



STPS20H100CT/CF/CG/CG-1

HIGH VOLTAGE POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

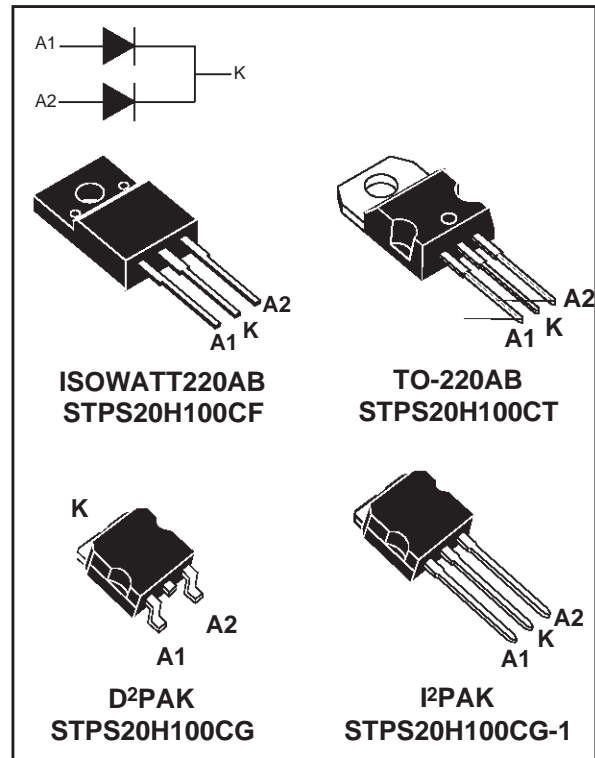
| | |
|-------------|-----------------|
| $I_{F(AV)}$ | 2 x 10 A |
| V_{RRM} | 100 V |
| T_j | 175°C |
| $V_F (max)$ | 0.64 V |

FEATURES AND BENEFITS

- NEGLIGIBLE SWITCHING LOSSES
- HIGH JUNCTION TEMPERATURE CAPABILITY
- GOOD TRADE OFF BETWEEN LEAKAGE CURRENT AND FORWARD VOLTAGE DROP
- LOW LEAKAGE CURRENT
- AVALANCHE RATED
- INSULATED PACKAGE: ISOWATT220AB
Insulating Voltage = 2500V_(RMS)
Capacitance = 45 pF

DESCRIPTION

Dual center tap schottky rectifier designed for high frequency miniature Switched Mode Power Supplies such as adaptators and on board DC/DC converters.



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 $\delta = 0.5$ | TO-220AB D ² PAK / I ² PAK | $T_c = 160^\circ\text{C}$ | per diode per device | 10 | A |
| | | ISOWATT220AB | $T_c = 145^\circ\text{C}$ | | 20 | |
| 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 = 1kHz | 1 | A | |
| I_{RSM} | Non repetitive peak reverse current | | $t_p = 100 \mu\text{s}$ square | 3 | 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 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 | TO-220AB / D ² PAK / I ² PAK | Per diode | 1.6 | °C/W |
| | | ISOWATT220AB | Per diode | 4 | |
| | | TO-220AB / D ² PAK / I ² PAK | Total | 0.9 | °C/W |
| | | ISOWATT220AB | Total | 3.2 | |
| R _{th(c)} | | TO-220AB / D ² PAK / I ² PAK | Coupling | 0.15 | °C/W |
| | | ISOWATT220AB | Coupling | 2.5 | |

