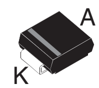
STPS2L60-Y

Automotive power Schottky rectifier

Features

- AEC-Q101 qualified
- Negligible switching losses
- Low forward voltage drop
- Surface mount miniature package
- Avalanche capability specified
- ECOPACK®2 compliant component



SMA
STPS2L60AY

Description

This power Schottky rectifier is suited to switched mode power supplies and high frequency DC to DC converters for automative applications.

Packaged in SMA, this device is especially 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}	60 V
T_j (max)	150 °C
V_F(max)	0.55 V

1 Characteristics

Table 2. Absolute ratings (limiting values)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		60	V
$I_{F(RMS)}$	Forward rms voltage		10	A
$I_{F(AV)}$	Average forward current	T_L = 115 °C δ = 0.5	2	A
I_{FSM}	Surge non repetitive forward current	t_p =10 ms sinusoidal	75	A
P_{ARM}	Repetitive peak avalanche power	t_p = 1 µs T_j = 25 °C	1600	W
T_{stg}	Storage temperature range		-65 to +150	°C
T_j	Operating junction temperature range(1)		-40 to +150	°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	Test conditions	Value	Unit
$R_{th(j-l)}$	Junction-lead	25	°C/W

Table 4. Static electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
I_R(1)	Reverse leakage current	T_j = 25 °C	$V_R = V_{RRM}$			100	µA
		T_j = 100 °C			2	10	mA
V_F(1)	Forward voltage drop	T_j = 25 °C	I_F = 2 A			0.60	V
		T_j = 125 °C			0.51	0.55	
		T_j = 25 °C	I_F = 4 A			0.77	
		T_j = 125 °C			0.62	0.67	

1. Pulse test: t_p = 380 µs, δ < 2%

To evaluate the conduction losses use the following equation:
$P = 0.43 \times I_{F(AV)} + 0.06\, I_F{}^2{}_{(RMS)}$

Figure 1. Average forward power dissipation versus average forward current

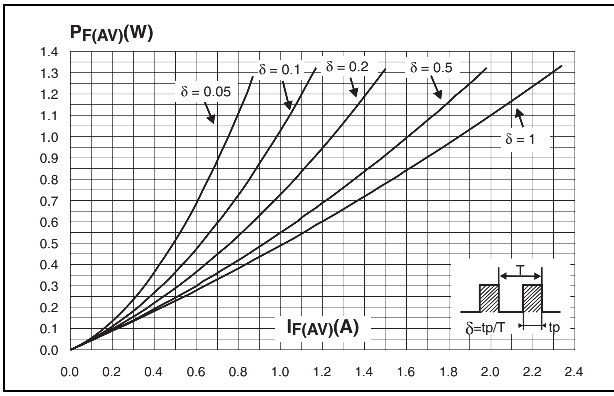


Figure 2. Average forward current versus ambient temperature (δ = 0.5)

