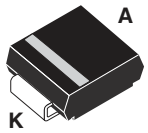
# STPS3L60U-Y

## Automotive power Schottky rectifier

**Datasheet – production data**




**SMB**
**STPS3L60UY**

**Table 1. Device summary**

| Symbol | Value |
|---|---|
| $I_{F(AV)}$ | 3 A |
| $V_{RRM}$ | 60 V |
| $T_{j\ (max)}$ | 150 °C |
| $V_{F\ (max)}$ | 0.61 V |

## Features

- Negligible switching losses
- Low forward voltage drop
- Avalanche capability specified
- AEC-Q101 qualified

## Description

Surface mount power Schottky rectifier suited for high frequency DC to DC converters. Packaged in SMB, this device is intended for use in low voltage, high frequency inverters and small battery chargers and for applications where there are space constraints.

# 1 Characteristics

**Table 2. Absolute ratings(1)**

| 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 | $T_L$ = 105 °C $\delta$ = 0.5 | 3 | A |
| $I_{FSM}$ | Surge non repetitive forward current | $t_p$ = 10 ms Sinusoidal | 100 | A |
| $P_{ARM}$ | Repetitive peak avalanche power | $t_p$ = 1 µs $T_j$ = 25 °C | 2000 | W |
| $T_{stg}$ | Storage temperature range | | -65 to + 150 | °C |
| $T_j$ | Operating junction temperature(2) range | | -40 to + 150 | °C |
| dV/dt | Critical rate of rise reverse voltage | | 10000 | V/µs |

1. limiting values, per diode
2. $\frac{dPtot}{dTj} < \frac{1}{Rth(j-a)}$ condition to avoid thermal runaway for a diode on its own heatsink

**Table 3. Thermal resistance**

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $R_{th\ (j-l)}$ | Junction to leads | 20 | °C/W |

**Table 4. Static electrical characteristics**

| Symbol | Parameter | Tests Conditions | | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|---|
| $I_R$ (1) | Reverse leakage current | $T_j$ = 25 °C | $V_R = V_{RRM}$ | - | - | 150 | µA |
| | | $T_j$ = 100 °C | | - | 4 | 15 | mA |
| | | $T_j$ = 125 °C | | - | 14 | 30 | |
| $V_F$ (1) | Forward voltage drop | $T_j$ = 25 °C | $I_F$ = 3 A | - | - | 0.62 | V |
| | | $T_j$ = 100 °C | | - | 0.53 | 0.61 | |
| | | $T_j$ = 125 °C | | - | 0.51 | 0.59 | |
| | | $T_j$ = 25 °C | $I_F$ = 6 A | - | - | 0.79 | |
| | | $T_j$ = 100 °C | | - | 0.62 | 0.71 | |
| | | $T_j$ = 125 °C | | - | 0.6 | 0.69 | |

1. Pulse test: $t_p$ = 380 µs, $\delta$ < 2%

To evaluate the conduction losses use the following equation:

