

## Automotive power Schottky rectifier

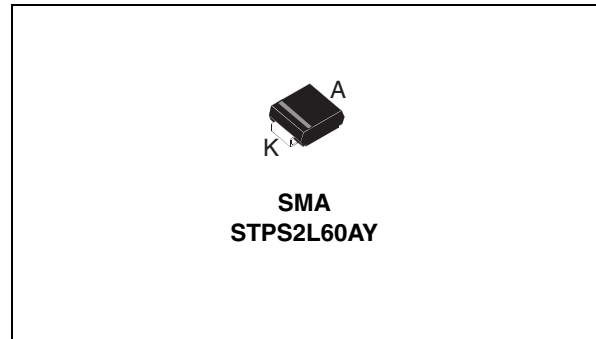
### Features

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

### Description

This power Schottky rectifier is suited to switched mode power supplies and high frequency DC to DC converters for automotive 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 <sub>RRM</sub>	Repetitive peak reverse voltage	60	V	
I <sub>F(RMS)</sub>	Forward rms voltage	10	A	
I <sub>F(AV)</sub>	Average forward current	T <sub>L</sub> = 115 °C δ = 0.5	2	A
I <sub>FSM</sub>	Surge non repetitive forward current	t <sub>p</sub> = 10 ms sinusoidal	75	A
P <sub>ARM</sub>	Repetitive peak avalanche power	t <sub>p</sub> = 1 μs T <sub>j</sub> = 25 °C	1600	W
T <sub>stg</sub>	Storage temperature range	-65 to +150	°C	
T <sub>j</sub>	Operating junction temperature range <sup>(1)</sup>	-40 to +150	°C	
dV/dt	Critical rate of rise of reverse voltage	10000	V/μs	

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

**Table 3. Thermal resistance**

Symbol	Test conditions	Value	Unit
R <sub>th(j-l)</sub>	Junction-lead	25	°C/W

**Table 4. 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>		100	μA
		T <sub>j</sub> = 100 °C		2	10	mA
V <sub>F</sub> <sup>(1)</sup>	Forward voltage drop	T <sub>j</sub> = 25 °C	I <sub>F</sub> = 2 A		0.60	V
		T <sub>j</sub> = 125 °C		0.51	0.55	
		T <sub>j</sub> = 25 °C	I <sub>F</sub> = 4 A		0.77	
		T <sub>j</sub> = 125 °C		0.62	0.67	

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

To evaluate the conduction losses use the following equation:

$$P = 0.43 \times I_{F(AV)} + 0.06 I_{F(RMS)}^2$$

Figure 1. Average forward power dissipation versus average forward current

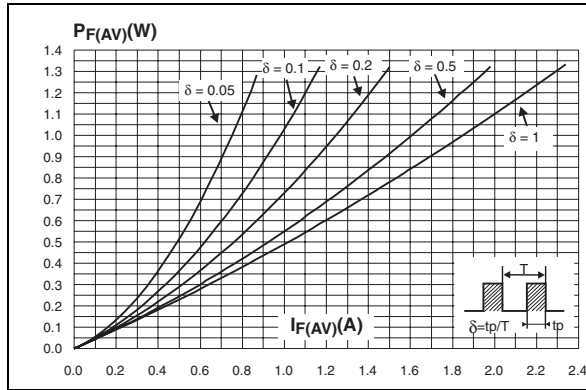


Figure 2. Average forward current versus ambient temperature ( $\delta = 0.5$ )

