

Low drop power Schottky rectifier

Main product characteristics

I _{F(AV)}	8 A
V _{RRM}	30 V
T _j	150° C
V _F (max)	0.40 V

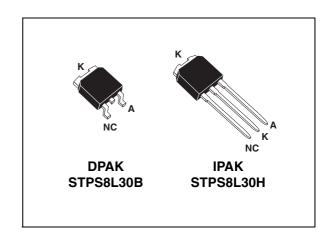
Features and benefits

- Low cost device with low drop forward voltage for less power dissipation and reduced heatsink
- Optimized conduction/reverse losses trade-off which leads to the highest yield in the application
- High power surface mount miniature package
- Avalanche capability specified

Description

Single Schottky rectifier suited to Switched Mode Power Supplies and high frequency DC to DC converters.

Packaged in DPAK and IPAK, this device is especially intended for use as a Rectifier at the secondary of 3.3 V SMPS or DC/DC units. wheeling and polarity protection applications.



Order codes

Part Numbers	Marking
STPS8L30B	LS30
STPS8L30B-TR	LS30
STPS8L30H	STPS8L30H

Table 1. Absolute Ratings (limiting values)

Symbol	Parameter	Value	Unit	
V_{RRM}	Repetitive peak reverse voltage		30	V
I _{F(RMS)}	RMS forward voltage		7	Α
I _{F(AV)}	Average forward current	$T_c = 135^{\circ} \text{ C}$ $\delta = 0.5$	8	Α
I _{FSM}	Surge non repetitive forward current	t _p = 10 ms sinusoidal	75	Α
I _{RRM}	Peak repetitive reverse current $t_p = 2 \mu s$ F = 1 kHz square		1	Α
I _{RSM}	Non repetitive peak reverse current $t_p = 100 \mu s$ square		2	Α
P _{ARM}	Repetitive peak avalanche power $t_p = 1 \mu s T_j = 25^{\circ} C$		3000	W
T _{stg}	Storage temperature range	-65 to + 150	°C	
T _j	Maximum operating junction temperature (1)	150	°C	
dV/dt	Critical rate of rise of reverse voltage	10000	V/µs	

^{1.} $\frac{dPtot}{dTj} > \frac{1}{Rth(j-a)}$ thermal runaway condition for a diode on its own heatsink

Characteristics STPS8L30

1 Characteristics

Table 2. Thermal Parameters

Symbol	Parameter	Value	Unit
R _{th(j-c)}	Junction to case	2.5	°C/W

Table 3. Static Electrical Characteristics

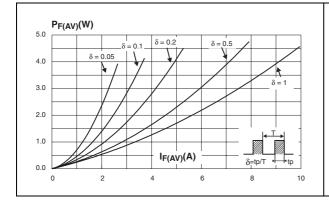
Symbol	Parameter	Tests conditions		Min.	Тур	Max.	Unit
I _R ⁽¹⁾	Reverse leakage current	T _j = 25° C	$V_R = V_{RRM}$			1	mA
		T _j = 100° C			15	40	
V _F ⁽¹⁾	Forward voltage drop	T _j = 25° C	I _F = 8 A			0.49	V
		T _j = 125° C			0.35	0.40	
		T _j = 25° C	I _F = 16 A			0.63	
		T _j = 125° C			0.448	0.57	

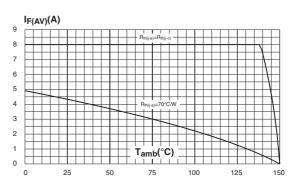
^{1.} Pulse test:* t_p = 380 μ s, δ < 2%

To evaluate the conduction losses use the following equation: $P = 0.23 \times I_{F(AV)} + 0.021 I_{F^2(RMS)}^2$

Figure 1. Average forward power dissipation versus average forward current

Figure 2. Average forward current versus ambient temperature (δ = 0.5)

