

## POWER SCHOTTKY RECTIFIER

### MAIN PRODUCT CHARACTERISTICS

|             |        |
|-------------|--------|
| $I_{F(AV)}$ | 2 A    |
| $V_{RRM}$   | 60 V   |
| $T_j(max)$  | 150°C  |
| $V_F(max)$  | 0.55 V |

### FEATURES AND BENEFITS

- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD VOLTAGE DROP
- AVALANCHE CAPABILITY SPECIFIED

### DESCRIPTION

Axial and Surface Mount Power Schottky rectifier suited for Switch Mode Power Supplies and high frequency DC to DC converters. Packaged in DO-41 and SMA, this device is intended for use in low voltage, high frequency inverters and small battery chargers.



### ABSOLUTE RATINGS (limiting values)

| Symbol       | Parameter                                |  | Value         | Unit             |
|--------------|--|--|---------------|------------------|
| $V_{RRM}$    | Repetitive peak reverse voltage          |  | 60            | V                |
| $I_{F(RMS)}$ | RMS forward current                      |  | 10            | A                |
| $I_{F(AV)}$  | Average forward current                  | $T_L = 115^\circ\text{C} \delta = 0.5$ SMA     | 2             | A                |
|              |  | $T_L = 110^\circ\text{C} \delta = 0.5$ DO-41   |               |                  |
| $I_{FSM}$    | Surge non repetitive forward current     | $t_p = 10 \text{ ms}$ Sinusoidal               | 75            | A                |
| $P_{ARM}$    | Repetitive peak avalanche power          | $t_p = 1 \mu\text{s}$ $T_j = 25^\circ\text{C}$ | 1600          | W                |
| $T_{stg}$    | Storage temperature range                |  | - 65 to + 150 | °C               |
| $T_j$        | Maximum junction temperature *           |  | 150           | °C               |
| $dV/dt$      | Critical rate of rise of reverse voltage |  | 10000         | V/ $\mu\text{s}$ |

\* :  $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th(j-a)}}$  thermal runaway condition for a diode on its own heatsink

# STPS2L60/A

## THERMAL RESISTANCES

| Symbol        | Parameter         |                     | Value | Unit |      |
|---------------|-------------------|---------------------|-------|------|------|
| $R_{th(j-l)}$ | Junction to leads | Lead length = 10 mm | DO-41 | 30   | °C/W |
|               |                   |                     | SMA   | 25   |      |

## STATIC ELECTRICAL CHARACTERISTICS

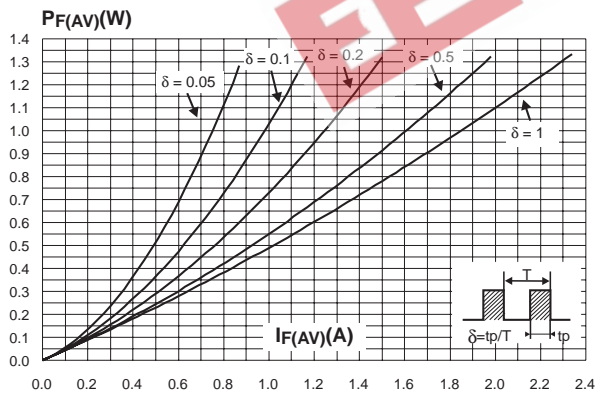
| Symbol  | Parameter               | Tests conditions          |                    | Min. | Typ. | Max. | Unit |
|---------|-------------------------|---------------------------|--------------------|------|------|------|------|
| $I_R^*$ | Reverse leakage current | $T_j = 25^\circ\text{C}$  | $V_R = 60\text{V}$ |      |      | 0.1  | mA   |
|         |                         | $T_j = 100^\circ\text{C}$ |                    |      | 2    | 10   |      |
| $V_F^*$ | Forward voltage drop    | $T_j = 25^\circ\text{C}$  | $I_F = 2\text{A}$  |      |      | 0.60 | V    |
|         |                         | $T_j = 125^\circ\text{C}$ |                    |      | 0.51 | 0.55 |      |
|         |                         | $T_j = 25^\circ\text{C}$  | $I_F = 4\text{A}$  |      |      | 0.77 |      |
|         |                         | $T_j = 125^\circ\text{C}$ |                    |      | 0.62 | 0.67 |      |

