SiPower

Power Semiconductor Technology

# SPSD30L45
## Schottky Barrier Rectifier

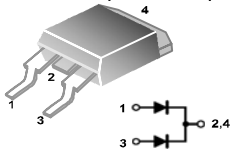
Rev. 2

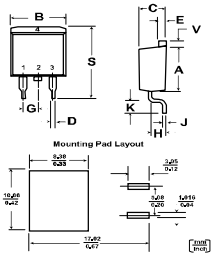
| SPSD30L45 | Schottky Barrier Rectifier<br>Low VF Device<br>$D^2PAK$ Power Package | Schottky Barrier Rectifier<br>30 Amps<br>45 Volts |
|---|---|---|

## Features

- Metal silicon junction, majority carrier conduction
- Highly stable oxide passivated junction
- Guardring for stress protection
- Low forward voltage drop.
- High current capability
- High surge capability
- High reliability
- Ideal for solar panel PV application such as By-Pass diode

$D^2PAK$ (TO-263AB)




| DIM | INCHES | | MILLIMETERS | |
|---|---|---|---|---|
| | MIN. | MAX. | MIN. | MAX. |
| A | 0.340 | 0.380 | 8.64 | 9.65 |
| B | 0.380 | 0.405 | 9.65 | 10.29 |
| C | 0.160 | 0.190 | 4.06 | 4.83 |
| D | 0.020 | 0.035 | 0.51 | 0.89 |
| E | 0.045 | 0.055 | 1.14 | 1.40 |
| G | 0.096 | 0.105 | 2.44 | 2.64 |
| H | 0.080 | 0.110 | 2.03 | 2.79 |
| J | 0.018 | 0.025 | 0.46 | 0.64 |
| K | 0.090 | 0.110 | 2.29 | 2.79 |
| S | 0.575 | 0.625 | 14.60 | 15.88 |
| V | 0.045 | 0.055 | 1.14 | 1.40 |

## Mechanical Data

- Cases: D PAK, Epoxy, Molded
- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- Terminals : All Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Weight : 1.7 grams

## Maximum Ratings and Electrical Characteristics

(Ta = 25°C unless otherwise noted)

| Parameter | Symbols | SPSD30L45 | Units |
|---|---|---|---|
| Maximum Repetitive Reverse Voltage | $V_{RRM}$ | 45 | Volts |
| Maximum RMS Voltage | $V_{RMS}$ | 31.5 | Volts |
| Maximum DC Blocking Voltage | $V_{DC}$ | 45 | Volts |
| Maximum average forward rectified current (see Fig. 1) | $I_{(AV)}$ | 30.0 | Amps |
| Non-repetitive Peak Forward Surge Current 8.3 ms Single Half-Sine-Wave | $I_{FSM}$ | 400.0 | Amps |
| Typical Thermal Resistance (Note 2 ) | $R_{\theta JC}$ | 1.5 | °C/W |
| Storage Temperature Range | $T_{stg}$ | -50 to +125 | °C |
| Operating Junction Temperature | $T_J$ | -50 to +125 | °C |
| In DC Forward Mode | $T_J$ | 200 max | °C |

Notes: 1. Pulse test with PW=300 usec, 1% duty cycle.

2. Leads are kept at ambient temperature at a distance of 10 mm from case.

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## Electrical Characteristics (Pulse test with PW=300 usec, 1% duty cycle)

| Parameter | Test Condition | | Symbols | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|---|
| Forward Voltage Drop | $T_j$=25°C | $I_F$ = 5A | $V_F$ | - | 0.34 | 0.38 | Volts |
| | $T_j$=125°C | | | - | 0.22 | - | Volts |
| | $T_j$=200°C | | | - | 0.13 | - | Volts |
| | $T_j$=25°C | $I_F$ = 8A | $V_F$ | - | 0.36 | 0.40 | Volts |
| | $T_j$=125°C | | | - | 0.25 | - | Volts |
| | $T_j$=200°C | | | - | 0.17 | - | Volts |
| | $T_j$=25°C | $I_F$ = 12A | $V_F$ | - | 0.38 | - | Volts |
| | $T_j$=125°C | | | - | 0.28 | - | Volts |
| | $T_j$=200°C | | | - | 0.21 | - | Volts |
| | $T_j$=25°C | $I_F$ = 30A | $V_F$ | - | 0.46 | 0.50 | Volts |
| | $T_j$=125°C | | | - | 0.39 | - | Volts |
| | $T_j$=200°C | | | - | 0.35 | - | Volts |
| Reverse Leakage Current | $T_j$=25°C | $V_R$=$V_{RRM}$ | $I_R$ | - | 0.4 | 1.5 | mA |
| | $T_j$=100°C | | | - | - | 100.0 | mA |

