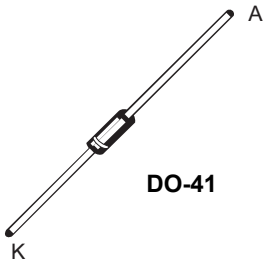
STPS2H100RL

Datasheet

100 V power Schottky rectifier



DO-41

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

Description

The STPS2H100RL is an axial power Schottky rectifier ideal for switch mode power supply and high frequency DC/DC converters.

Packaged in DO-41, this device is optimized for use in low voltage, high frequency inverters and small battery chargers.

Product status link	
STPS2H100RL	
Product summary	
Symbol	**Value**
$I_{F(AV)}$	2 A
V_{RRM}	100 V
T_j (max.)	175 °C
V_F (max.)	0.70 V

1 Characteristics

Table 1. Absolute ratings (limiting values at 25 °C, unless otherwise specified)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		100	V
$I_{F(AV)}$	Average forward current	T_L = 120 °C, δ = 0.5	2	A
I_{FSM}	Surge non repetitive forward current	t_p = 10 ms sinusoidal	50	A
P_{ARM}	Repetitive peak avalanche power	t_p = 10 µs, T_j = 125 °C	108	W
T_{stg}	Storage temperature range		-65 to +175	°C
T_j	Maximum operating junction temperature(1)		175	°C

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

Table 2. Thermal resistance parameters

Symbol	Parameter		Max. value	Unit
$R_{th(j-a)}$	Junction to ambient	Lead length = 10 mm	100	°C/W
$R_{th(j-l)}$	Junction to lead		35	

Table 3. Static electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
I_R(1)	Reverse leakage current	T_j = 25 °C	$V_R = V_{RRM}$	-		1	µA
		T_j = 125 °C		-	0.2	0.5	mA
V_F(2)	Forward voltage drop	T_j = 25 °C	I_F = 2 A	-		0.86	V
		T_j = 125 °C		-	0.65	0.70	
		T_j = 25 °C	I_F = 4 A	-		0.92	
		T_j = 125 °C		-	0.72	0.78	

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:

$P = 0.62 \times I_{F(AV)} + 0.04 \times I_F{}^2{}_{(RMS)}$

For more information, please refer to the following application notes related to the power losses :

- AN604: Calculation of conduction losses in a power rectifier
- AN4021: Calculation of reverse losses on a power diode.

1.1 Characteristics (curves)

Figure 1. Average forward power dissipation versus average forward current

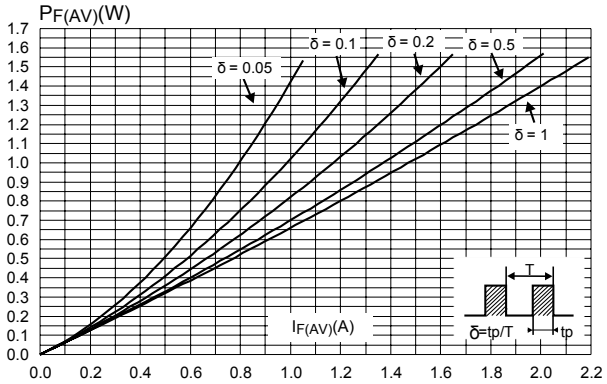


Figure 2. Average forward current versus ambient temperature (δ = 0.5)

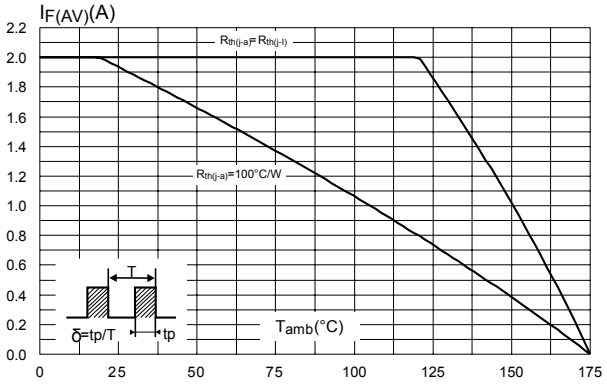


Figure 3. Normalized avalanche power derating versus junction temperature (T_j = 125 °C)

