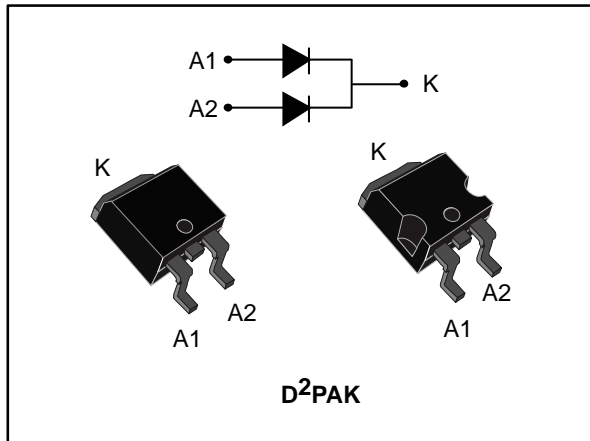# STPS16H100C

High voltage power Schottky rectifier

Datasheet - production data

D²PAK

Description

Dual center tap Schottky rectifier designed for high frequency miniature switch mode power supplies such as adaptors and on-board DC-DC converters.

Table 1: Device summary

Symbol	Value
$I_{F(AV)}$	2x 8 A
V_{RRM}	100 V
T_j (max)	175 °C
V_F (typ)	0.59 V

Features

- Negligible switching losses
- High junction temperature capability
- Low leakage current
- Good trade off between leakage current and forward voltage drop
- Avalanche capability specified
- ECOPACK®2 compliant component for D²PAK on demand

This is information on a product in full production.

1 Characteristics

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

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			100	V
$I_{F(RMS)}$	Forward rms current			30	A
$I_{F(AV)}$	Average forward current δ = 0.5, square wave	T_C = 165 °C	Per diode	8	A
		T_C = 160 °C	Per device	16	
I_{FSM}	Surge non repetitive forward current	tp = 10 ms sinusoidal		200	A
P_{ARM}	Repetitive peak avalanche power	tp = 10 µs, T_j= 125 °C		625	W
T_{stg}	Storage temperature range			-65 to + 175	°C
T_j	Maximum operating junction temperature [(1)](#)			+ 175	°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 parameter

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode	1.6	°C/W
		Total	1.1	
$R_{th(c)}$	Coupling		0.6	°C/W

When the diodes 1 and 2 are used simultaneously :

$\Delta T_j(\text{diode 1}) = P(\text{diode1}) \times R_{th(j-c)}(\text{Per diode}) + P(\text{diode 2}) \times R_{th(c)}$

Table 4: Static electrical characteristics (per diode)

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
I_R[(1)]	Reverse leakage current	T_j = 25 °C	$V_R = V_{RRM}$	-		3.6	µA
		T_j = 125 °C		-	1.6	5	mA
V_F[(2)]	Forward voltage drop	T_j = 25 °C	I_F = 8 A	-		0.77	V
		T_j = 125 °C		-	0.59	0.64	
		T_j = 25 °C	I_F = 16 A	-		0.88	
		T_j = 125 °C		-	0.67	0.73	

Notes:

[(1)]Pulse test: t_p = 5 ms, δ < 2%

[(2)]Pulse test: t_p = 380 µs, δ < 2%

To evaluate the conduction losses use the following equation:

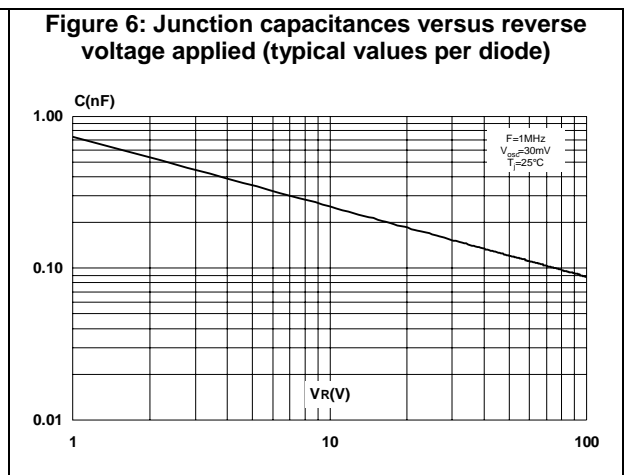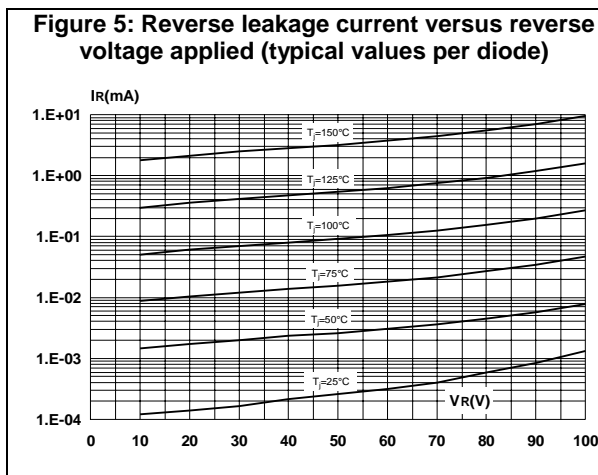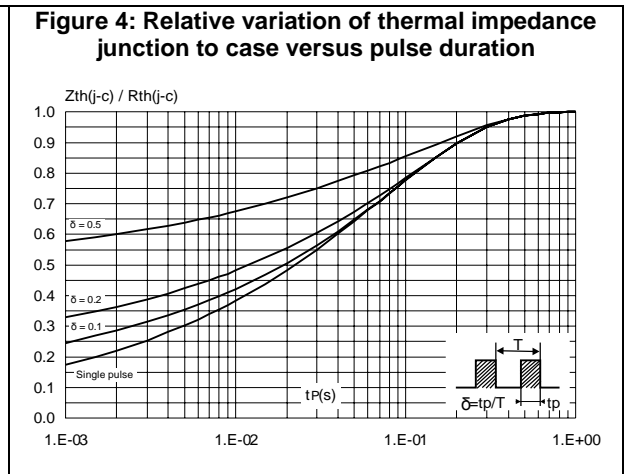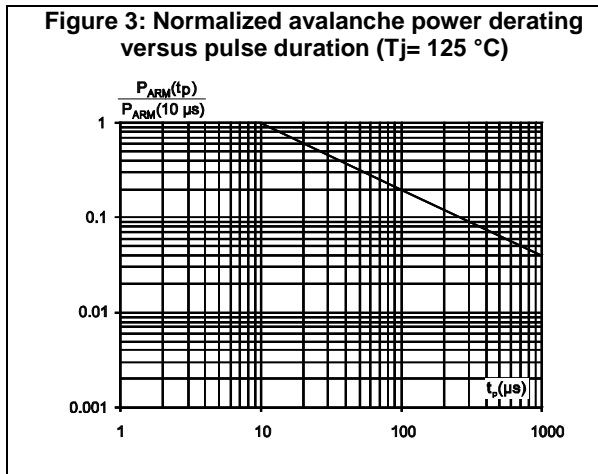$P = 0.55 \times I_{F(AV)} + 0.011\, I^2_{F(RMS)}$

1.1 Characteristics (curves)

Figure 1: Conduction losses versus average current (per diode)

Figure 2: Average forward current versus ambient temperature (δ= 0.5 per diode)

Figure 3: Normalized avalanche power derating versus pulse duration (Tj= 125 °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 per diode)

Figure 6: Junction capacitances versus reverse voltage applied (typical values per diode)

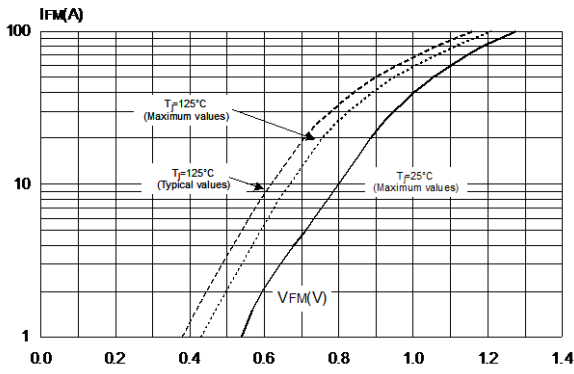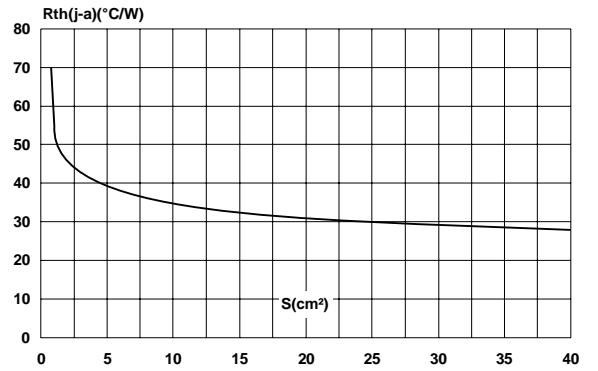### Figure 7: Forward voltage drop versus forward current (per diode)