## Typical Characteristics

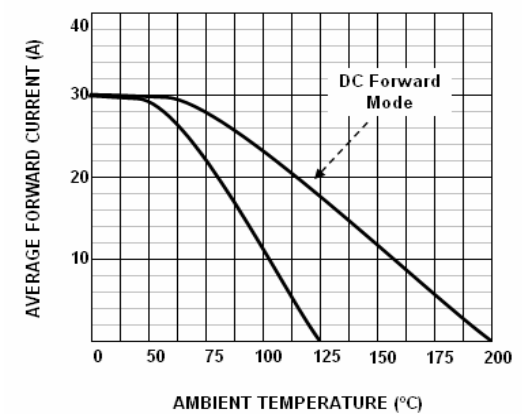


Figure 1. Forward Current Derating Curve

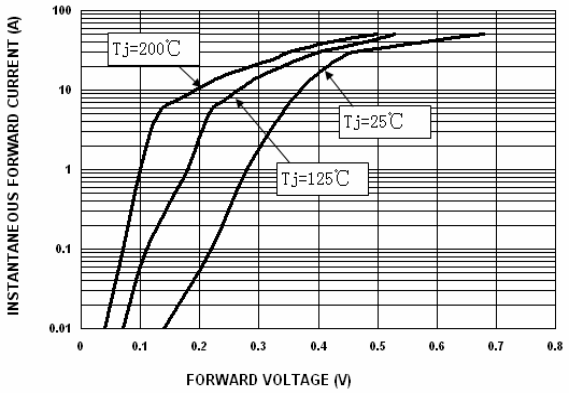


Figure 2. Forward Voltage Characteristics

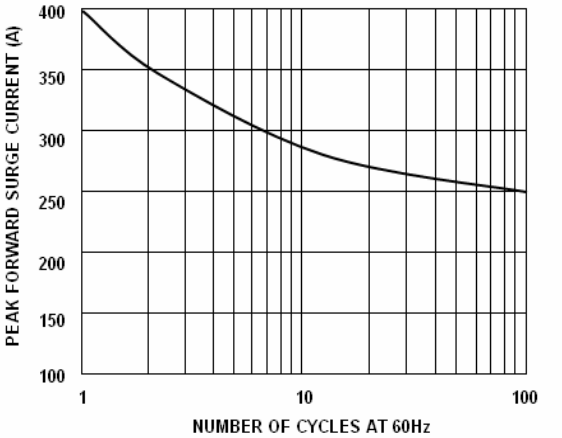


Figure 3. Non-Repetitive Surge Current

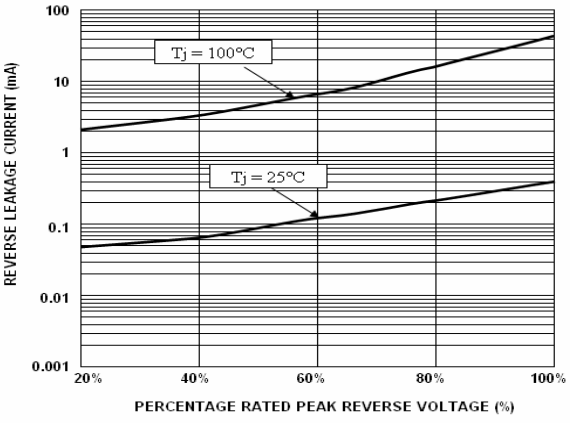


Figure 4. Reverse Current Characteristics