

STPS15H100C

High voltage power Schottky rectifier

Main product characteristics

I _{F(AV)}	2 x 7.5 A
V _{RRM}	100 V
T _j (max)	175° C
V _F (max)	0.67 V

Features and Benefits

- 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 tab Schottky rectifier suited for switched mode power supply and high frequency DC to DC converters.

Packaged in DPAK and IPAK, this device is intended for use in high frequency inverters.

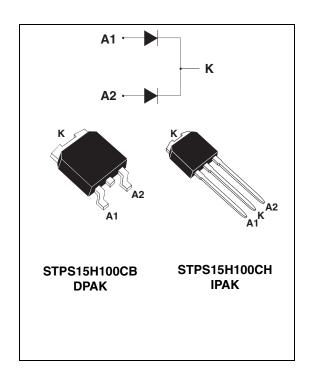


Table 1. Absolute Ratings (limiting values, per diode)

Symbol	Parameter	Value	Unit		
V _{RRM}	Repetitive peak reverse voltage			100	V
I _{F(RMS)}	RMS forward current			10	Α
1	Average forward current	T _c = 135° C	Per diode	7.5	Α
'F(AV)	I _{F(AV)} Average forward current	$\delta = 0.5$	Per device	15	^
I _{FSM}	Surge non repetitive forward current	75	Α		
I _{RRM}	Peak repetitive reverse current $t_p = 2 \mu s square F= 1 kHz$			1	Α
P _{ARM}	Repetitive peak avalanche power $t_p = 1 \mu s$ $Tj = 25^{\circ} C$			6600	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.} $\frac{dPtot}{dTj} < \frac{1}{Rth(j-a)}$ condition to avoid thermal runaway for a diode on its own heatsink

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Characteristics 1

Table 2. Thermal resistance

Symbol	Parameter Value			
В	lunction to cook	Per diode	4	
R _{th(j-c)}	Junction to case	Total	2.4	°C/W
R _{th(c)}	Coupling	0.7		

When the diodes 1 and 2 are used simultaneously:

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

Table 3. Static electrical characteristics (per diode)

Symbol	Parameter	Test Conditions		Min.	Тур.	Max.	Unit
I _B ⁽¹⁾	L (1) Payara laska a surrent	T _j = 25° C	V - V			3	μΑ
'R`	Reverse leakage current	T _j = 125° C	$V_R = V_{RRM}$		1.3	4	mA
	V _F (1.) Forward voltage drop	T _j = 25° C	I _F = 7.5 A			0.8	
		T _j = 125° C	I _F = 7.5 A		0.62	0.67	
V (1)		T _j = 25° C	I _F = 12 A			0.85	V
V _F (1.)		T _j = 125° C	I _F = 12 A		0.68	0.73	\ \
		T _j = 25° C	I _F = 15 A			0.89	
		T _j = 125° C	I _F = 15 A		0.71	0.76	

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

To evaluate the conduction losses use the following equation: P = 0.58 x $I_{F(AV)}$ + 0.012 $I_{F}^{2}_{(RMS)}$

$$P = 0.58 \times I_{E(AV)} + 0.012 I_{E}^{2}$$

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Figure 1. Conduction losses versus average Figure 2. Average forward current versus current ambient temperature (δ = 0.5)

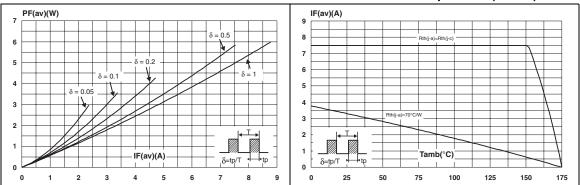


Figure 3. Normalized avalanche power derating versus pulse duration

Figure 4. Normalized avalanche power derating versus junction temperature

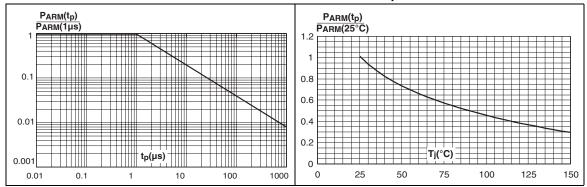
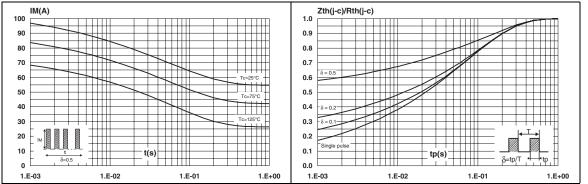


Figure 5. Non repetitive surge peak forward current versus overload duration (maximum values)