Pulse test : \*  $t_p = 380\ \mu\text{s}$ ,  $\delta < 2\%$

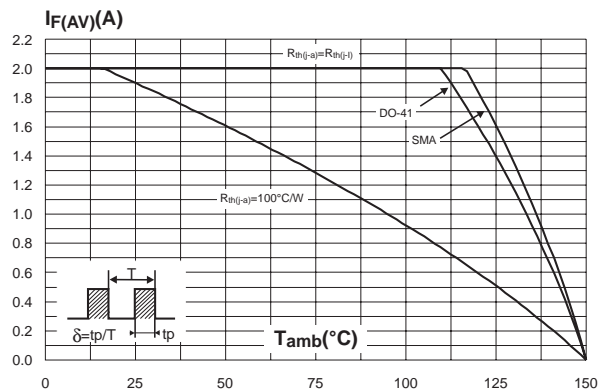
To evaluate the maximum conduction losses use the following equation:

$$P = 0.43 \times I_{F(AV)} + 0.06 \times I_{F(RMS)}^2$$

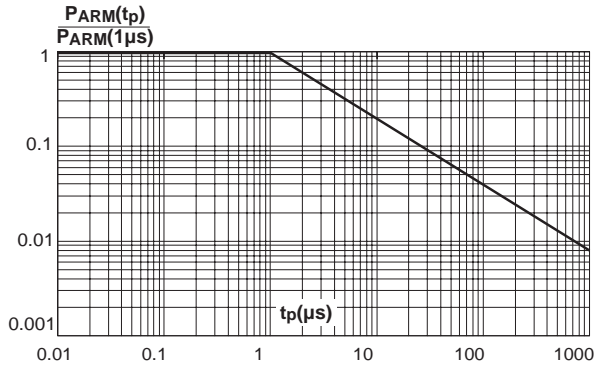
**Fig. 1:** Average forward power dissipation versus average forward current.



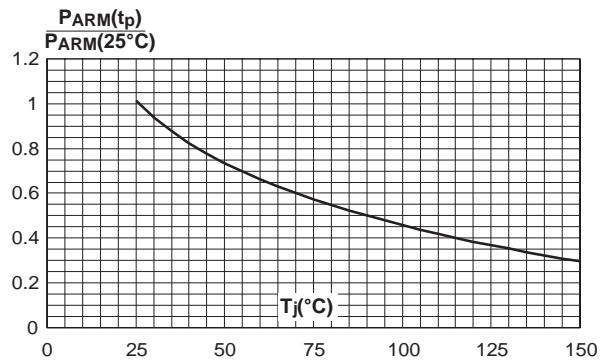
**Fig. 2:** Average forward current versus ambient temperature ( $\delta = 0.5$ ).



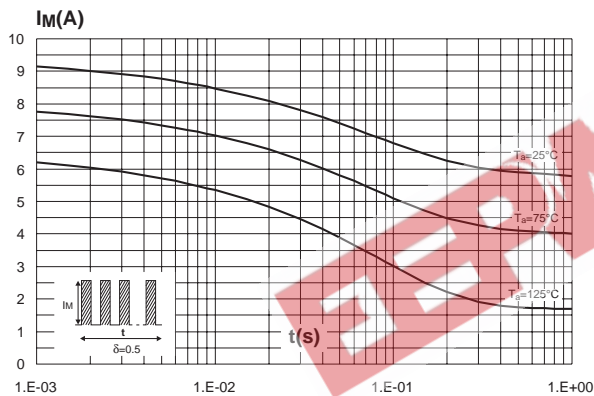
**Fig. 3:** Normalized avalanche power derating versus pulse duration.



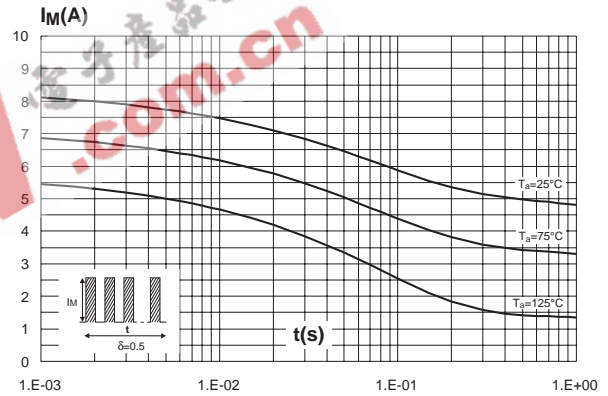
**Fig. 4:** Normalized avalanche power derating versus junction temperature.



