $I_{F(AV)}$ | 50% duty cycle @ $T_M = 121^\circ\text{C}$<br>rectangular wave form | 10  | A    |
| Peak One Cycle Non-Repetitive Surge Current (per leg) | $I_{FSM}$   | 8.3 ms, half Sine pulse                                             | 150 | A    |

\* Mounted on 30 mm x 30 mm pad areas aluminum PCB

#### Electrical Characteristics

| Parameters                       | Symbol   | Test Conditions                                         | Typ   | Max  | Unit |
|----------------------------------|----------|---------------------------------------------------------|-------|------|------|
| Forward Voltage Drop (per leg) * | $V_{F1}$ | @5A, Pulse, $T_J = 25^\circ\text{C}$                    | 0.43  | -    | V    |
|                                  |          | @10A, Pulse, $T_J = 25^\circ\text{C}$                   | 0.49  | 0.57 |      |
|                                  | $V_{F2}$ | @5A, Pulse, $T_J = 125^\circ\text{C}$                   | 0.33  | -    |      |
|                                  |          | @10A, Pulse, $T_J = 125^\circ\text{C}$                  | 0.41  | -    |      |
| Reverse Current (per leg) *      | $I_{R1}$ | @ $V_R = \text{rated } V_R$ , $T_J = 25^\circ\text{C}$  | 0.017 | 0.80 | mA   |
|                                  | $I_{R2}$ | @ $V_R = \text{rated } V_R$ , $T_J = 125^\circ\text{C}$ | 15    | 100  |      |
| Junction Capacitance (per leg)   | $C_T$    | @ $V_R = 5V$ , $T_C = 25^\circ\text{C}$ , fSIG = 1MHz   | 639   | -    | pF   |

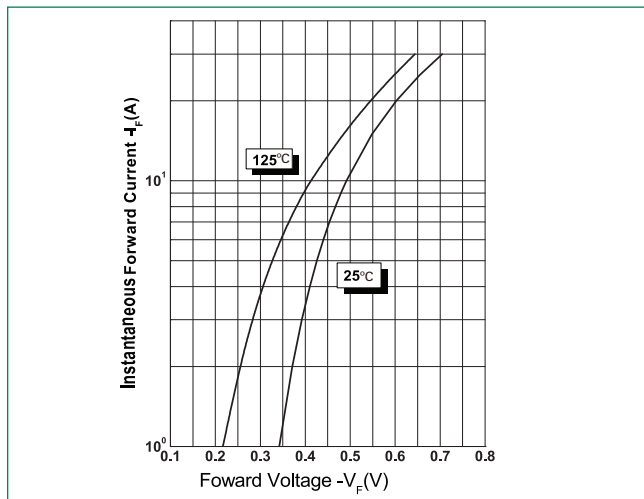
\* Pulse Width < 300 $\mu$ s, Duty Cycle < 2%

### Thermal-Mechanical Specifications

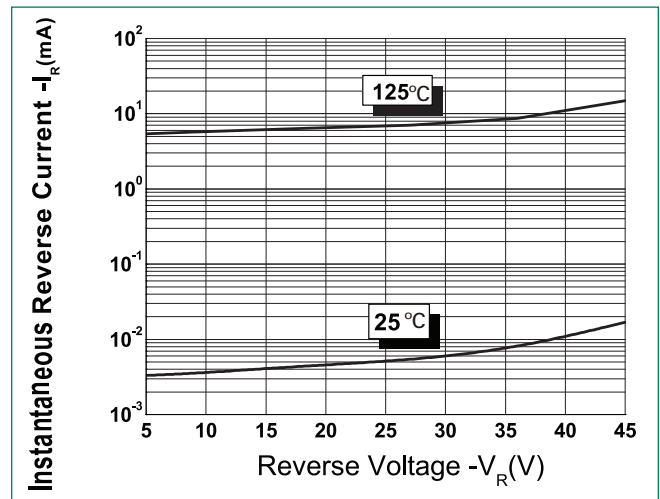
| Parameters                 | Symbol     | Test Conditions | Max         | Unit |
|----------------------------|------------|-----------------|-------------|------|
| Junction Temperature       | $T_J$      |                 | -55 to +150 | °C   |
| Storage Temperature        | $T_{stg}$  |                 | -55 to +150 | °C   |
| Typical Thermal Resistance | $R_{thJM}$ | DC operation    | 4           | °C/W |
| Approximate Weight         | wt         |                 | 0.08        | g    |
| Case Style                 |            | TO-277B         |             |      |

Mounted on 30 mm x 30 mm aluminum PCB; thermal resistance  $R_{thJM}$  - junction to mount