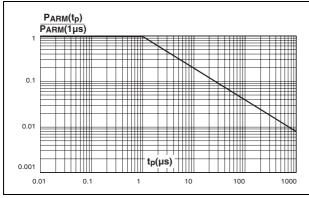




STPS8L30 Characteristics

Figure 3. Normalized avalanche power derating versus pulse duration

Figure 4. Normalized avalanche power derating versus junction temperature



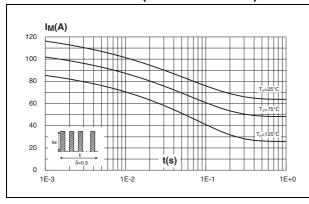
PARM(tp)
PARM(25°C)

1.2

1
0.8
0.6
0.4
0.2
0
25 50 75 100 125 150

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

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



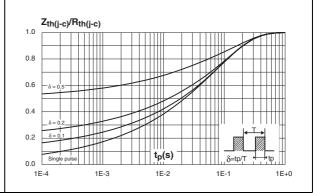
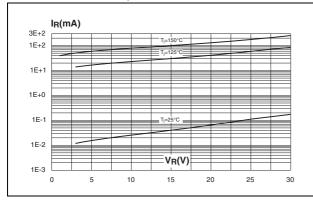


Figure 7. Reverse leakage current versus reverse voltage applied (typical values)

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



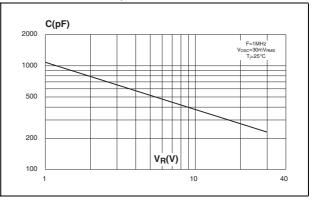
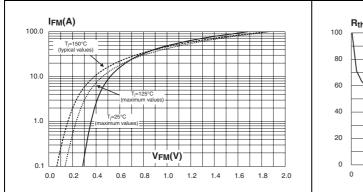
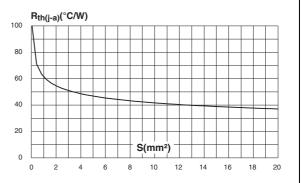


Figure 9. Forward voltage drop versus forward current

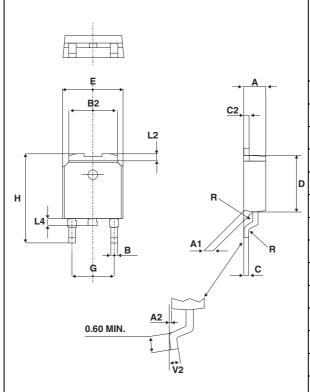
Figure 10. Thermal resistance junction to ambient versus copper surface under tab (epoxy printed board FR4, Cu = 35 µm) (DPAK)





2 Packaging information

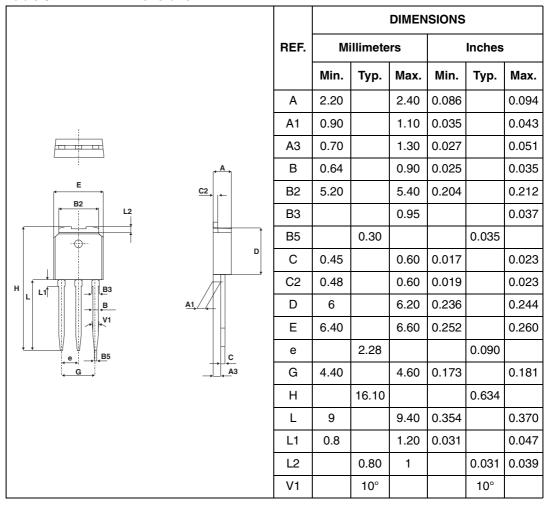
Table 4. DPAK dimensions



		DIMENSIONS				
	REF.	Millim	neters	Inc	ches	
		Min.	Max	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	5.40	0.204	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)

Table 5. IPAK Dimensions



In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a Lead-free second level interconnect. The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com.

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Ordering information STPS8L30

3 Ordering information

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS8L30B	LS30	DPAK	0.30 g	75	Tube
STPS8L30B-TR	LS30	DFAR	0.30 g	2500	Tape and reel
STPS8L30H	STPS8L30H	IPAK	0.35 g	75	Tube

4 Revision history

Date	Revision	Description of Changes
Jul-2002	2A	Previous update.
16-Apr-2005	3	IPAK package added.
01-Mar-2006	4	IPAK connector identifiers corrected on page 1. Ecopack statement added. Document reformatted to current standard.

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