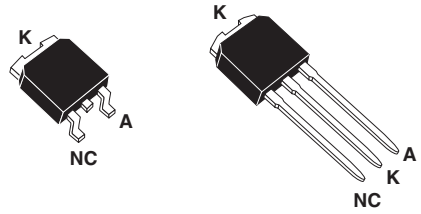
STPS8L30

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



DPAK
STPS8L30B

IPAK
STPS8L30H

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	A
$I_{F(AV)}$	Average forward current	T_c = 135° C δ = 0.5	8	A
I_{FSM}	Surge non repetitive forward current	t_p = 10 ms sinusoidal	75	A
I_{RRM}	Peak repetitive reverse current	t_p = 2 µs F = 1 kHz square	1	A
I_{RSM}	Non repetitive peak reverse current	t_p = 100 µs square	2	A
P_{ARM}	Repetitive peak avalanche power	t_p = 1 µs T_j = 25° 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

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.	Typ	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 µs, δ < 2%

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

Figure 1. Average forward power dissipation versus average forward current

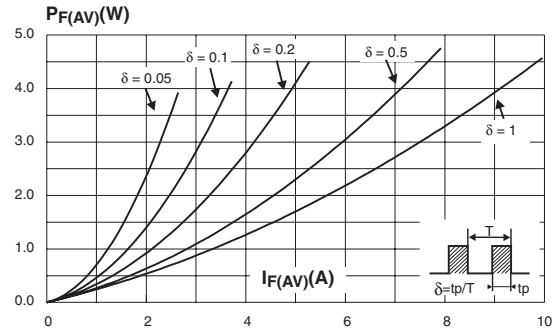


Figure 2. Average forward current versus ambient temperature (δ = 0.5)

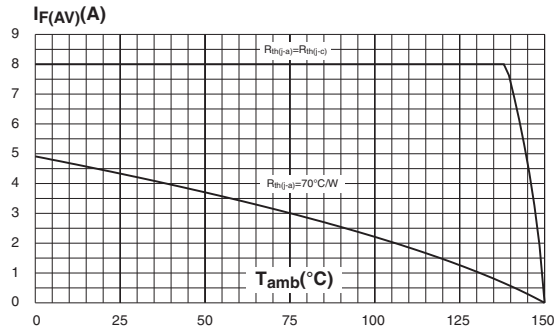


Figure 3. Normalized avalanche power derating versus pulse duration

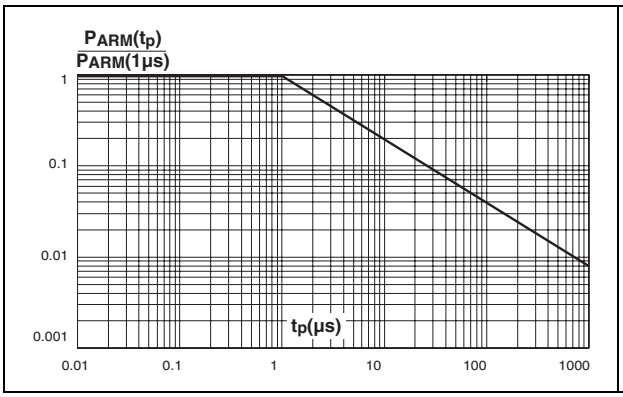


Figure 4. Normalized avalanche power derating versus junction temperature

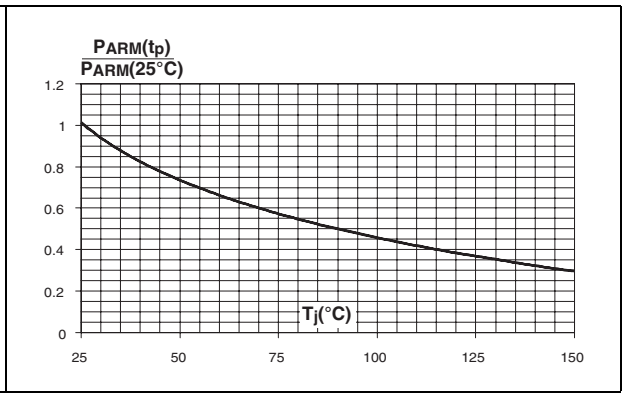


Figure 5. Non repetitive surge peak forward current versus overload duration (maximum values)

