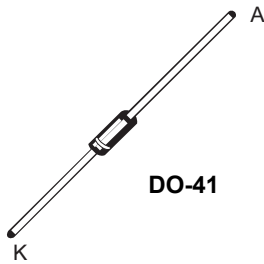


## 100 V, 2 A power Schottky rectifier



### Features

- Negligible switching losses
- High junction temperature capability
- Low leakage current
- Good trade-off between leakage current and forward voltage drop
- Avalanche capability specified
- ECOPACK2 compliant

### Applications

- Switching diode
- LED lighting
- DC/DC converter

### 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 <sub>RRM</sub>	Repetitive peak reverse voltage		100	V
I <sub>F(AV)</sub>	Average forward current	T <sub>L</sub> = 120 °C, δ = 0.5	2	A
I <sub>FSM</sub>	Surge non repetitive forward current	t <sub>p</sub> = 10 ms sinusoidal	50	A
P <sub>ARM</sub>	Repetitive peak avalanche power	t <sub>p</sub> = 10 μs, T <sub>j</sub> = 125 °C	108	W
T <sub>stg</sub>	Storage temperature range		-65 to +175	°C
T <sub>j</sub>	Maximum operating junction temperature <sup>(1)</sup>		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 <sub>th(j-a)</sub>	Junction to ambient	Lead length = 10 mm	100	°C/W
R <sub>th(j-l)</sub>	Junction to lead		35	

For more information, please refer to the following application note :

- AN5088 : Rectifiers thermal management, handling and mounting recommendations

**Table 3. Static electrical characteristics**

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
I <sub>R</sub> <sup>(1)</sup>	Reverse leakage current	T <sub>j</sub> = 25 °C	V <sub>R</sub> = V <sub>RRM</sub>	-		1	μA
		T <sub>j</sub> = 125 °C		-	0.2	0.5	mA
V <sub>F</sub> <sup>(2)</sup>	Forward voltage drop	T <sub>j</sub> = 25 °C	I <sub>F</sub> = 2 A	-		0.86	V
		T <sub>j</sub> = 125 °C		-	0.65	0.70	
		T <sub>j</sub> = 25 °C	I <sub>F</sub> = 4 A	-		0.92	
		T <sub>j</sub> = 125 °C		-	0.72	0.78	

1. Pulse test: t<sub>p</sub> = 5 ms, δ < 2%

2. Pulse test: t<sub>p</sub> = 380 μs, δ < 2%

To evaluate the conduction losses, use the following equation:

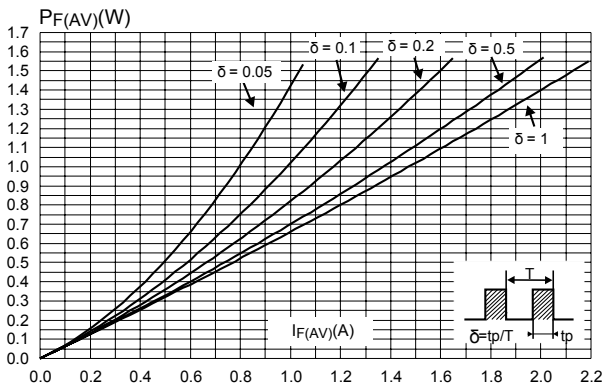
$$P = 0.62 \times I_{F(AV)} + 0.04 \times I_{F(RMS)}^2$$

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

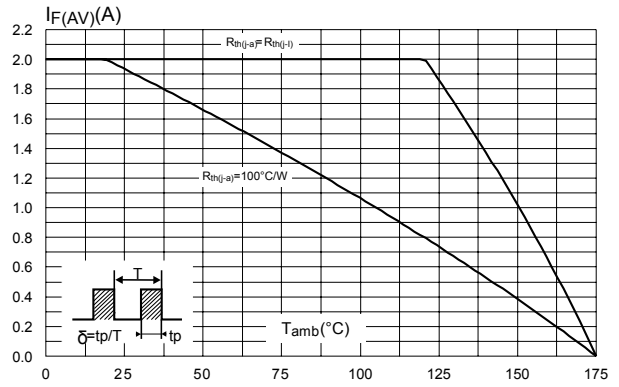
- AN604: Calculation of conduction losses in a power rectifier
- AN4021: Calculation of reverse losses on a power diode.

