



STPS8H100D/F/G/G-1

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

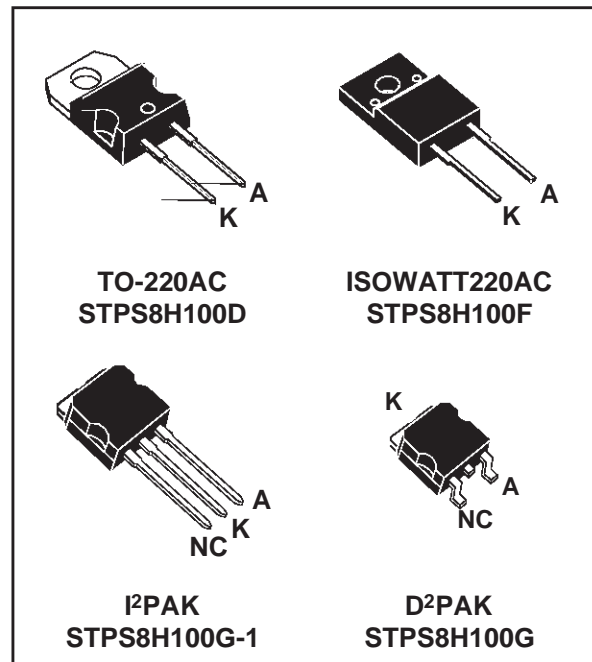
| | |
|-------------|--------|
| $I_{F(AV)}$ | 8 A |
| V_{RRM} | 100 V |
| $T_j(max)$ | 175 °C |
| $V_F(max)$ | 0.58 V |

FEATURES AND BENEFITS

- NEGLIGIBLE SWITCHING LOSSES
- HIGH JUNCTION TEMPERATURE CAPABILITY
- LOW LEAKAGE CURRENT
- GOOD TRADE OFF BETWEEN LEAKAGE CURRENT AND FORWARD VOLTAGE DROP
- AVALANCHE RATED

DESCRIPTION

Schottky barrier rectifier designed for high frequency compact Switched Mode Power Supplies such as adaptators and on board DC/DC converters.



ABSOLUTE RATINGS (limiting values)

| 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 $\delta = 0.5$ | TO-220AC / I²PAK / D²PAK | $T_c = 165^\circ\text{C}$ | 8 | A |
| | | ISOWATT220AC | $T_c = 150^\circ\text{C}$ | | |
| I_{FSM} | Surge non repetitive forward current | tp = 10 ms sinusoidal | | 250 | A |
| I_{RRM} | Repetitive peak reverse current | tp = 2 μs F = 1kHz square | | 1 | A |
| I_{RSM} | Non repetitive peak reverse current | tp = 100 μs square | | 3 | A |
| E_{as} | Non repetitive avalanche energy | $T_j = 25^\circ\text{C}$ L = 60 mH $I_{as} = 2$ A | | 24 | mJ |
| I_{ar} | Repetitive avalanche current | $V_a = 1.5 \times V_R$ typ Current decaying linearly to 0 in 1 μs Frequency limited by T_j max. | | 2 | A |
| T_{stg} | Storage temperature range | | - 65 to + 175 | °C | |
| T_j | Maximum operating junction temperature | | 175 | °C | |
| dV/dt | Critical rate of rise of rise voltage | | 10000 | V/ μs | |

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THERMAL RESISTANCES

| Symbol | Parameter | | Value | Unit |
|---------------|------------------|--|-------|------|
| $R_{th(j-c)}$ | Junction to case | TO-220AC / I ² PAK / D ² PAK | 1.6 | °C/W |
| $R_{th(j-c)}$ | Junction to case | ISOWATT220AC | 4 | °C/W |

STATIC ELECTRICAL CHARACTERISTICS

| Symbol | Parameter | Tests Conditions | | Min. | Typ. | Max. | Unit |
|------------|-------------------------|---------------------------|---------------------|------|------|------|---------------|
| I_R^* | Reverse leakage current | $T_j = 25^\circ\text{C}$ | $V_R = V_{RRM}$ | | | 4.5 | μA |
| | | $T_j = 125^\circ\text{C}$ | | | 2 | 6 | mA |
| V_F^{**} | Forward voltage drop | $T_j = 25^\circ\text{C}$ | $I_F = 8\text{ A}$ | | | 0.71 | V |
| | | $T_j = 25^\circ\text{C}$ | $I_F = 10\text{ A}$ | | | 0.77 | |
| | | $T_j = 25^\circ\text{C}$ | $I_F = 16\text{ A}$ | | | 0.81 | |
| | | $T_j = 125^\circ\text{C}$ | $I_F = 8\text{ A}$ | | 0.56 | 0.58 | |
| | | $T_j = 125^\circ\text{C}$ | $I_F = 10\text{ A}$ | | 0.59 | 0.64 | |
| | | $T_j = 125^\circ\text{C}$ | $I_F = 16\text{ A}$ | | 0.65 | 0.68 | |

