

STPS2H100ZFY

Automotive high voltage power Schottky rectifier

Datasheet - production data



Features



- AEC-Q101 qualified
- High junction temperature capability
- Low leakage current
- Negligible switching losses
- Avalanche capability specified
- ECOPACK[®]2 compliant component
- PPAP capable

Description

Single chip Schottky rectifiers suited to automotive applications, such as lighting, diesel injection, or engine control unit.

Packaged in SOD123Flat, this device is especially intended for surface mounting and used in high frequency converters, free wheeling and reverse polarity protection in automotive applications.

| Table 1: Device summary | | | |
|-------------------------|--------|--|--|
| Symbol | Value | | |
| I _{F(AV)} | 2 A | | |
| V _{RRM} | 100 V | | |
| V _F (typ.) | 0.65 V | | |
| T _j (max.) | 175 °C | | |

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This is information on a product in full production.

1 Characteristics

Table 2: Absolute ratings (limiting values at 25 °C, unless otherwise specified)

| Symbol | Parameter | Value | Unit | |
|--------------------|--|-------------|------|---|
| Vrrm | Repetitive peak reverse voltage $T_j = -40 \text{ °C to } +175 \text{ °C}$ | | 100 | V |
| I _{F(AV)} | Average forward current δ = 0.5, square wave T_{L} = 140 °C | | 2 | А |
| IFSM | Surge non repetitive forward current t _p = 10 ms sinusoidal | | 50 | А |
| PARM | Repetitive peak avalanche power $t_p = 10 \ \mu s, T_j = 125 \ ^{\circ}C$ | | 105 | W |
| T _{stg} | Storage temperature range | -65 to +175 | °C | |
| Tj | Operating junction temperature range ⁽¹⁾ -4 | | | C |

Notes:

 $^{(1)}(dP_{tot}/dT_j) < (1/R_{th(j-a)})$ condition to avoid thermal runaway for a diode on its own heatsink.

| Table 3: Thermal parameters | | | | |
|-----------------------------|---------------------------|--|--|--|
| Symbol | Parameter Max. value Unit | | | |
| Rth(j-l) | Junction to lead 20 °C/W | | | |

| Symbol | Parameter | Test conditions | | Min. | Тур. | Max. | Unit |
|--|---------------------------------------|-------------------------|---------------------------|------|------|------|------|
| I_ (1) | $I_{P}^{(1)}$ Reverse leakage current | Tj = 25 °C | $V_{\rm R} = V_{\rm RRM}$ | - | | 1 | μA |
| IR | | Tj = 125 °C | | - | 0.2 | 0.5 | mA |
| | | T _j = 25 °C | IF = 2 A | - | | 0.86 | |
| VF ⁽²⁾ | | Tj = 125 °C | IF = 2 A | - | 0.65 | 0.70 | V |
| V _F ⁽²⁾ Forward voltage drop | Tj = 25 °C | - 4 0 | - | | 0.96 | v | |
| | | T _j = 125 °C | F = 4 A | - | 0.75 | 0.83 | |

Table 4: Static electrical characteristics

Notes:

 $^{(1)}$ Pulse test: tp = 5 ms, δ < 2% $^{(2)}$ Pulse test: tp = 380 μ s, δ < 2%

To evaluate the conduction losses, use the following equation:

 $P = 0.57 \text{ x } I_{F(AV)} + 0.065 \text{ x } I_{F^{2}(RMS)}$

For more information, please refer to the following application notes related to the power losses.

- AN604 (Calculation of conduction losses in a power rectifier)
- AN4021 (Calculation of reverse losses in a power diode)



0.001

57

1

10

1.E+00

t_p(s)

Ш

1.E+01

1.E-01

1.E-02





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1.E-03

Single pulse

0.2

0.1

0.0

1.E-04

t₀(µs)

1000

100

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Characteristics

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2 Package information

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK[®] packages, depending on their level of environmental compliance. ECOPACK[®] specifications, grade definitions and product status are available at: *www.st.com*. ECOPACK[®] is an ST trademark.

- Epoxy meets UL94, V0
- Cooling method: by conduction (C)

2.1 SOD123Flat package information



Figure 9: SOD123Flat package outline



Package information

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| Table 5: SOD123Flat package mechanical data Dimensions | | | | |
|--|------|-------------|------|--|
| | | | | |
| Ref. | | Millimeters | | |
| | Min. | Тур. | Max. | |
| A | 0.86 | 0.98 | 1.10 | |
| b | 0.80 | 0.90 | 1.00 | |
| с | 0.08 | 0.15 | 0.25 | |
| c1 | 0.00 | | 0.10 | |
| D | 2.50 | 2.60 | 2.70 | |
| E | 1.50 | 1.60 | 1.80 | |
| HD | 3.30 | 3.50 | 3.70 | |
| L | 0.45 | 0.65 | 0.85 | |







3 Ordering information

| Table 6: Ordering information | | | | | |
|-------------------------------|-------------------------------------|------------|---------------|------|---------------|
| Order code | de Marking Package Weight Base qty. | | Delivery mode | | |
| STPS2H100ZFY | 2Y1 | SOD123Flat | 12.5 mg | 3000 | Tape and reel |

4 Revision history

| Date | Revision | Changes |
|-------------|----------|------------------|
| 20-Oct-2016 | 1 | Initial release. |



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