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 (per diode)

| Symbol | Parameter | Tests conditions | | Min. | Typ. | Max. | Unit |
|-------------------|-------------------------|------------------------|-----------------------------------|------|------|------|------|
| I _R * | Reverse leakage current | T _j = 25°C | V _R = V _{RRM} | | | 4.5 | μA |
| | | T _j = 125°C | | | 2 | 6 | mA |
| V _F ** | Forward voltage drop | T _j = 25°C | I _F = 8 A | | | 0.71 | V |
| | | T _j = 25°C | I _F = 10 A | | | 0.77 | |
| | | T _j = 25°C | I _F = 16 A | | | 0.81 | |
| | | T _j = 25°C | I _F = 20 A | | | 0.88 | |
| | | T _j = 125°C | I _F = 8 A | | 0.56 | 0.58 | |
| | | T _j = 125°C | I _F = 10 A | | 0.59 | 0.64 | |
| | | T _j = 125°C | I _F = 16 A | | 0.65 | 0.68 | |
| | | T _j = 125°C | I _F = 20 A | | 0.67 | 0.73 | |

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

To evaluate the maximum conduction losses use the following equation :
 $P = 0.55 \times I_{F(AV)} + 0.009 \times I_{F(RMS)}^2$

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

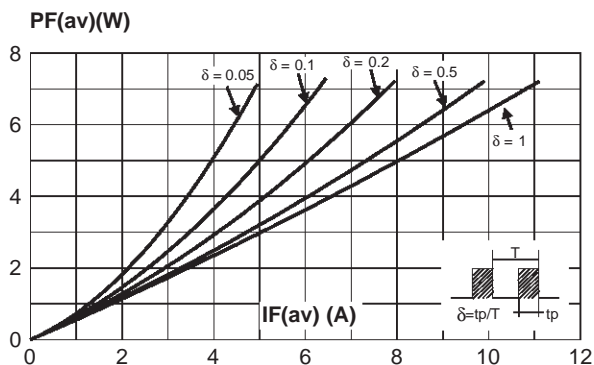


Fig. 2: Average forward current versus ambient temperature (δ=0.5, per diode).

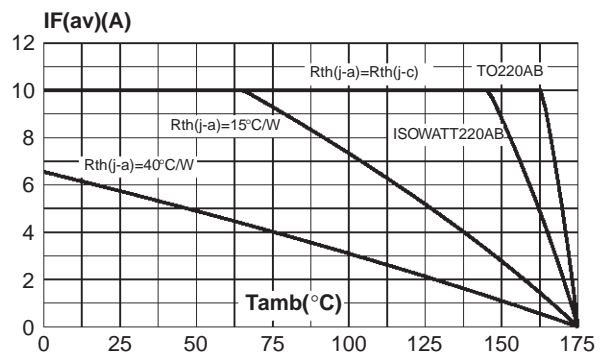


Fig. 3: Non repetitive surge peak forward current versus overload duration (maximum values, per diode) (TO-220AB, D²PAK, I²PAK)

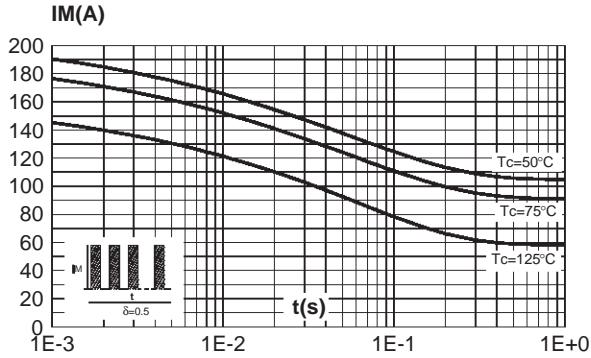


Fig. 4: Non repetitive surge peak forward current versus overload duration (maximum values, per diode) (ISOWATT220AB).

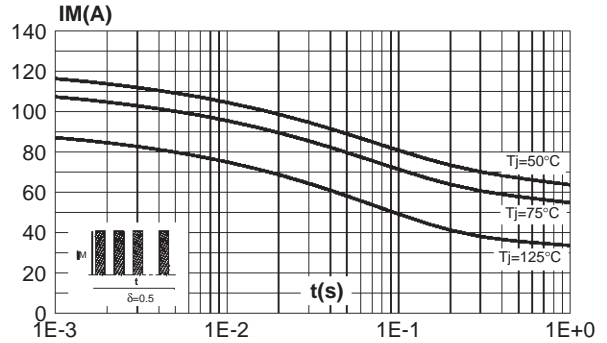


Fig. 5: Relative variation of thermal impedance junction to case versus pulse duration (per diode) (TO-220AB, D²PAK, I²PAK).

