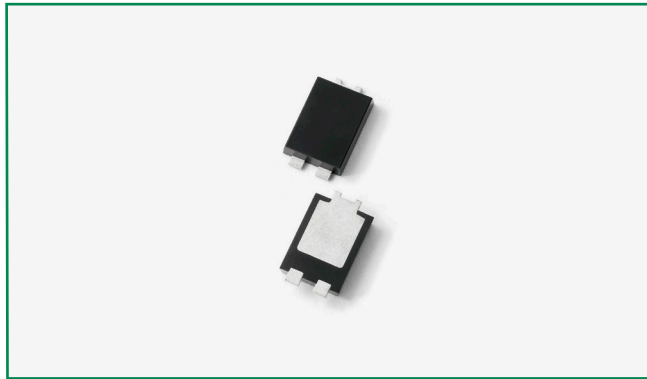
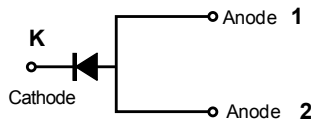


### DST1040S-A



#### Pin out



#### Description

Littelfuse DST series Ultra Low  $V_F$  Schottky Barrier Rectifier is designed to meet the general requirements of automotive 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

- Hi reliability application and automotive grade AEC-Q101 qualified
- Ultra low forward voltage drop
- High frequency operation
- MSL: Level 1 - unlimited
- High junction temperature capability
- Trench MOS Schottky technology
- Single die in TO-277B Package
- Pb-free E3 means 2nd level interconnect is Pb-free and the terminal finish material is tin(Sn) (IPC/ JEDEC J-STD-609A.01)

#### 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                        | $V_{RWM}$   | -  | 40  | V    |
| Average Forward Current*                    | $I_{F(AV)}$ | 50% duty cycle @ $T_L = 125^\circ\text{C}$ rectangular wave form | 10  | A    |
| Peak One Cycle Non-Repetitive Surge Current | $I_{FSM}$   | 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 * | $V_{F1}$ | @5A, Pulse, $T_J = 25^\circ\text{C}$                                   | 0.40  | 0.51 | V             |
|                        |          | @10A, Pulse, $T_J = 25^\circ\text{C}$                                  | 0.46  | 0.57 |               |
|                        | $V_{F2}$ | @5A, Pulse, $T_J = 125^\circ\text{C}$                                  | 0.30  | 0.43 |               |
|                        |          | @10A, Pulse, $T_J = 125^\circ\text{C}$                                 | 0.37  | 0.50 |               |
| Reverse Current *      | $I_{R1}$ | @ $V_R = \text{rated } V_R, T_J = 25^\circ\text{C}$                    | 0.015 | 0.80 | $\mu\text{A}$ |
|                        | $I_{R2}$ | @ $V_R = \text{rated } V_R, T_J = 125^\circ\text{C}$                   | 78    | 100  |               |
| Junction Capacitance   | $C_T$    | @ $V_R = 5\text{V}, T_C = 25^\circ\text{C}, \text{fSIG} = 1\text{MHz}$ | 579   | -    | pF            |

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

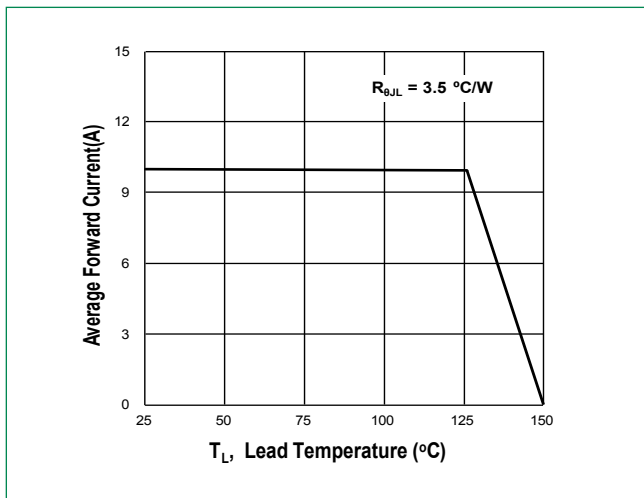
### Thermal-Mechanical Specifications

| Parameters  | Symbol       | Test Conditions | Max         | Unit |
|---|--------------|-----------------|-------------|------|
| Junction Temperature                              | $T_J$        |                 | -55 to +150 | °C   |
| Storage Temperature                               | $T_{stg}$    |                 | -55 to +150 | °C   |
| Maximum Thermal Resistance<br>Junction to Ambient | $R_{thJA}$   | DC operation    | 75          | °C/W |
| Maximum Thermal Resistance<br>Junction to Lead    | $R_{thJL}^*$ |                 | 3.5         | °C/W |
| Approximate Weight                                | wt           |                 | 0.08        | g    |
| Case Style  |              | TO-277B         |             |      |

