



# STPS16L45CT/CFP

## LOW DROP POWER SCHOTTKY RECTIFIER

### MAIN PRODUCTS CHARACTERISTICS

<b>I<sub>F(AV)</sub></b>	<b>2 x 8 A</b>
<b>V<sub>RRM</sub></b>	<b>45 V</b>
<b>T<sub>j (max)</sub></b>	<b>150 °C</b>
<b>V<sub>F (max)</sub></b>	<b>0.45 V</b>

### FEATURES AND BENEFITS

- LOW FORWARD VOLTAGE DROP MEANING VERY SMALL CONDUCTION LOSSES
- LOW SWITCHING LOSSES ALLOWING HIGH FREQUENCY OPERATION
- INSULATED PACKAGE: TO-220FPAB  
Insulated voltage: 2000V DC  
Capacitance: 12 pF
- AVALANCHE CAPABILITY SPECIFIED

### DESCRIPTION

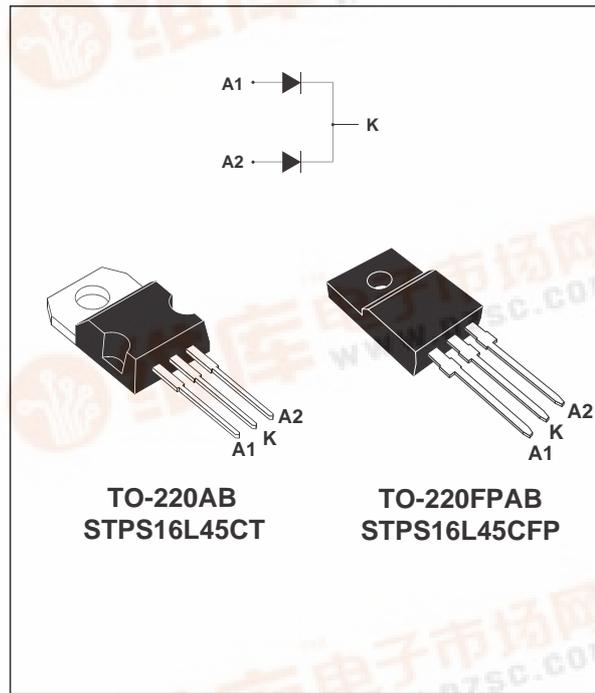
Dual center tap Schottky barrier rectifier designed for high frequency Switched Mode Power Supplies and high frequency DC to DC converters.

Packaged in TO-220AB and TO-220FPAB, these devices are intended for use in low voltage, high frequency converters, free-wheeling and polarity protection applications.

### ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter		Value	Unit	
V <sub>RRM</sub>	Repetitive peak reverse voltage		45	V	
I <sub>F(RMS)</sub>	RMS forward current		30	A	
I <sub>F(AV)</sub>	Average forward current	TO-220AB	T <sub>c</sub> = 140°C δ = 0.5	Per diode: 8 Per device: 16	A
		TO-220FPAB	T <sub>c</sub> = 125°C δ = 0.5	Per diode: 8 Per device: 16	
	I <sub>FSM</sub>	Surge non repetitive forward current	tp = 10 ms sinusoidal	180	A
	I <sub>RRM</sub>	Repetitive peak reverse current	tp=2 μs square F=1kHz	1	A
I <sub>RSM</sub>	Non repetitive peak reverse current	tp = 100 μs square	2	A	
P <sub>ARM</sub>	Repetitive peak avalanche power	tp = 1 μs T <sub>j</sub> = 25°C	4000	W	
T <sub>stg</sub>	Storage temperature range		- 65 to + 150	°C	
T <sub>j</sub>	Maximum operating junction temperature *		150	°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	Per diode	2.2
			Total	1.3
			Coupling	0.3
		TO-220FPAB	Per diode	4.5
			Total	3.5
			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)

