



# STPS10L60CF/CFP

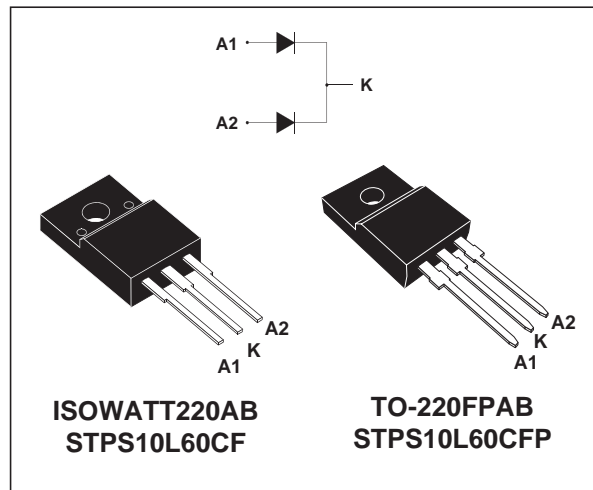
## POWER SCHOTTKY RECTIFIER

### MAIN PRODUCT CHARACTERISTICS

|             |         |
|-------------|---------|
| $I_{F(AV)}$ | 2 x 5 A |
| $V_{RRM}$   | 60 V    |
| $T_j(max)$  | 150 °C  |
| $V_F(max)$  | 0.52 V  |

### FEATURES AND BENEFITS

- LOW FORWARD VOLTAGE DROP
- NEGLIGIBLE SWITCHING LOSSES
- INSULATED PACKAGE:  
Insulating voltage = 2000V DC  
Capacitance = 12pF
- AVALANCHE CAPABILITY SPECIFIED



### DESCRIPTION

Dual center tap Schottky rectifiers suited for Switched Mode Power Supplies and high frequency DC to DC converters.

Packaged in ISOWATT220AB, TO-220FPAB 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          |                           |  | 60                      | V                |   |
| $I_{F(RMS)}$ | RMS forward current                      |                           |  | 30                      | A                |   |
| $I_{F(AV)}$  | Average forward current                  | ISOWATT220AB<br>TO220FPAB | $T_c = 130^\circ\text{C}$<br>$\delta = 0.5$    | Per diode<br>Per device | 5<br>10          | A |
| $I_{FSM}$    | Surge non repetitive forward current     |                           | $t_p = 10 \text{ ms}$ Sinusoidal               | 180                     | A                |   |
| $I_{RRM}$    | Repetitive peak reverse current          |                           | $t_p = 2 \mu\text{s}$ square F = 1kHz          | 1                       | A                |   |
| $P_{ARM}$    | Repetitive peak avalanche power          |                           | $t_p = 1 \mu\text{s}$ $T_j = 25^\circ\text{C}$ | 4000                    | W                |   |
| $T_{stg}$    | Storage temperature range                |                           |  | - 65 to + 175           | °C               |   |
| $T_j$        | Maximum operating junction temperature * |                           |  | 150                     | °C               |   |
| $dV/dt$      | Critical rate of rise reverse voltage    |                           |  | 10000                   | V/ $\mu\text{s}$ |   |

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

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### THERMAL RESISTANCE

| Symbol        | Parameter                                | Value     | Unit                        |
|---------------|--|-----------|-----------------------------|
| $R_{th(j-c)}$ | Junction to case ISOWATT220AB TO-220FPAB | Per Diode | 4.5                         |
|               |  | Total     | 3.5                         |
| $R_{th(c)}$   | Coupling                                 | 2.5       | $^{\circ}\text{C}/\text{W}$ |