Pulse test : * $t_p = 5\text{ ms}$, $\delta < 2\%$
 ** $t_p = 380\text{ }\mu\text{s}$, $\delta < 2\%$

To evaluate the maximum conduction losses use the following equation :

$$P = 0.48 \times I_{F(AV)} + 0.0125 \times I_{F(RMS)}^2$$

Fig. 1: Average forward power dissipation versus average forward current. (TO-220AC / ISOWATT220AC / I²PAK / D²PAK)

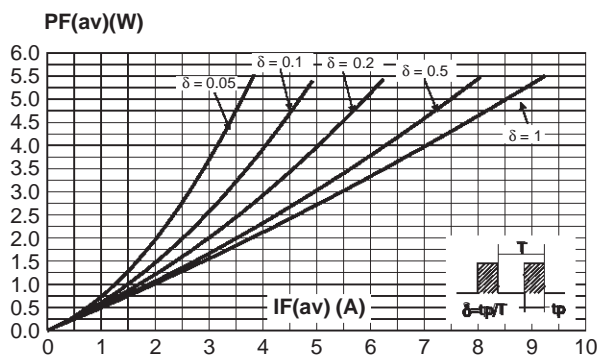


Fig. 2-1: Average forward current versus ambient temperature ($\delta=0.5$) (TO-220AC / I²PAK / D²PAK).

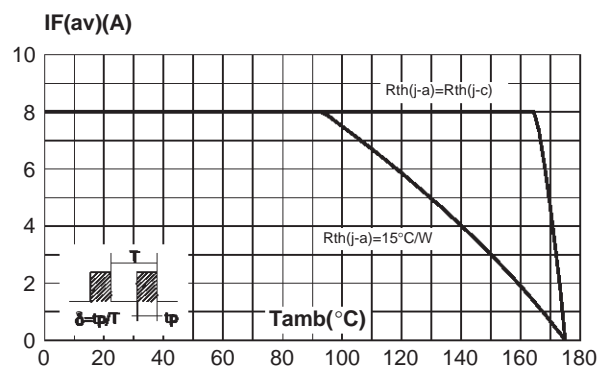


Fig. 2-2: Average forward current versus ambient temperature ($\delta=0.5$) (ISOWATT220AC).

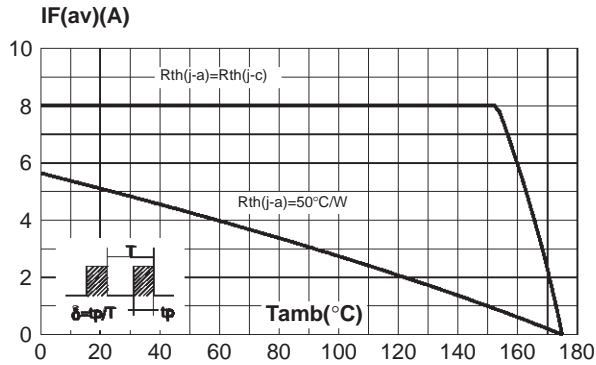


Fig. 3-1: Non repetitive surge peak forward current versus overload duration (maximum values) (TO-220AC / I²PAK / D²PAK).

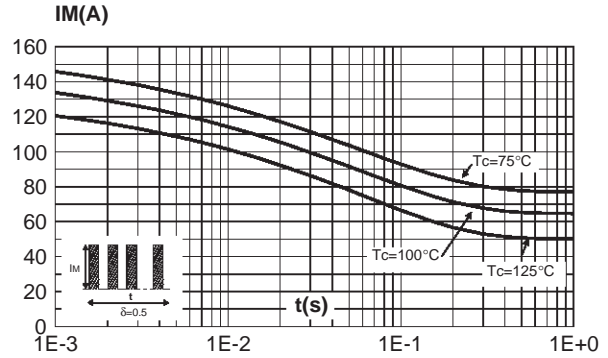


Fig. 3-2: Non repetitive surge peak forward current versus overload duration (maximum values) (ISOWATT220AC).