Figure 8: Thermal resistance junction to ambient versus copper surface under tab (epoxy printed board FR4, ecu= 35 µm)
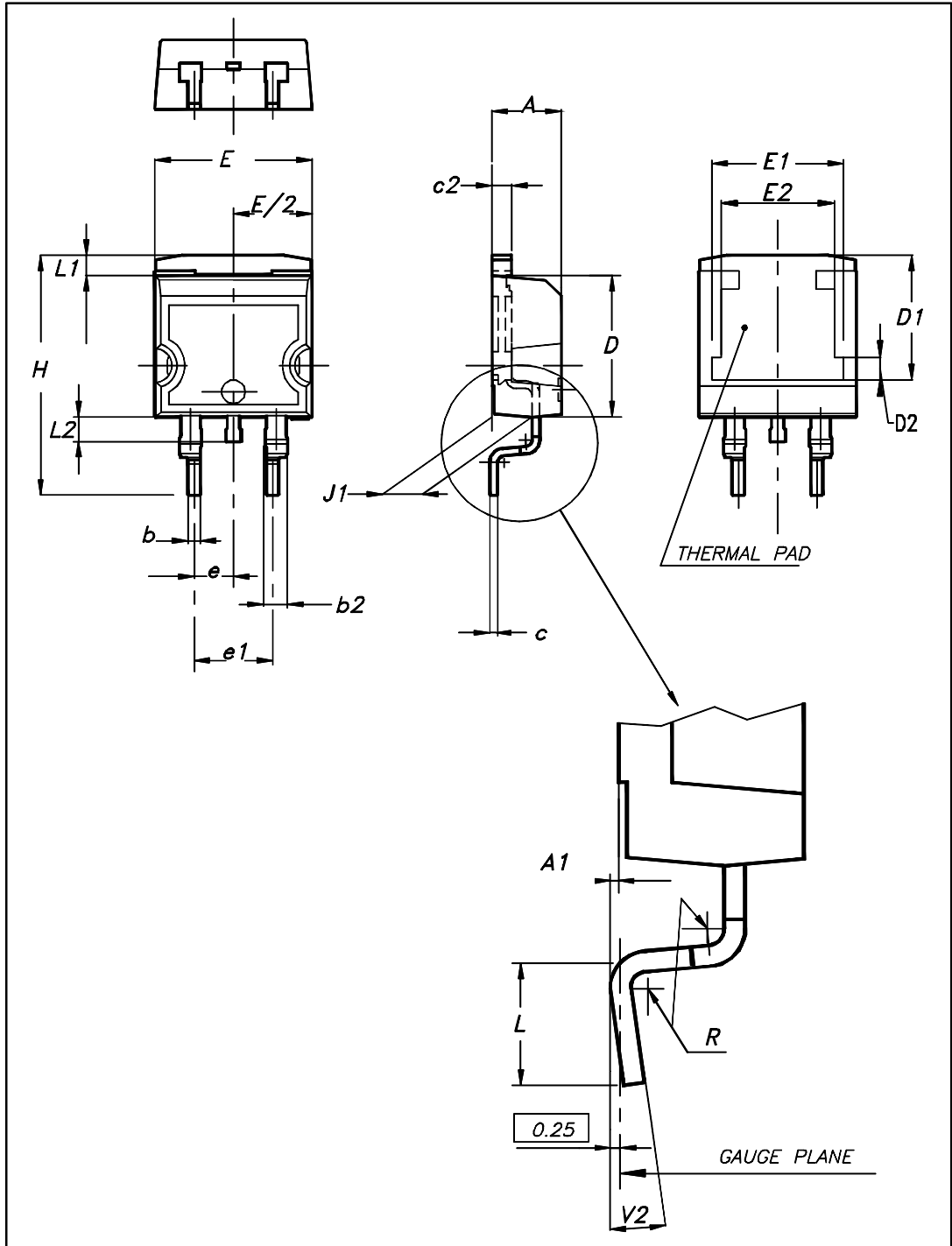
2   Package information