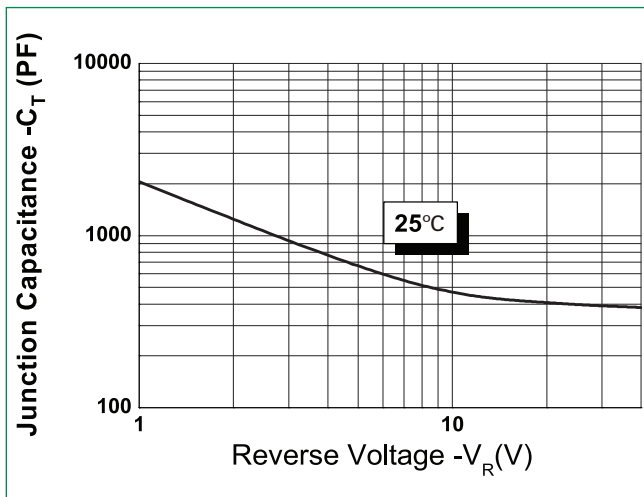
**Figure 1: Typical Forward Characteristics**



**Figure 2: Typical Reverse Characteristics**



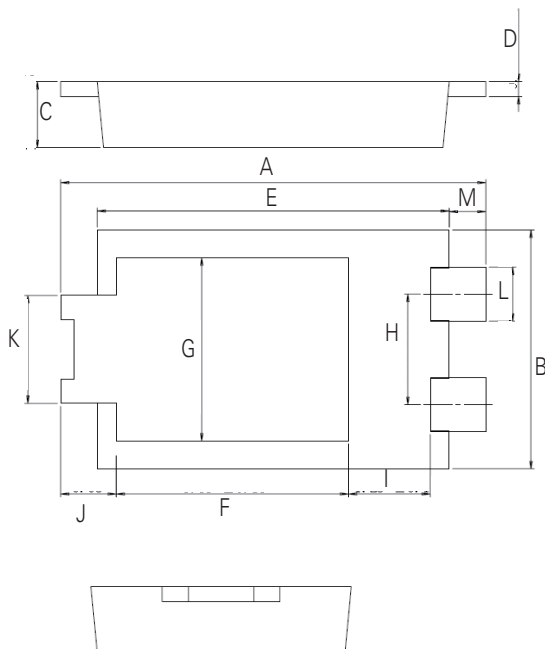
**Figure 3: Typical Junction Capacitance**



# Schottky Barrier Rectifier

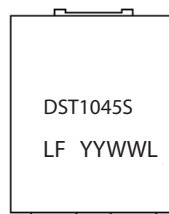
## DST1045S, 10A, 45V, TO-277B, Single

### Dimensions-TO-277B



| Symbol   | Millimeters |      |      |
|----------|-------------|------|------|
|          | Min         | Typ  | Max  |
| <b>A</b> | 6.30        | 6.50 | 6.70 |
| <b>B</b> | 3.88        | 3.98 | 4.08 |
| <b>C</b> | 0.95        | 1.10 | 1.25 |
| <b>D</b> | 0.20        | 0.25 | 0.30 |
| <b>E</b> | 5.28        | 5.38 | 5.48 |
| <b>F</b> | 3.40        | 3.55 | 3.70 |
| <b>G</b> | 2.90        | 3.05 | 3.20 |
| <b>H</b> | 1.74        | 1.84 | 1.94 |
| <b>I</b> | 1.10        | 1.25 | 1.40 |
| <b>J</b> | -           | 0.85 | -    |
| <b>K</b> | 1.70        | 1.80 | 1.90 |
| <b>L</b> | 0.85        | 0.90 | 0.95 |
| <b>M</b> | -           | 0.56 | -    |

### Part Numbering and Marking System

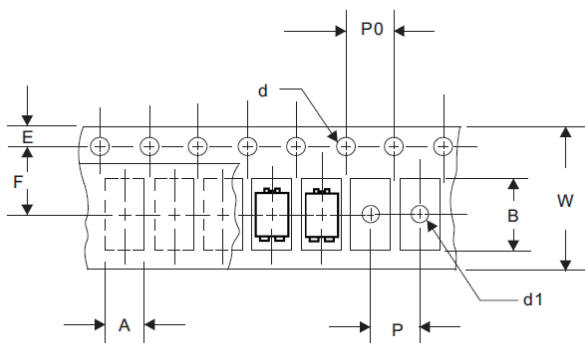


DST = Device Type  
 10 = Forward Current (10A)  
 45 = Reverse Voltage (45V)  
 S = Package Type  
 LF = Littelfuse  
 YY = Year  
 WW = Week  
 L = Lot Number

### Packing Options

| Part Number | Marking  | Packing Mode   | M.O.Q |
|-------------|----------|----------------|-------|
| DST1045S    | DST1045S | 5000pcs / Reel | 5000  |

### Carrier Tape & Reel Specification



| Symbol    | Millimeters |       |
|-----------|-------------|-------|
|           | Min         | Max   |
| <b>A</b>  | 4.28        | 4.48  |
| <b>B</b>  | 6.80        | 7.00  |
| <b>d</b>  | 1.40        | 1.60  |
| <b>d1</b> | -           | 1.50  |
| <b>E</b>  | 1.65        | 1.85  |
| <b>F</b>  | 7.40        | 7.60  |
| <b>P</b>  | 7.90        | 8.10  |
| <b>P0</b> | 3.90        | 4.10  |
| <b>W</b>  | 15.70       | 16.30 |