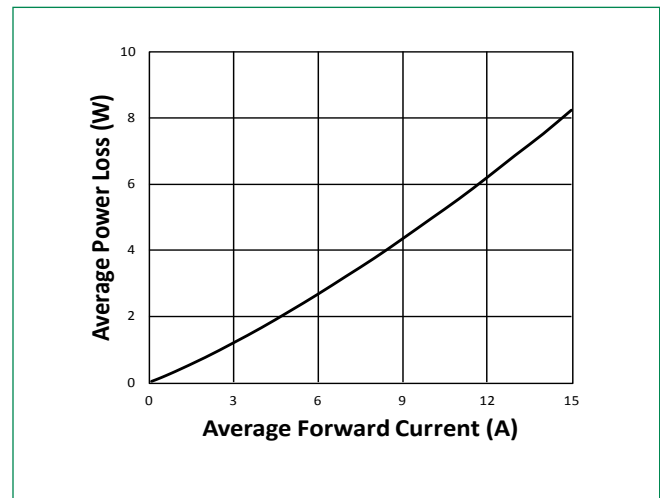
Mounted on 30 mm x 30 mm aluminum PCB; thermal resistance  $R_{thJL}$  - junction to lead

\*Lead temperature monitored at the cathode pin

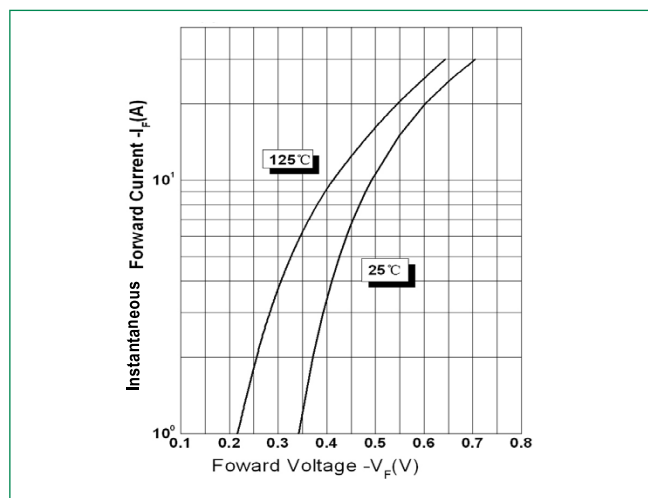
**Figure 1: Forward Current Derating Curve**



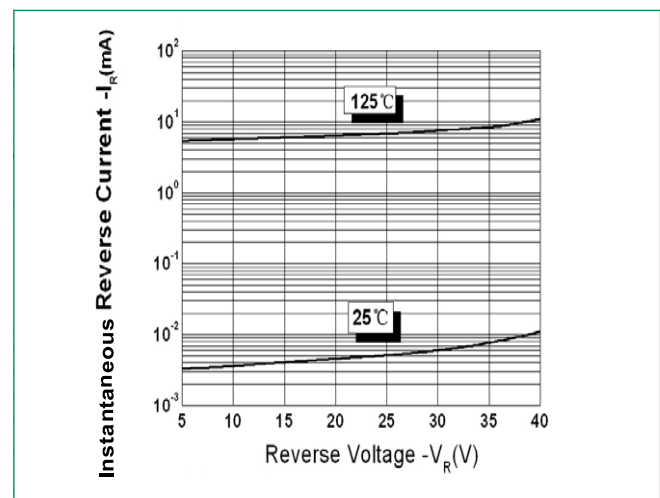
**Figure 2: Forward Power Loss Characteristics**



