

## POWER SCHOTTKY RECTIFIER

### MAIN PRODUCT CHARACTERISTICS

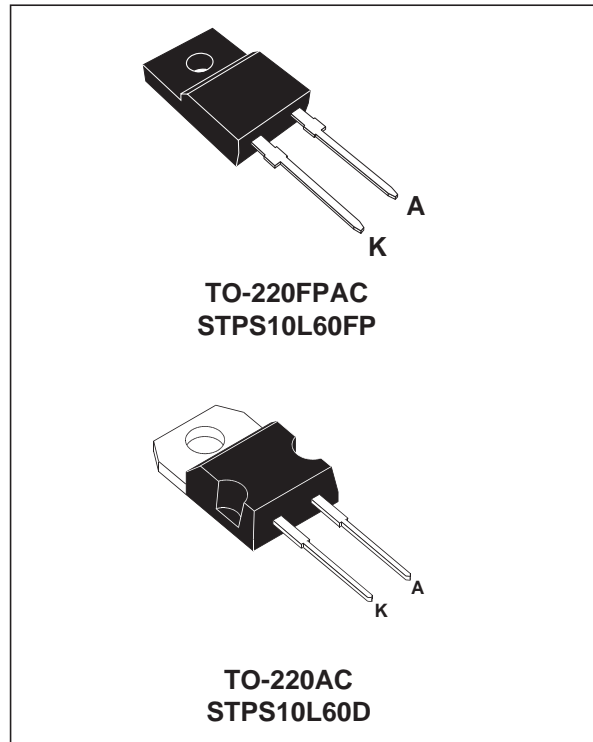
$I_{F(AV)}$	10 A
$V_{RRM}$	60 V
$T_j(\text{max})$	150°C
$V_F(\text{max})$	0.56 V

### FEATURES AND BENEFITS

- LOW FORWARD VOLTAGE DROP
- NEGLIGIBLE SWITCHING LOSSES
- LOW THERMAL RESISTANCE
- AVALANCHE CAPABILITY SPECIFIED

### DESCRIPTION

Schottky rectifier suited for Switched Mode Power Supplies and high frequency DC to DC converters. Packaged in TO-220AC, TO-220FPAC this device is intended for use in DC/DC chargers.



### ABSOLUTE RATINGS (limiting values)

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	TO-220AC	$T_c = 140^\circ\text{C}$ $\delta = 0.5$	10	A
		TO-220FPAC	$T_c = 120^\circ\text{C}$ $\delta = 0.5$		
$I_{FSM}$	Surge non repetitive forward current	$t_p = 10 \text{ ms}$ Sinusoidal	220	A	
$I_{RRM}$	Repetitive peak reverse current	$t_p = 2 \mu\text{s}$ square $F=1\text{kHz}$	1	A	
$P_{ARM}$	Repetitive peak avalanche power	$t_p = 1 \mu\text{s}$ $T_j = 25^\circ\text{C}$	5800	W	
$T_{stg}$	Storage temperature range		- 65 to + 175	°C	
$T_j$	Maximum operating junction temperature *		150	°C	
$dV/dt$	Critical rate of rise of 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 RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case	TO-220AC	1.6
		TO-220FPAC	4

