



STPS30H100CW/CT

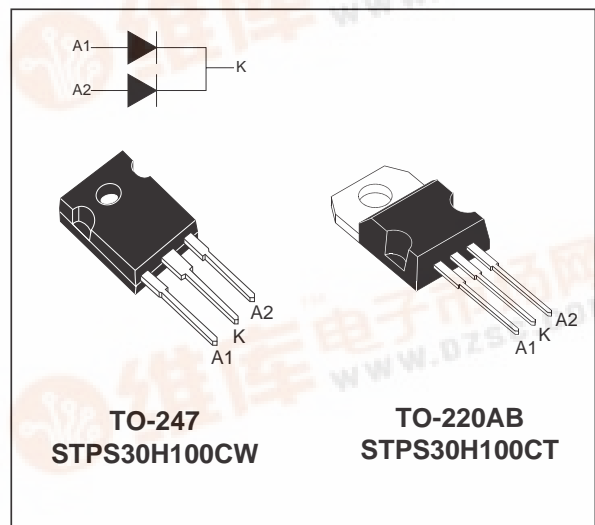
HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

| | |
|-------------|----------|
| $I_{F(AV)}$ | 2 x 15 A |
| V_{RRM} | 100 V |
| $T_j (max)$ | 175 °C |
| $V_F (max)$ | 0.67 V |

FEATURES AND BENEFITS

- NEGLIGIBLE SWITCHING LOSSES
- LOW LEAKAGE CURRENT
- GOOD TRADE OFF BETWEEN LEAKAGE CURRENT AND FORWARD VOLTAGE DROP
- LOW THERMAL RESISTANCE
- AVALANCHE CAPABILITY SPECIFIED



DESCRIPTION

Dual center tap Schottky rectifier suited for Switch Mode Power Supplies and high frequency DC to DC converters. Packaged in TO-247, this device is intended for use in high frequency inverters.

ABSOLUTE RATINGS (limiting values, per diode)

| Symbol | Parameter | | Value | Unit | |
|--------------|--|--|---------------|------------------|---|
| V_{RRM} | Repetitive peak reverse voltage | | 100 | V | |
| $I_{F(RMS)}$ | RMS forward current | | 30 | A | |
| $I_{F(AV)}$ | Average forward current | $T_c = 155^\circ\text{C}$ | Per diode | 15 | A |
| | | $\delta = 0.5$ | Per device | 30 | A |
| I_{FSM} | Surge non repetitive forward current | $t_p = 10 \text{ ms}$ sinusoidal | 250 | A | |
| I_{RRM} | Repetitive peak reverse current | $t_p = 2 \mu\text{s}$ square $F = 1\text{kHz}$ | 1 | A | |
| I_{RSM} | Non repetitive peak reverse current | $t_p = 100 \mu\text{s}$ square | 3 | A | |
| P_{ARM} | Repetitive peak avalanche power | $t_p = 1\mu\text{s}$ $T_j = 25^\circ\text{C}$ | 10800 | W | |
| T_{stg} | Storage temperature range | | - 65 to + 175 | °C | |
| T_j | Maximum operating junction temperature * | | 175 | °C | |
| dV/dt | Critical rate of rise of reverse voltage | | 10000 | V/ μs | |

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



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THERMAL RESISTANCES

| Symbol | Parameter | | Value | Unit |
|----------------------|------------------|-----------|-------|------|
| R _{th(j-c)} | Junction to case | Per diode | 1.6 | °C/W |
| | | Total | 0.9 | |
| R _{th(c)} | | Coupling | 0.1 | |

When the diodes 1 and 2 are used simultaneously :
 $\Delta T_j(\text{diode } 1) = P(\text{diode } 1) \times R_{th(j-c)}(\text{Per diode}) + P(\text{diode } 2) \times R_{th(c)}$