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

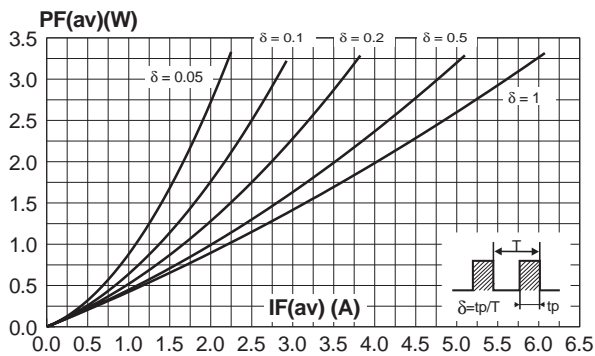
### STATIC ELECTRICAL CHARACTERISTICS (per diode)

| Symbol  | Parameter               | Tests conditions            | Min.                | Typ. | Max. | Unit          |                      |      |      |
|---------|-------------------------|-----------------------------|---------------------|------|------|---------------|----------------------|------|------|
| $I_R^*$ | Reverse leakage current | $T_j = 25^{\circ}\text{C}$  | $V_R = V_{RRM}$     |      | 220  | $\mu\text{A}$ |                      |      |      |
|         |                         | $T_j = 125^{\circ}\text{C}$ |                     |      |      | 45            | 60                   | mA   |      |
| $V_F^*$ | Forward voltage drop    | $T_j = 25^{\circ}\text{C}$  | $I_F = 5 \text{ A}$ |      | 0.55 | V             |                      |      |      |
|         |                         | $T_j = 125^{\circ}\text{C}$ |                     |      |      |               | 0.43                 | 0.52 |      |
|         |                         | $T_j = 25^{\circ}\text{C}$  |                     |      |      |               | $I_F = 10 \text{ A}$ |      | 0.67 |
|         |                         | $T_j = 125^{\circ}\text{C}$ |                     |      |      |               |                      |      |      |

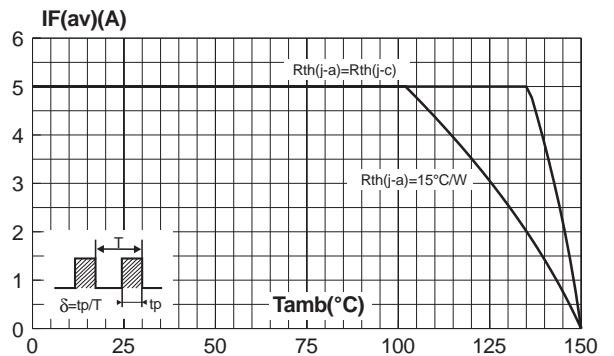
Pulse test : \*  $t_p = 380 \mu\text{s}$ ,  $\delta < 2\%$

To evaluate the conduction losses use the following equation :  
 $P = 0.4 \times I_{F(AV)} + 0.024 I_{F(RMS)}^2$

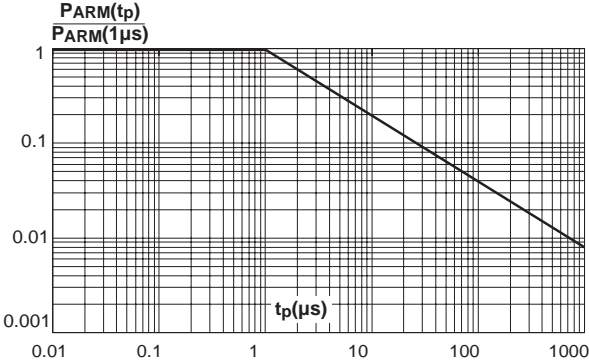
**Fig. 1:** Average forward power dissipation versus average forward current (per diode).



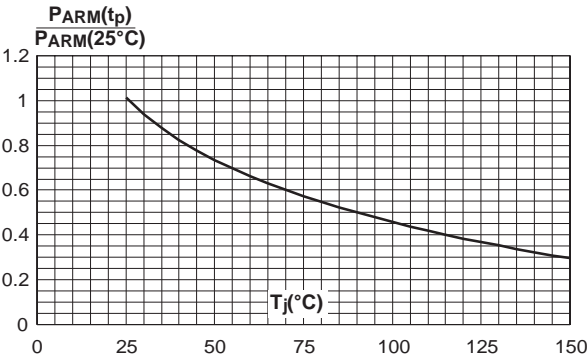
**Fig. 2:** Average current versus ambient temperature ( $\delta=0.5$ ) (per diode).