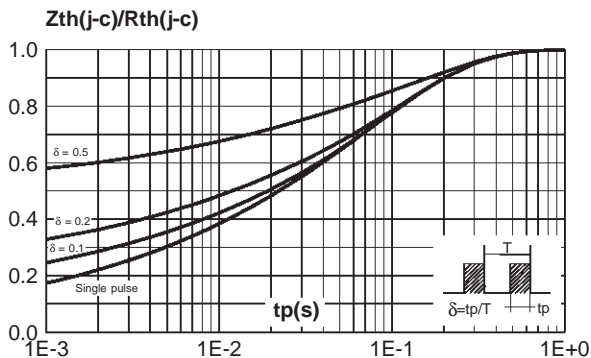


Fig. 6: Relative variation of thermal impedance junction to case versus pulse duration (per diode) (ISOWATT220AB).

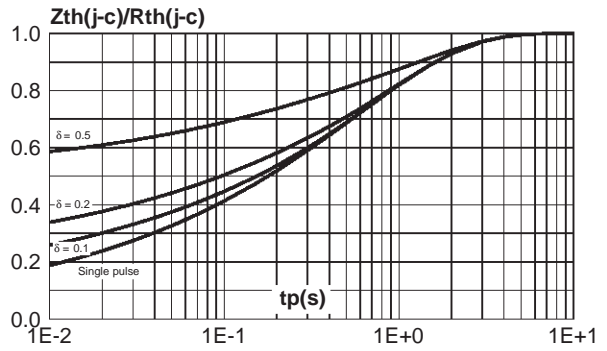


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values, per diode).

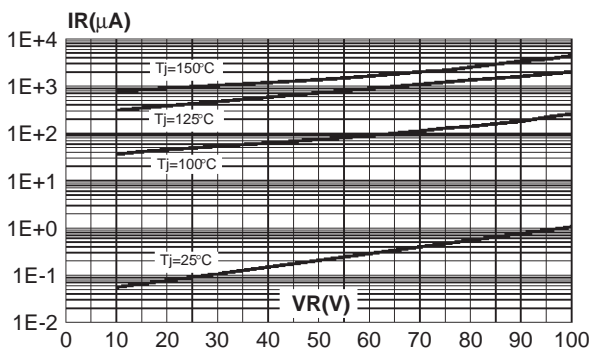
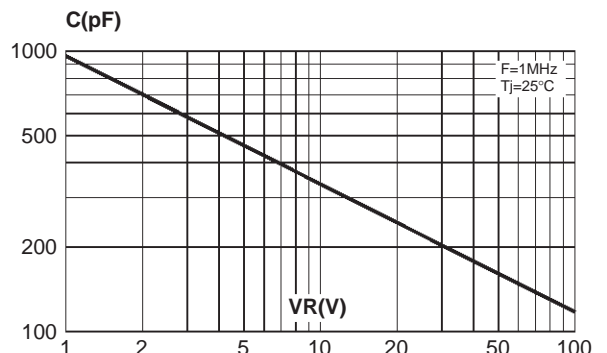


Fig. 8: Junction capacitance versus reverse voltage applied (typical values, per diode).