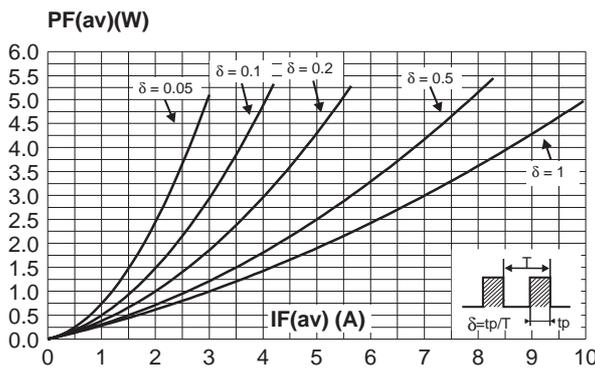
Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
$I_R^*$	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$			0.2	mA
		$T_j = 125^\circ\text{C}$			65	130	mA
$V_F^*$	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 8\text{ A}$			0.5	V
		$T_j = 125^\circ\text{C}$	$I_F = 8\text{ A}$		0.39	0.45	
		$T_j = 25^\circ\text{C}$	$I_F = 16\text{ A}$			0.63	
		$T_j = 125^\circ\text{C}$	$I_F = 16\text{ A}$		0.55	0.64	

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

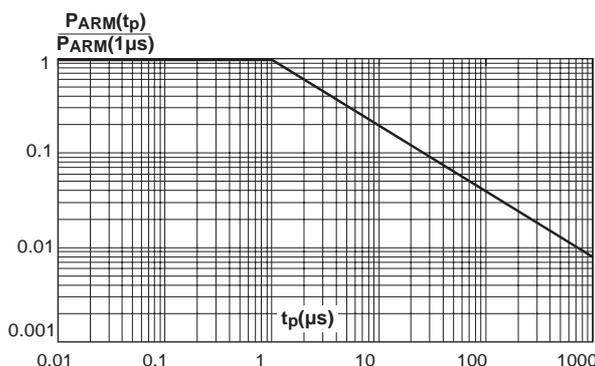
To evaluate the conduction losses use the following equation :

$$P = 0.26 \times I_{F(AV)} + 0.024 I_{F(RMS)}^2$$

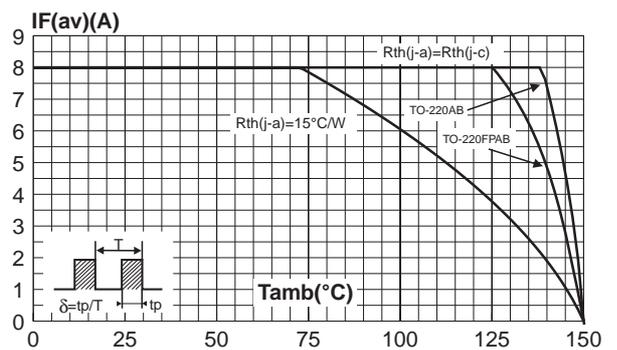
**Fig. 1:** Average forward power dissipation versus average forward current (per diode).



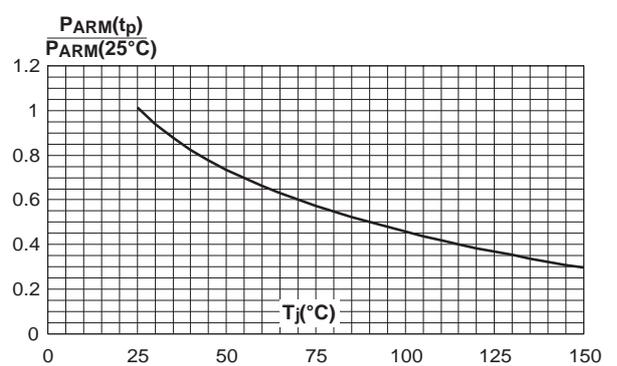
**Fig. 3:** Normalized avalanche power derating versus pulse duration.



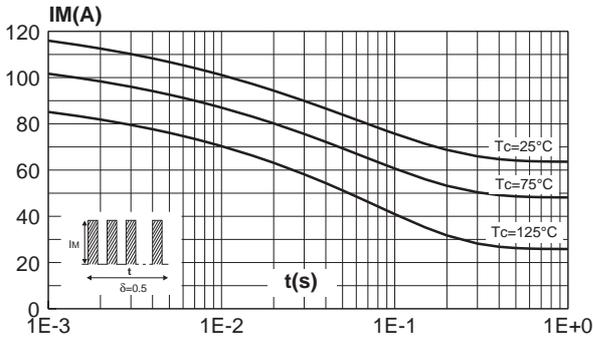
**Fig. 2:** Average current versus ambient temperature ( $\delta = 0.5$ ) (per diode).



