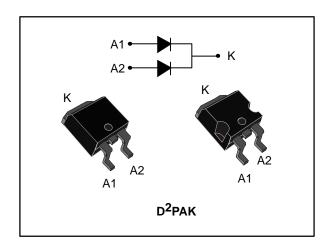


STPS16H100C

High voltage power Schottky rectifier

Datasheet - production data



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

Characteristics STPS16H100C

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	Α	
	Average forward current $\delta = 0.5$,	T _C = 165 °C	Per diode	8		
I _{F(AV)}	square wave	T _C = 160 °C	Per device	16	A	
I _{FSM}	Surge non repetitive forward current	tp = 10 ms sinusoidal		200	Α	
P _{ARM}	Repetitive peak avalanche power $tp = 10 \mu s$, $T_{j=} 125 ^{\circ}C$		625	W		
T _{stg}	Storage temperature range			-65 to + 175	°C	
Tj	Maximum operating junction temperature (1)			+ 175	°C	

Notes:

Table 3: Thermal parameter

Symbol	Parameter	Value	Unit	
D	lunation to appe	Per diode	1.6	°C/W
Kth(j-c)	R _{th(j-c)} Junction to case		1.1	C/VV
R _{th(c)}	Coupling		0.6	°C/W

When the diodes 1 and 2 are used simultaneously:

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

Table 4: Static electrical characteristics (per diode)

Symbol	Parameter	Test conditions		Min.	Тур.	Max.	Unit
I _R ⁽¹⁾	Davoras laskara surrent	T _j = 25 °C	\/- \/	ı		3.6	μΑ
IR''	Reverse leakage current	T _j = 125 °C	$V_R = V_{RRM}$	-	1.6	5	mA
		T _j = 25 °C	I _F = 8 A	-		0.77	
V (2)	Forward voltage drop $T_j = 25 ^{\circ}C$	T _j = 125 °C		-	0.59	0.64	\ /
VF ⁽²⁾		T _j = 25 °C		-		0.88	V
		T _j = 125 °C		-	0.67	0.73	

Notes:

 $^{(1)}$ Pulse test: t_p = 5 ms, δ < 2%

(2) Pulse test: t_p = 380 μ s, δ < 2%

To evaluate the conduction losses use the following equation:

 $P = 0.55 \text{ x } I_{F(AV)} + 0.011 I_{F^2(RMS)}$

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

STPS16H100C Characteristics

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)

F(AV)(A)

Rth_(a) F(B)

Rth_(a) F(B)

Rth_(a) F(B)

Tamb(°C)

0 25 50 75 100 125 150 175

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

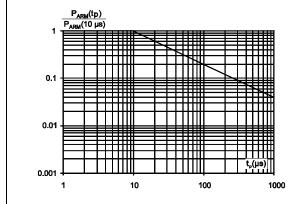


Figure 4: Relative variation of thermal impedance junction to case versus pulse duration

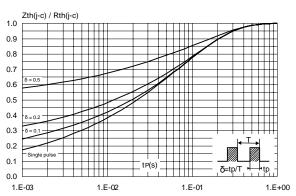


Figure 5: Reverse leakage current versus reverse voltage applied (typical values per diode)

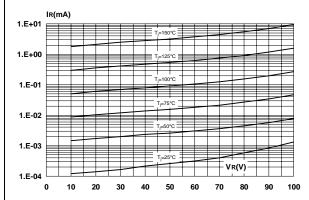
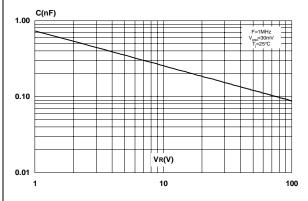
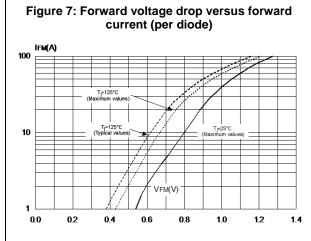


Figure 6: Junction capacitances versus reverse voltage applied (typical values per diode)



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versus copper surface under tab (epoxy printed board FR4, ecu= 35 µm) Rth(j-a)(°C/W)

Figure 8: Thermal resistance junction to ambient

STPS16H100C Package information

2 Package information

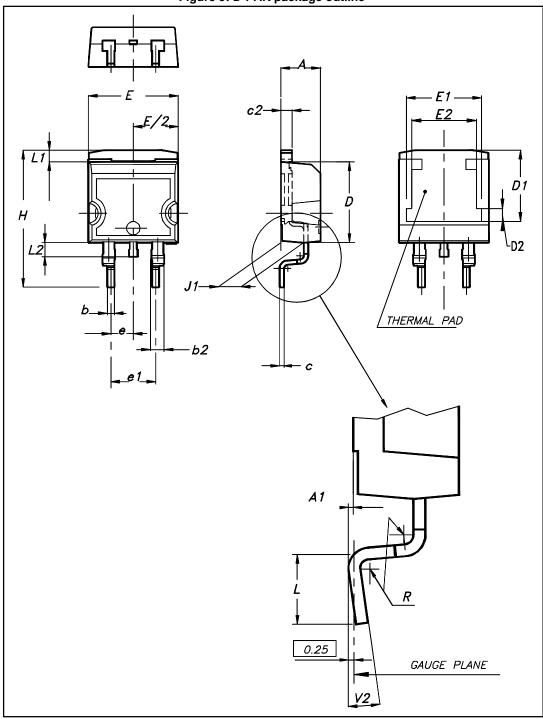
In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: **www.st.com**. ECOPACK® is an ST trademark.

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



2.1 D²PAK package information

Figure 9: D²PAK package outline





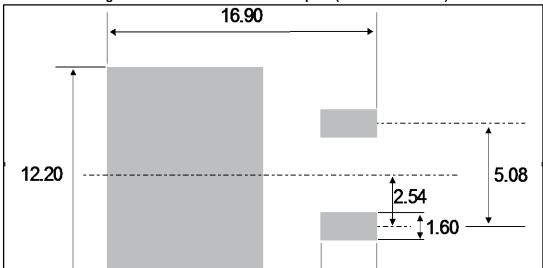
This package drawing may slightly differ from the physical package. However, all the specified dimensions are guaranteed.

Table 5: D2PAK package mechanical data

	Dimensions				
Ref.	Millimeters		Inches		
	Min.	Max.	Min.	Max.	
А	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	
С	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	
Е	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	
е	2.54	typ.	0.100		
e1	4.88	5.28	0.190	0.205	
Н	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°	-	-	

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9.75



3.50

Figure 10: D²PAK recommended footprint (dimensions in mm)

STPS16H100C Ordering information

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".

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