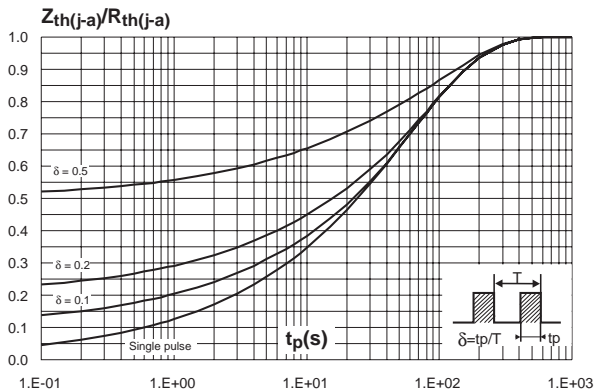
**Fig. 5-1:** Non repetitive surge peak forward current versus overload duration (maximum values) (DO-41).



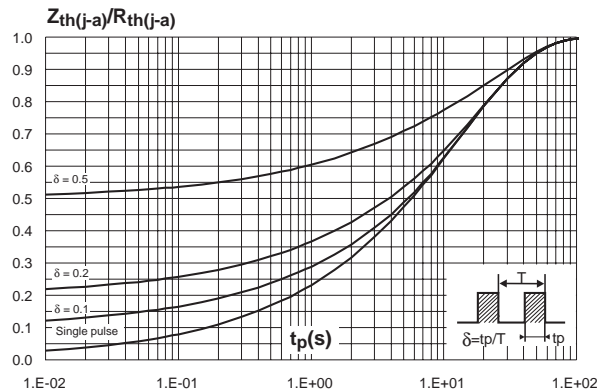
**Fig. 5-2:** Non repetitive surge peak forward current versus overload duration (maximum values) (SMA).



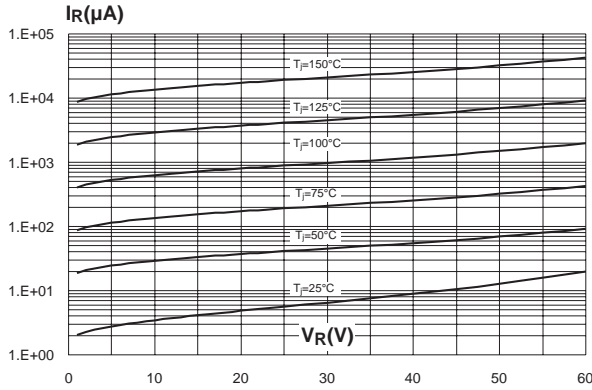
**Fig. 6-1:** Relative variation of thermal impedance junction to ambient versus pulse duration (DO-41).



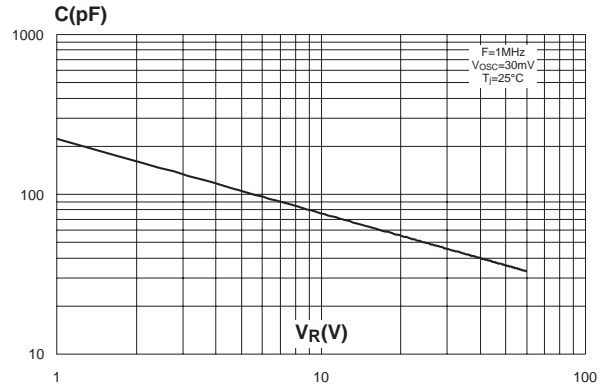
**Fig. 6-2:** Relative variation of thermal impedance junction to ambient versus pulse duration (SMA).



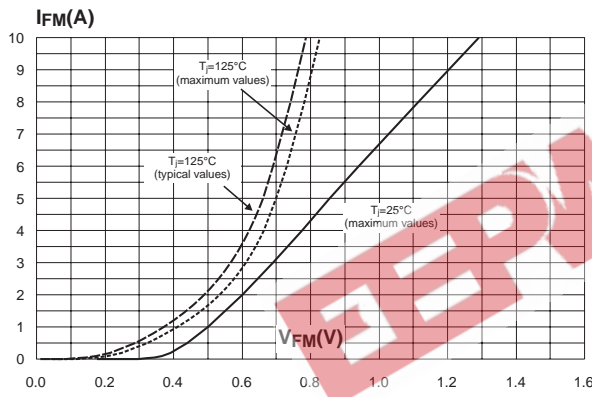
**Fig. 7:** Reverse leakage current versus reverse voltage applied (typical values).



