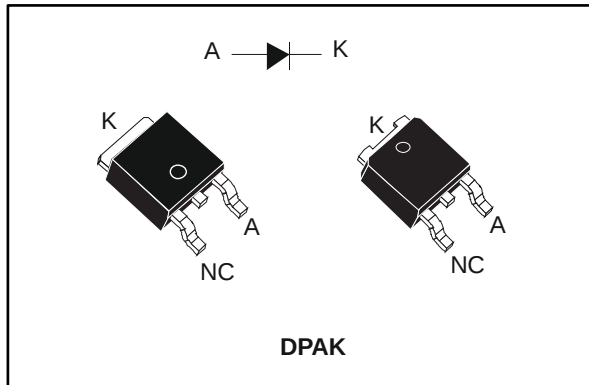


Low drop power Schottky rectifier

Datasheet - production data



Description

Single Schottky rectifier suited to switched mode power supplies and high frequency DC to DC converters.

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

Table 1: Device summary

Symbol	Value
$I_{F(AV)}$	8 A
V_{RRM}	30 V
T_j (max.)	150 °C
V_F (typ.)	0.35 V

Features

- 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
- ECOPACK®2 compliant component for DPAK on demand

1 Characteristics

Table 2: Absolute ratings (limiting values at 25 °C, unless otherwise specified)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		30	V
$I_{F(RMS)}$	Forward rms current		7	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$, square wave	$T_C = 135\text{ °C}$	8	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10\text{ ms}$ sinusoidal	75	A
P_{ARM}	Repetitive peak avalanche power	$t_p = 10\text{ }\mu\text{s}$, $T_j = 125\text{ °C}$	215	W
T_{stg}	Storage temperature range		-65 to +150	°C
T_j	Maximum operating junction temperature ⁽¹⁾		150	°C

Notes:

⁽¹⁾ $(dP_{tot}/dT_j) < (1/R_{th(j-a)})$ condition to avoid thermal runaway for a diode on its own heatsink.

Table 3: Thermal parameters

Symbol	Parameter	Max. value	Unit
$R_{th(j-c)}$	Junction to case	2.5	°C/W

Table 4: Static electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
$I_R^{(1)}$	Reverse leakage current	$T_j = 25\text{ °C}$	$V_R = V_{RRM}$	-		1	mA
		$T_j = 100\text{ °C}$		-	15	40	
$V_F^{(1)}$	Forward voltage drop	$T_j = 25\text{ °C}$	$I_F = 8\text{ A}$	-		0.49	V
		$T_j = 125\text{ °C}$		-	0.35	0.40	
		$T_j = 25\text{ °C}$	$I_F = 16\text{ A}$	-		0.63	
		$T_j = 125\text{ °C}$		-	0.448	0.57	

Notes:

⁽¹⁾Pulse test: $t_p = 380\text{ }\mu\text{s}$, $\delta < 2\%$

To evaluate the conduction losses, use the following equation:

$$P = 0.23 \times I_{F(AV)} + 0.021 \times I_{F(RMS)}^2$$

1.1 Characteristics (curves)

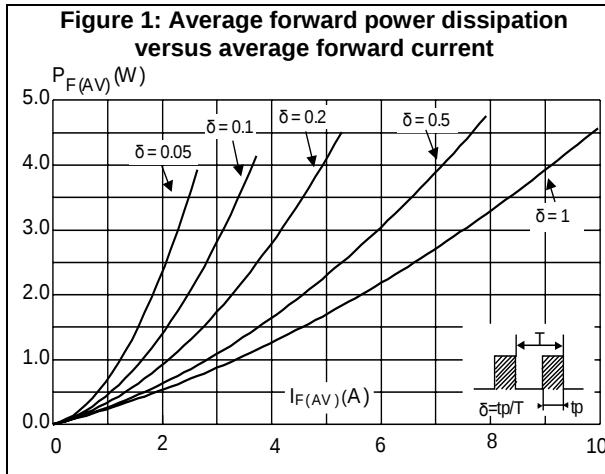


Figure 2: Average forward current versus ambient temperature ($\delta = 0.5$)

