



STPS1045D/F

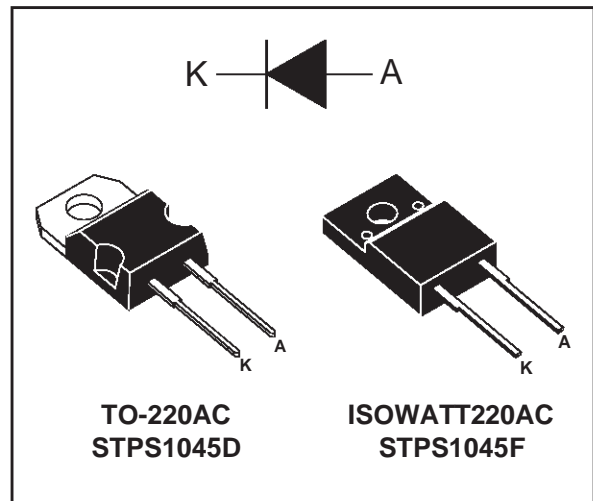
POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

| | |
|-------------|--------|
| $I_{F(AV)}$ | 10 A |
| V_{RRM} | 45 V |
| V_F | 0.57 V |

FEATURES AND BENEFITS

- VERY SMALL CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- EXTREMELY FAST SWITCHING
- LOW FORWARD VOLTAGE DROP
- INSULATED PACKAGE: ISOWATT220AC
Insulating voltage = 2000V DC
Capacitance = 12pF



DESCRIPTION

Single chip Schottky rectifier suited for Switch Mode Power Supply and high frequency DC to DC converters.

This device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.

ABSOLUTE RATINGS (limiting values)

| Symbol | Parameter | | Value | Unit | |
|--------------|---|--------------|--|------------------------|---|
| V_{RRM} | Repetitive peak reverse voltage | | 45 | V | |
| $I_{F(RMS)}$ | RMS forward current | | 30 | A | |
| $I_{F(AV)}$ | Average forward current $\delta = 0.5$ | TO-220AC | $T_c = 135^\circ\text{C}$ | 10 | A |
| | | ISOWATT220AC | | | |
| I_{FSM} | Surge non repetitive forward current | | $t_p = 10 \text{ ms}$ Sinusoidal | 180 | A |
| I_{RRM} | Repetitive peak reverse current | | $t_p = 2 \mu\text{s}$ $F = 1 \text{ KHz}$ | 1 | A |
| T_{stg} | Storage temperature range | | - 65 to + 150 | $^\circ\text{C}$ | |
| T_j | Maximum junction temperature | | 150 | $^\circ\text{C}$ | |
| dV/dt | Critical rate of rise of reverse voltage | | 10000 | $\text{V}/\mu\text{s}$ | |

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THERMAL RESISTANCES

| Symbol | Parameter | | Value | Unit |
|---------------|------------------|--------------|-------|------|
| $R_{th(j-c)}$ | Junction to case | TO-220AC | 2.2 | °C/W |
| | | ISOWATT220AC | 4.5 | |

STATIC ELECTRICAL CHARACTERISTICS

| Symbol | Parameter | Tests Conditions | | Min. | Typ. | Max. | Unit |
|------------|-------------------------|---------------------------|----------------------|------|------|------|---------------|
| I_R^* | Reverse leakage current | $T_j = 25^\circ\text{C}$ | $V_R = V_{RRM}$ | | | 100 | μA |
| | | $T_j = 125^\circ\text{C}$ | | | | 15 | mA |
| V_F^{**} | Forward voltage drop | $T_j = 25^\circ\text{C}$ | $I_F = 15\text{ A}$ | | | 0.84 | V |
| | | $T_j = 125^\circ\text{C}$ | $I_F = 15\text{ A}$ | | | 0.72 | |
| | | $T_j = 125^\circ\text{C}$ | $I_F = 7.5\text{ A}$ | | | 0.57 | |

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

To evaluate the conduction losses use the following equation :
 $P = 0.42 \times I_{F(AV)} + 0.015 I_{F(RMS)}^2$

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

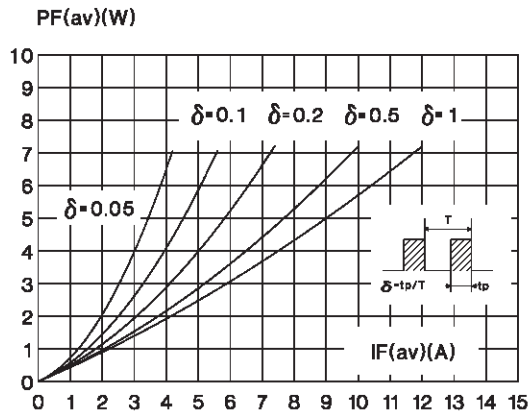


Fig. 2-1: Average current versus ambient temperature ($\delta : 0.5$) (TO-220AC).