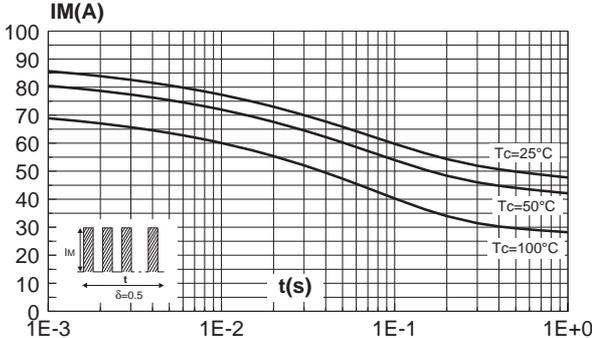
**Fig. 4:** Normalized avalanche power derating versus junction temperature.



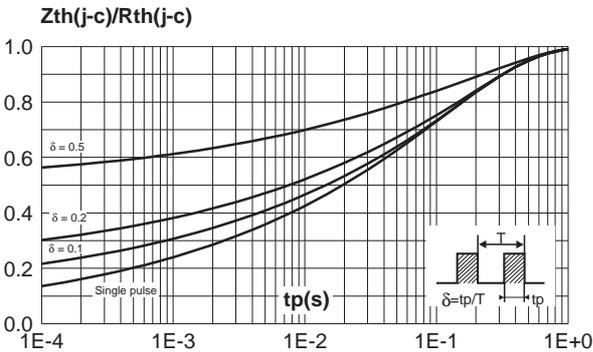
**Fig. 5-1:** Non repetitive surge peak forward current versus overload duration (maximum values per diode, TO-220AB).



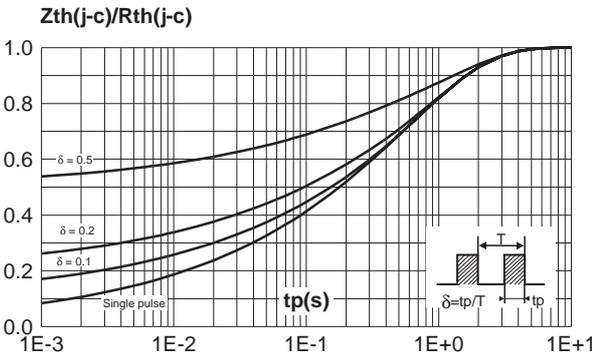
**Fig. 5-2:** Non repetitive surge peak forward current versus overload duration (maximum values per diode, TO-220FPAB).



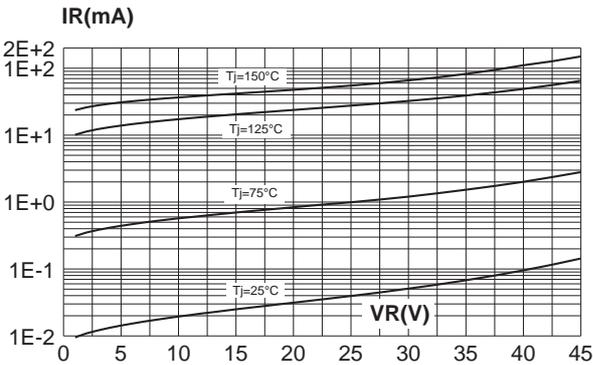
**Fig. 6-1:** Relative variation of thermal impedance junction to case versus pulse duration (TO-220AB).



