STPS20L120C

Power Schottky rectifier

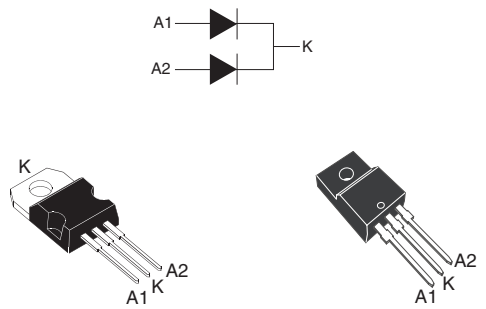
Features

- High junction temperature capability
- Avalanche capability specified
- Low forward voltage drop current
- High frequency operation
- Insulated package
  - TO-220FPAB
    Insulating voltage = 1500 V rms
    Typical package capacitance 12 pF

Description

Dual center tap Schottky rectifier suited for high frequency switch mode power supplies.

Packaged in TO-220AB and TO-220FPAB, this device provides the adaptor designers with an optimized price-performance ratio.



TO-220AB
STPS20L120CT

TO-220FPAB
STPS20L120CFP

Table 1. Device summary

$I_{F(AV)}$	2 x 10 A
V_{RRM}	120 V
$T_{j(max)}$	150 °C
$V_{F(typ)}$	0.55 V

1 Characteristics

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

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		120	V
$I_{F(RMS)}$	Forward rms current		20	A
$I_{F(AV)}$	Average forward current, $\delta = 0.5$	Total package	20	A
I_{FSM}	Surge non repetitive forward current	t_p = 10 ms Sinusoidal	200	A
P_{ARM}	Repetitive peak avalanche power	t_p = 1 µs T_j = 25 °C	8000	W
T_{stg}	Storage temperature range		-65 to + 175	°C
T_j	Maximum operating junction temperature(1)		150	°C

1. $\frac{dPtot}{dTj} < \frac{1}{Rth(j-a)}$ 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	TO-220AB	Per diode Total	2 1.1	°C/W
		TO-220FPAB	Per diode Total	4.9 4.1	
$R_{th(c)}$	Coupling	TO-220AB	Total	0.2	
		TO-220FPAB		3.2	

When the diodes 1 and 2 are used simultaneously :
T_j(diode 1) = P(diode 1) x $R_{th(j-c)}$(per diode) + P(diode 2) x $R_{th(c)}$

Table 4. Static electrical characteristics (per diode)

Symbol	Test conditions			Min.	Typ.	Max.	Unit
I_R(1)	Reverse leakage current	T_j = 25 °C	$V_R = V_{RRM}$	-	-	120	µA
		T_j = 125 °C		-	8	25	mA
V_F(2)	Forward voltage drop	T_j = 25 °C	I_F = 5 A	-	-	0.74	V
		T_j = 125 °C		-	0.55	0.605	
		T_j = 25 °C	I_F = 10 A	-	-	0.86	
		T_j = 125 °C		-	0.63	0.69	
		T_j = 25 °C	I_F = 20 A	-	-	1	
		T_j = 125 °C		-	0.72	0.785	

1. Pulse test : tp = 5 ms, δ < 2%
2. Pulse test : tp = 380 µs, δ < 2%

To evaluate the maximum conduction losses use the following equation :
$P = 0.595 \times I_{F(AV)} + 0.0095\ I_F{}^2{}_{(RMS)}$

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

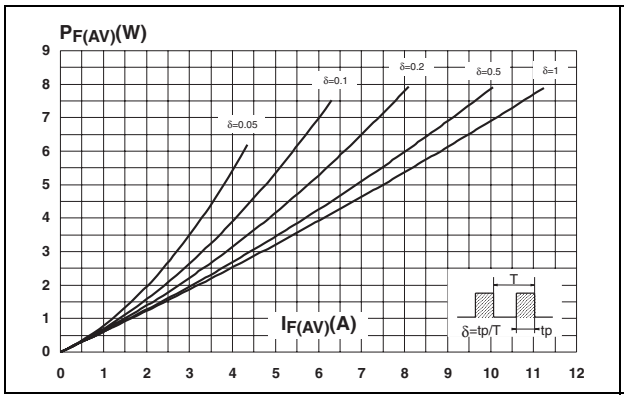


Figure 2. Average forward current vs. ambient temperature (δ = 0.5, per diode)

