



# STPS2045CT/CF/CG

## POWER SCHOTTKY RECTIFIER

### MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	<b>2 x 10 A</b>
$V_{RRM}$	<b>45 V</b>
$V_F$	<b>0.57 V</b>

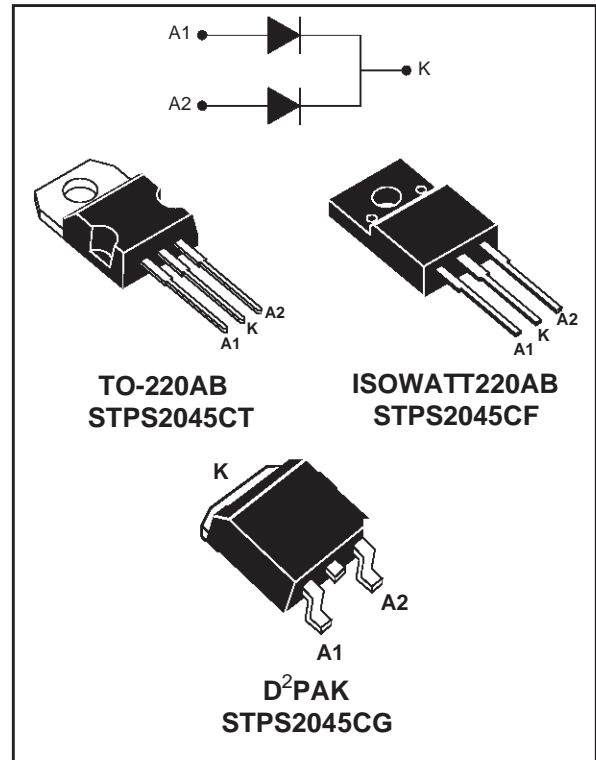
### FEATURES AND BENEFITS

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

### DESCRIPTION

Dual center tap Schottky rectifier suited for Switch-Mode Power Supply and high frequency DC to DC converters.

This device is especially 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	
$I_{F(AV)}$	Average forward current $\delta = 0.5$	TO-220AB/ D <sup>2</sup> PAK	$T_c = 135^\circ\text{C}$	Per diode	10	A
		ISOWATT220AB	$T_c = 120^\circ\text{C}$	Per device	20	
$I_{F(RMS)}$	RMS forward current			Per diode	30	A
$I_{FSM}$	Surge non repetitive forward current		$t_p = 10 \text{ ms}$ Sinusoidal	Per diode	180	A
$I_{RRM}$	Repetitive peak reverse current		$t_p = 2 \mu\text{s}$ $F = 1 \text{ KHz}$	Per diode	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	V/ $\mu\text{s}$	

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### THERMAL RESISTANCES

Symbol	Parameter		Value	Unit	
R <sub>th(j-c)</sub>	Junction to case	TO-220AB / D <sup>2</sup> PAK	Per diode Total	2.2 1.3	°C/W
		ISOWATT220AB	Per diode Total	4.5 3.5	
R <sub>th(c)</sub>	Coupling	TO-220AB / D <sup>2</sup> PAK		0.3	°C/W
		ISOWATT220AB		2.5	

When the diodes 1 and 2 are used simultaneously:

$$\Delta T_j (\text{diode 1}) = P (\text{diode 1}) \times R_{TH} (\text{per diode}) + P (\text{diode 2}) \times R_{TH(C)}$$

### STATIC ELECTRICAL CHARACTERISTICS (Per diode)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I <sub>R</sub> *	Reverse leakage current	T <sub>j</sub> = 25°C	V <sub>R</sub> = V <sub>RRM</sub>			100	μA
		T <sub>j</sub> = 125°C				15	mA
V <sub>F</sub> **	Forward voltage drop	T <sub>j</sub> = 25°C	I <sub>F</sub> = 20 A			0.84	V
		T <sub>j</sub> = 125°C	I <sub>F</sub> = 20 A			0.72	
		T <sub>j</sub> = 125°C	I <sub>F</sub> = 10 A			0.57	