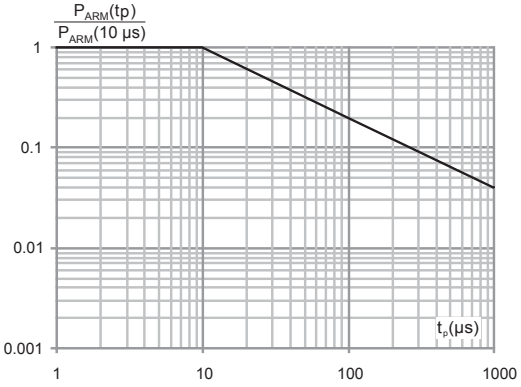


Figure 4. Relative variation of thermal impedance junction to ambient versus pulse duration

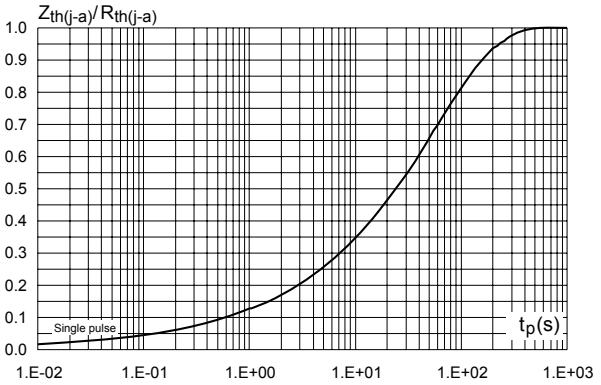


Figure 5. Reverse leakage current versus reverse voltage applied (typical values)

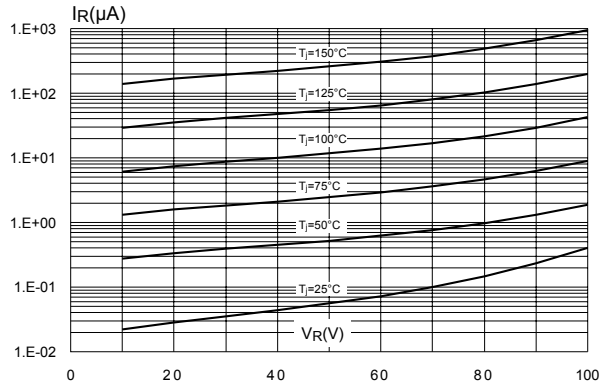


Figure 6. Junction capacitance versus reverse voltage applied (typical values)

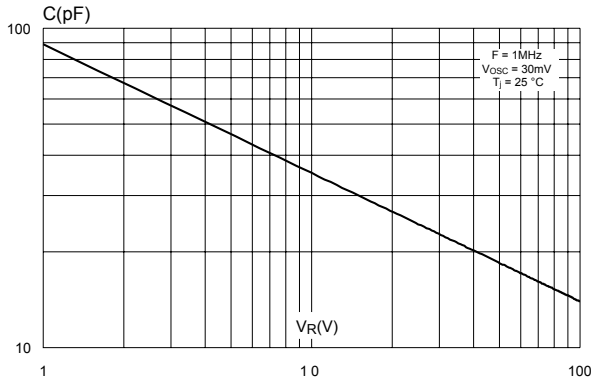


Figure 7. Forward voltage drop versus forward current (low level)

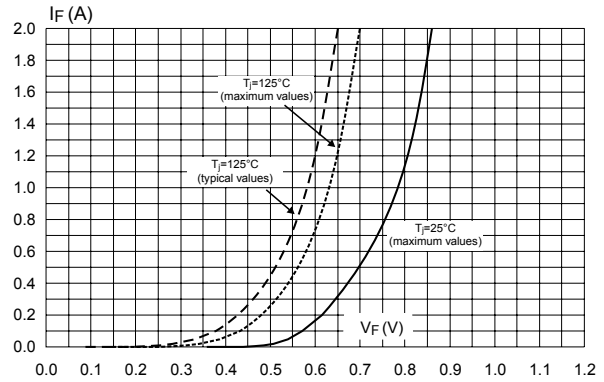


Figure 8. Forward voltage drop versus forward current (high level)

