



STPS10LCD100C

High voltage power Schottky rectifier

Features

- High junction temperature capability
- Good trade-off between leakage current and forward voltage drop
- Low leakage current
- Avalanche capability specified
- Insulated package TO-220FPAB
 - Insulated voltage: 2000 V_{RMS}
 - Typical package capacitance: 12 pF

Description

Dual center tap Schottky rectifier designed for high frequency switched mode power supplies.

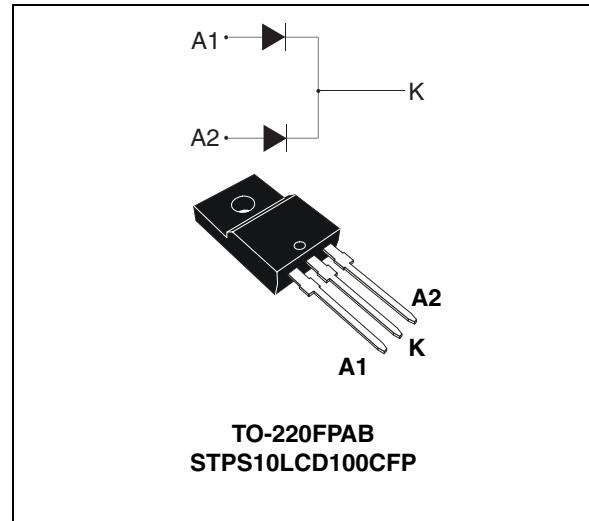


Table 1. Device summary

I _{F(AV)}	2 X 5 A
V _{RRM}	100 V
T _j	175 °C
V _F (typ)	0.64 V

1 Characteristics

Table 2. 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)}	RMS forward current			30	A		
I _{F(AV)}	Average forward current, $\delta = 0.5$	per diode	T _c = 145 °C	5	A		
		per device	T _c = 135 °C	10			
I _{FSM}	Surge non repetitive forward current	t _p = 8.3 ms sinusoidal		155	A		
		t _p = 10 ms sinusoidal		150			
P _{ARM}	Repetitive peak avalanche power	t _p = 1 µs T _j = 25 °C		3360	W		
T _{stg}	Storage temperature range			-65 to + 175	°C		
T _j	Maximum operating junction temperature ⁽¹⁾			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 parameters

Symbol	Parameter		Value	Unit
R _{th(j-c)}	Junction to case	per diode	6.8	°C/W
		per device	4.9	
R _{th(c)}	Coupling		3.0	

Table 4. Static electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ	Max.	Unit
I _R ⁽¹⁾	Reverse leakage current	T _j = 25 °C	V _R = V _{RRM}			1.5	µA
		T _j = 125 °C			0.4	1	mA
V _F ⁽²⁾	Forward voltage drop	T _j = 25 °C	I _F = 5 A			0.84	V
		T _j = 125 °C			0.64	0.70	
		T _j = 25 °C	I _F = 10 A			0.93	V
		T _j = 125 °C			0.72	0.78	

1. Pulse test: t_p = 5 ms, δ < 2 %

2. Pulse test: t_p = 380 µs, δ < 2 %

To evaluate the conduction losses use the following equation:

$$P = 0.62 \times I_{F(AV)} + 0.016 \times I_{F(RMS)}^2$$

Figure 1. Average forward power dissipation versus average forward current

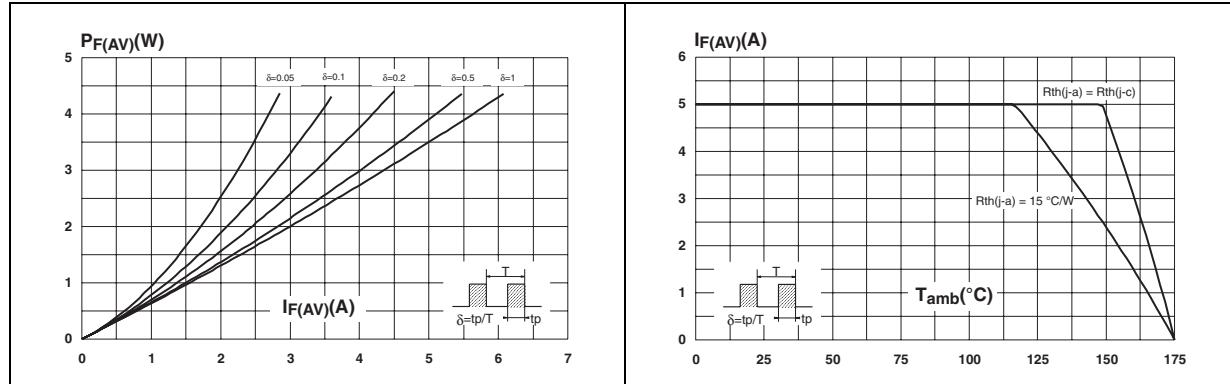


Figure 3. Normalized avalanche power derating versus pulse duration

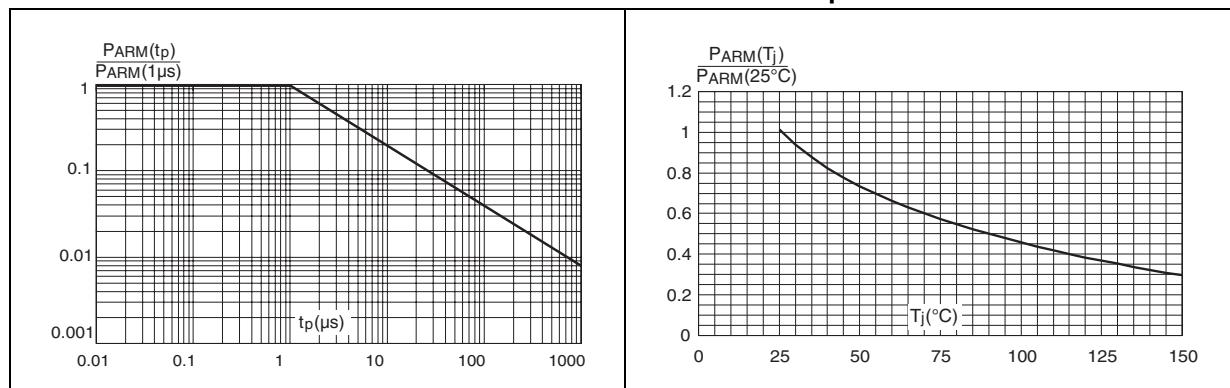


Figure 5. Non repetitive surge peak forward current versus overload duration (maximum values, per diode)

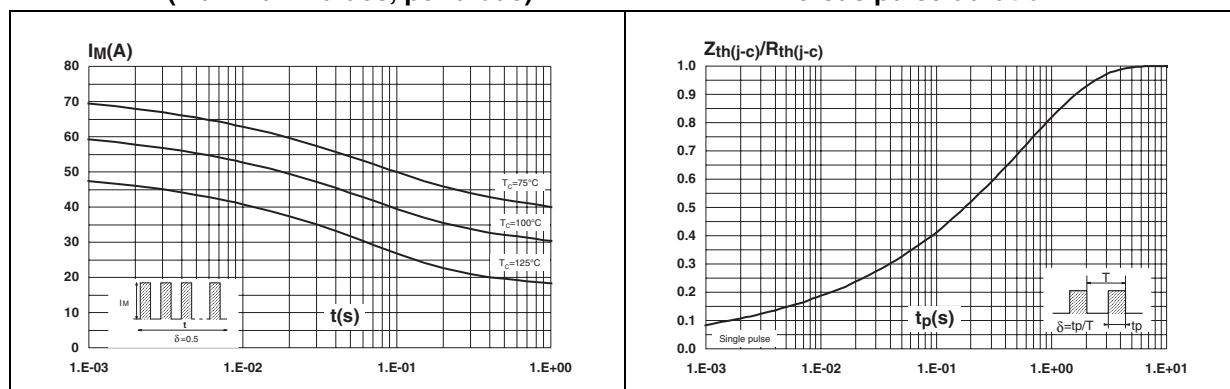


Figure 2. Average forward current versus ambient temperature ($\delta = 0.5$)

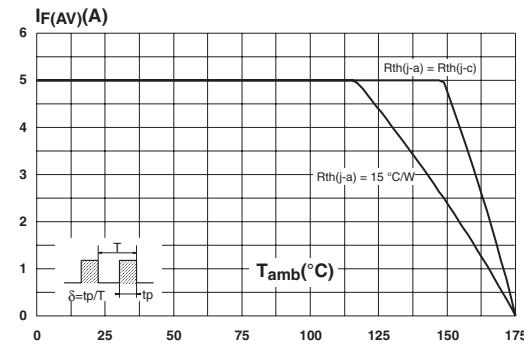


Figure 4. Normalized avalanche power derating versus junction temperature

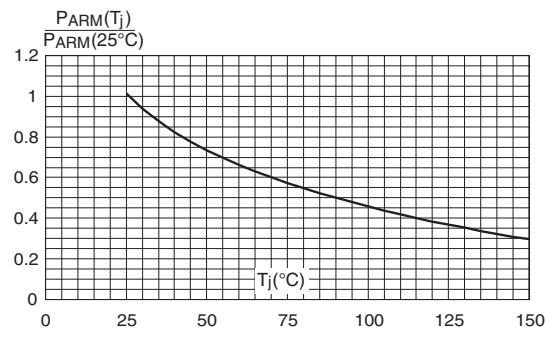


Figure 6. Relative variation of thermal impedance junction to ambient versus pulse duration

