



# STPS30H100C

High voltage power Schottky rectifier

Datasheet – production data

## Features

- Negligible switching losses
- Low leakage current
- Good trade off between leakage current and forward voltage drop
- Low thermal resistance
- 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-200AB, TO-220AB narrow leads, TO-247, and I<sup>2</sup>PAK this device is intended for use in high frequency inverters.

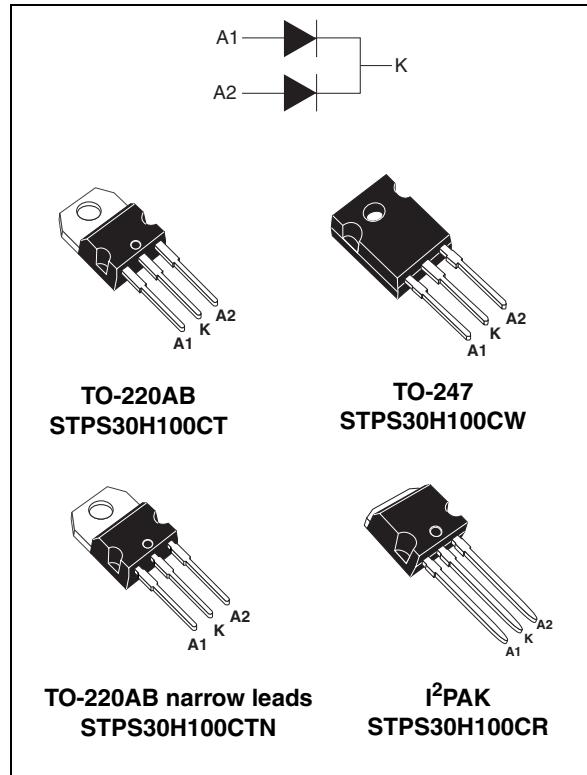


Table 1. Device summary

Symbol	Value
$I_{F(AV)}$	2 x 15 A
$V_{RRM}$	100 V
$T_j$ (max)	175 °C
$V_F$ (max)	0.67 V

# 1 Characteristics

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

Symbol	Parameter			Value	Unit
$V_{RRM}$	Repetitive peak reverse voltage			100	V
$I_{F(RMS)}$	Forward rms current			30	A
$I_{F(AV)}$	Average forward current	$T_c = 155^\circ C$ $\delta = 0.5$	Per diode Per device	15 30	A
$I_{FSM}$	Surge non repetitive forward current	$t_p = 10 \text{ ms sinusoidal}$		250	A
$I_{RRM}$	Repetitive peak reverse current	$t_p = 2 \mu s \text{ square, } f = 1 \text{ kHz}$		1	A
$I_{RSM}$	Non repetitive peak reverse current	$t_p = 100 \mu s \text{ square}$		3	A
$P_{ARM}$	Repetitive peak avalanche power	$t_p = 1 \mu s \quad T_j = 25^\circ C$		10800	W
$T_{stg}$	Storage temperature range			-65 to +175	°C
$T_j$	Operating junction temperature range <sup>(1)</sup>			-40 to +175	°C
dV/dt	Critical rate of rise of reverse voltage			10000	V/μs

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

**Table 3. Thermal resistance**

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode	1.6	°C/W
		Total	0.9	
$R_{th(c)}$	Coupling		0.1	

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	Test conditions		Min.	Typ.	Max.	Unit
$I_R^{(1)}$	Reverse leakage current	$T_j = 25^\circ C$	$V_R = V_{RRM}$			5	μA
		$T_j = 125^\circ C$			2	6	mA
$V_F^{(2)}$	Forward voltage drop	$T_j = 25^\circ C$	$I_F = 15 A$			0.80	V
		$T_j = 125^\circ C$			0.64	0.67	
		$T_j = 25^\circ C$	$I_F = 30 A$			0.93	
		$T_j = 125^\circ C$			0.74	0.8	