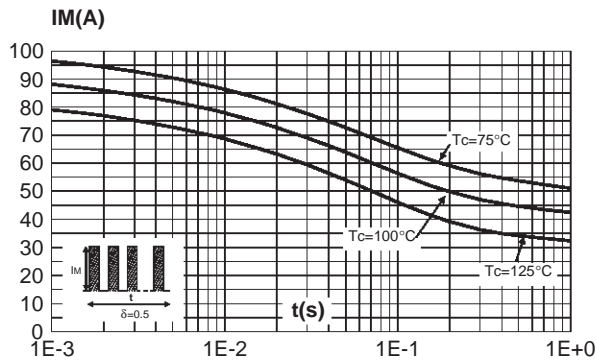


Fig. 4-1: Relative variation of thermal impedance junction to case versus pulse duration (TO-220AC / I²PAK / D²PAK).

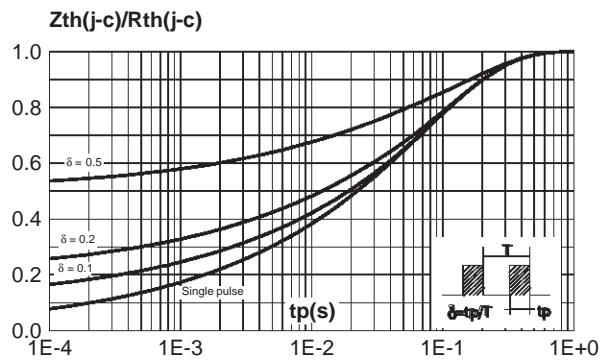


Fig. 4-2: Relative variation of thermal impedance junction to case versus pulse duration (ISOWATT220AC).

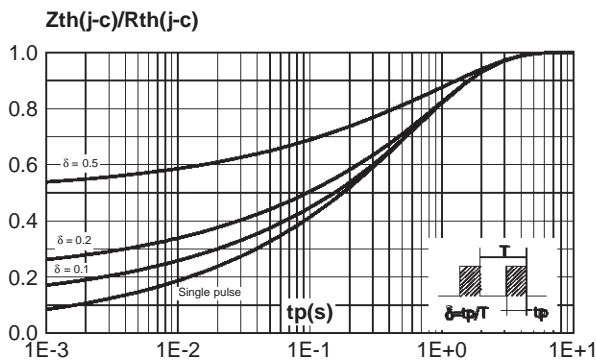


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values).

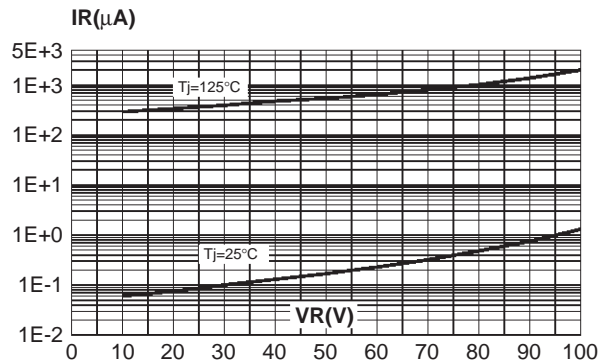


Fig. 6: Junction capacitance versus reverse voltage applied (typical values).

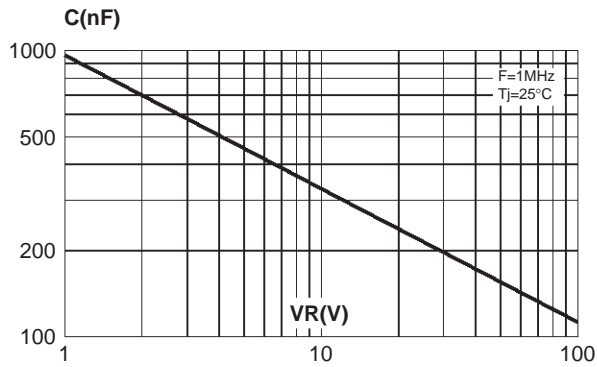


Fig. 7: Forward voltage drop versus forward current (maximum values).