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

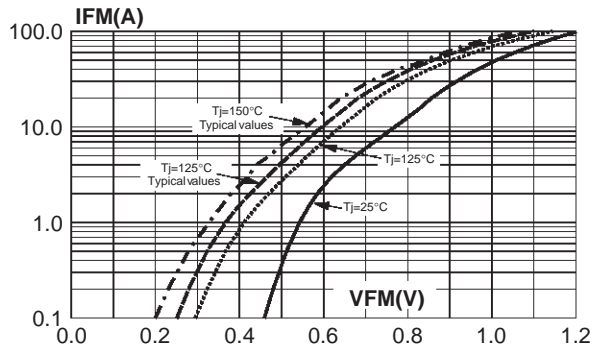
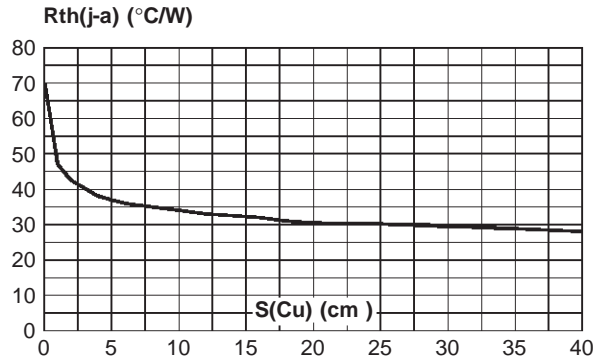
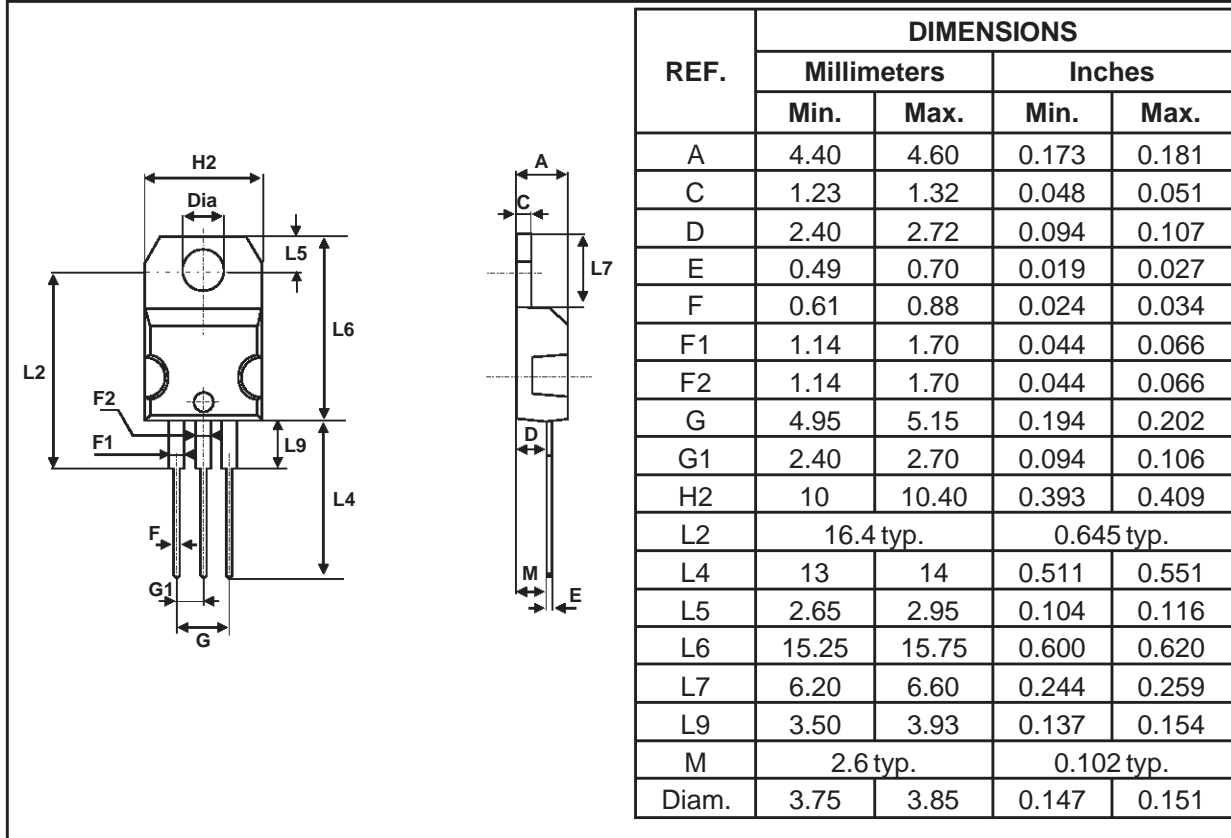