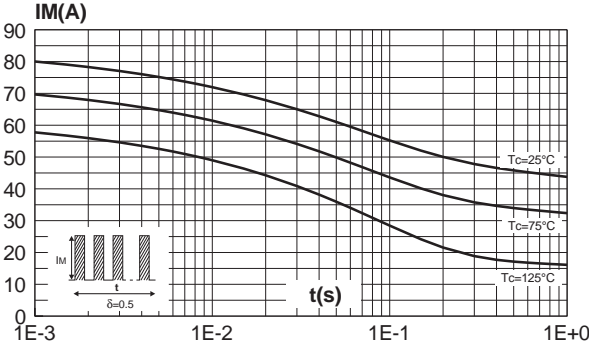
**Fig. 3:** Normalized avalanche power derating versus pulse duration.



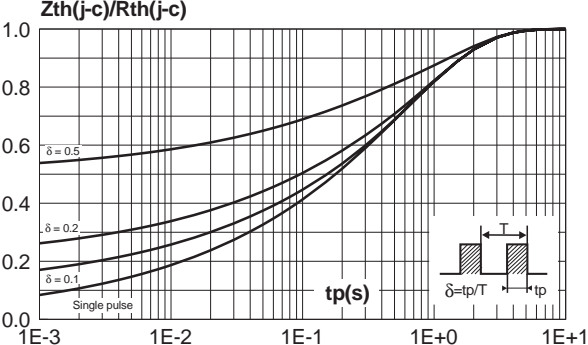
**Fig. 4:** Normalized avalanche power derating versus junction temperature.



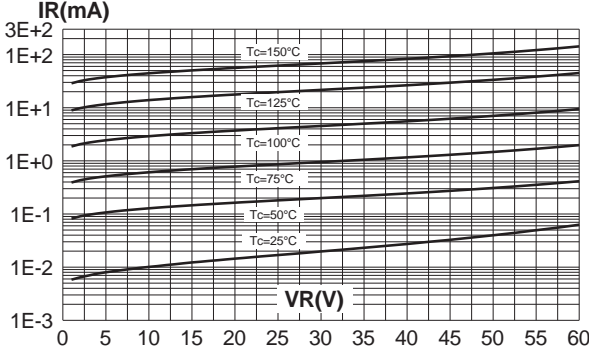
**Fig. 5:** Non repetitive surge peak forward current versus overload duration (maximum values, per diode) (ISOWATT220AB, TO-220FPAB).



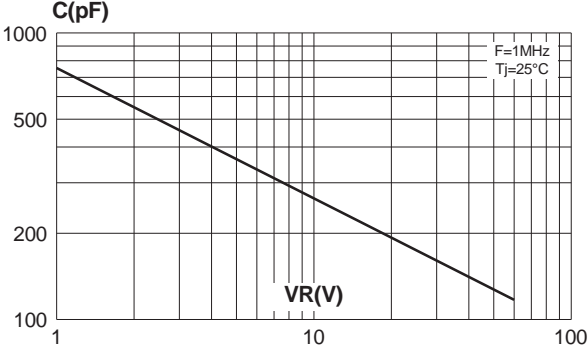
**Fig. 6:** Relative variation of thermal transient impedance junction to case versus pulse duration. (ISOWATT220AB, TO-220FPAB).