## STATIC ELECTRICAL CHARACTERISTICS

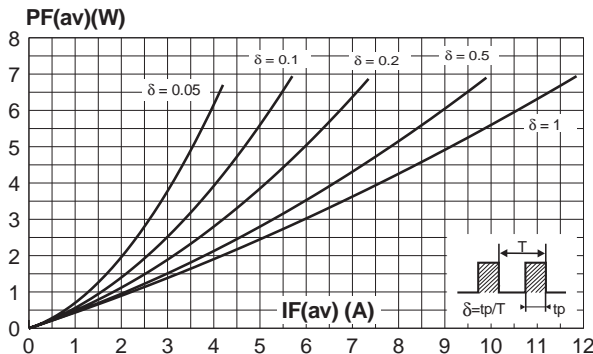
Symbol	Parameter	Tests conditions	Min.	Typ.	Max.	Unit
$I_R^*$	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$		350	$\mu\text{A}$
		$T_j = 125^\circ\text{C}$		65	95	mA
$V_F^*$	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 10\text{ A}$		0.6	V
		$T_j = 125^\circ\text{C}$	$I_F = 10\text{ A}$	0.48	0.56	
		$T_j = 25^\circ\text{C}$	$I_F = 20\text{ A}$		0.74	
		$T_j = 125^\circ\text{C}$	$I_F = 20\text{ A}$	0.62	0.7	

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

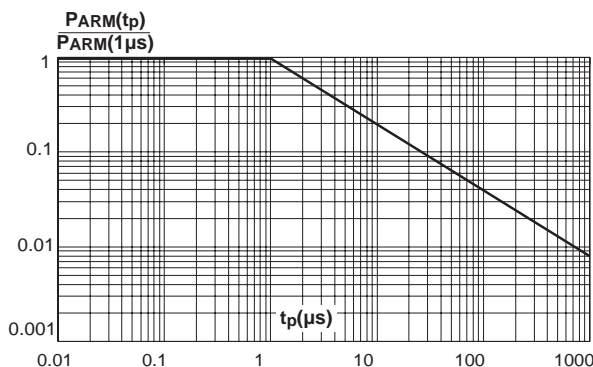
To evaluate the conduction losses use the following equation :

$$P = 0.42 \times I_{F(AV)} + 0.014 I_{F(RMS)}^2$$

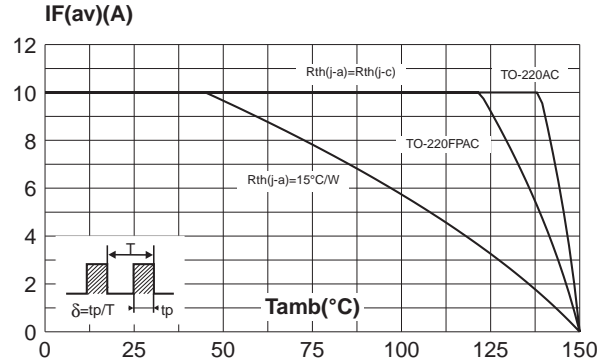
**Fig. 1:** Average forward power dissipation versus average forward current.



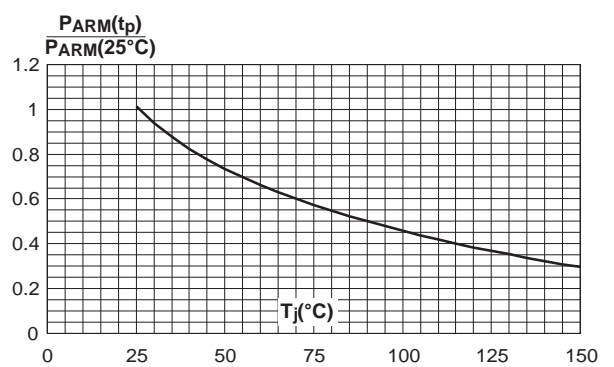
**Fig. 3:** Normalized avalanche power derating versus pulse duration.



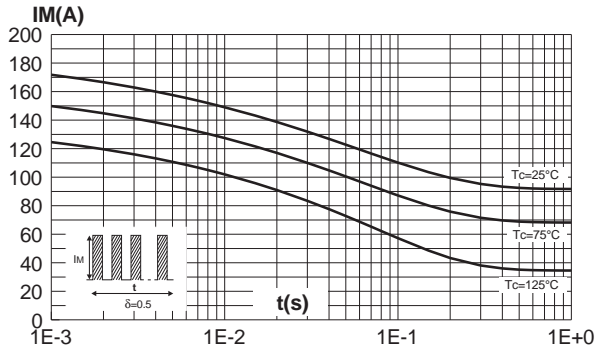
**Fig. 2:** Average forward current versus ambient temperature ( $\delta = 0.5$ ).