$P = 0.44 \times I_{F(AV)} + 0.05 \times I_F{}^2{}_{(RMS)}$

**Figure 1. Average forward power dissipation versus average forward current**

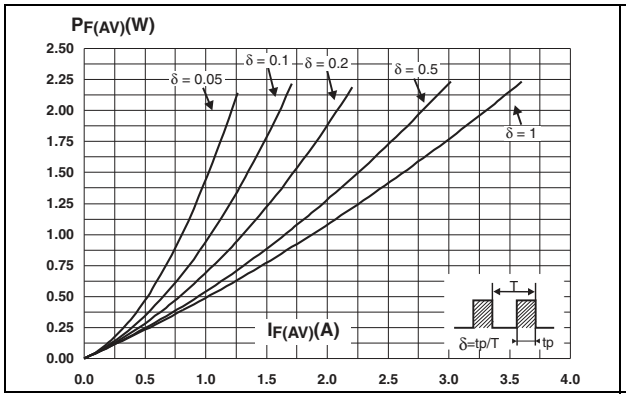



**Figure 2. Average forward current versus ambient temperature (δ = 0.5)**

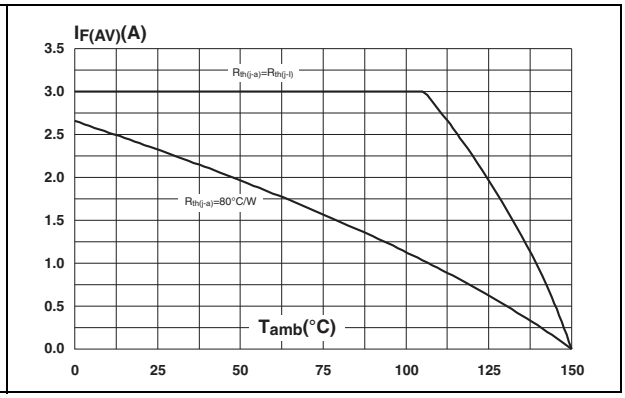



**Figure 3. Normalized avalanche power derating versus pulse duration**

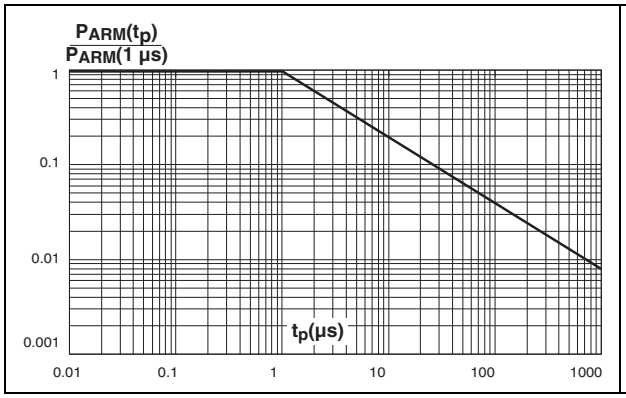



**Figure 4. Normalized avalanche power derating versus junction temperature**

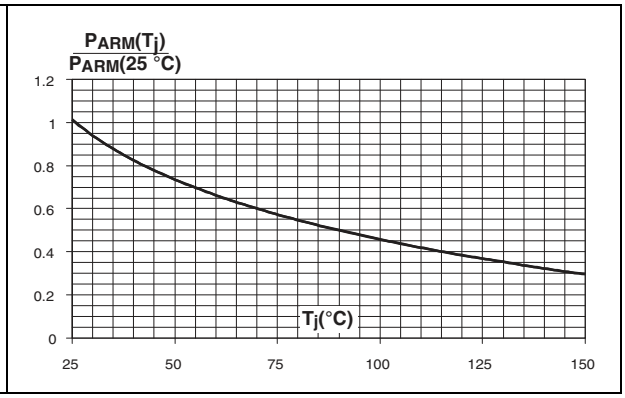



**Figure 5. Non repetitive surge peak forward current versus overload duration (maximum values)**

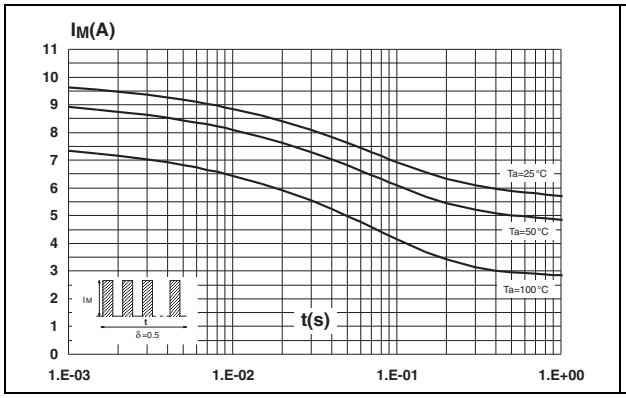