## 1.1 Characteristics (curves)

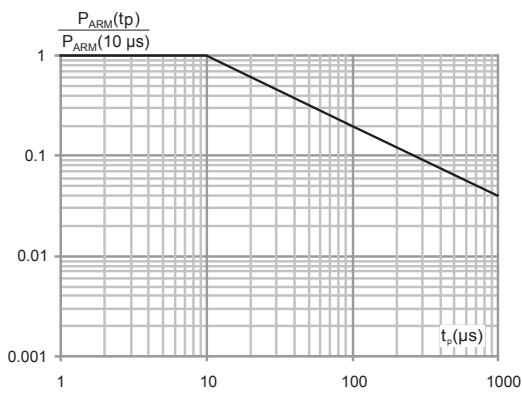
**Figure 1. Average forward power dissipation versus average forward current**



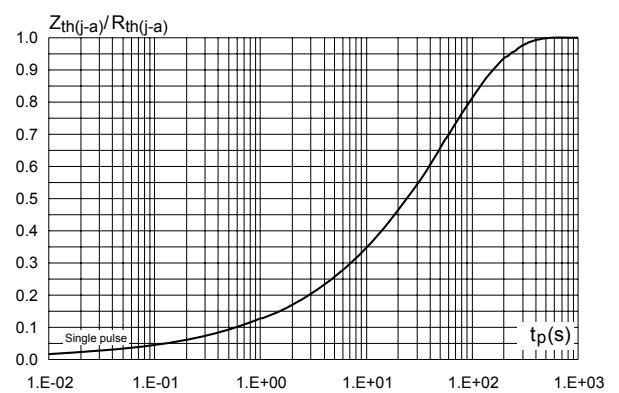
**Figure 2. Average forward current versus ambient temperature ( $\delta = 0.5$ )**



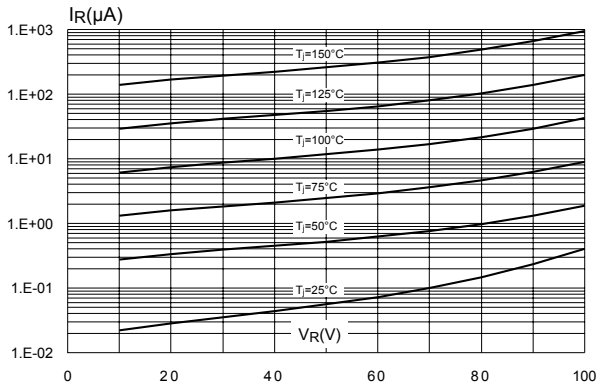
**Figure 3. Normalized avalanche power derating versus junction temperature ( $T_j = 125^\circ\text{C}$ )**



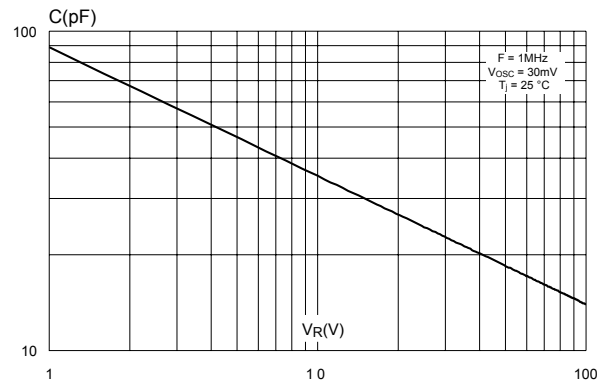
**Figure 4. Relative variation of thermal impedance junction to ambient versus pulse duration**