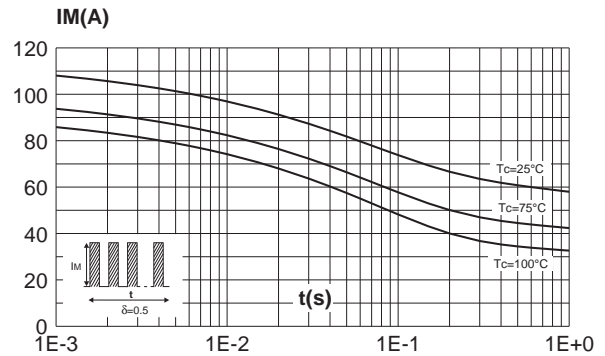
**Fig. 4:** Normalized avalanche power derating versus junction temperature.



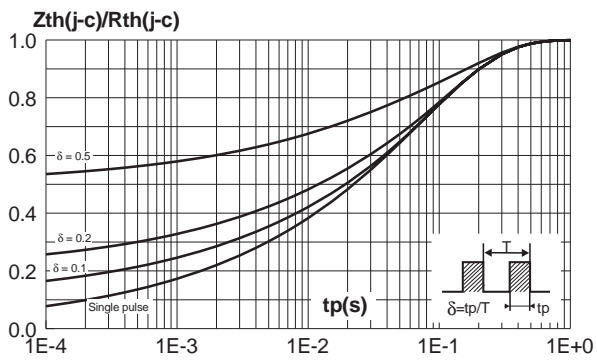
**Fig. 5-1:** Non repetitive surge peak forward current versus overload duration (maximum values) (TO-220AC).



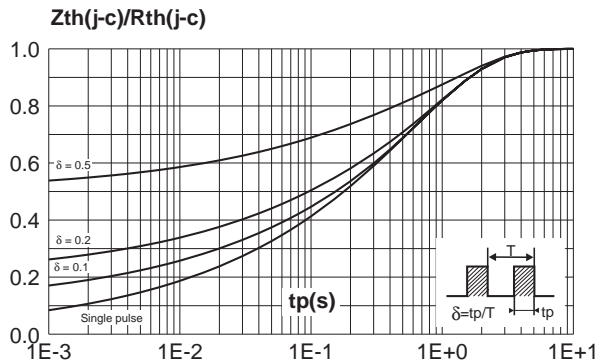
**Fig. 5-2:** Non repetitive surge peak forward current versus overload duration (maximum values) (TO-220FPAC).



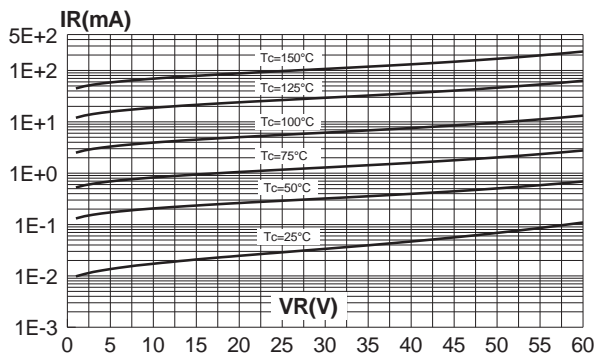
**Fig. 6-1:** Relative variation of thermal impedance junction to lead versus pulse duration (TO-220AC).