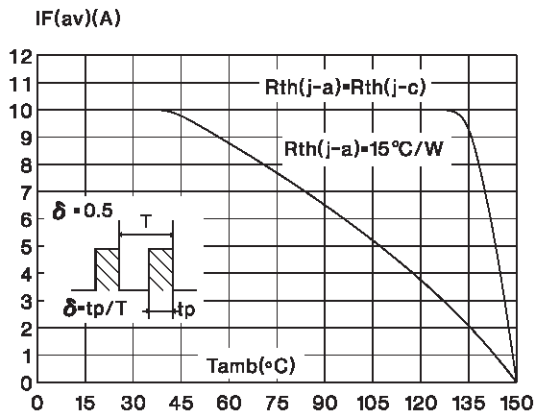


Fig. 2-2: Average current versus ambient temperature ($\delta : 0.5$) (ISOWATT220AC).

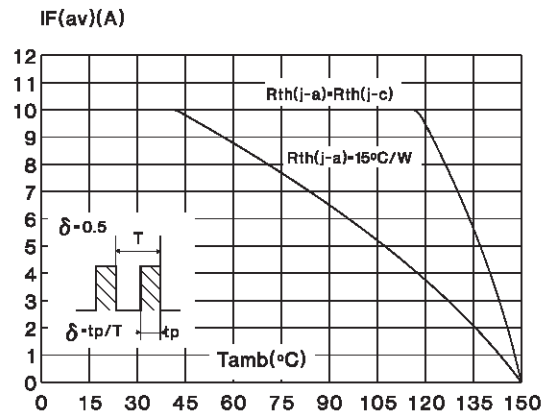


Fig. 3-1: Non repetitive surge peak forward current versus overload duration (maximum values) (TO-220AC).

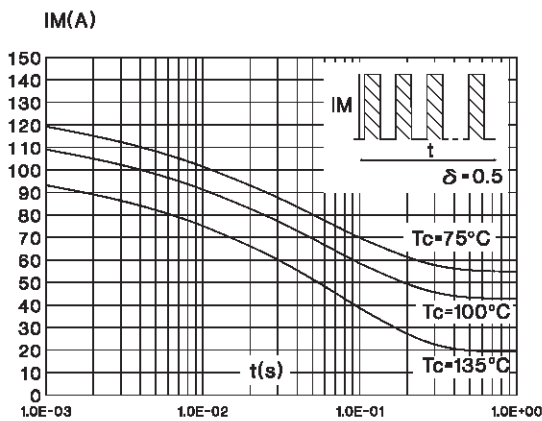


Fig. 3-2: Non repetitive surge peak forward current versus overload duration (maximum values) (ISOWATT220AC).

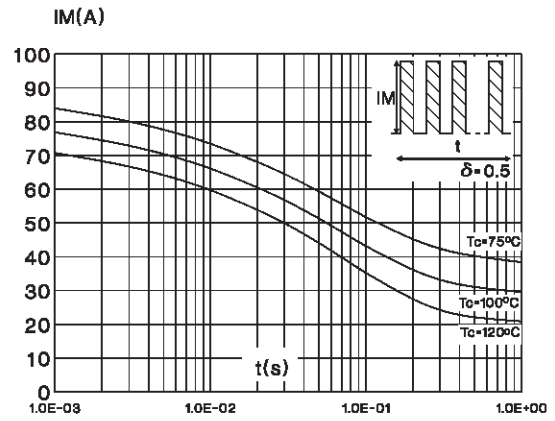


Fig. 4-1: Relative variation of thermal transient impedance junction to case versus pulse duration (TO-220AC).

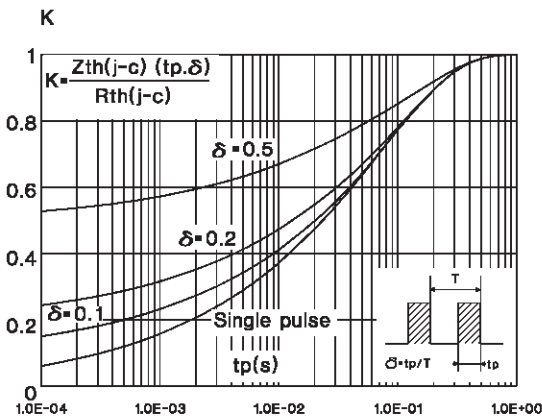


Fig. 4-2: Relative variation of thermal transient impedance junction to case versus pulse duration (ISOWATT220AC).