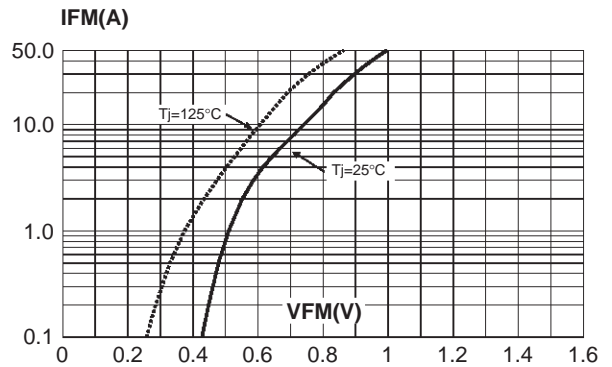
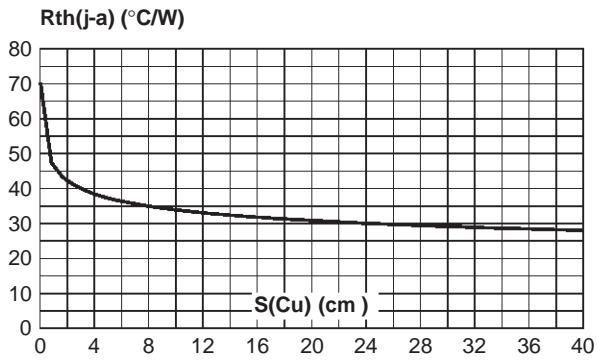
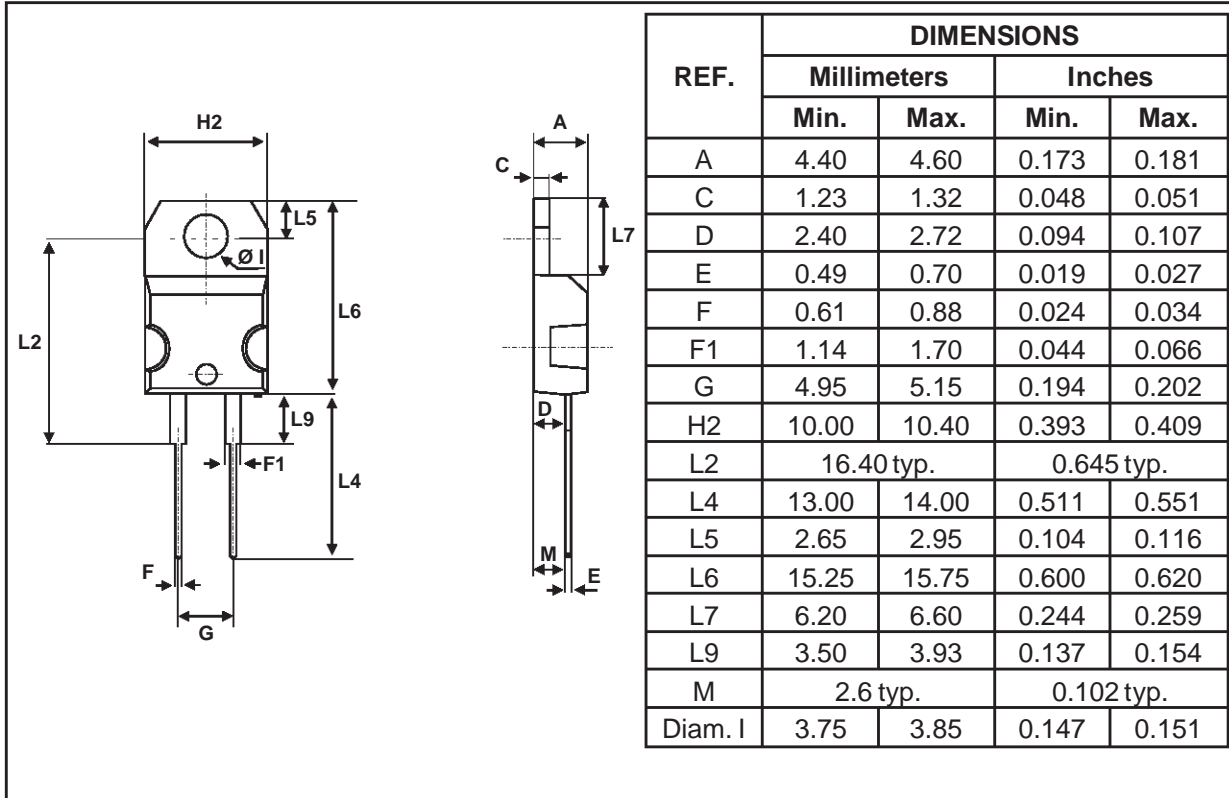