**Figure 6. Relative variation of thermal impedance junction to ambient versus pulse duration**

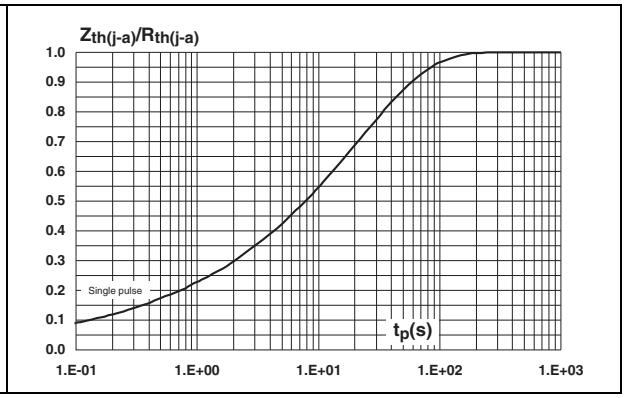


**Figure 7. Reverse leakage current versus reverse voltage applied (typical values)**

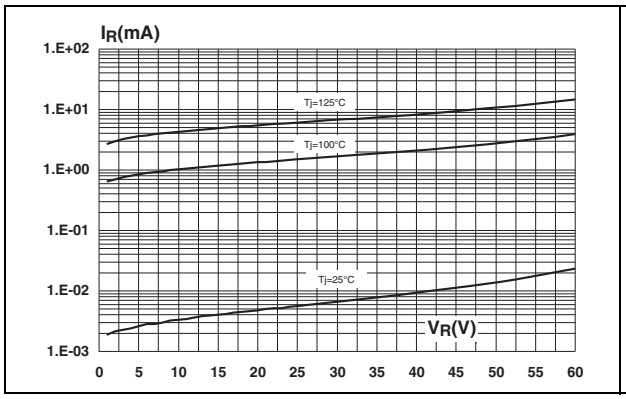



**Figure 8. Junction capacitance versus reverse voltage applied (typical values)**

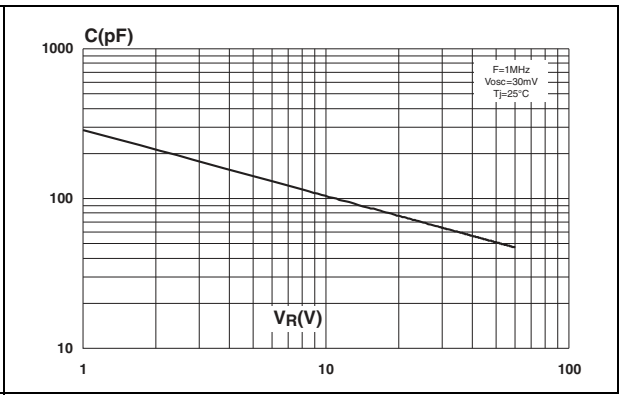



**Figure 9. Forward voltage drop versus forward current (high level)**

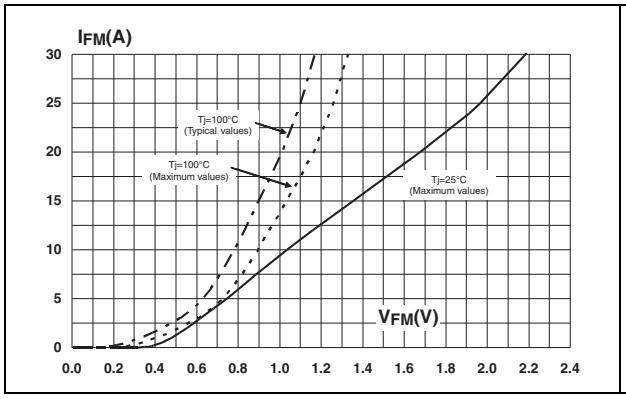



**Figure 10. Forward voltage drop versus forward current (low level)**

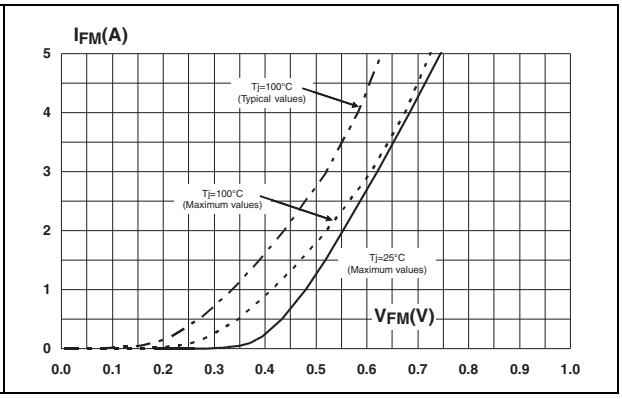
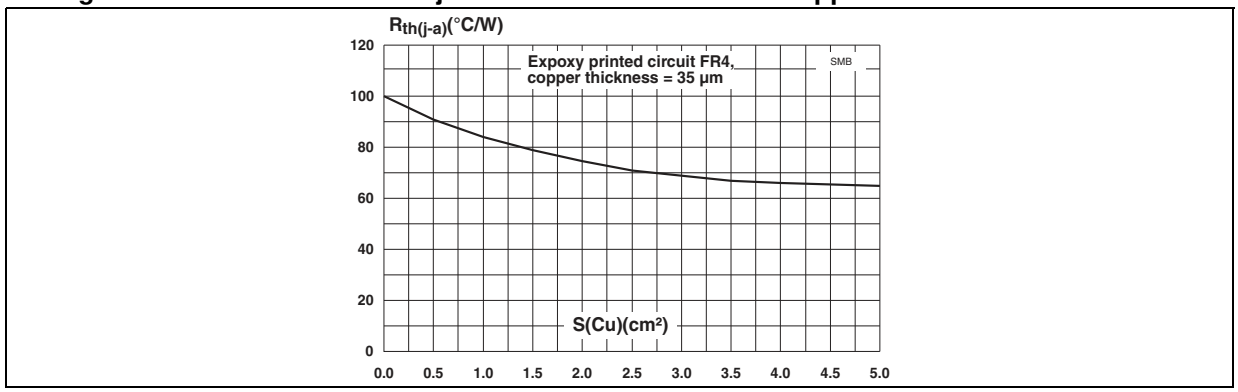



