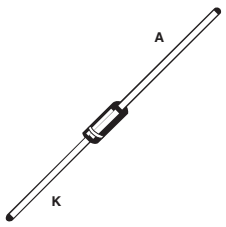
STPS2H100RL

High voltage 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



DO-41
STPS2H100RL

Description

Axial power Schottky rectifier suited for switch mode power supply and high frequency DC/DC converters. Packaged in DO-41, this device is intended for use in low voltage, high frequency inverters and small battery chargers.

Table 1. Device 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 2. Absolute ratings (limiting values)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		100	V
$I_{F(RMS)}$	Forward rms current		10	A
$I_{F(AV)}$	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
I_{RRM}	Repetitive peak reverse current	t_p = 2 ms square, F = 1 kHz	50	A
P_{ARM}	Repetitive peak avalanche power	t_p = 1 µs, T_j = 25 °C	1500	W
T_{stg}	Storage temperature range		-65 to + 175	°C
T_j	Operating junction temperature (1)		175	°C
dV/dt	Critical rate of rise of reverse voltage		10000	V/µs

1. $\frac{dPtot}{dTj} < \frac{1}{Rth(j-a)}$ condition to avoid thermal runaway for a diode on its own heatsink

Table 3. Thermal resistance

Symbol	Parameter		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 4. 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:
$P = 0.62 \times I_{F(AV)} + 0.04\ I_F{}^2{}_{(RMS)}$

Figure 1. Average forward current versus ambient temperature (δ = 0.5)