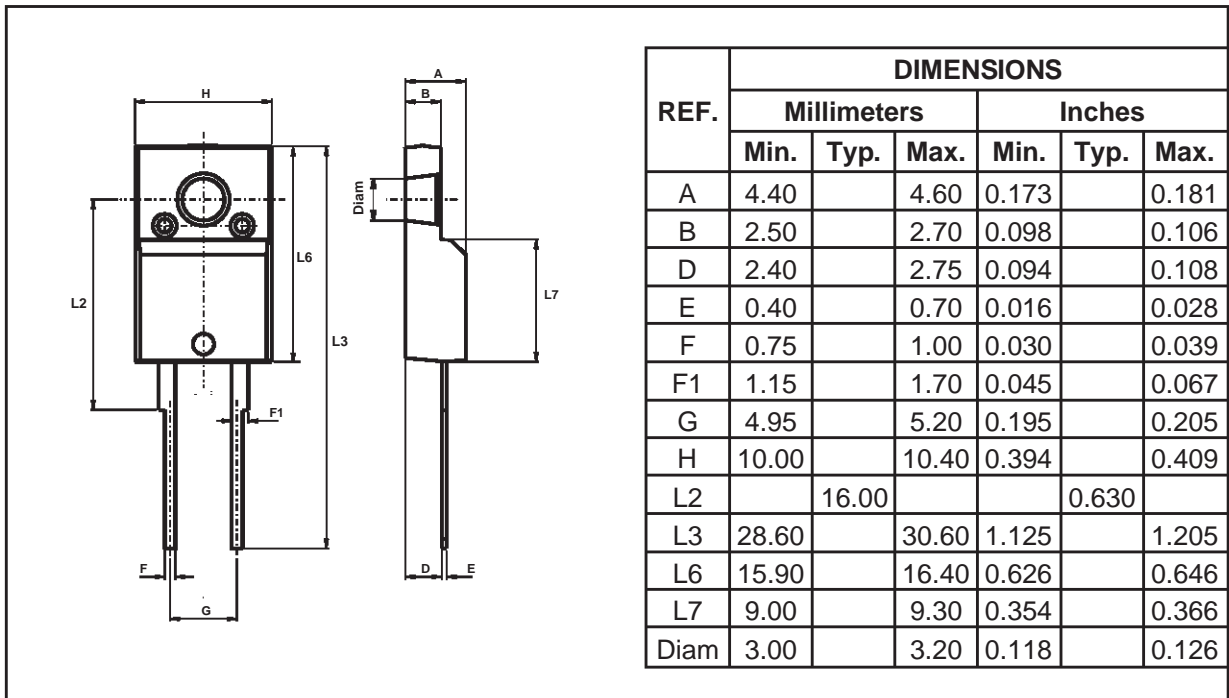
Fig. 8: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35μm)(D²PAK).