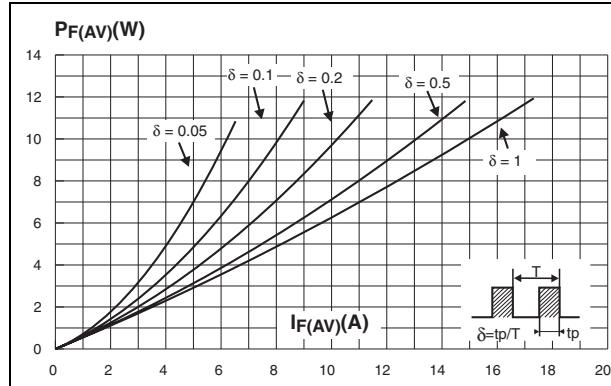
1. Pulse test:  $t_p = 5 \text{ ms}, \delta < 2\%$

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

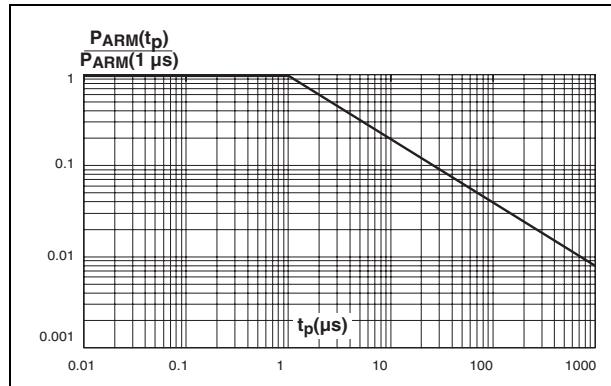
To evaluate the conduction losses use the following equation:

$$P = 0.54 \times I_{F(AV)} + 0.0086 I_F^2 (\text{RMS})$$

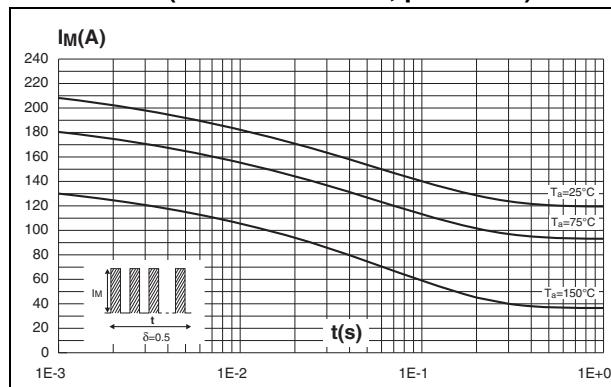
**Figure 1.** Average forward power dissipation versus average forward current (per diode)



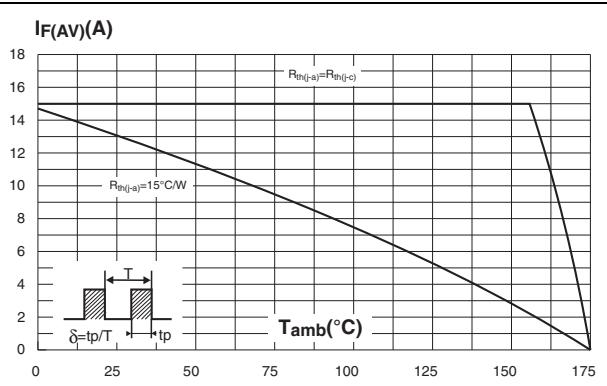
**Figure 3.** Normalized avalanche power derating versus pulse duration



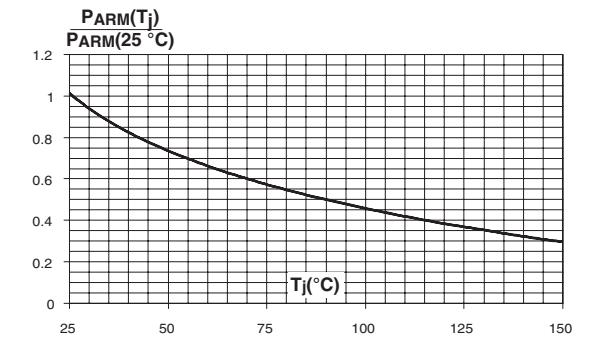
**Figure 5.** Non repetitive surge peak forward current versus overload duration (maximum values, per diode)



**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 impedance junction to case versus pulse duration

