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SEMICONDUCTOR



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PLED

STPS1150A-MS

Product specification

Description

This 150 V power Schottky rectifier is ideal for switch mode power supplies on up to 24 V rails and high frequency converters.

Packaged in SMA and , the STPS1150A-MS is optimized for use in consumer and computer applications where low drop forward voltage is required to reduce power dissipation.

Device summary

Symbol	Values
$I_F(AV)$	1 A
V_{RRM}	150 V
$T_j(max.)$	175 °C
$V_F(typ.)$	0.62 V

Features

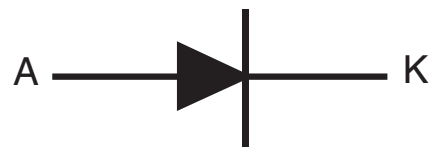
- Negligible switching losses
- Low forward voltage drop for higher efficiency and extended battery life
- Low thermal resistance
- Surface mount miniature package
- Avalanche capability

Applications

- Switching diode
- SMPS
- DC/DC converter
- Telecom power

Reference News

STPS1150A-MS	MARKING
 DO-214AC(SMA)	



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

Symbol	Parameter			Value	Unit
V _{RRM}	Repetitive peak reverse voltage			150	V
I _{F(RMS)}	Forward rms current			15	A
I _{F(AV)}	Average forward current δ = 0.5, square wave	SMA	T _L = 150 °C	1	A
I _{FSM}	Surge non repetitive forward current	SMA	t _p = 10 ms sinusoidal	50	A
				75	
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.

Thermal resistance parameter

Symbol	Parameter		Max. value	Unit
R _{th(j-l)}	Junction to lead	SMA	30	°C/W

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

- AN5088 : Rectifiers thermal management, handling and mounting recommendations

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}	-	0.2	1.0	μ A
		T _j = 125 °C		-	0.2	1.0	mA
V _F (2)	Forward voltage drop	T _j = 25 °C	I _F = 1 A	-	0.78	0.82	V
		T _j = 125 °C		-	0.62	0.67	
		T _j = 25 °C	I _F = 2 A	-	0.85	0.89	
		T _j = 125 °C		-	0.69	0.75	

1. Pulse test: t_p = 5 ms, $\delta < 2\%$

2. Pulse test: t_p = 380 μ s, $\delta < 2\%$

To evaluate the conduction losses use the following equation: $P = 0.59 \times I_{F(AV)} + 0.08 I_F^2(RMS)$

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

Characteristics (curves)

Figure 1. Average forward power dissipation versus average forward current

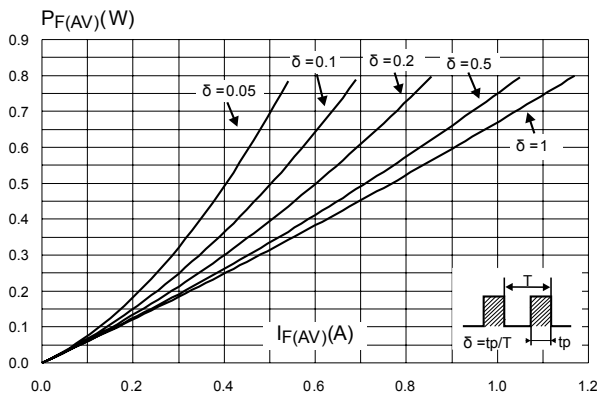


Figure 2. Average forward current versus ambient temperature ($\delta = 0.5$)

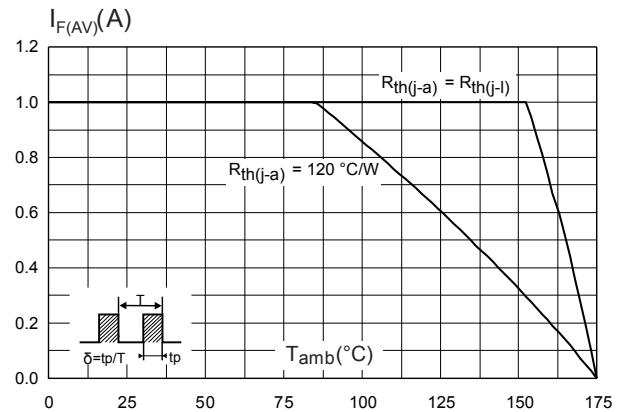


Figure 3. Normalized avalanche power derating versus pulse duration ($T_j = 125^\circ\text{C}$)

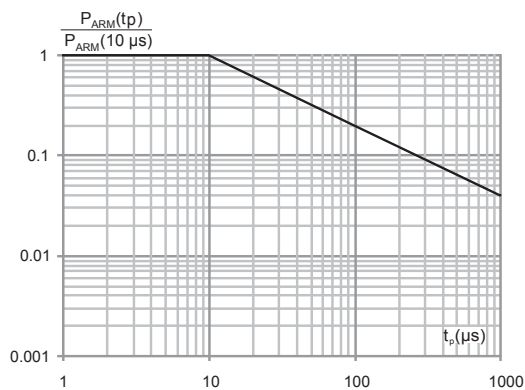


Figure 4. Relative variation of thermal impedance junction to ambient versus pulse duration (SMA)