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

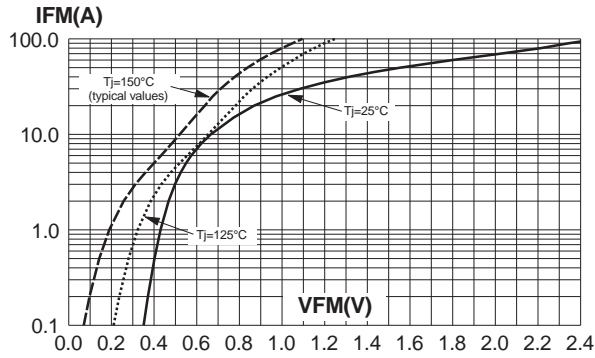


**Fig. 8:** Junction capacitance versus reverse voltage applied (typical values, per diode).

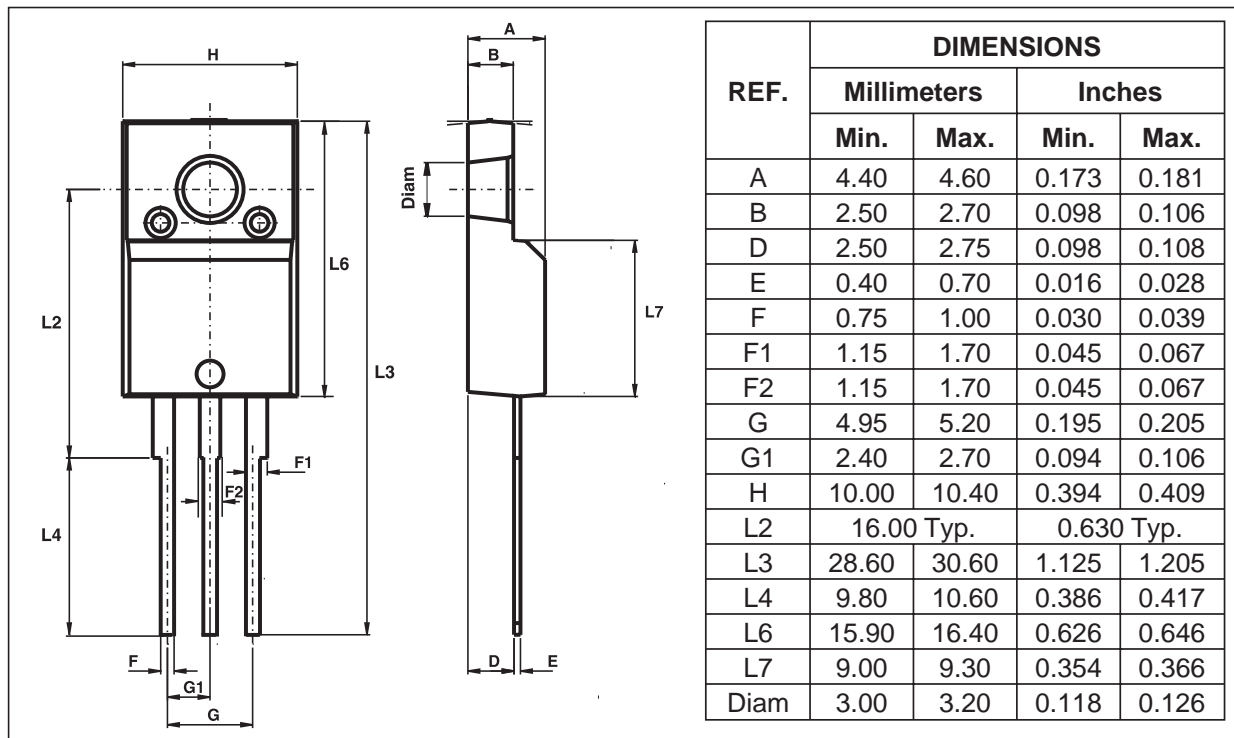


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**Fig. 9:** Forward voltage drop versus forward current (maximum values, per diode).