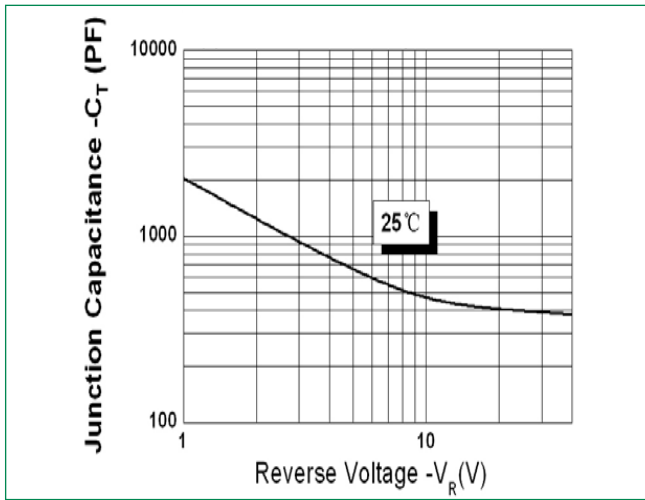
**Figure 3: Typical Forward Characteristics**



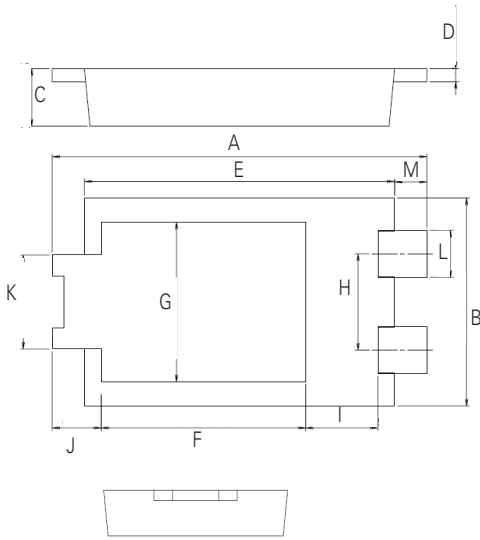
**Figure 4: Typical Reverse Characteristics**



**Figure 5: Typical Junction Capacitance**

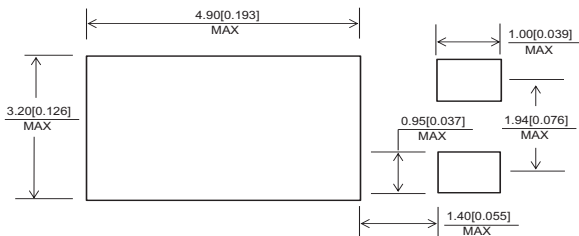


**Dimensions-TO-277B**

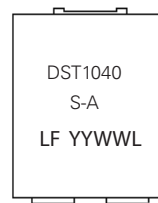


| Symbol   | Millimeters |      |      |
|----------|-------------|------|------|
|          | Min         | Typ  | Max  |
| <b>A</b> | 6.30        | 6.50 | 6.70 |
| <b>B</b> | 3.88        | 3.98 | 4.08 |
| <b>C</b> | 0.95        | 1.10 | 1.25 |
| <b>D</b> | 0.20        | 0.25 | 0.30 |
| <b>E</b> | 5.28        | 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 | -    |

**Mounting Pad Layout**



**Part Numbering and Marking System**

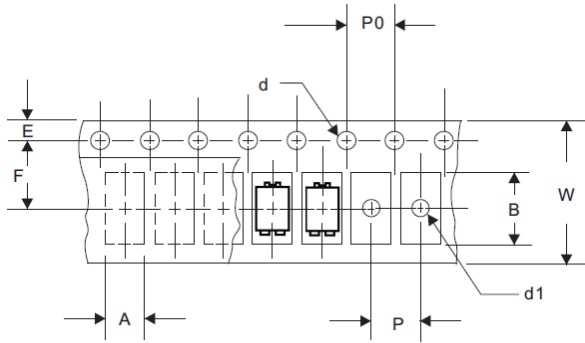


- DST = Device Type
- 10 = Forward Current (10A)
- 40 = Reverse Voltage (40V)
- S = Package Type
- A = AEC-Q101 qualified device
- LF = Littelfuse
- YY = Year
- WW = Week
- L = Lot Number

### Packing Options

| Part Number | Marking    | Packing Mode   | M.O.Q |
|-------------|------------|----------------|-------|
| DST1040S-A  | DST1040S-A | 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>  | 5.40        | 5.60  |
| <b>P</b>  | 7.90        | 8.10  |
| <b>P0</b> | 3.90        | 4.10  |
| <b>W</b>  | 11.70       | 12.30 |