STATIC ELECTRICAL CHARACTERISTICS

| Symbol | Parameter | Tests Conditions | | Min. | Typ. | Max. | Unit |
|-------------------|-------------------------|------------------------|-----------------------------------|------|------|------|------|
| I _R * | Reverse leakage current | T _j = 25°C | V _R = V _{RRM} | | | 5 | μA |
| | | T _j = 125°C | | | 2 | 6 | mA |
| V _F ** | Forward voltage drop | T _j = 25°C | I _F = 15 A | | | 0.80 | V |
| | | T _j = 125°C | I _F = 15 A | | 0.64 | 0.67 | |
| | | T _j = 25°C | I _F = 30 A | | | 0.93 | |
| | | T _j = 125°C | I _F = 30 A | | 0.74 | 0.80 | |

Pulse test : * tp = 5 ms, δ < 2%
 ** tp = 380 μs, δ < 2%

To evaluate the maximum conduction losses use the following equation :
 $P = 0.54 \times I_{F(AV)} + 0.0086 \times I_{F(RMS)}^2$

Fig. 1: Average forward power dissipation versus average forward current (per diode).

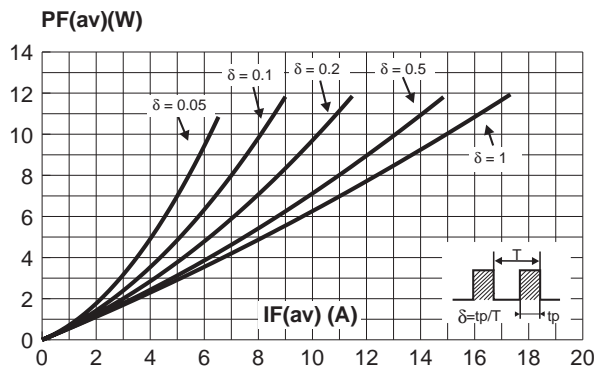


Fig. 2: Average forward current versus ambient temperature (δ=0.5, per diode).

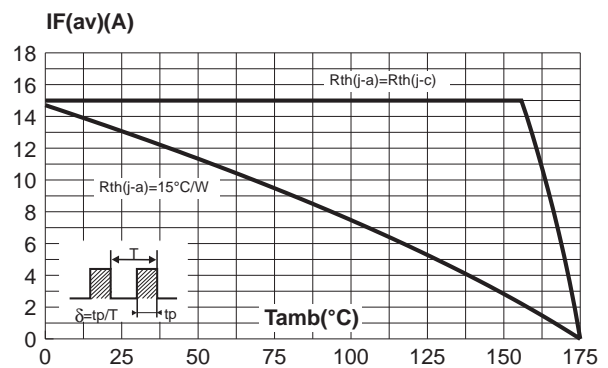


Fig. 3: Normalized avalanche power derating versus pulse duration.

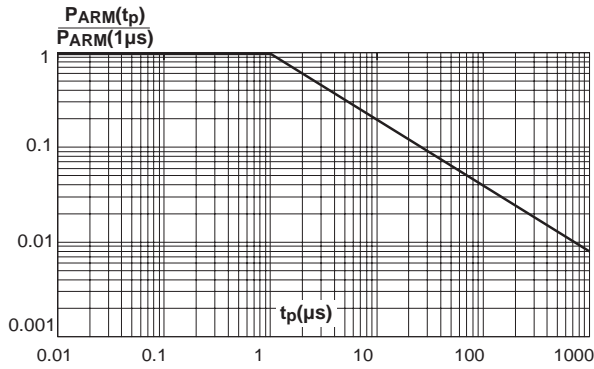


Fig. 4: Normalized avalanche power derating versus junction temperature.

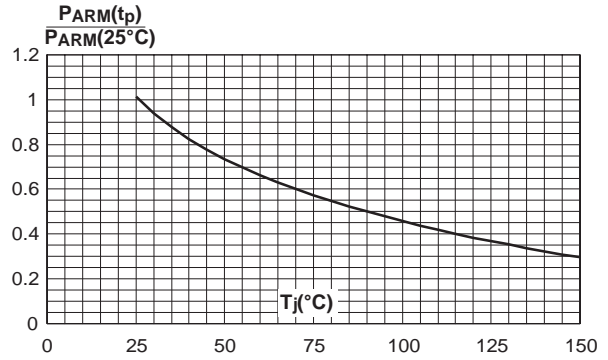


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values, per diode).