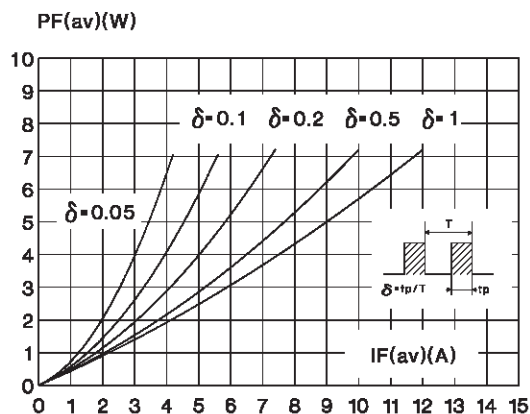
Pulse test : \* t<sub>p</sub> = 5 ms, δ < 2 %

\*\* t<sub>p</sub> = 380 μs, δ < 2%

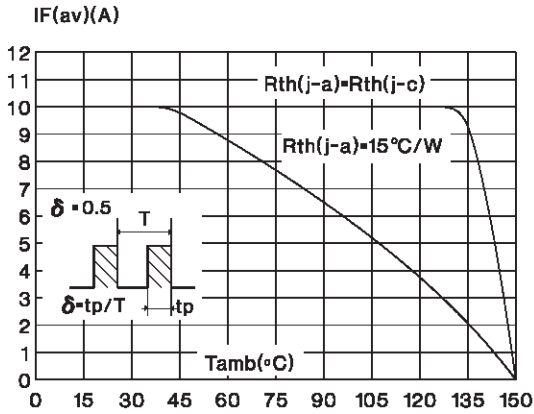
To evaluate the conduction losses use the following equation :

$$P = 0.42 \times I_{F(AV)} + 0.015 I_{F(RMS)}^2$$

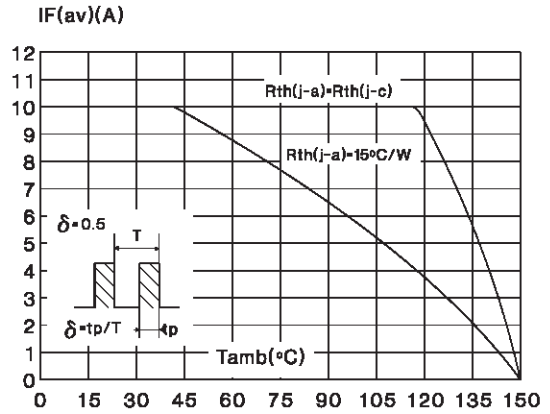
**Fig. 1:** Average forward power dissipation versus average forward current (per diode).



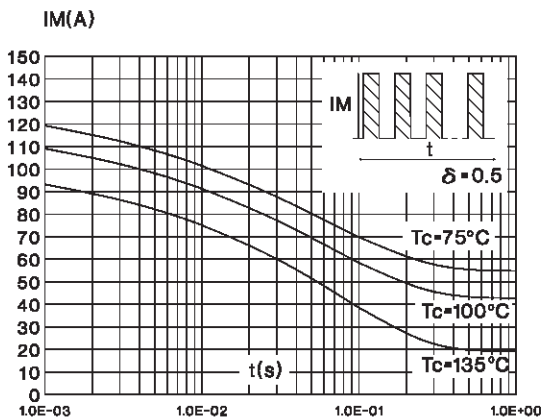
**Fig. 2-1:** Average current versus ambient temperature ( $\delta=0.5$ ) (per diode) (TO-220AB and D<sup>2</sup>PAK).