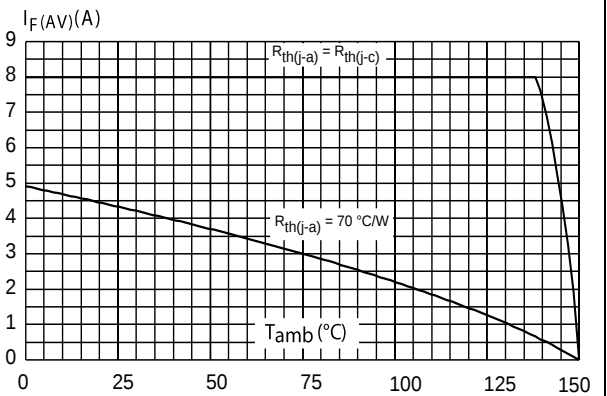


Figure 3: Normalized avalanche power derating versus pulse duration ($T_j = 125 \text{ } ^\circ C$)

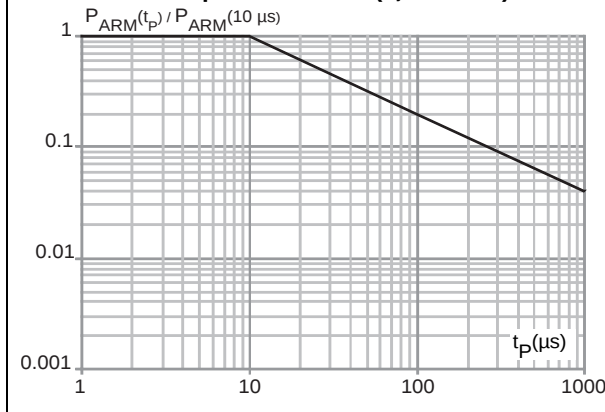


Figure 4: Relative variation of thermal impedance junction to case versus pulse duration

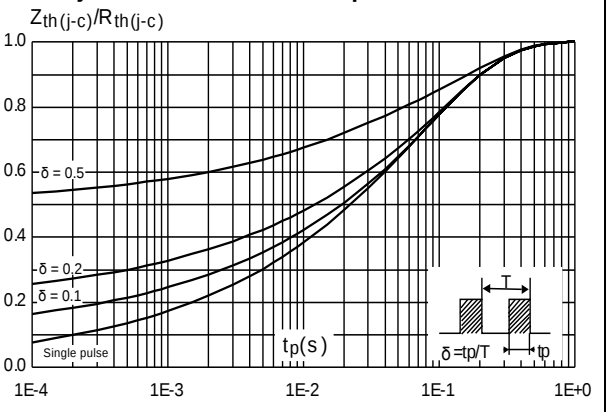


Figure 5: Reverse leakage current versus reverse voltage applied (typical values)

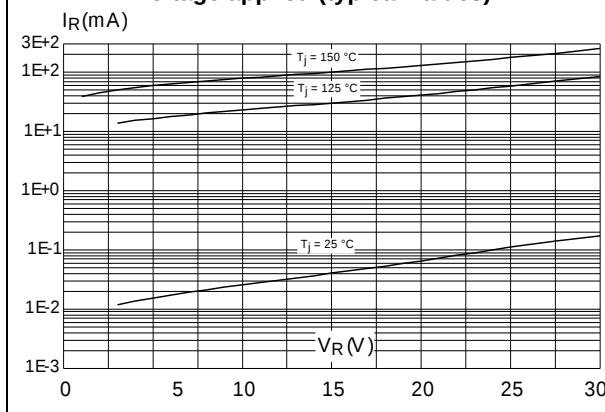


Figure 6: Junction capacitance versus reverse voltage applied (typical values)

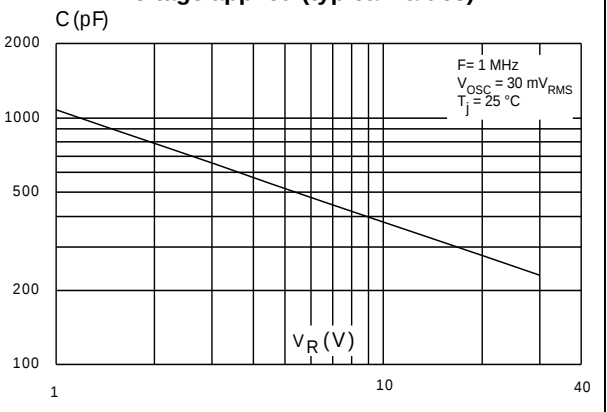
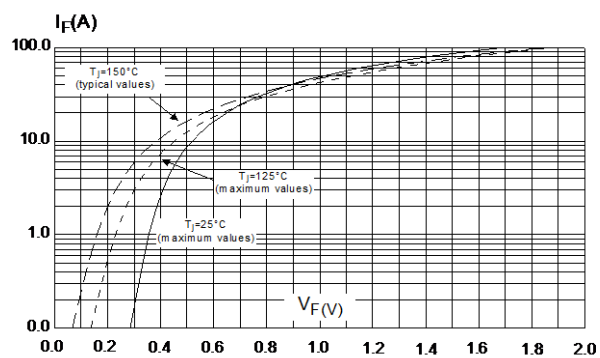
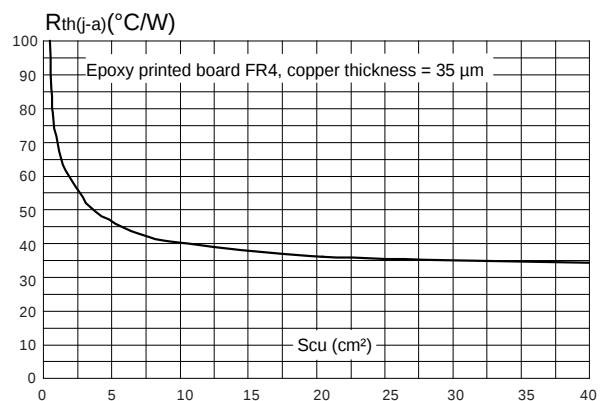