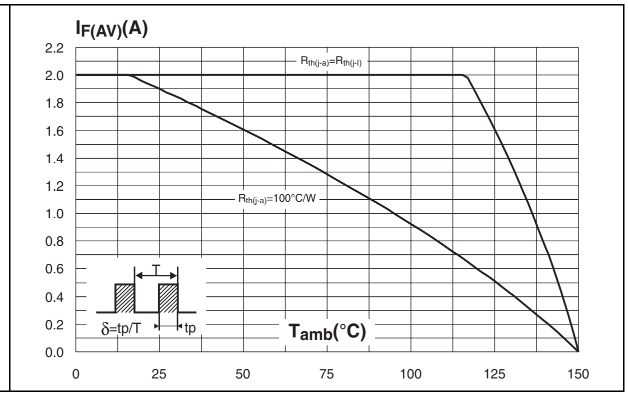


Figure 3. Normalized avalanche power derating versus pulse duration

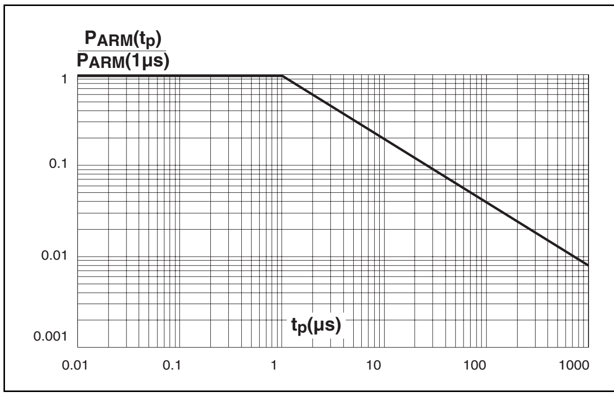


Figure 4. Normalized avalanche power derating versus junction temperature

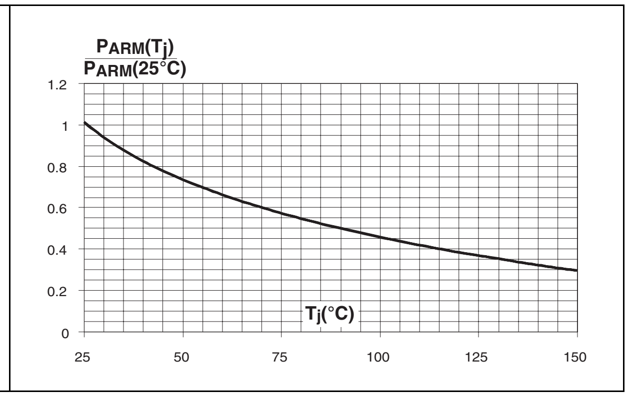


Figure 5. Non repetitive surge peak forward current versus overload duration (maximum values)

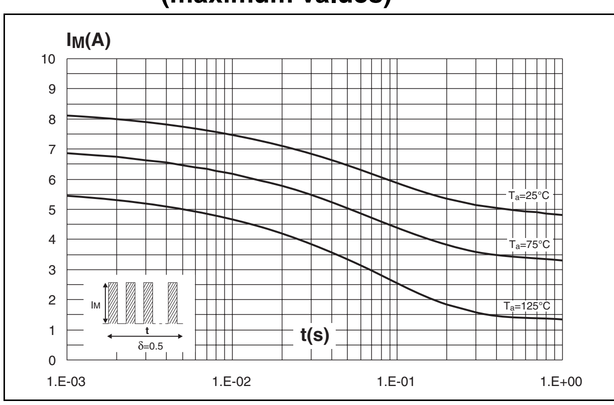


Figure 6. Relative variation of thermal impedance junction to ambient versus pulse duration

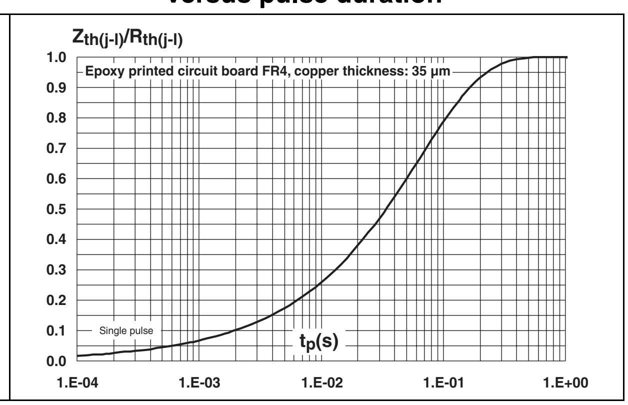


Figure 7. Reverse leakage current versus reverse voltage applied (typical values)

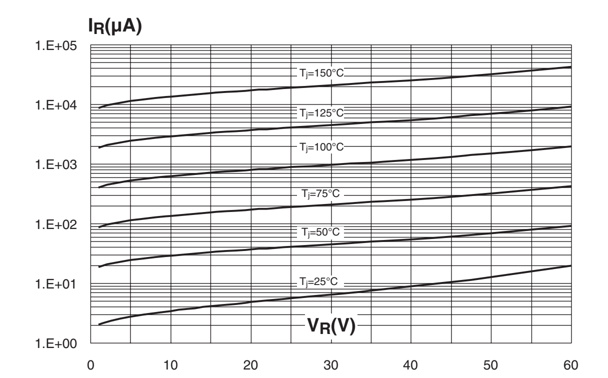


Figure 8. Junction capacitance versus reverse voltage applied (typical values)

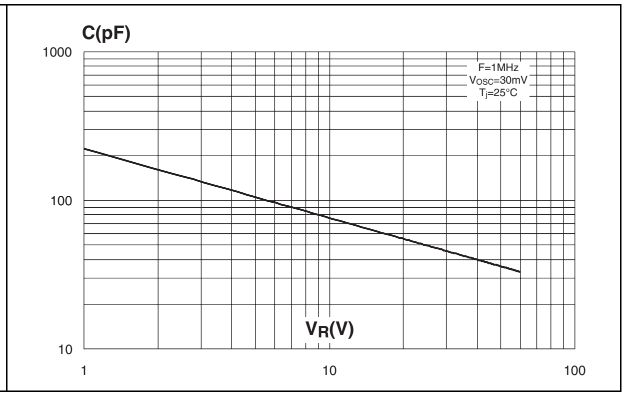


Figure 9. Forward voltage drop versus forward current (maximum values, low level)