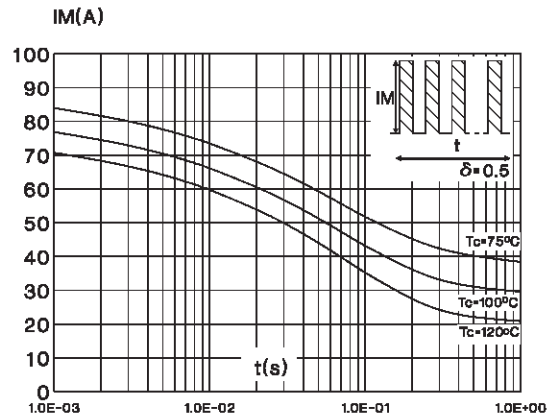
**Fig. 2-2:** Average current versus ambient temperature ( $\delta=0.5$ ) (per diode) (ISOWATT220AB).



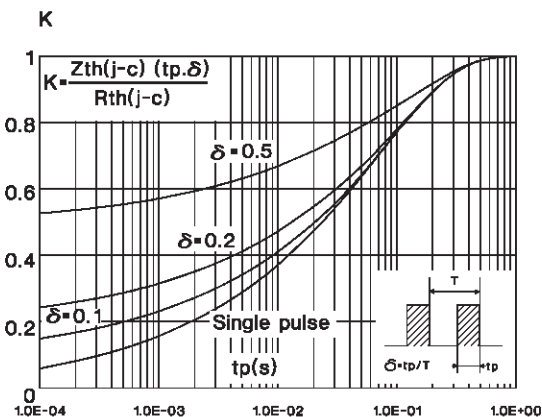
**Fig. 3-1:** Non repetitive surge peak forward current versus overload duration (maximum values) (per diode) (TO-220AB and D<sup>2</sup>PAK).



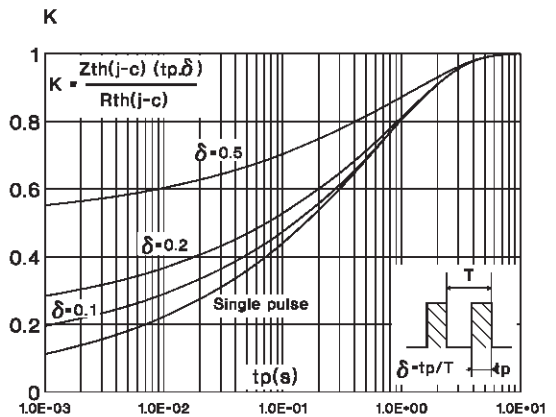
**Fig. 3-2:** Non repetitive surge peak forward current versus overload duration (maximum values) (per diode) (ISOWATT220AB).



**Fig. 4-1:** Relative variation of thermal transient impedance junction to case versus pulse duration (TO-220AB and D<sup>2</sup>PAK).