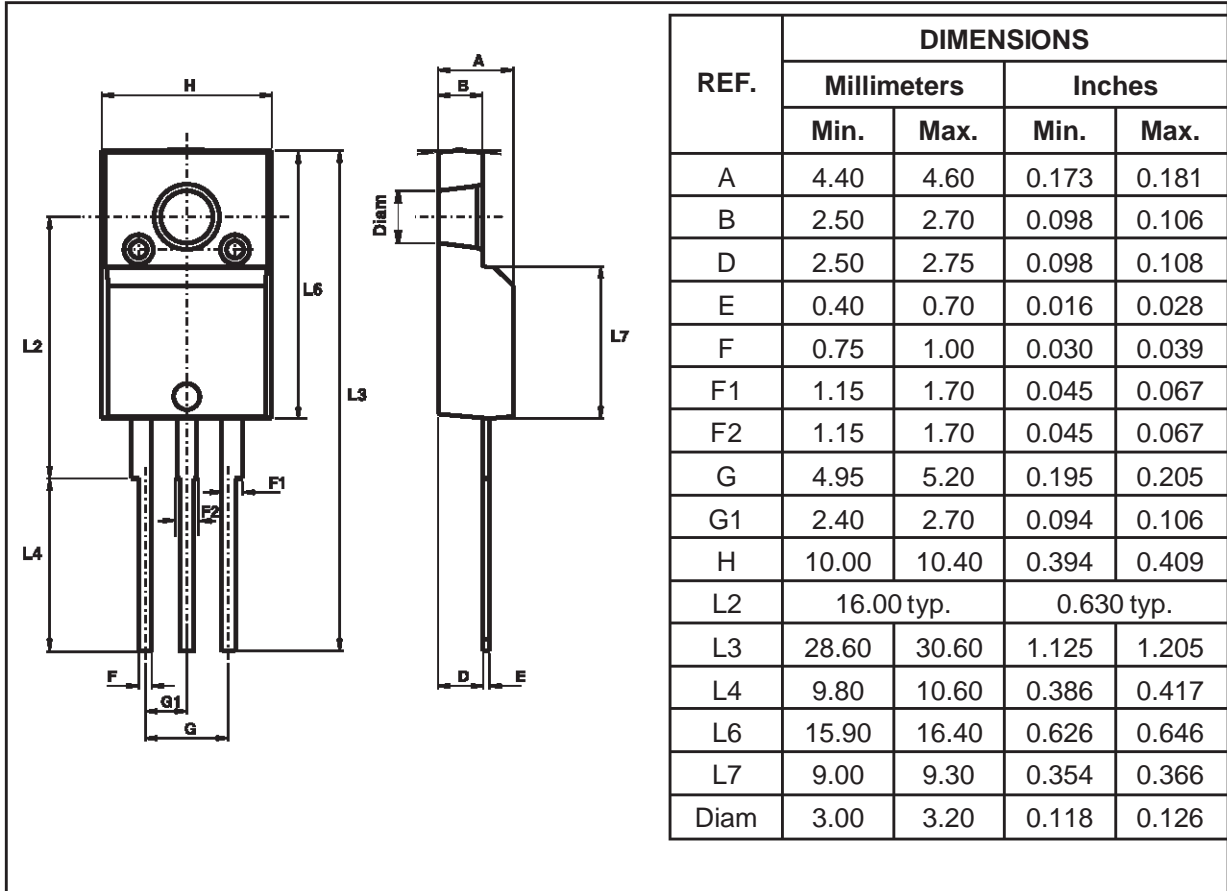
Fig. 10: Thermal resistance junction to ambient versus copper surface undertab (Epoxy printed circuit board FR4, copper thickness: 35μm) (D²PAK).



