



# STPS10L60C

Power Schottky rectifier

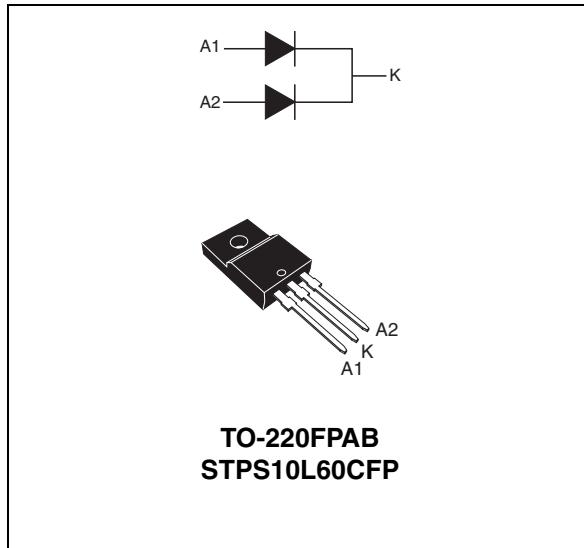
## Features

- Low forward voltage drop
- Negligible switching losses
- Insulated package:
  - Insulating voltage = 2000 V DC
  - Capacitance = 12 pF
- Avalanche capability specified

## Description

Dual center tap Schottky rectifier suited for switch mode power supplies and high frequency DC to DC converters.

Packaged in TO-220FPAB, this device is intended for use in high frequency inverters.



**Table 1. Device summary**

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

# 1 Characteristics

**Table 2. Absolute ratings (limiting values, per diode)**

Symbol	Parameter			Value	Unit		
$V_{RRM}$	Repetitive peak reverse voltage			60	V		
$I_{F(RMS)}$	Forward rms current			30	A		
$I_{F(AV)}$	Average forward current	$T_C = 130 \text{ }^\circ\text{C}$ $\delta = 0.5$	Per diode Per device	5 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 $F=1 \text{ kHz}$		1	A		
$P_{ARM}$	Repetitive peak avalanche power	$t_p = 1 \mu\text{s}$ $T_j = 25 \text{ }^\circ\text{C}$		4000	W		
$T_{stg}$	Storage temperature range			-65 to + 175	$^\circ\text{C}$		
$T_j$	Maximum operating junction temperature <sup>(1)</sup>			150	$^\circ\text{C}$		
$dV/dt$	Critical rate of rise reverse voltage			10000	V/ $\mu\text{s}$		

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

**Table 3. Thermal resistance**

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

When the diodes 1 and 2 are used simultaneously :

$$\Delta T_j(\text{diode 1}) = P(\text{diode 1}) \times R_{th(j-c)}(\text{Per diode}) + P(\text{diode 2}) \times R_{th(c)}$$

**Table 4. Static electrical characteristics (per diode)**

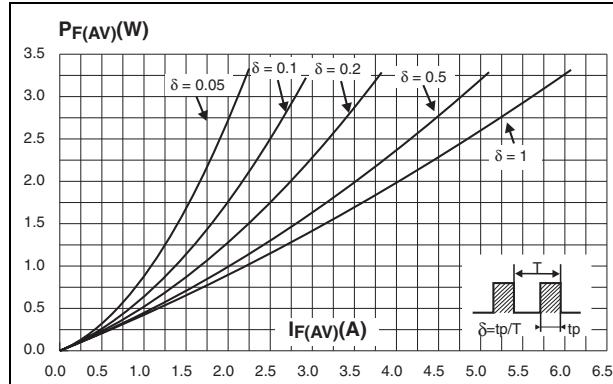
Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
$I_R^{(1)}$	Reverse leakage current	$T_j = 25 \text{ }^\circ\text{C}$	$V_R = V_{RRM}$			220	$\mu\text{A}$
		$T_j = 125 \text{ }^\circ\text{C}$			45	60	mA
$V_F^{(1)}$	Forward voltage drop	$T_j = 25 \text{ }^\circ\text{C}$	$I_F = 5 \text{ A}$			0.55	V
		$T_j = 125 \text{ }^\circ\text{C}$	$I_F = 5 \text{ A}$		0.43	0.52	
		$T_j = 25 \text{ }^\circ\text{C}$	$I_F = 10 \text{ A}$			0.67	
		$T_j = 125 \text{ }^\circ\text{C}$	$I_F = 10 \text{ A}$		0.55	0.64	