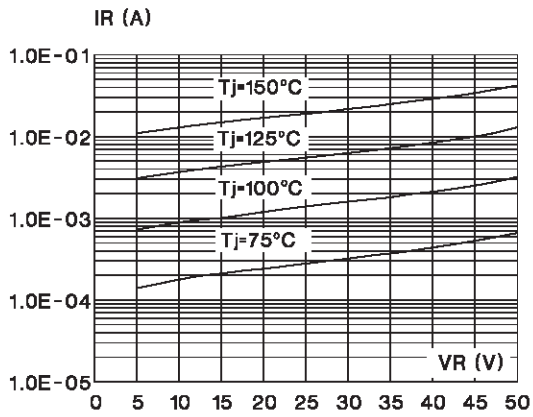


**Fig. 4-2:** Relative variation of thermal transient impedance junction to case versus pulse duration (ISOWATT220AB).

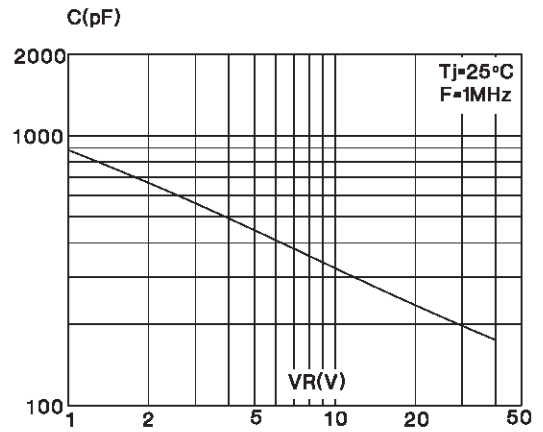


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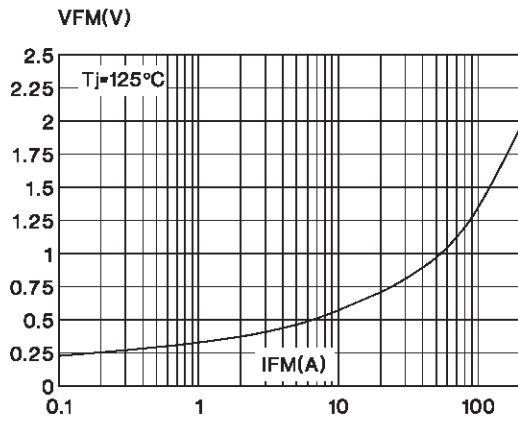
**Fig. 5:** Reverse leakage current versus reverse voltage applied (typical values) (per diode).



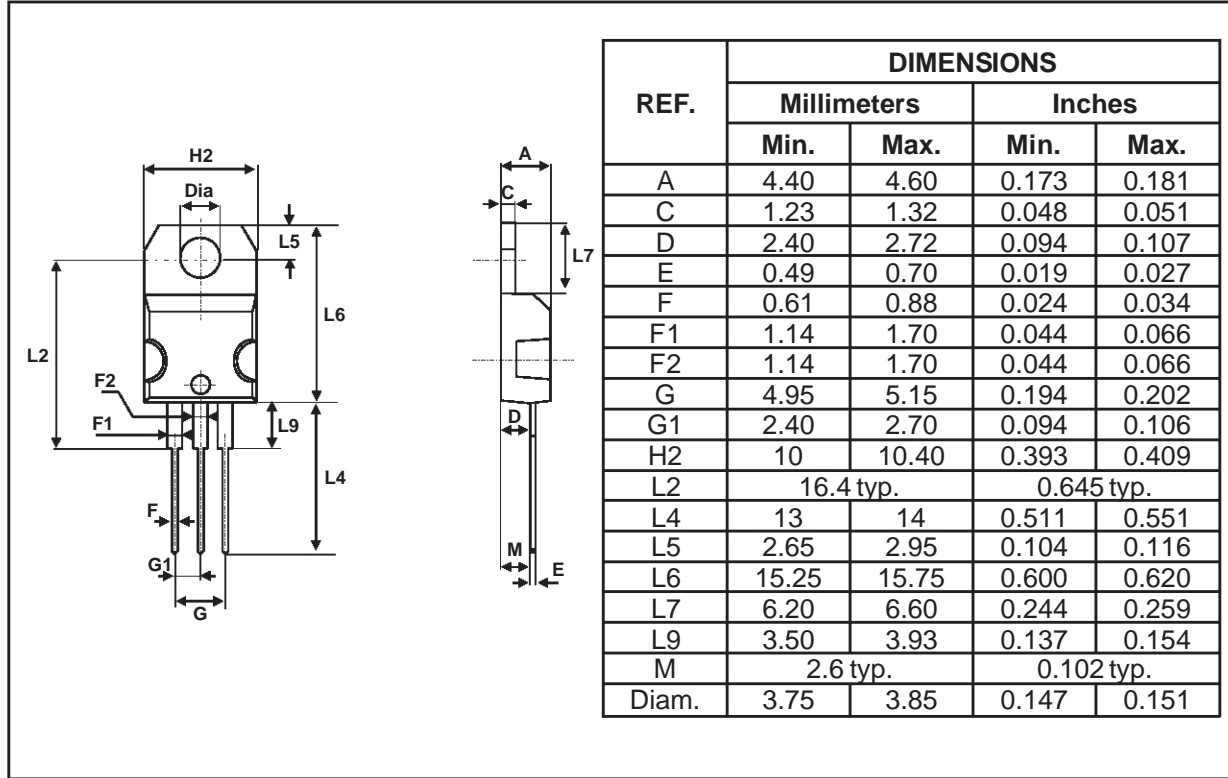
**Fig. 6:** Junction capacitance versus reverse voltage applied (typical values) (per diode).