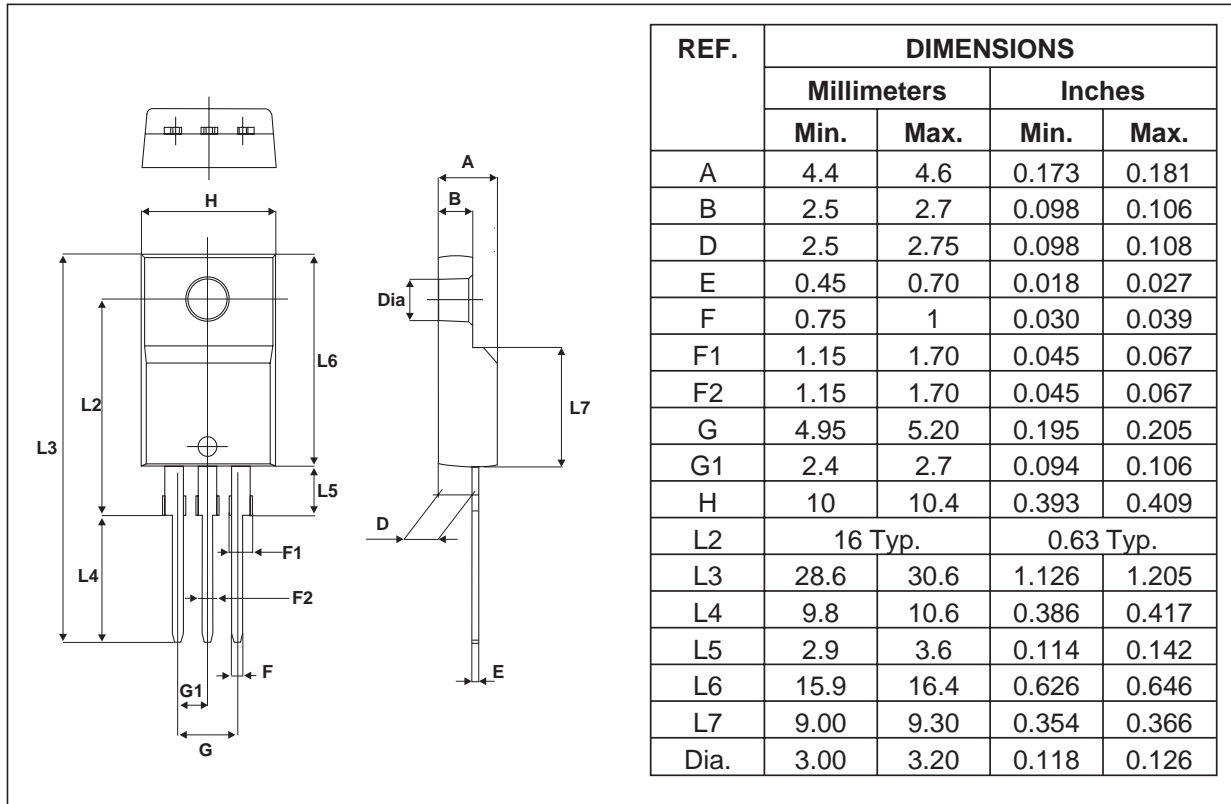
## PACKAGE MECHANICAL DATA ISOWATT220AB



- Cooling method: C
- Recommended torque value: 0.55 m.N
- Maximum torque value: 0.70 m.N

**PACKAGE MECHANICAL DATA**

TO-220FPAB



| Ordering type | Marking      | Package      | Weight | Base qty | Delivery mode |
|---------------|--------------|--------------|--------|----------|---------------|
| STPS10L60CF   | STPS10L60CF  | ISOWATT220AB | 2.08g  | 50       | Tube          |
| STPS10L60CF   | STPS10L60CF  | ISOWATT220AB | 2.08g  | 1000     | Bulk          |
| STPS10L60CFP  | STPS10L60CFP | TO-220FPAB   | 2 g    | 50       | Tube          |

- Epoxy meets UL94,V0

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