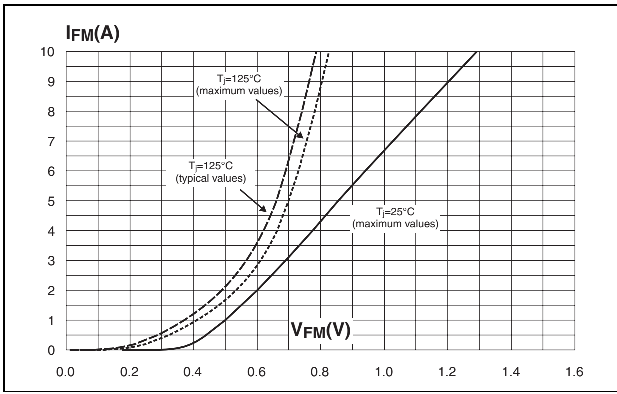
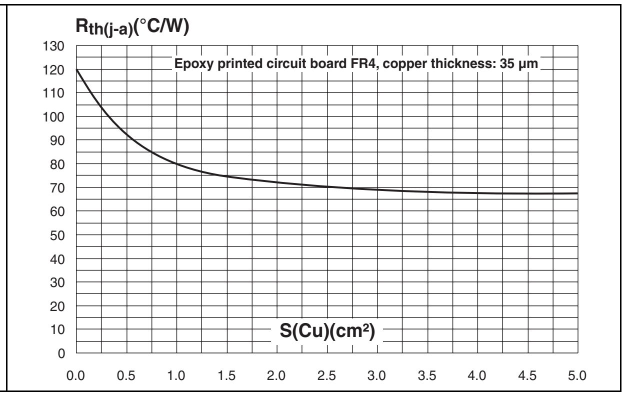


Figure 10. Thermal resistance junction to ambient versus copper surface under each lead

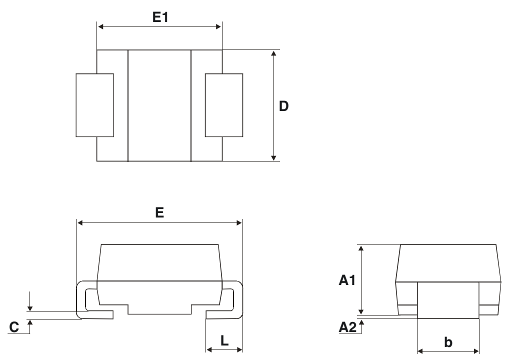


2 Package information

- Epoxy meets UL94, V0
- Lead-free package

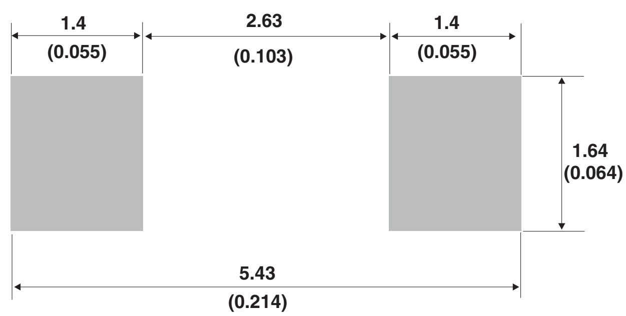
In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: www.st.com. ECOPACK® is an ST trademark.

Table 5. SMA dimensions



Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.45	0.075	0.094
A2	0.05	0.20	0.002	0.008
b	1.25	1.65	0.049	0.065
c	0.15	0.40	0.006	0.016
D	2.25	2.90	0.089	0.114
E	4.80	5.35	0.189	0.211
E1	3.95	4.60	0.156	0.181
L	0.75	1.50	0.030	0.059

Figure 11. Footprint, dimensions in mm (inches)



3 Ordering information

Table 6. Ordering information

Order code	Marking	Package	Weight	Base qty	Delivery mode
STPS2L60AY	S26Y	SMA	0.068 g	5000	Tape and reel

4 Revision history

Table 7. Document revision history

Date	Revision	Changes
02-Nov-2011	1	Initial release.