**Figure 11. Thermal resistance junction to ambient versus copper surface under each lead**



# 2 Package information

- Epoxy meets UL94,V0
- Lead-free package

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**Figure 12. SMB dimension definitions**

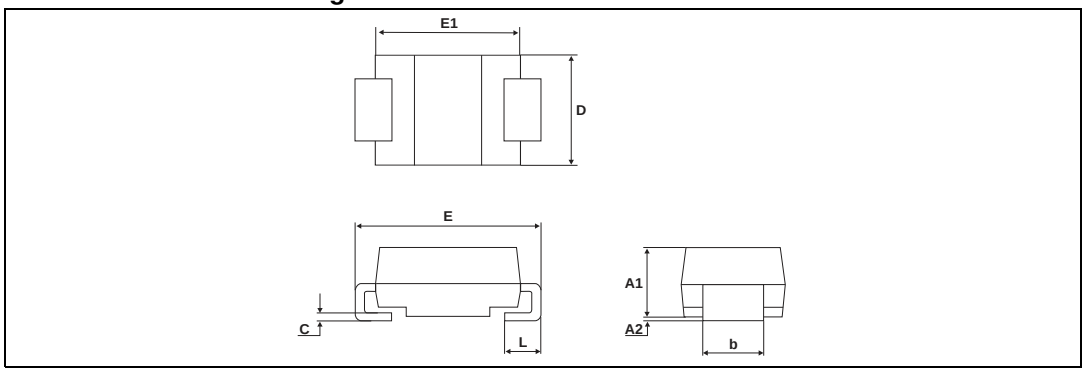
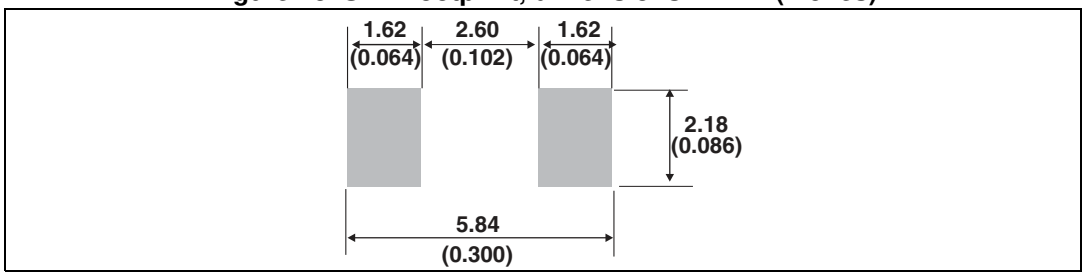



**Table 5. SMB dimension values**

| Ref. | Dimensions | | | |
|---|---|---|---|---|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A1 | 1.90 | 2.45 | 0.075 | 0.096 |
| A2 | 0.05 | 0.20 | 0.002 | 0.008 |
| b | 1.95 | 2.20 | 0.077 | 0.087 |
| c | 0.15 | 0.40 | 0.006 | 0.016 |
| D | 3.30 | 3.95 | 0.130 | 0.156 |
| E | 5.10 | 5.60 | 0.201 | 0.220 |
| E1 | 4.05 | 4.60 | 0.159 | 0.181 |
| L | 0.75 | 1.50 | 0.030 | 0.059 |

**Figure 13. SMB footprint, dimensions in mm (inches)**



# 3 Ordering information

**Table 6. Ordering information**

| Order codes | Marking | Package | Weight | Base qty | Delivery mode |
|---|---|---|---|---|---|
| STPS3L60UY | G36Y | SMB | 0.107 g | 2500 | Tape and reel |

# 4 Revision history

**Table 7. Document revision history**

| Date | Revision | Changes |
|---|---|---|
| 22-Mar-2013 | 1 | Initial release. |

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