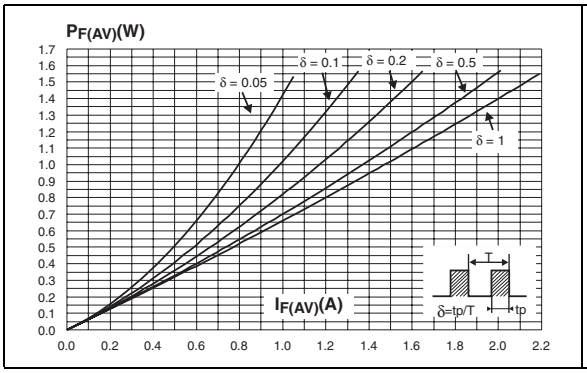


Figure 2. Average forward current versus ambient temperature

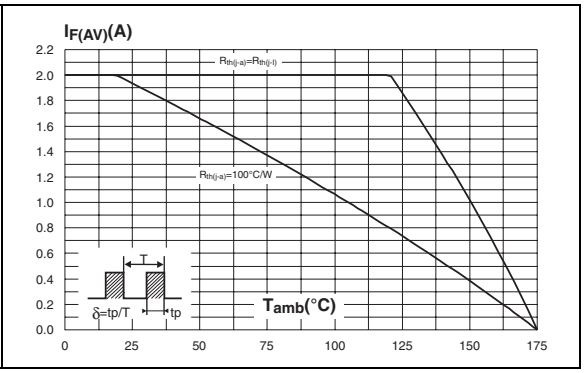


Figure 3. Normalized avalanche power derating versus pulse duration

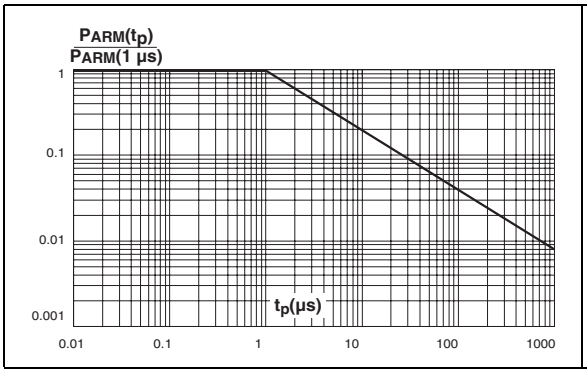


Figure 4. Normalized avalanche power derating versus junction temperature

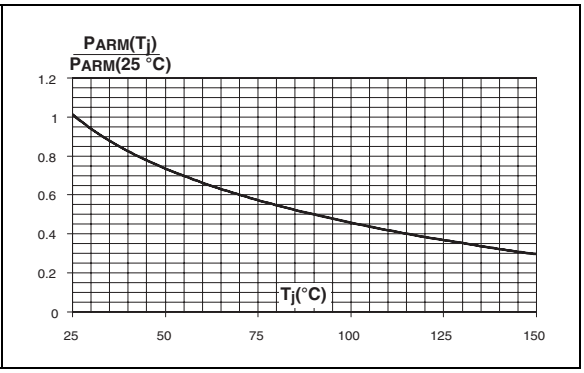


Figure 5. Non repetitive surge peak forward current versus overload duration (maximum values)

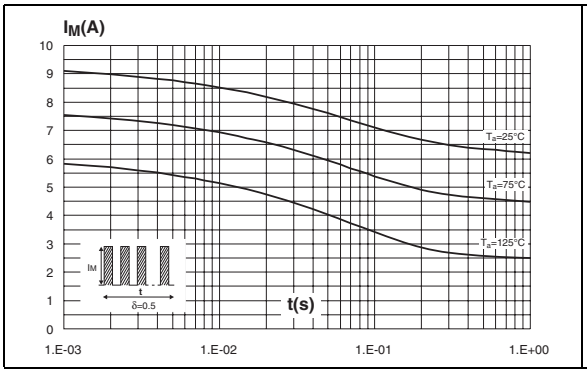


Figure 6. Relative variation of thermal impedance junction to ambient versus pulse duration

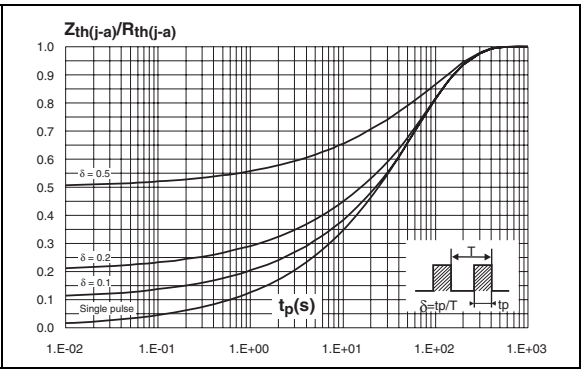


Figure 7. Reverse leakage current versus reverse voltage applied (typical values)

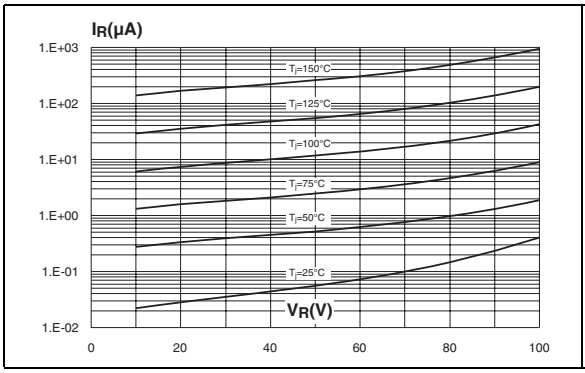


Figure 8. Junction capacitance versus reverse voltage applied (typical values)

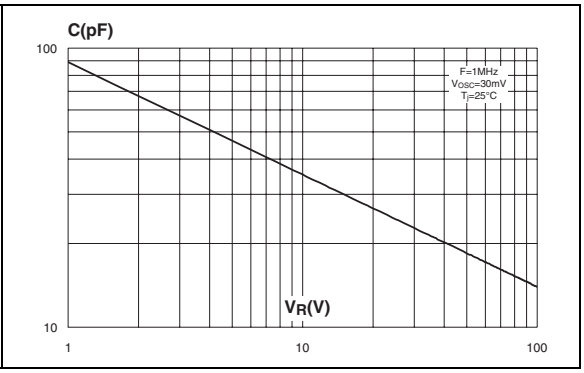


Figure 9. Forward voltage drop versus forward current (low level)