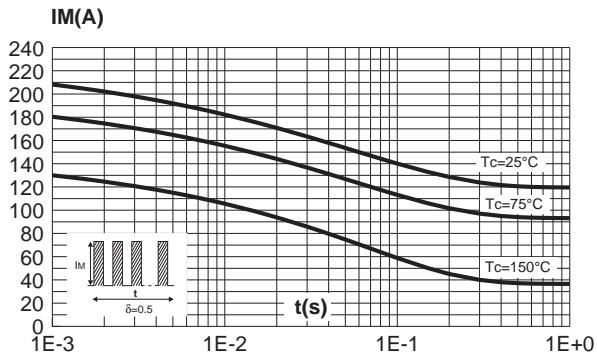


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration.

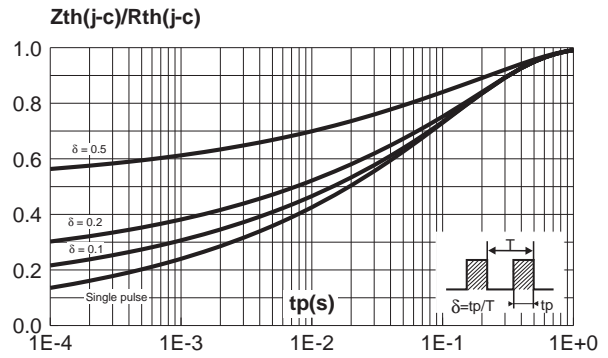


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values, per diode).

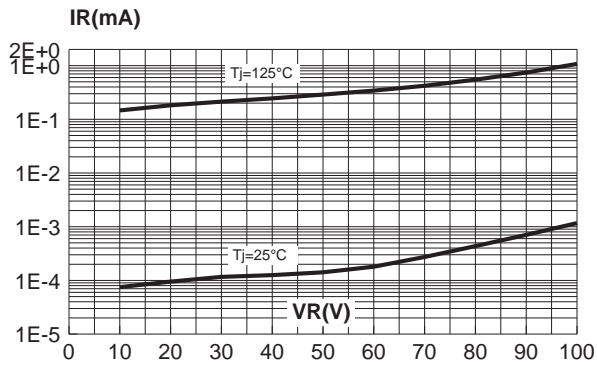
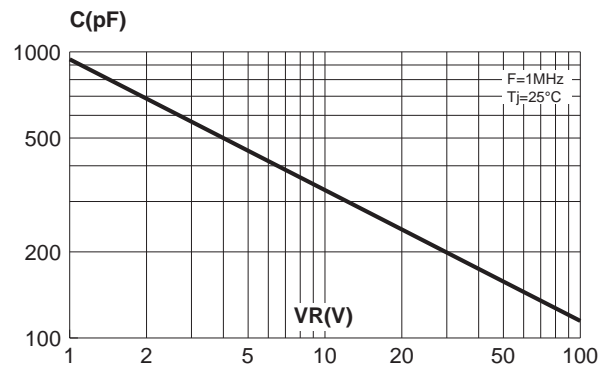
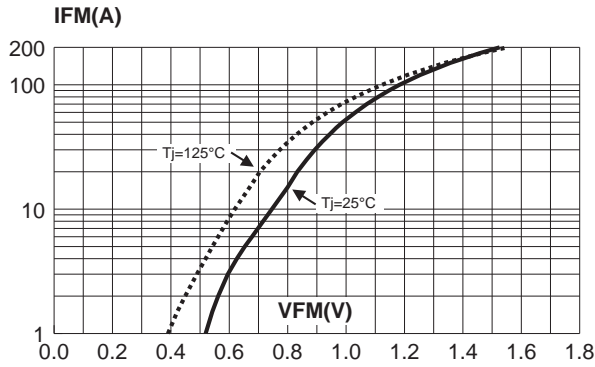


Fig. 8: Junction capacitance versus reverse voltage applied (typical values, per diode).