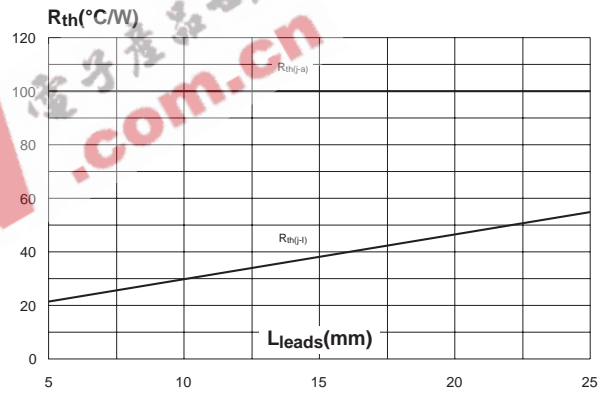
**Fig. 8:** Junction capacitance versus reverse voltage applied (typical values).



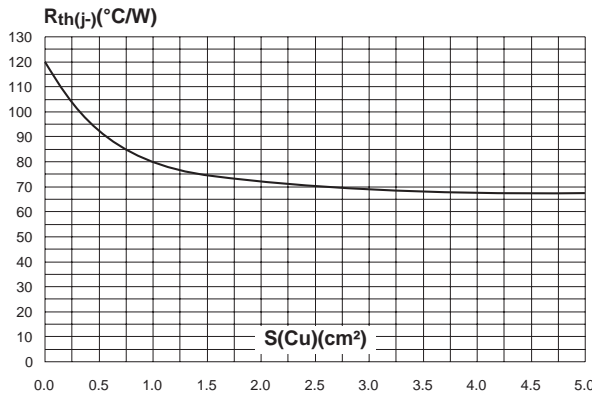
**Fig. 9:** Forward voltage drop versus forward current (low level, maximum values).



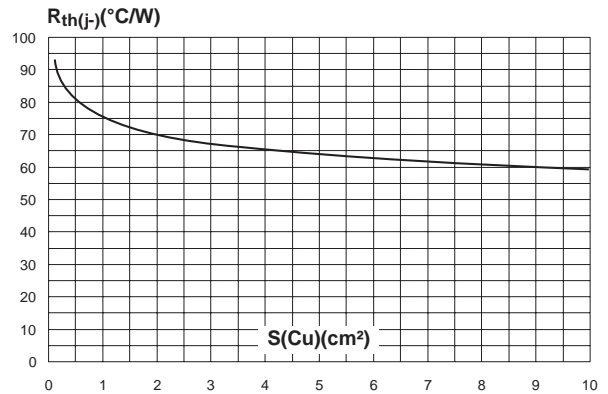
**Fig. 10:** Thermal resistance versus lead length (DO-41).