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

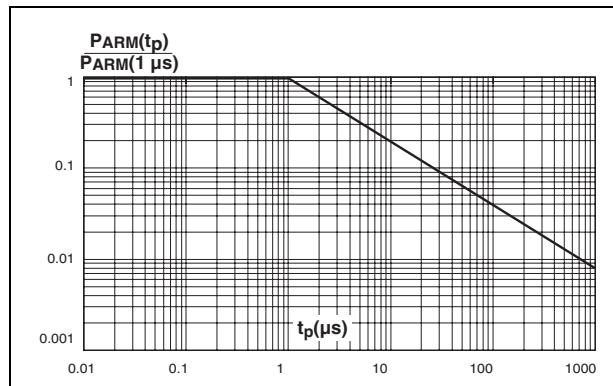
To evaluate the conduction losses use the following equation:

$$P = 0.44 \times I_{F(AV)} + 0.0091 \times I_F^2 (\text{RMS})$$

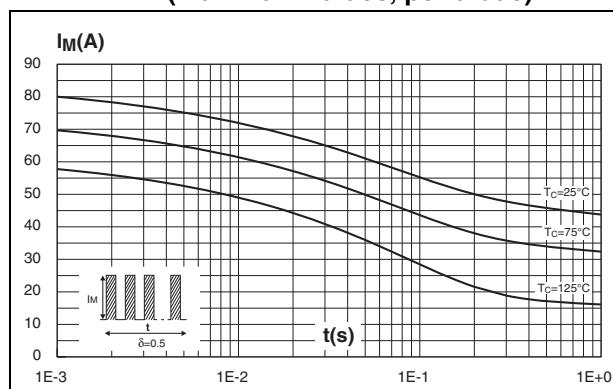
**Figure 1.** Average forward power dissipation versus average forward current (per diode)



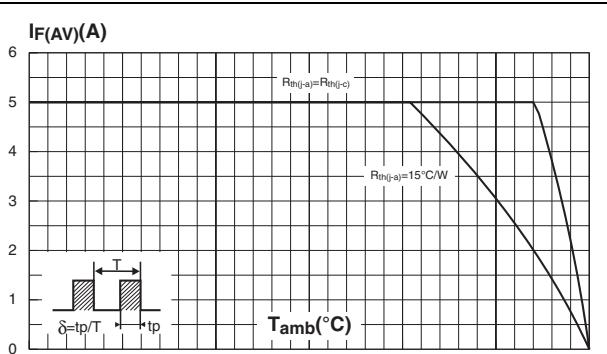
**Figure 3.** Normalized avalanche power derating versus pulse duration



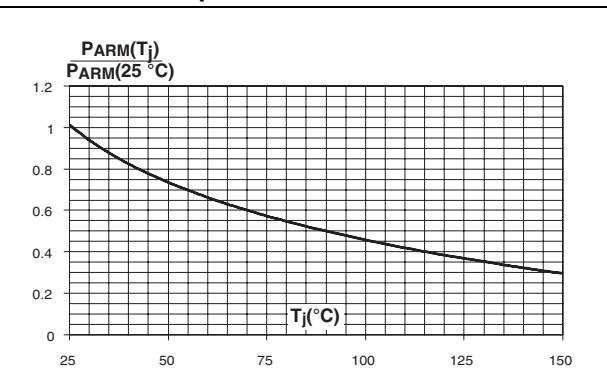
**Figure 5.** Non repetitive surge peak forward current versus overload duration (maximum values, per diode)



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



**Figure 4.** Normalized avalanche power derating versus junction temperature



**Figure 6.** Relative variation of thermal transient impedance junction to case versus pulse duration