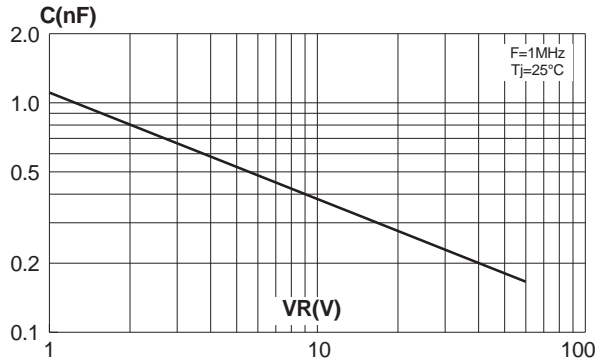
**Fig. 6-2:** Relative variation of thermal impedance junction to lead versus pulse duration (TO-220FPAC).



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

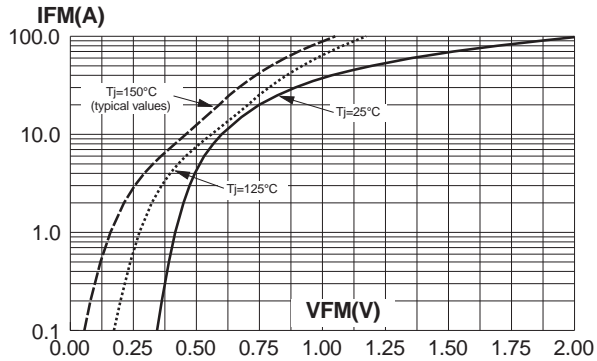


**Fig. 8:** Junction capacitance versus reverse voltage applied (typical values).

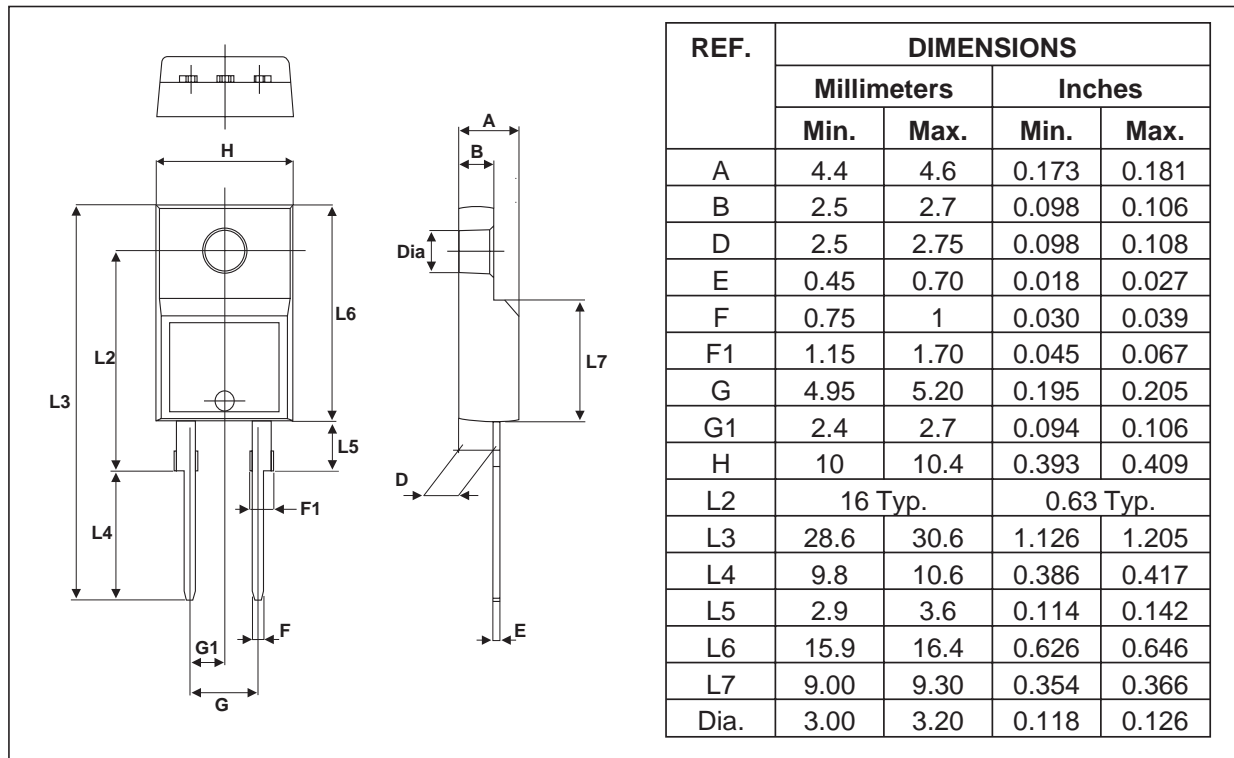


# STPS10L60D/FP

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