PACKAGE MECHANICAL DATA TO-220AB

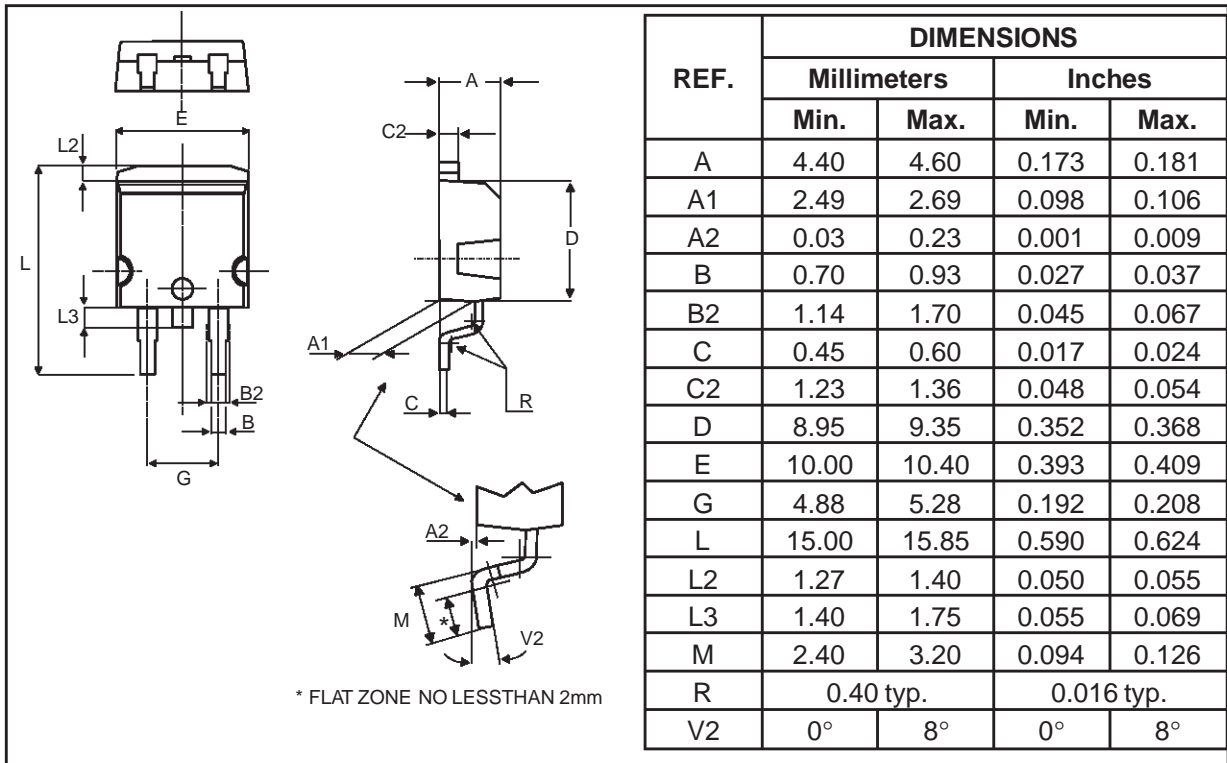


PACKAGE MECHANICAL DATA
ISOWATT220AB

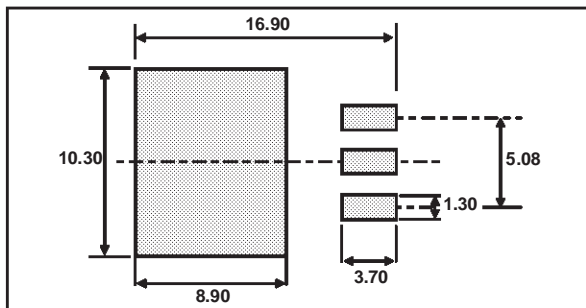


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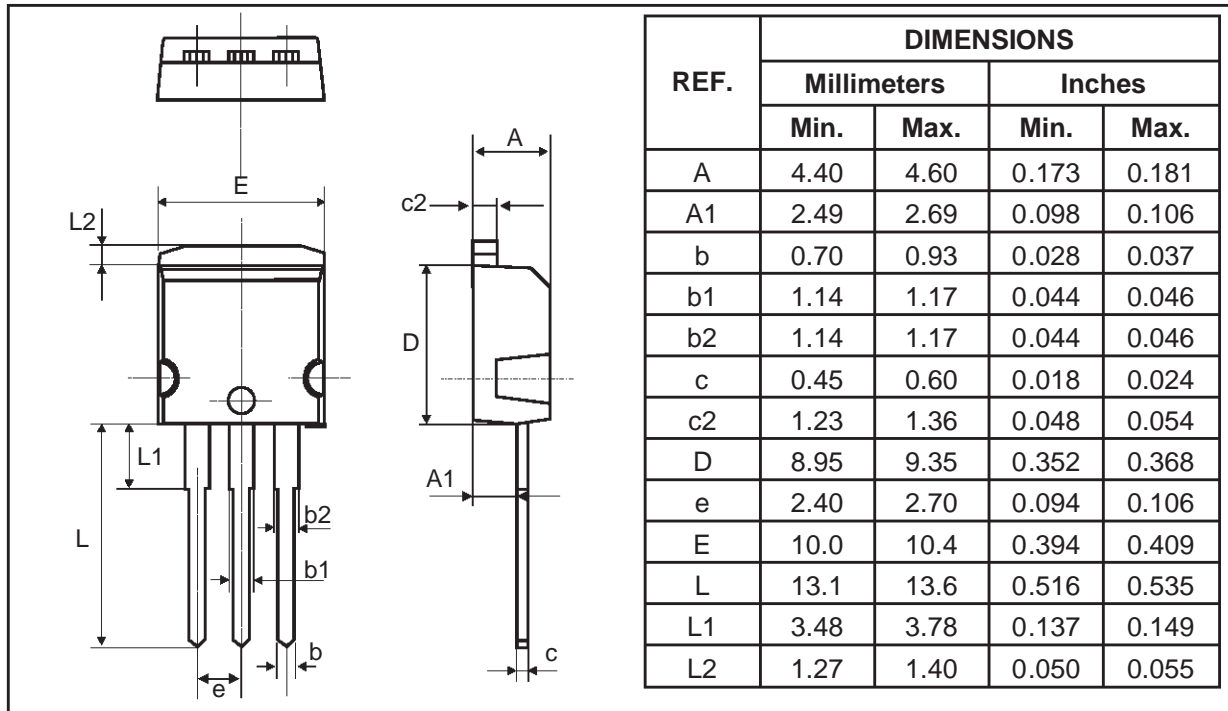
PACKAGE MECHANICAL DATA
D²PAK



FOOT PRINT DIMENSIONS (in millimeters)



PACKAGE MECHANICAL DATA

I²PAK

| Ordering type | Marking | Package | Weight | Base qty | Delivery mode |
|-----------------|--------------|--------------------|--------|----------|---------------|
| STPS20H100CT | STPS20H100CT | TO-220AB | 2.20g | 50 | Tube |
| STPS20H100CF | STPS20H100CF | ISOWATT220AB | 2.08g | 50 | Tube |
| STPS20H100CG-1 | STPS20H100CG | I ² PAK | 1.49g | 50 | Tube |
| STPS20H100CG | STPS20H100CG | D ² PAK | 1.48g | 50 | Tube |
| STPS20H100CG-TR | STPS20H100CG | D ² PAK | 1.48g | 1000 | Tape & reel |

■ Epoxy meets UL94, V0

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