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 D²PAK package information
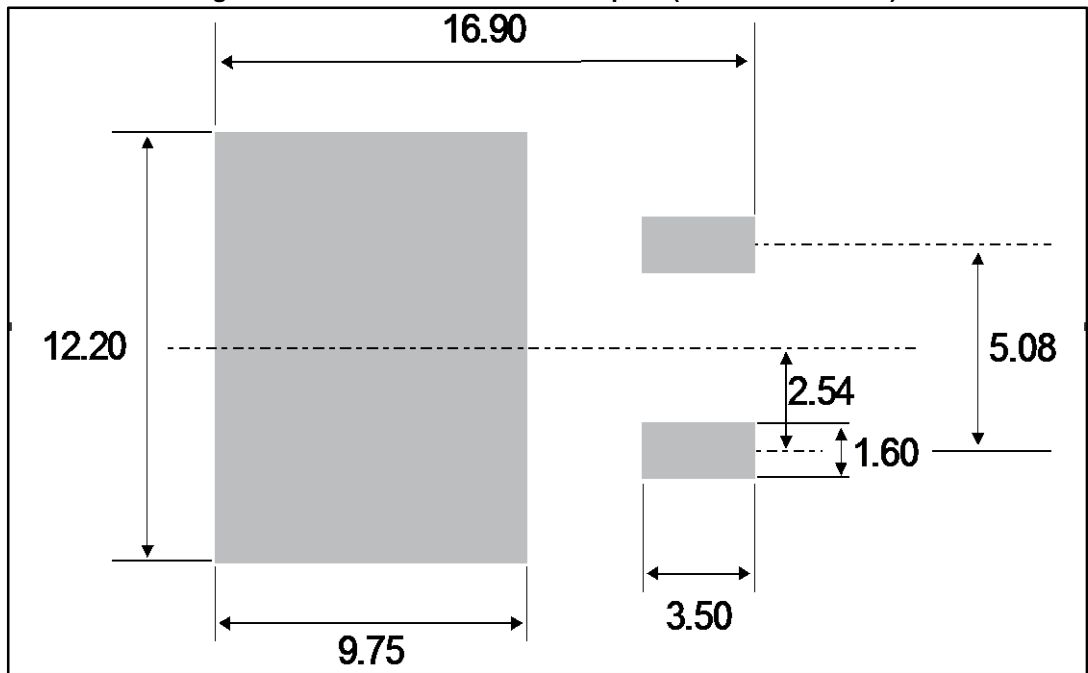
Figure 9: D²PAK package outline

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

Table 5: D²PAK package mechanical data

Ref.	Dimensions			
	Millimeters		**Inches**	
	Min.	**Max.**	**Min.**	**Max.**
A	4.36	4.60	0.172	0.181
A1	0.00	0.25	0.000	0.010
b	0.70	0.93	0.028	0.037
b2	1.14	1.70	0.045	0.067
c	0.38	0.69	0.015	0.027
c2	1.19	1.36	0.047	0.053
D	8.60	9.35	0.339	0.368
D1	6.90	8.00	0.272	0.311
D2	1.10	1.50	0.043	0.060
E	10.00	10.55	0.394	0.415
E1	8.10	8.90	0.319	0.346
E2	6.85	7.25	0.266	0.282
e	2.54 typ.		0.100	
e1	4.88	5.28	0.190	0.205
H	15.00	15.85	0.591	0.624
J1	2.49	2.90	0.097	0.112
L	1.90	2.79	0.075	0.110
L1	1.27	1.65	0.049	0.065
L2	1.30	1.78	0.050	0.070
R	0.4 typ.		0.015	
V2	0°	8°	-	-

Figure 10: D²PAK recommended footprint (dimensions in mm)

3 Ordering information

Table 6: Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
STPS16H100CG-TR	STPS16H100CG	D^{2}PAK	1.38g	1000	Tape and reel

4 Revision history

Table 7: Document revision history

Date	Revision	Changes
27-Jun-2012	2	
22-Apr-2015	3	Updated features in cover page. Minor text changes in *Section 1: "Characteristics"*. Updated *Section 2: "Package information"*.

IMPORTANT NOTICE – PLEASE READ CAREFULLY