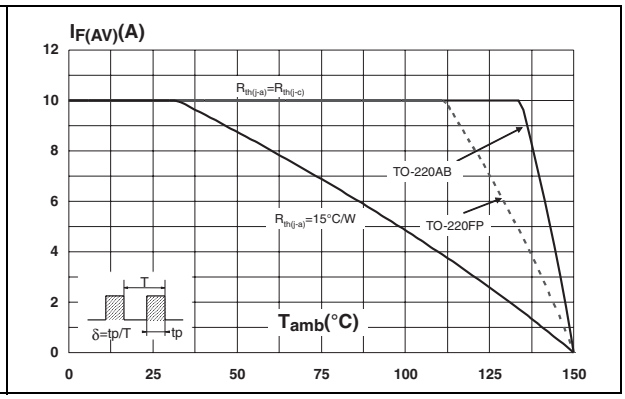


Figure 3. Normalized avalanche power derating vs. pulse duration

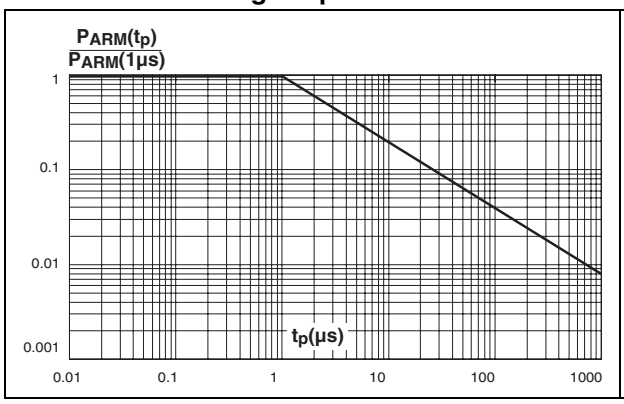


Figure 4. Normalized avalanche power derating vs. junction temperature

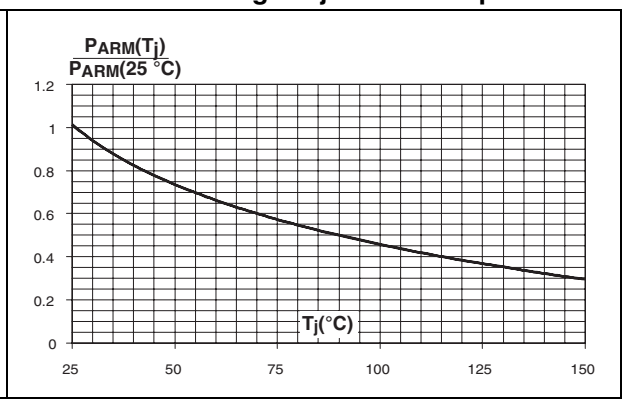


Figure 5. Non repetitive surge peak forward current vs. overload duration (max. values, per diode) (TO-220AB)

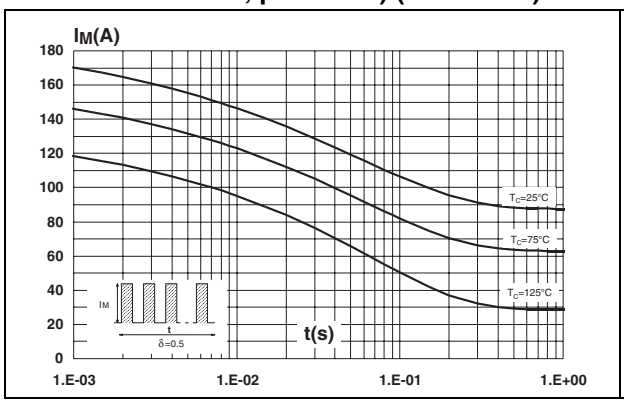
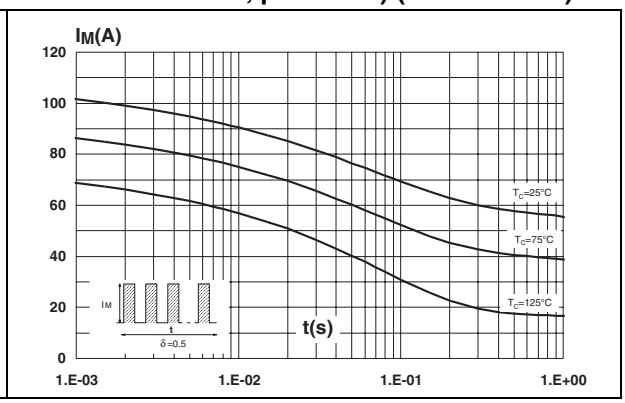


Figure 6. Non repetitive surge peak forward current vs. overload duration (max. values, per diode) (TO-220FPAB)



3 Ordering information

Table 7. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
STPS20L120CT	STPS20L120CT	TO-220AB	2.2 g	50	Tube
STPS20L120CFP	STPS20L120CFP	TO-220FPAB	2.0 g	50	Tube