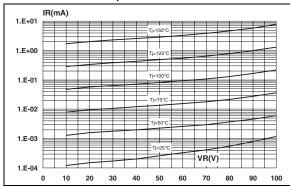
Figure 6. Relative variation of thermal impedance junction to case versus pulse duration



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Figure 7. Reverse leakage current versus reverse voltage applied (typical values)

Figure 8. Junction capacitance versus reverse voltage applied (typical values)



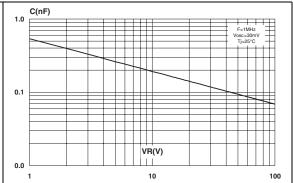
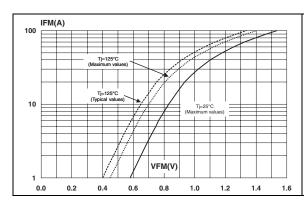
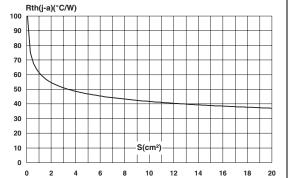


Figure 9. Forward voltage drop versus forward current

Figure 10. Thermal resistance junction to ambient versus copper surface under tab (epoxy printed board FR4, Cu: 35µm)

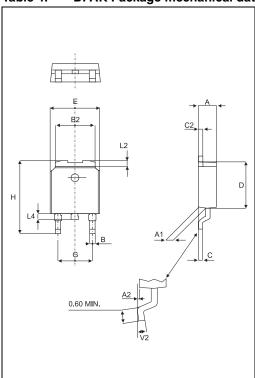




2 Package Information

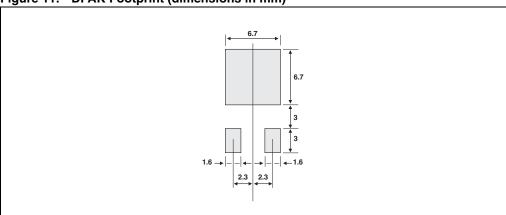
Epoxy meets UL94,V0

Table 4. DPAK Package mechanical data



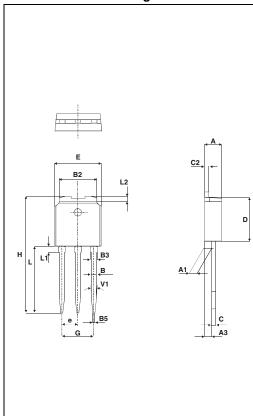
	Dimensions				
Ref	Millimeters Min. Max.		Inc	hes	
			Min.	Max.	
Α	2.20	2.40	0.086	0.094	
A1	0.90	1.10	0.035	0.043	
A2	0.03	0.23	0.001	0.009	
В	0.64	0.90	0.025	0.035	
B2	5.20	5.20 5.40 0		0.212	
С	0.45	0.60	0.017	0.023	
C2	0.48	0.60	0.018	0.023	
D	6.00	6.20	0.236	0.244	
Е	6.40	6.60	0.251	0.259	
G	4.40	4.60	0.173	0.181	
Н	9.35	10.10	0.368	0.397	
L2	0.80 typ.		0.03	1 typ.	
L4	0.60	1.00	0.023	0.039	
V2	0° 8°		0°	8°	

Figure 11. DPAK Footprint (dimensions in mm)



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Table 5. IPAK Package mechanical data



			Dimer	nsions		
Ref.	Millimeters		Inches			
	Min.	Тур.	Max.	Min.	Тур.	Max.
Α	2.20		2.40	0.086		0.094
A1	0.90		1.10	0.035		0.043
А3	0.70		1.30	0.027		0.051
В	0.64		0.90	0.025		0.035
B2	5.20		5.40	0.204		0.212
В3			0.95			0.037
B5		0.30			0.035	
С	0.45		0.60	0.017		0.023
C2	0.48		0.60	0.019		0.023
D	6		6.20	0.236		0.244
Е	6.40		6.60	0.252		0.260
е		2.28			0.090	
G	4.40		4.60	0.173		0.181
Н		16.10			0.634	
L	9		9.40	0.354		0.370
L1	0.8		1.20	0.031		0.047
L2		0.80	1		0.031	0.039
V1		10°			10°	

3 Ordering Information

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS15H100CB	S15H100	DPAK	0.30 g	75	Tube
STPS15H100CB-TR	S15H100	DPAK	0.30 g	2500	Tape andreel
STPS15H100CH	S15H100CH	IPAK	0.35 g	75	Tube

4 Revision History

Date	Revision	Changes	
Mar-2004	3	Last issue	
08-Jun-2006	4	Reformatted to current standard. Added IPAK.	

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