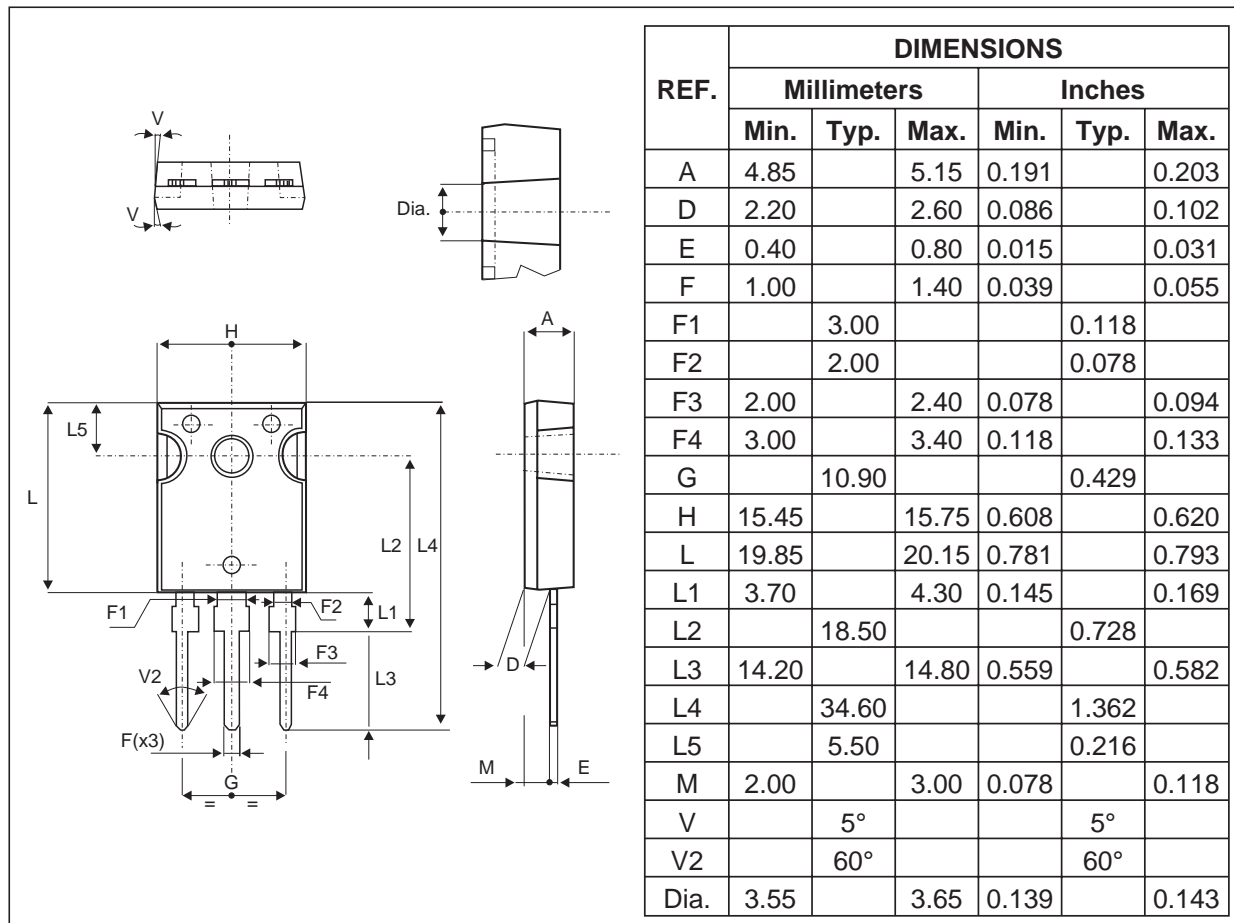


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Fig. 9: Forward voltage drop versus forward current (maximum values, per diode).