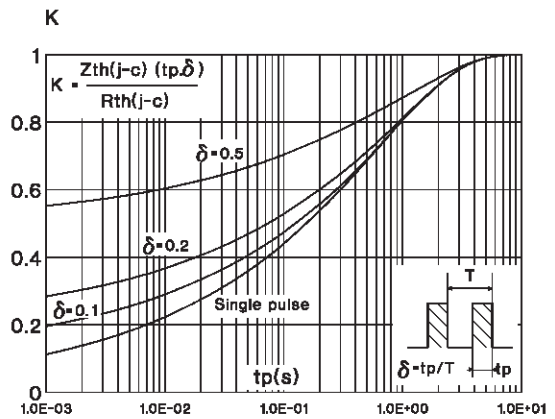


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values).

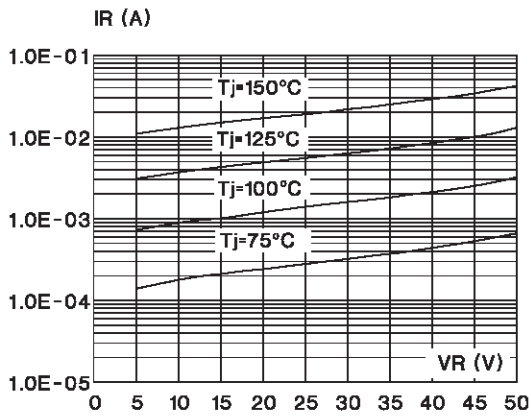


Fig. 6: Junction capacitance versus reverse voltage applied (typical values).

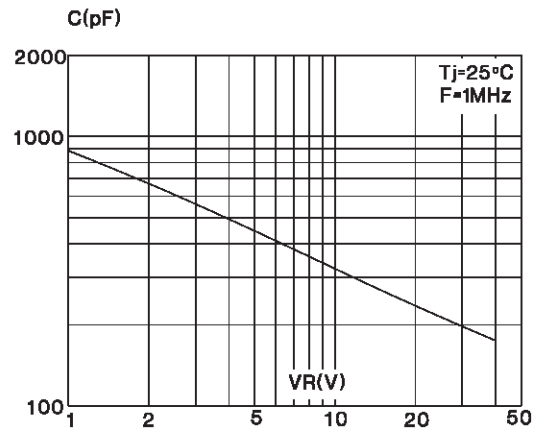
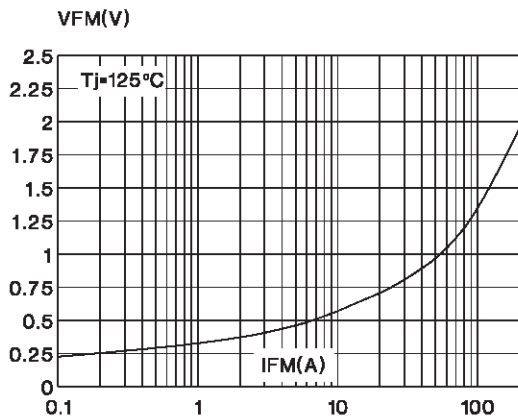
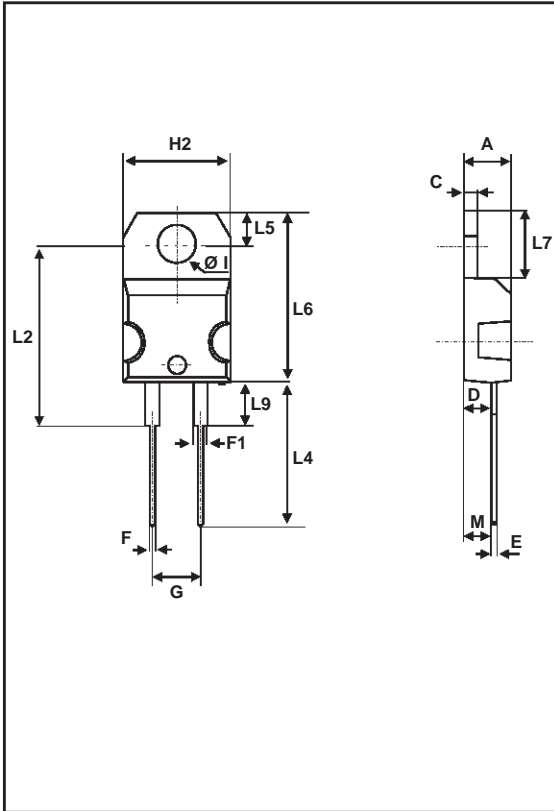


Fig. 7: Forward voltage drop versus forward current (maximum values).