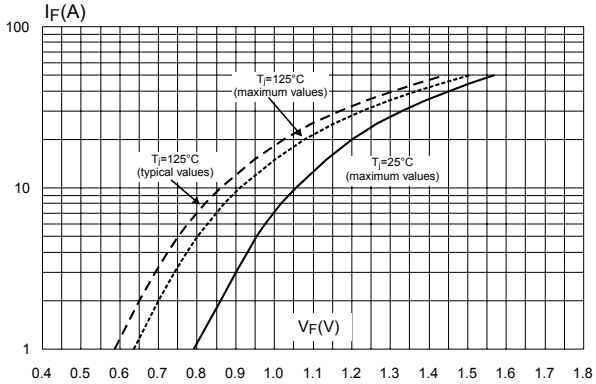
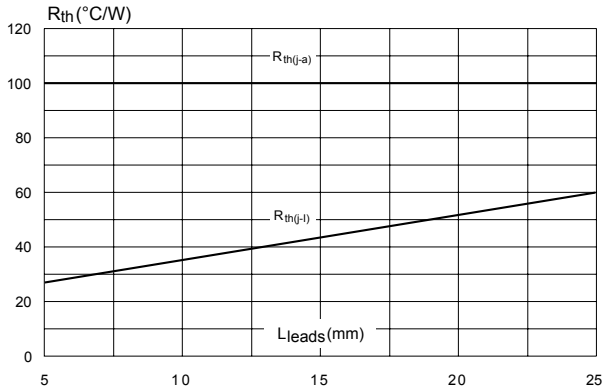


Figure 9. Thermal resistance versus lead length



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.

2.1 DO-41 package information

- Epoxy meets UL94, V0
- Band indicates cathode

Figure 10. DO-41 package outline

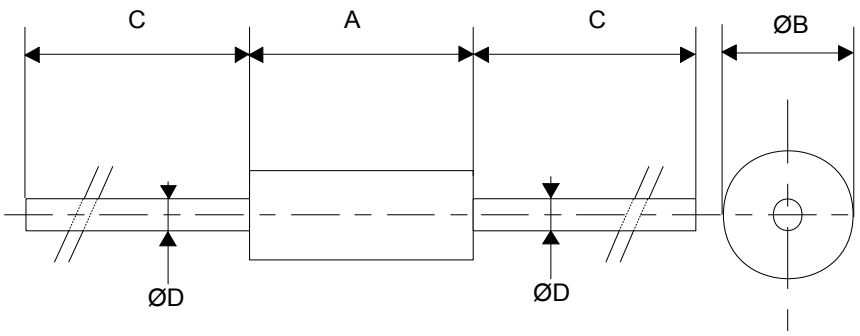


Table 4. DO-41 package mechanical data

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.07	5.20	0.160	0.205
ØB	2.04	2.71	0.080	0.107
C	25.40		1	
ØD	0.71	0.86	0.028	0.034

3 Ordering Information

Table 5. Ordering information

Order code	Marking	Package	Weight	Base qty.	Delivery mode
STPS2H100	STPS2H100 Cathode ring	DO-41	0.34 g	2000	Ammopack
STPS2H100RL				5000	Tape and reel

Revision history

Table 6. Document revision history

Date	Version	Changes
Jul-2003	2A	Initial release.
23-Jun-2009	3	Updated dimension C in table 5.
05-Oct-2009	4	Updated table 5 package dimensions.
17-May-2018	5	Removed figure 4 and figure 5. Updated Figure 3. Normalized avalanche power derating versus junction temperature (T_j = 125 °C) and Table 1. Absolute ratings (limiting values at 25 °C, unless otherwise specified). Minor text changes to improve readability.

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