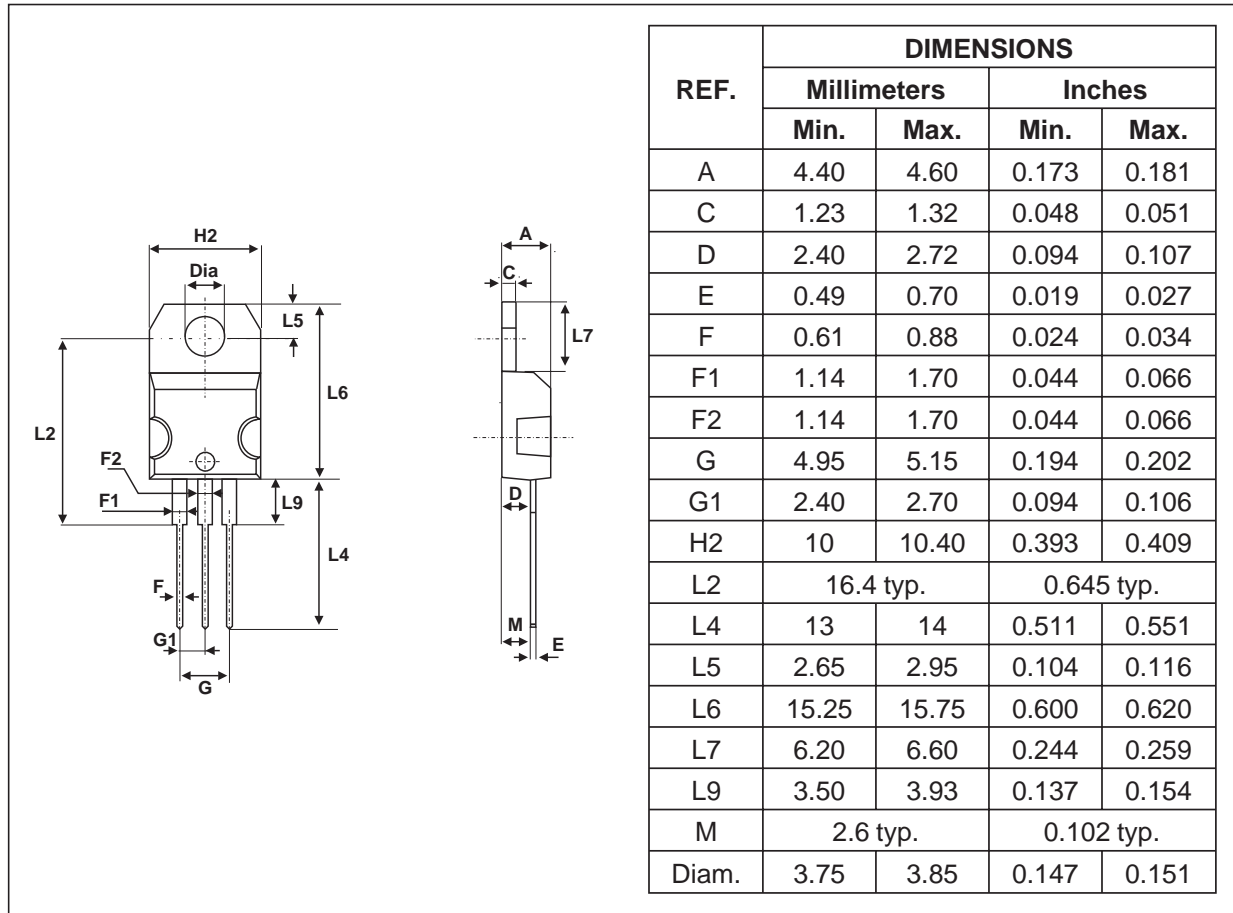


PACKAGE MECHANICAL DATA TO-247



- COOLING METHOD: C
- RECOMMENDED TORQUE VALUE: 0.8 N.M.
- MAXIMUM TORQUE VALUE: 1 N.M.

PACKAGE MECHANICAL DATA
TO-220AB



| Ordering type | Marking | Package | Weight | Base qty | Delivery mode |
|---------------|--------------|----------|--------|----------|---------------|
| STPS30H100CW | STPS30H100CW | TO-247 | 4.36g | 30 | Tube |
| STPS30H100CT | STPS30H100CT | TO-220AB | 2.20 g | 50 | Tube |

- EPOXY MEETS UL94,V0

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