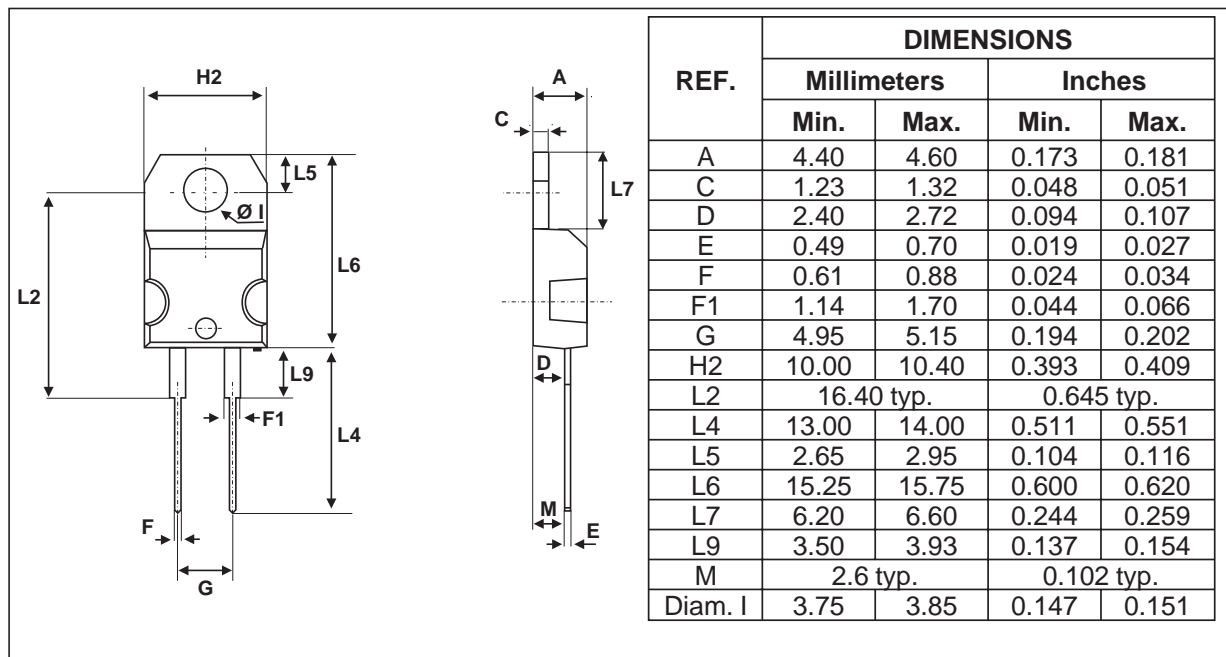


## PACKAGE MECHANICAL DATA TO-220FPAC



# STPS10L60D/FP

## PACKAGE MECHANICAL DATA TO-220AC



- COOLING METHOD : C
- RECOMMENDED TORQUE VALUE : 0.8M.N
- MAXIMUM TORQUE VALUE : 1.0M.N

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS10L60D	STPS10L60D	TO-220AC	1.86g	50	Tube
STPS10L60FP	STPS10L60FP	TO-220FPAC	1.9g	50	Tube

- EPOXY MEETS UL94,V0

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