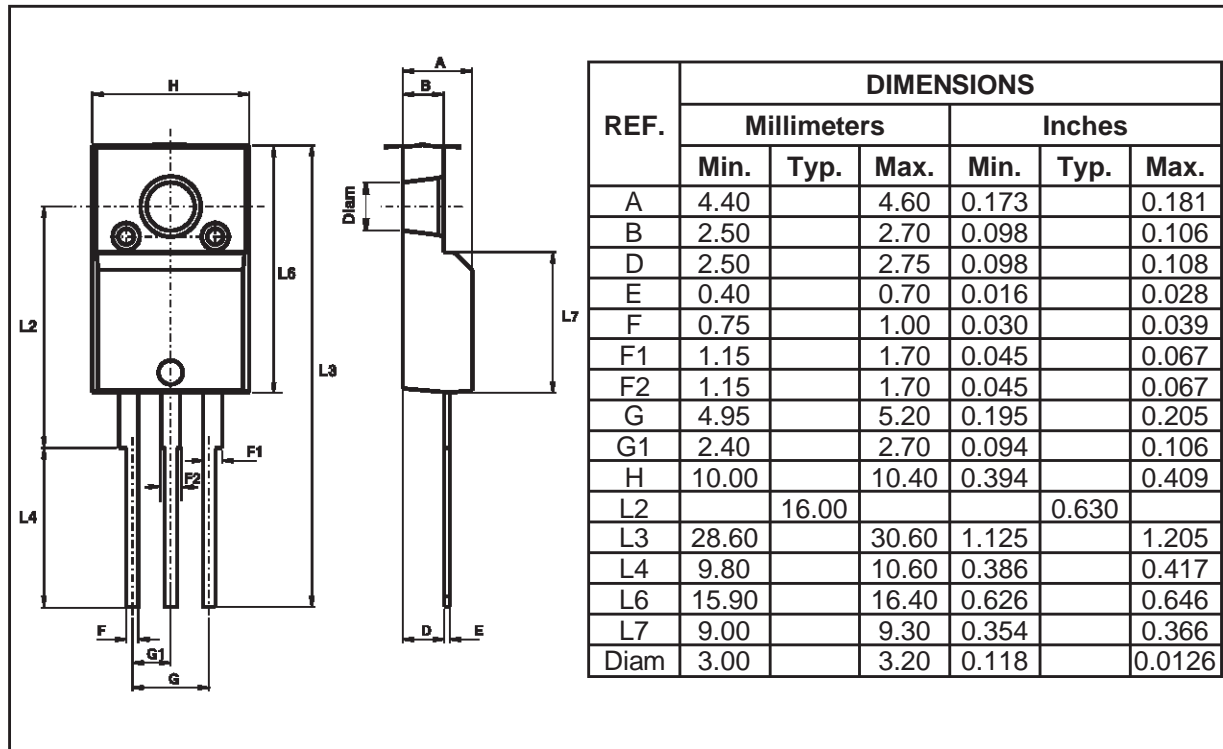
**Fig. 7:** Forward voltage drop versus forward current (maximum values) (per diode).