**Fig. 11-1:** Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, Cu: 35 $\mu m$ ) (SMA).

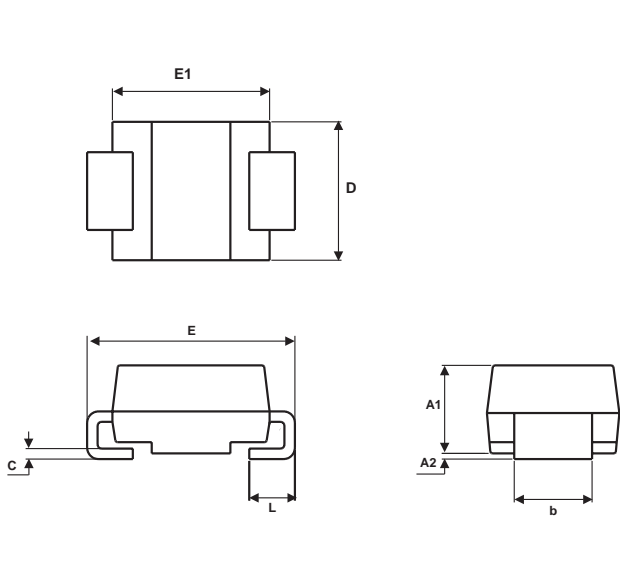


**Fig. 11-2:** Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, Cu: 35 $\mu m$ ) (DO-41).

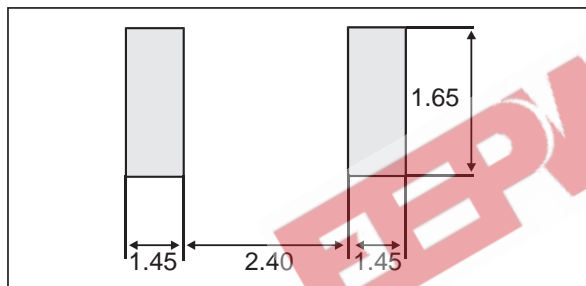


**PACKAGE MECHANICAL DATA**  
SMA (JEDEC DO-214AC)

| REF. | DIMENSIONS  |      |        |       |
|------|-------------|------|--------|-------|
|      | Millimeters |      | Inches |       |
|      | Min.        | Max. | Min.   | Max.  |
| A1   | 1.90        | 2.70 | 0.075  | 0.106 |
| A2   | 0.05        | 0.20 | 0.002  | 0.008 |
| b    | 1.25        | 1.65 | 0.049  | 0.065 |
| c    | 0.15        | 0.41 | 0.006  | 0.016 |
| E    | 4.80        | 5.60 | 0.189  | 0.220 |
| E1   | 3.95        | 4.60 | 0.156  | 0.181 |
| D    | 2.25        | 2.95 | 0.089  | 0.116 |



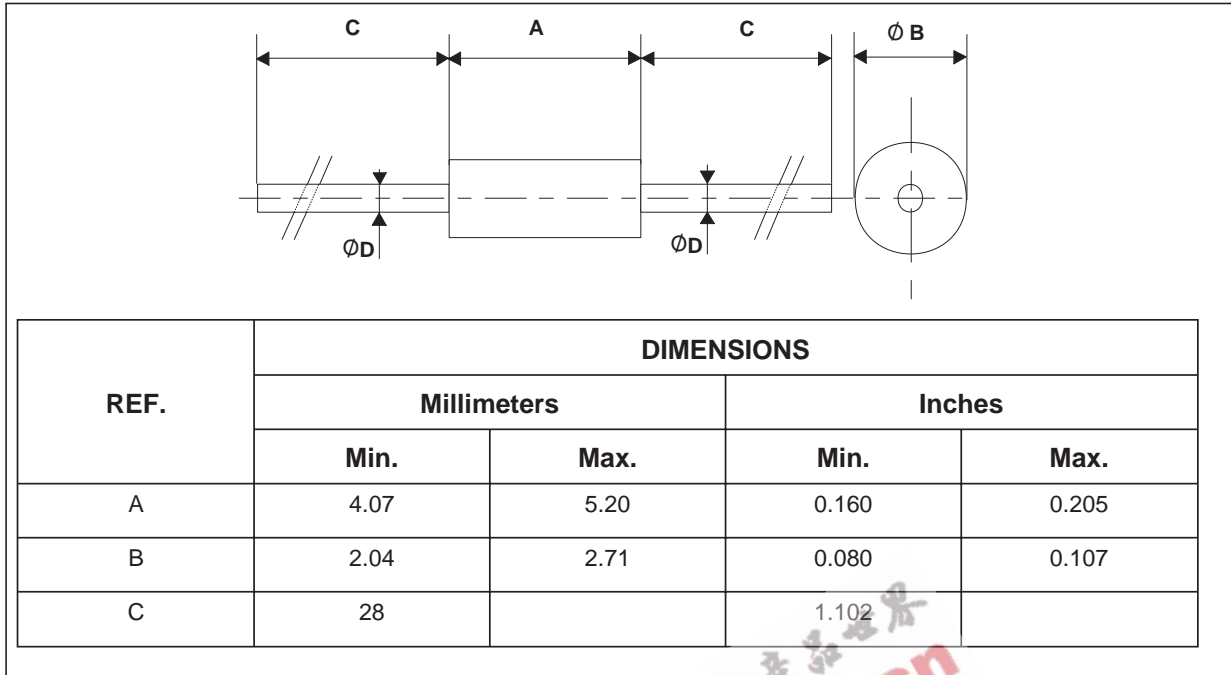
**FOOT PRINT DIMENSIONS** (in millimeters)



# STPS2L60/A

## PACKAGE MECHANICAL DATA

DO-41 plastic



| Ordering type | Marking  | Package | Weight  | Base qty | Delivery mode |
|---------------|----------|---------|---------|----------|---------------|
| STPS2L60      | STPS2L60 | DO-41   | 0.34g   | 2000     | Ammopack      |
| STPS2L60RL    | STPS2L60 | DO-41   | 0.34g   | 5000     | Tape & Reel   |
| STPS2L60A     | S26      | SMA     | 0.068 g | 5000     | Tape & Reel   |

- EPOXY MEETS UL94,V0

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