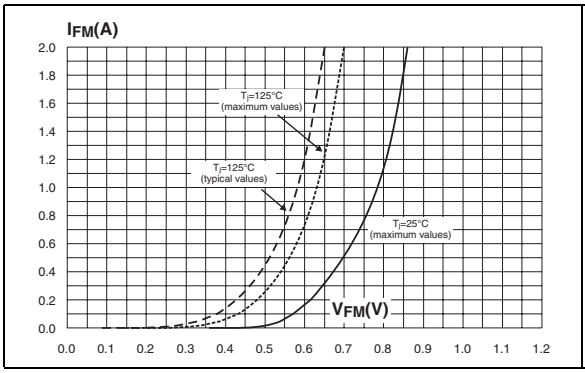


Figure 10. Forward voltage drop versus forward current (high level)

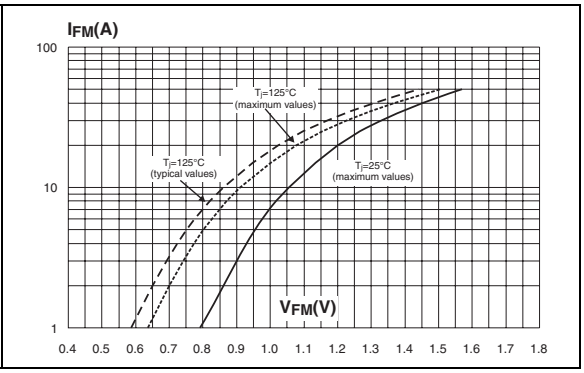
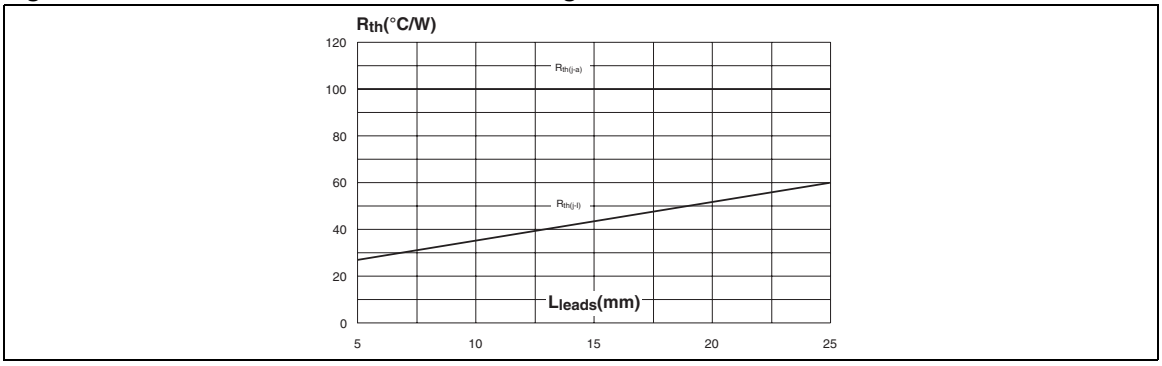


Figure 11. Thermal resistance versus lead length



2 Package information

- Epoxy meets UL94, V0
- Band indicates cathode

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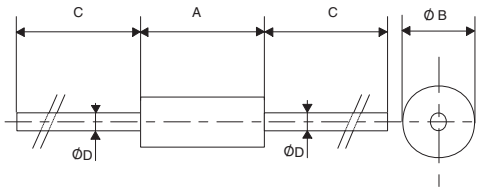
Table 5. DO-41 (plastic) dimensions



Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.07	5.20	0.160	0.205
B	2.04	2.71	0.080	0.107
C	25.4		1	
D	0.71	0.86	0.028	0.034

3 Ordering information

Table 6. Ordering information

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

4 Revision history

Table 7. Document revision history

Date	Revision	Changes
Jul-2003	2A	Last update.
23-Jun-2009	3	Updated dimension C in table 5.
05-Oct-2009	4	Updated table 5 package dimensions.

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