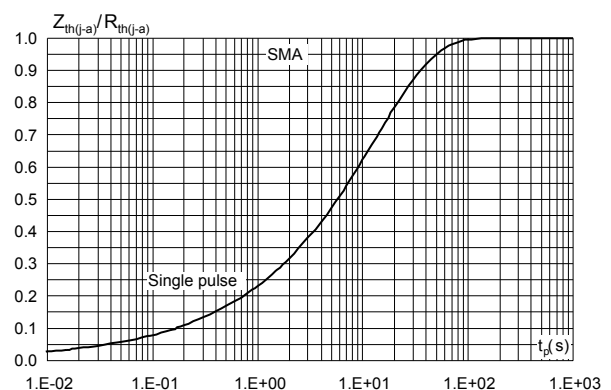


Figure 7. Junction capacitance versus reverse voltage applied (typical values)

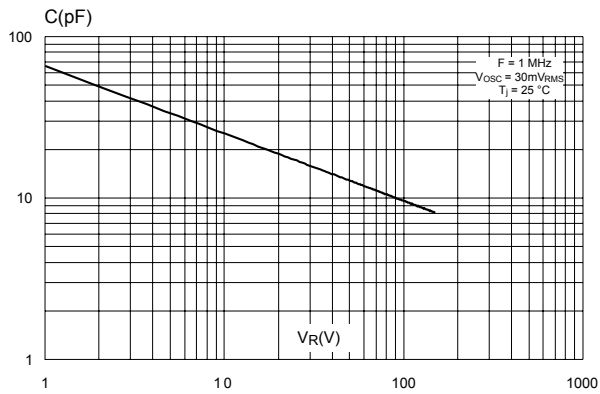


Figure 6. Reverse leakage current versus reverse voltage applied (typical values)

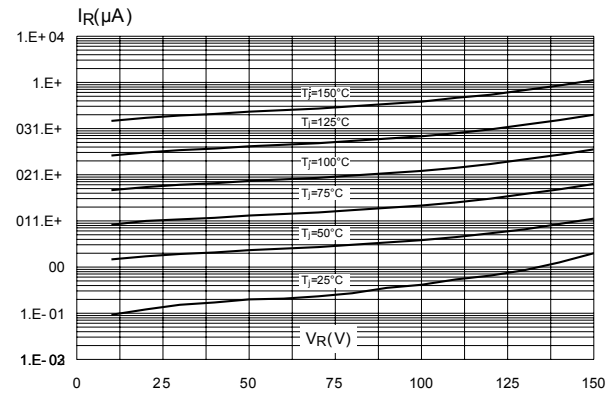


Figure 8. Forward voltage drop versus forward current

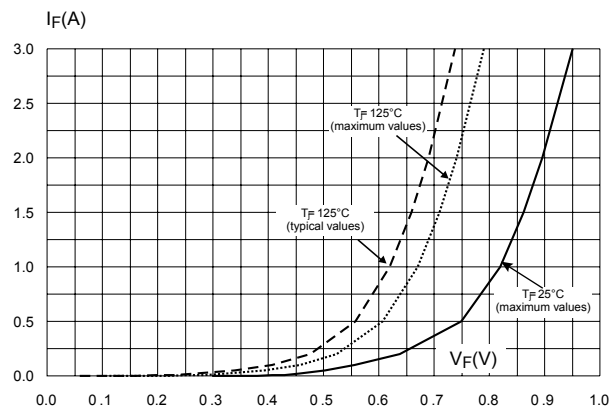
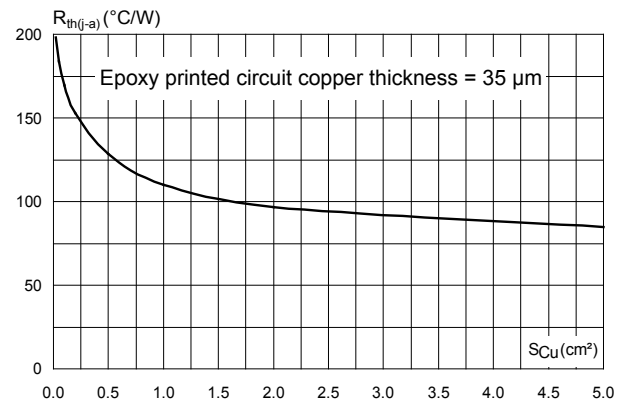
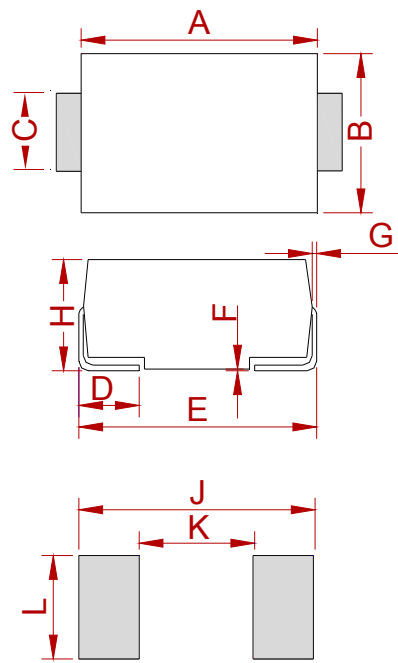


Figure 9. Thermal resistance junction to ambient versus copper surface under each lead (SMA)



PACKAGE MECHANICAL DATA



DO-214AC (SMA)

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.25	4.65	0.167	0.183
B	2.50	2.90	0.098	0.114
C	1.35	1.65	0.053	0.065
D	0.76	1.52	0.030	0.060
E	4.93	5.28	0.194	0.208
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	1.98	2.41	0.078	0.095
J	6.50		0.256	
K		2.30		0.090
L	1.70		0.067	

REEL SPECIFICATION

P/N	PKG	QTY
STPS1150A-MS	DO-214AC (SMA)	5000

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