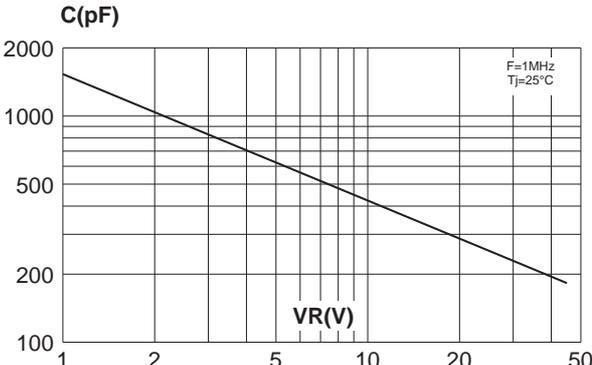
**Fig. 6-2:** Relative variation of thermal impedance junction to case versus pulse duration (TO-220FPAB).



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

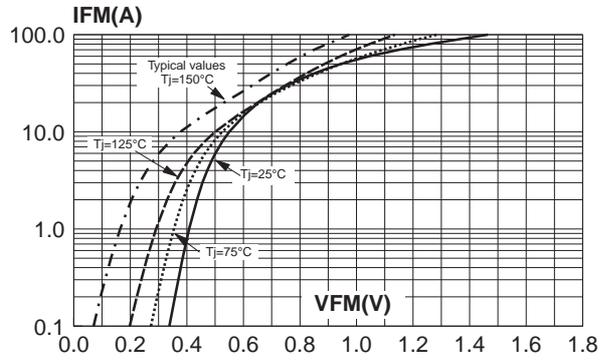


**Fig. 8:** Junction capacitance versus reverse voltage applied (typical values) (per diode).



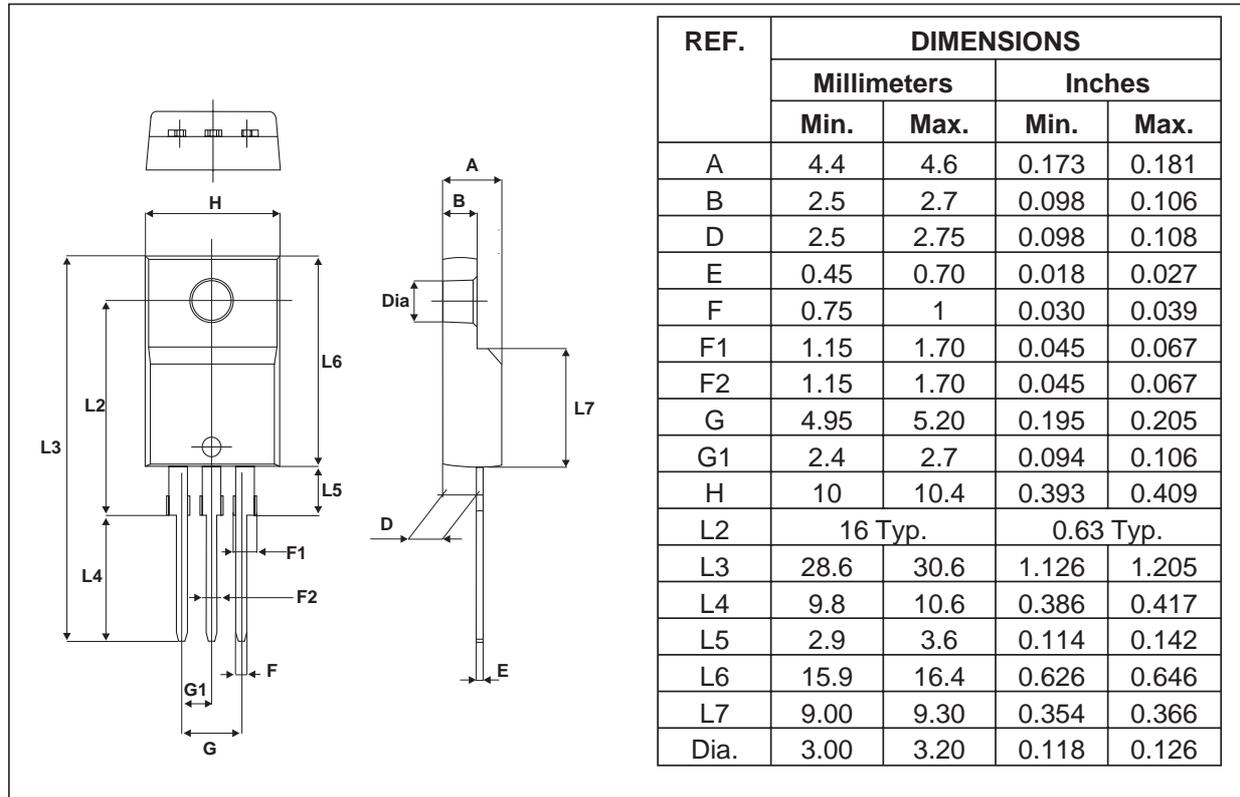
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**Fig. 9:** Forward voltage drop versus forward current (maximum values) (per diode).