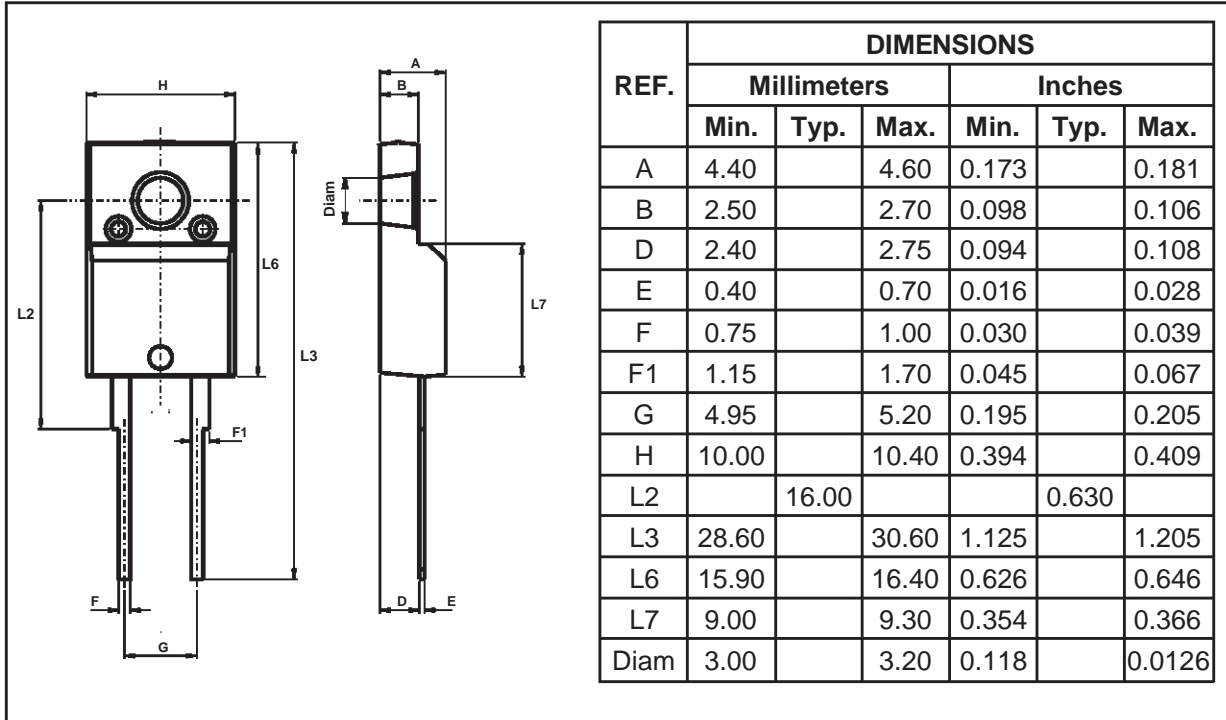


PACKAGE MECHANICAL DATA
TO-220AC

| REF. | DIMENSIONS | | | |
|---------|-------------|-------|------------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 4.40 | 4.60 | 0.173 | 0.181 |
| C | 1.23 | 1.32 | 0.048 | 0.051 |
| D | 2.40 | 2.72 | 0.094 | 0.107 |
| E | 0.49 | 0.70 | 0.019 | 0.027 |
| F | 0.61 | 0.88 | 0.024 | 0.034 |
| F1 | 1.14 | 1.70 | 0.044 | 0.066 |
| G | 4.95 | 5.15 | 0.194 | 0.202 |
| H2 | 10.00 | 10.40 | 0.393 | 0.409 |
| L2 | 16.40 typ. | | 0.645 typ. | |
| L4 | 13.00 | 14.00 | 0.511 | 0.551 |
| L5 | 2.65 | 2.95 | 0.104 | 0.116 |
| L6 | 15.25 | 15.75 | 0.600 | 0.620 |
| L7 | 6.20 | 6.60 | 0.244 | 0.259 |
| L9 | 3.50 | 3.93 | 0.137 | 0.154 |
| M | 2.6 typ. | | 0.102 typ. | |
| Diam. I | 3.75 | 3.85 | 0.147 | 0.151 |



PACKAGE MECHANICAL DATA
ISOWATT220AC



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