**PACKAGE MECHANICAL DATA**  
TO-220AB

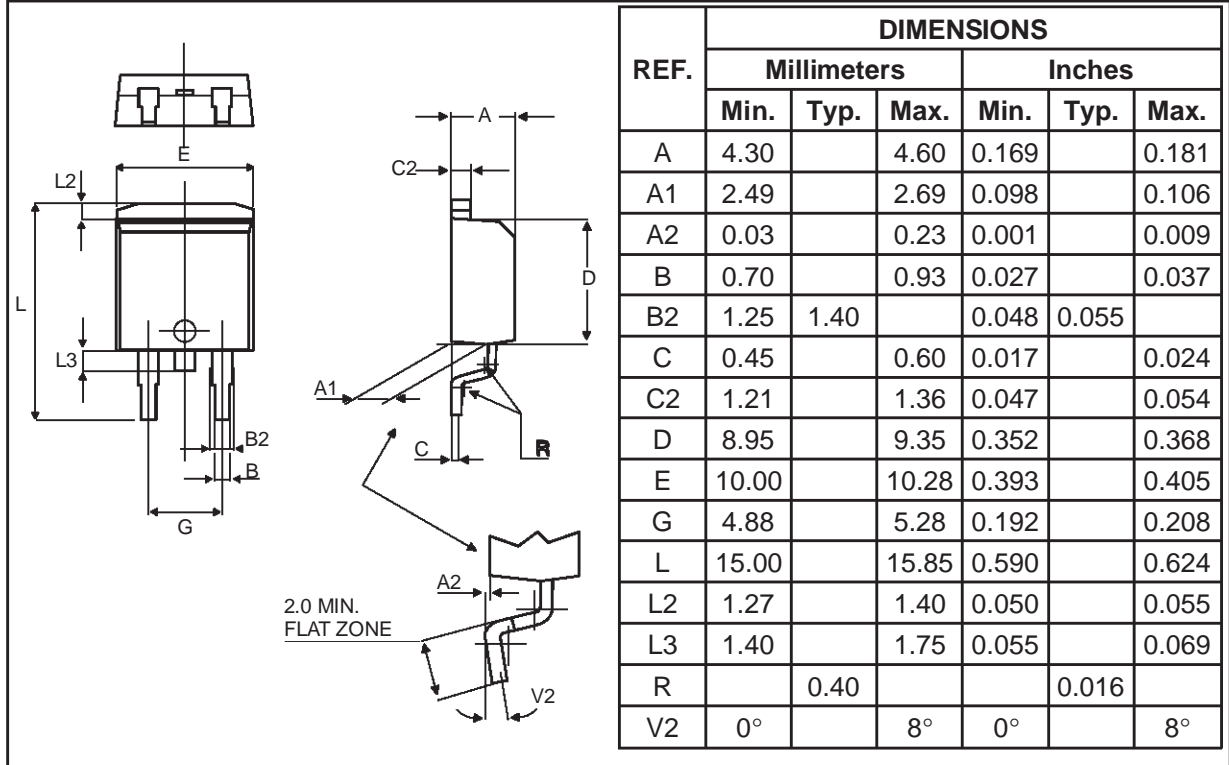


**PACKAGE MECHANICAL DATA**  
ISOWATT220AB

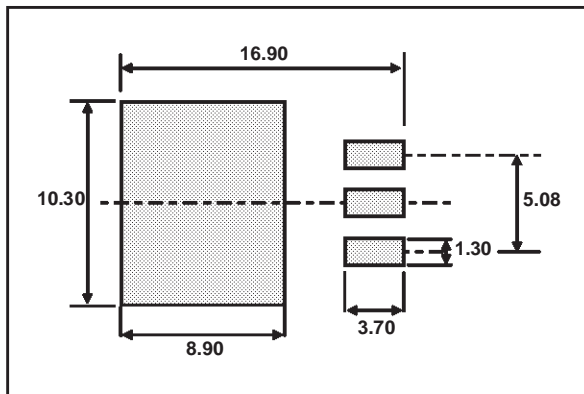


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## PACKAGE MECHANICAL DATA D<sup>2</sup>PAK



## FOOTPRINT DIMENSIONS (in millimeters)



- **Marking:** Type number
- **Cooling method:** C
- **Weight:** 1.8 g.

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