## PACKAGE MECHANICAL DATA

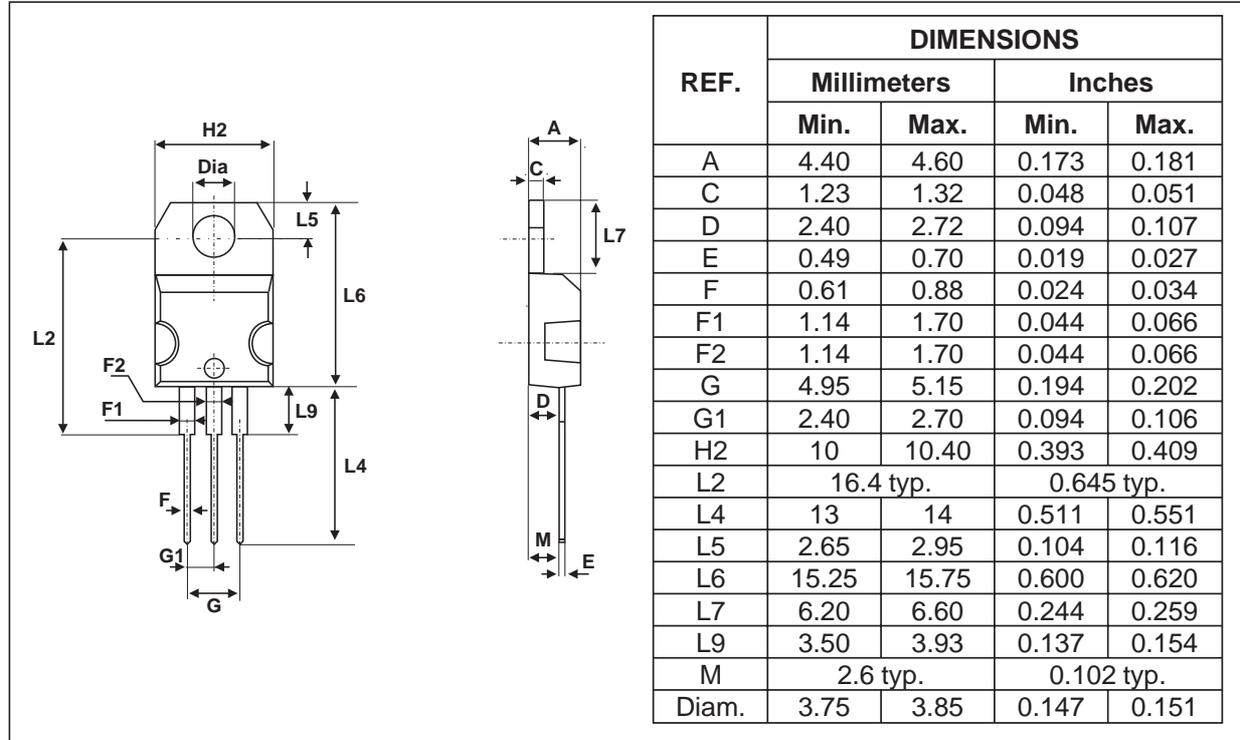
### TO-220FPAB



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## PACKAGE MECHANICAL DATA

TO-220AB



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS16L45CT	STPS16L45CT	TO-220AB	2g	50	Tube
STPS16L45CFP	STPS16L45CFP	TO-220FPAB	2g	50	Tube

- Epoxy meets UL94,V0
- Cooling method : C
- Recommended torque value : 0.55 m.N
- Maximum torque value : 0.70 m.N

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