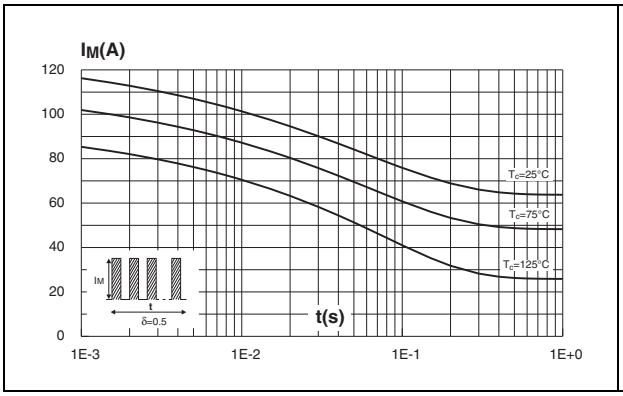


Figure 6. Relative variation of thermal impedance junction to ambient versus pulse duration

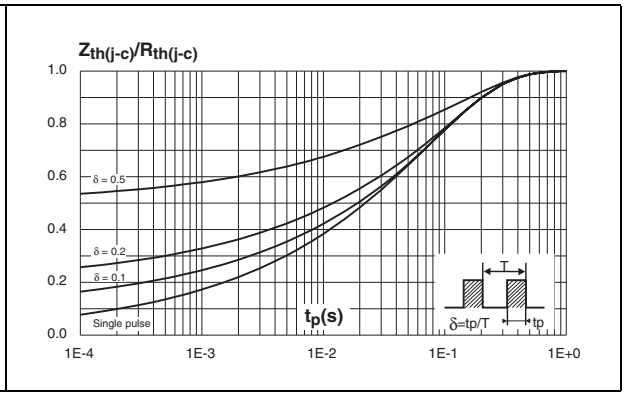


Figure 7. Reverse leakage current versus reverse voltage applied (typical values)

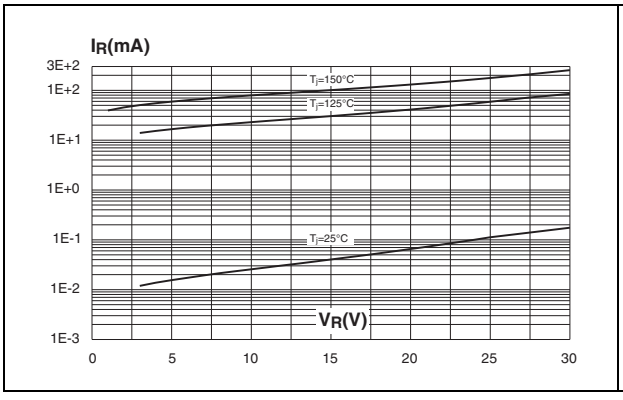


Figure 8. Junction capacitance versus reverse voltage applied (typical values)