PACKAGE MECHANICAL DATA
TO-220AC

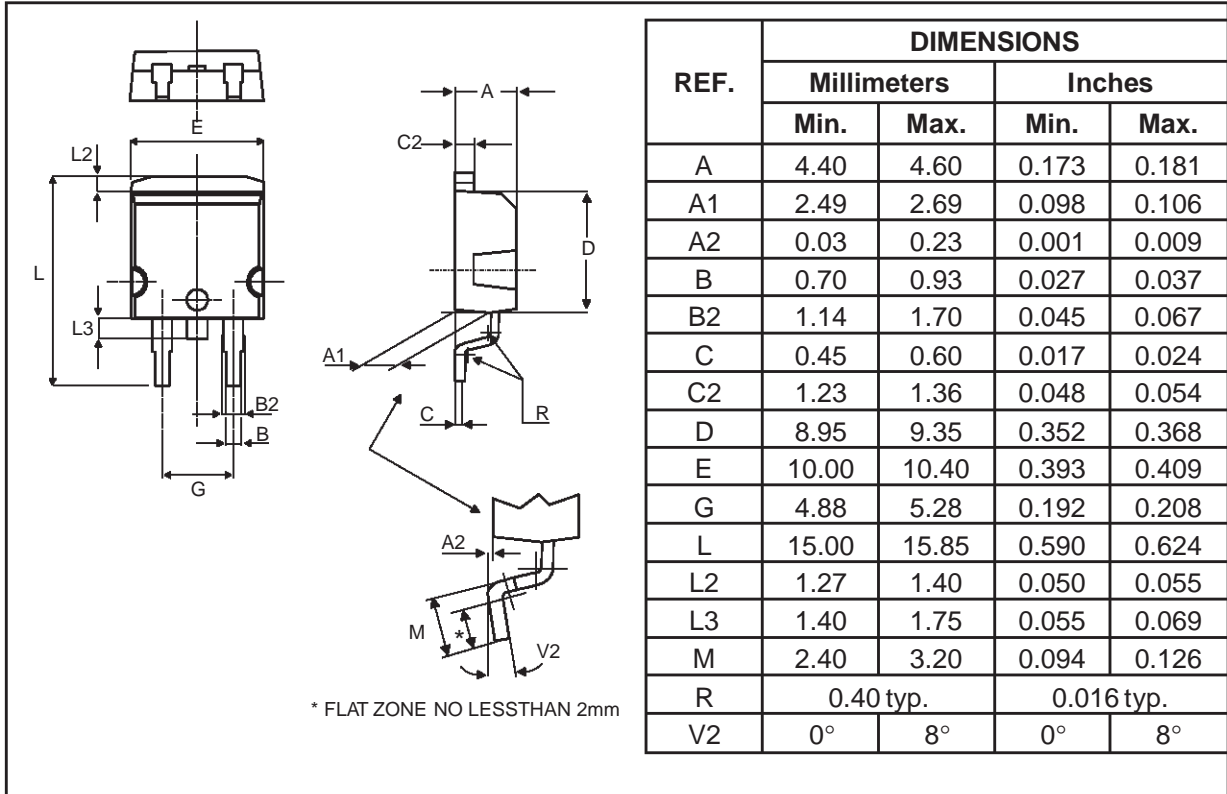


PACKAGE MECHANICAL DATA
ISOWATT220AC

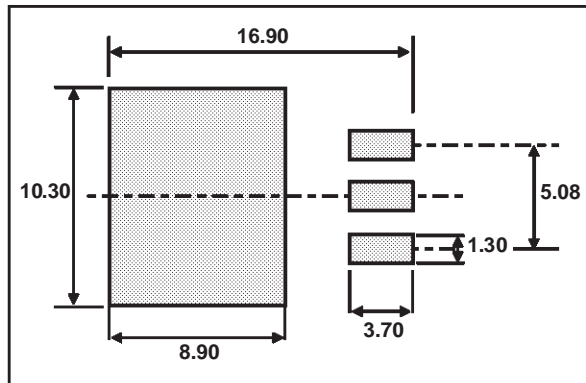


STPS8H100D/F/G/G-1

PACKAGE MECHANICAL DATA
D²PAK



FOOTPRINT (in millimeters)D²PAK



PACKAGE MECHANICAL DATA
I²PAK

| REF. | DIMENSIONS | | | |
|------|-------------|------|--------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 4.40 | 4.60 | 0.173 | 0.181 |
| A1 | 2.49 | 2.69 | 0.098 | 0.106 |
| b | 0.70 | 0.93 | 0.028 | 0.037 |
| b1 | 1.14 | 1.17 | 0.044 | 0.046 |
| b2 | 1.14 | 1.17 | 0.044 | 0.046 |
| c | 0.45 | 0.60 | 0.018 | 0.024 |
| c2 | 1.23 | 1.36 | 0.048 | 0.054 |
| D | 8.95 | 9.35 | 0.352 | 0.368 |
| e | 2.40 | 2.70 | 0.094 | 0.106 |
| E | 10.0 | 10.4 | 0.394 | 0.409 |
| L | 13.1 | 13.6 | 0.516 | 0.535 |
| L1 | 3.48 | 3.78 | 0.137 | 0.149 |
| L2 | 1.27 | 1.40 | 0.050 | 0.055 |

| Ordering type | Marking | Package | Weight | Base qty | Delivery mode |
|---------------|------------|--------------------|--------|----------|---------------|
| STPS8H100D | STPS8H100D | TO-220AC | 1.86g | 50 | Tube |
| STPS8H100F | STPS8H100F | ISOWATT220AC | 2.00g | 50 | Tube |
| STPS8H100G-1 | STPS8H100G | I ² PAK | 1.49g | 50 | Tube |
| STPS8H100G | STPS8H100G | D ² PAK | 1.48g | 50 | Tube |
| STPS8H100G-TR | STPS8H100G | D ² PAK | 1.48g | 500 | Tape & reel |

■ Epoxy meets UL94,V0

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