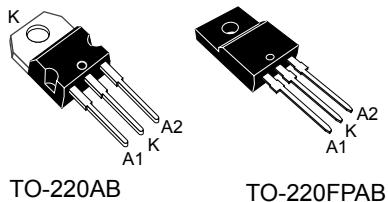
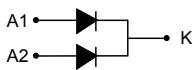


## 100 V power Schottky rectifier

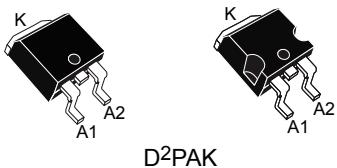
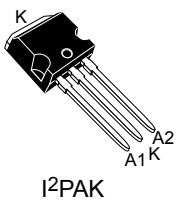


### Features

- Negligible switching losses
- High junction temperature capability
- Low leakage current
- Good trade off between leakage current and forward voltage drop
- Avalanche rated
- Insulated package: TO-220FPAB
  - Insulating voltage = 2000 V<sub>RMS</sub> sine
- ECOPACK®2 compliant component for D<sup>2</sup>PAK on demand

### Description

Dual center tap Schottky rectifier designed for high frequency miniature switch mode power supplies such as adaptors and on-board DC-DC converters.



Product status link	
<a href="#">STPS20H100C</a>	
Product summary	
I <sub>F(AV)</sub>	2 x 10 A
V <sub>RRM</sub>	100 V
T <sub>j</sub> (max)	175 °C
V <sub>F</sub> (typ)	0.59 V

## 1 Characteristics

**Table 1. Absolute ratings (limiting values, per diode, at 25 °C, unless otherwise specified)**

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 $\delta = 0.5$ , square wave	TO-220AB, D <sup>2</sup> PAK, I <sup>2</sup> PAK	$T_C = 160$ °C	Per diode	10	A	
				Per device	20		
		TO-220FPAB	$T_C = 145$ °C	Per diode	10		
				Per device	20		
$I_{FSM}$	Surge non repetitive forward current	$t_p = 10$ ms sinusoidal				250	
$P_{ARM}$	Repetitive peak avalanche power	$t_p = 10$ µs, $T_j = 125$ °C				775	
$T_{stg}$	Storage temperature range					-65 to + 175	
$T_j$	Maximum operating junction temperature <sup>(1)</sup>					+ 175	

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

**Table 2. Thermal resistance parameter**

Symbol	Parameter				Value	Unit
$R_{th(j-c)}$	Junction to case	TO-220AB, D <sup>2</sup> PAK, I <sup>2</sup> PAK		Per diode	1.6	°C/W
		TO-220FPAB			4	
		TO-220AB, D <sup>2</sup> PAK, I <sup>2</sup> PAK		Total	0.9	
		TO-220FPAB			3.2	
$R_{th(c)}$	Coupling	TO-220AB, D <sup>2</sup> PAK, I <sup>2</sup> PAK		-	0.15	°C/W
		TO-220FPAB			2.5	

When the diodes 1 and 2 are used simultaneously :

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

**Table 3. Static electrical characteristics (per diode)**

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
$I_R^{(1)}$	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$	-		4.5	$\mu\text{A}$
		$T_j = 125^\circ\text{C}$		-	2	6	mA
$V_F^{(2)}$	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 8 \text{ A}$	-		0.71	V
			$I_F = 10 \text{ A}$	-		0.77	
			$I_F = 16 \text{ A}$	-		0.81	
			$I_F = 20 \text{ A}$	-		0.88	
		$T_j = 125^\circ\text{C}$	$I_F = 8 \text{ A}$	-	0.56	0.58	
			$I_F = 10 \text{ A}$	-	0.59	0.64	
			$I_F = 16 \text{ A}$	-	0.65	0.68	
			$I_F = 20 \text{ A}$	-	0.67	0.73	