Figure 7: Forward voltage drop versus forward current**Figure 8: Thermal resistance junction to ambient versus copper surface under tab**

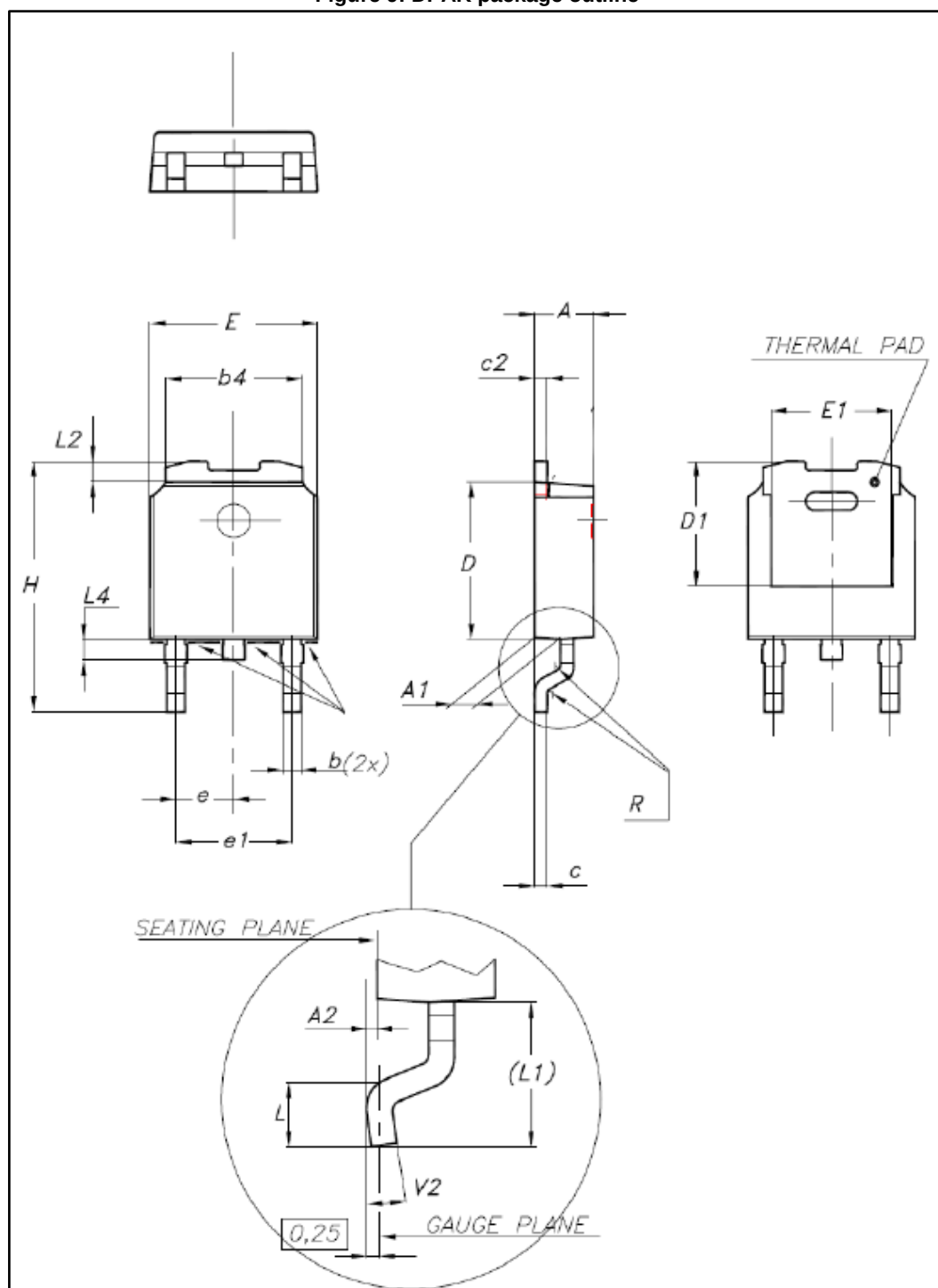
2 Package information

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: www.st.com. ECOPACK® is an ST trademark.

- Cooling method: by conduction (C)
- Epoxy meets UL 94,V0

2.1 DPAK package information

Figure 9: DPAK package outline

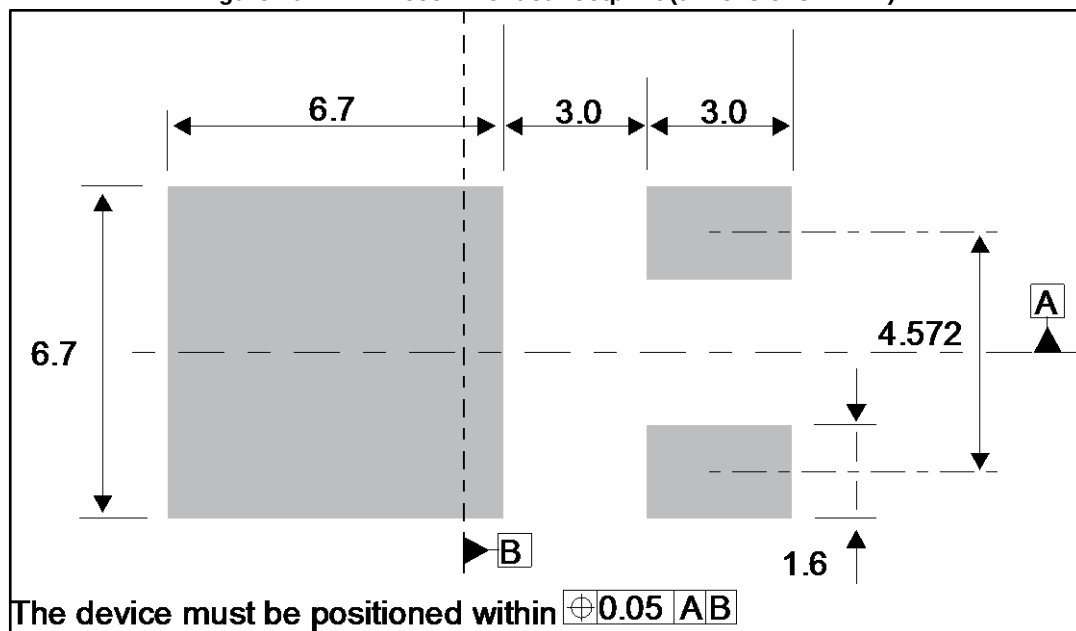


This package drawing may slightly differ from the physical package. However, all the specified dimensions are guaranteed.

Table 5: DPAK package mechanical data

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.18	2.40	0.085	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
b4	4.95	5.46	0.194	0.215
c	0.46	0.61	0.018	0.024
c2	0.46	0.60	0.018	0.023
D	5.97	6.22	0.235	0.244
D1	4.95	5.60	0.194	0.220
E	6.35	6.73	0.250	0.265
E1	4.32	5.50	0.170	0.216
e	2.286 typ.		0.090 typ.	
e1	4.40	4.70	0.173	0.185
H	9.35	10.40	0.368	0.409
L	1.0	1.78	0.039	0.070
L2		1.27		0.050
L4	0.60	1.02	0.023	0.040
V2	-8°	+8°	-8°	+8°

Figure 10: DPAK recommended footprint (dimensions in mm)



3 Ordering information

Table 6: Ordering information

Order code	Marking	Package	Weight	Base qty.	Delivery mode
STPS8L30B-TR	LS 30	DPAK	0.32 g	2500	Tape and reel

4 Revision history

Table 7: Document revision history

Date	Revision	Changes
Jul-2002	2A	First issue
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.
18-Oct-2016	5	Updated DPAK package information and reformatted to current standard. Removed IPAK package.

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