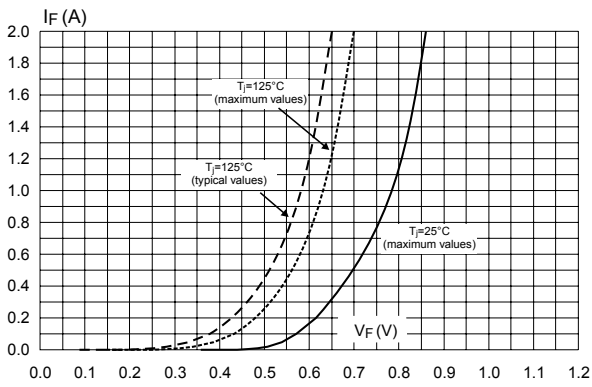
**Figure 5. Reverse leakage current versus reverse voltage applied (typical values)**



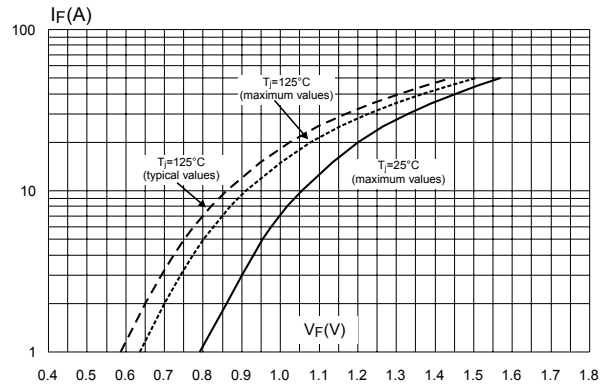
**Figure 6. Junction capacitance versus reverse voltage applied (typical values)**



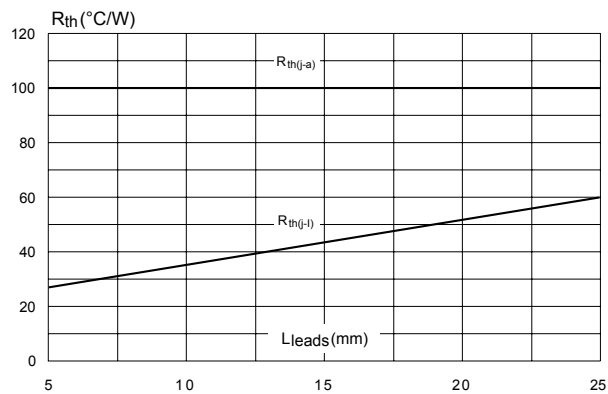
**Figure 7. Forward voltage drop versus forward current (low level)**



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



**Figure 9. Thermal resistance versus lead length**



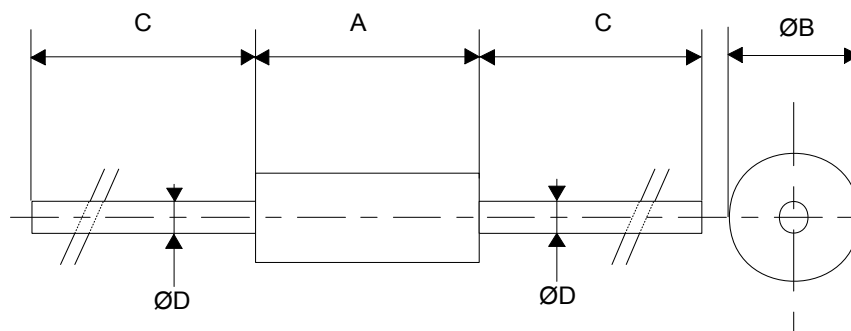
## 2 Package information

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](http://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

## 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 ( $T_j = 125\text{ °C}$ ) and Table 1. Absolute ratings (limiting values at 25 °C, unless otherwise specified). Minor text changes to improve readability.
01-Apr-2020	6	Updated Table 5. Ordering information.

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