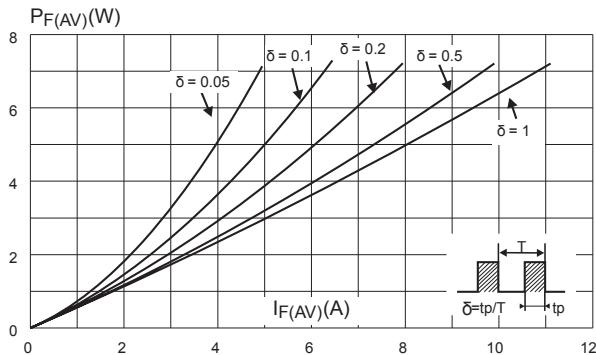
1. Pulse test:  $t_p = 5 \text{ ms}$ ,  $\delta < 2\%$ 2. Pulse test:  $t_p = 380 \mu\text{s}$ ,  $\delta < 2\%$ 

To evaluate the conduction losses use the following equation:

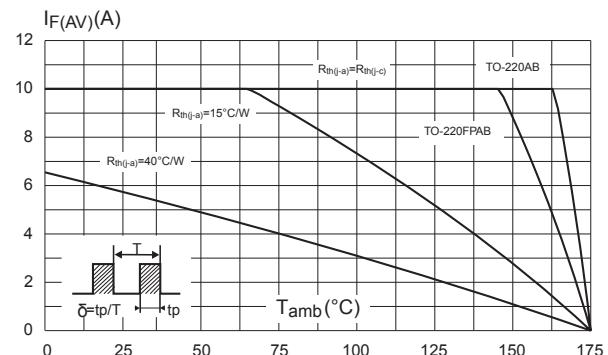
$$P = 0.55 \times I_{F(AV)} + 0.009 I_F^2(\text{RMS})$$

## 1.2 Characteristics (curves)

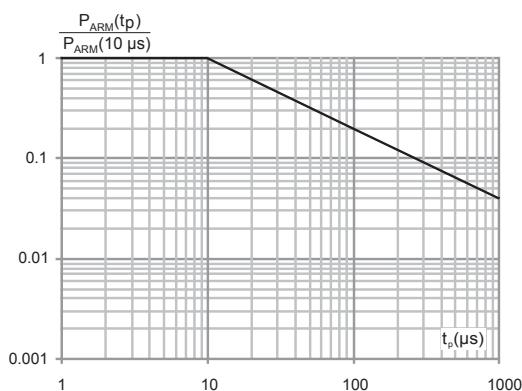
**Figure 1. Average forward power dissipation versus average forward current (per diode)**



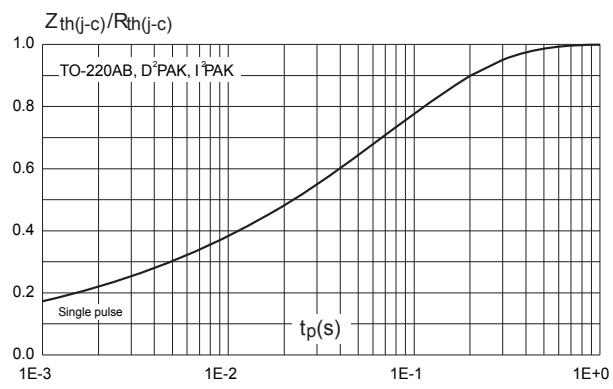
**Figure 2. Average forward current versus ambient temperature ( $\delta = 0.5$ , per diode)**



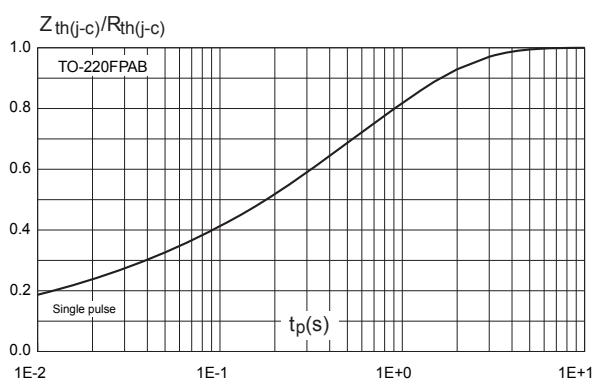
**Figure 3. Normalized avalanche power derating versus pulse ( $T_j = 125^\circ\text{C}$ )**



**Figure 4. Relative variation of thermal impedance junction to case versus pulse duration (per diode)**



**Figure 5. Relative variation of thermal impedance junction to case versus pulse duration (per diode)**



**Figure 6. Reverse leakage current versus reverse voltage applied (typical values, per diode)**