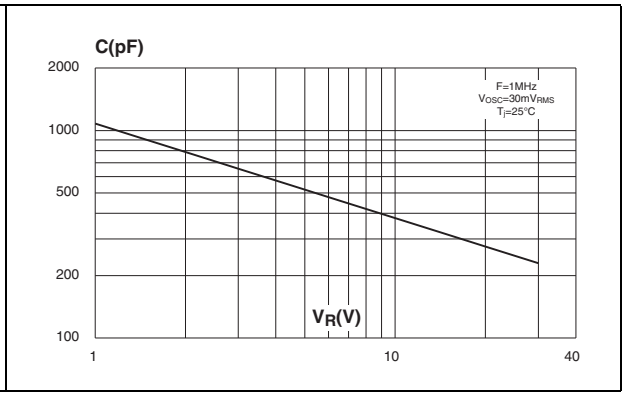


Figure 9. Forward voltage drop versus forward current

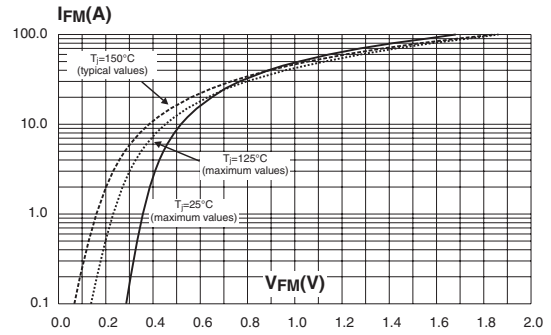
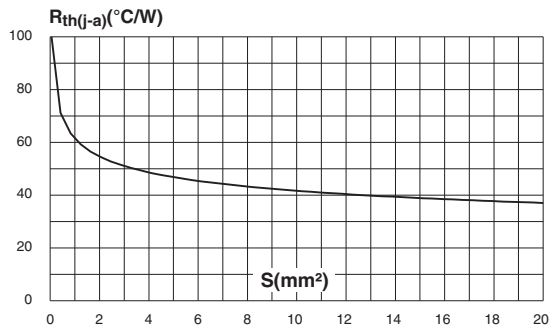
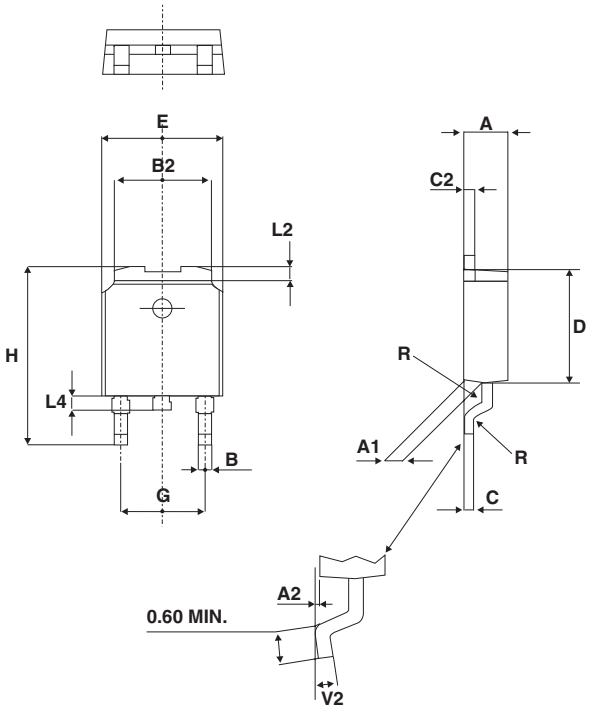


Figure 10. Thermal resistance junction to ambient versus copper surface under tab (epoxy printed board FR4, Cu = 35 µm) (DPAK)



2 Packaging information

Table 4. DPAK dimensions



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max	Min.	Max.
A	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
B	0.64	0.90	0.025	0.035
B2	5.20	5.40	0.204	0.212
C	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
E	6.40	6.60	0.251	0.259
G	4.40	4.60	0.173	0.181
H	9.35	10.10	0.368	0.397
L2	0.80 typ.		0.031 typ.	
L4	0.60	1.00	0.023	0.039
V2	0°	8°	0°	8°

Figure 11. DPAK footprint dimensions (in mm)

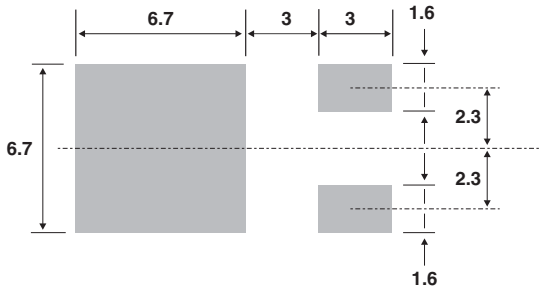
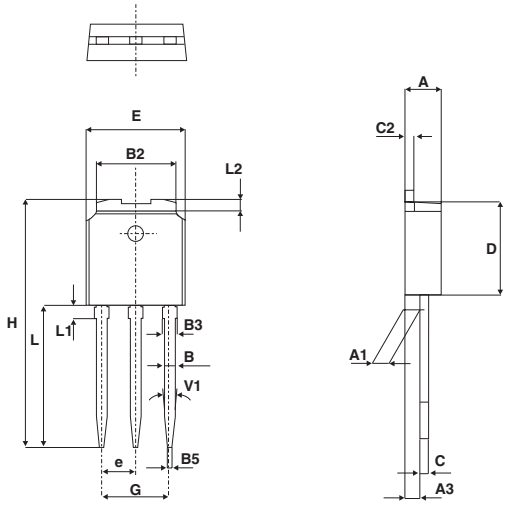


Table 5. IPAK Dimensions



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.20		2.40	0.086		0.094
A1	0.90		1.10	0.035		0.043
A3	0.70		1.30	0.027		0.051
B	0.64		0.90	0.025		0.035
B2	5.20		5.40	0.204		0.212
B3			0.95			0.037
B5		0.30			0.035	
C	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
E	6.40		6.60	0.252		0.260
e		2.28			0.090	
G	4.40		4.60	0.173		0.181
H		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°	

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.

3 Ordering information

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS8L30B	LS30	DPAK	0.30 g	75	Tube
STPS8L30B-TR	LS30			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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