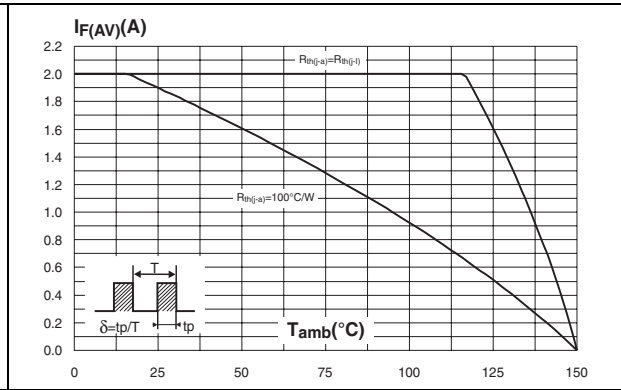


Figure 3. Normalized avalanche power derating versus pulse duration

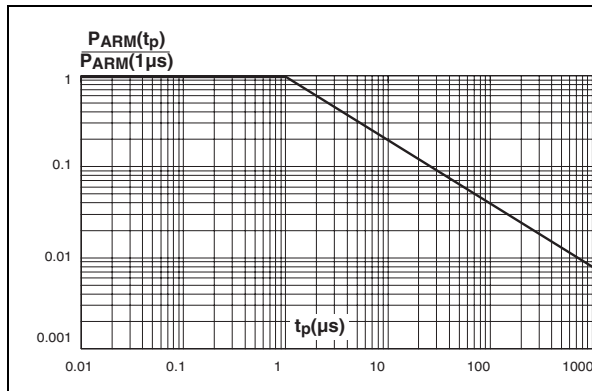


Figure 4. Normalized avalanche power derating versus junction temperature

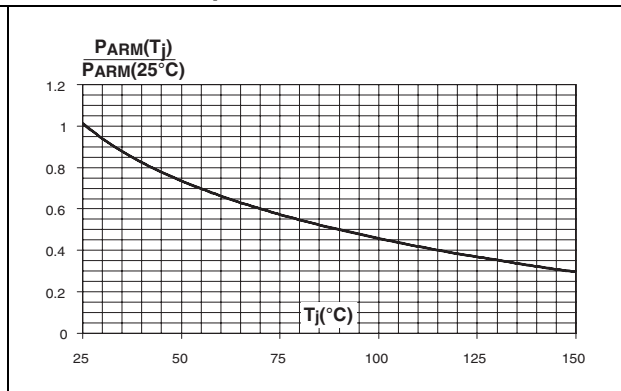


Figure 5. Non repetitive surge peak forward current versus overload duration (maximum values)

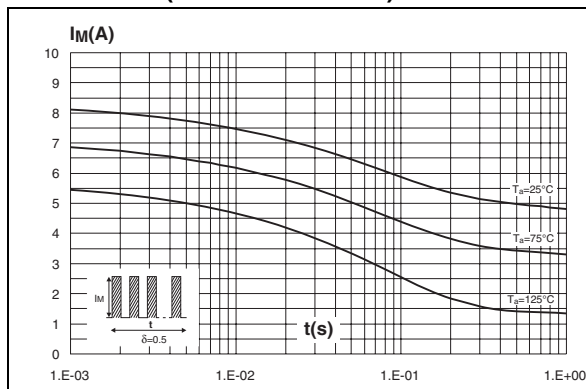
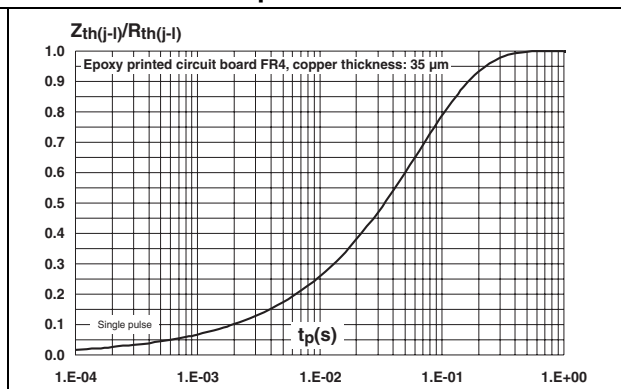
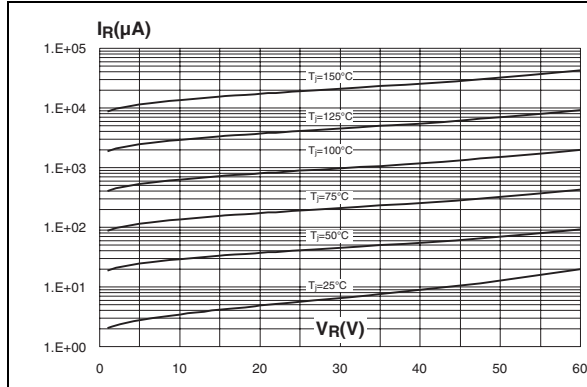


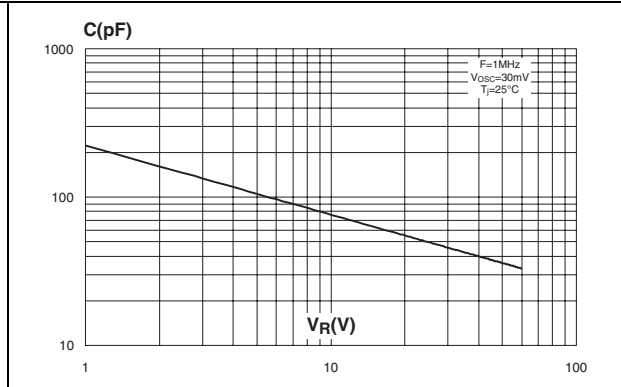
Figure 6. Relative variation of thermal impedance junction to ambient versus pulse duration



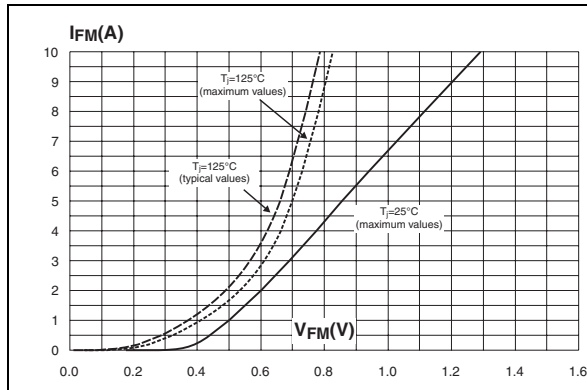
**Figure 7. Reverse leakage current versus reverse voltage applied (typical values)**



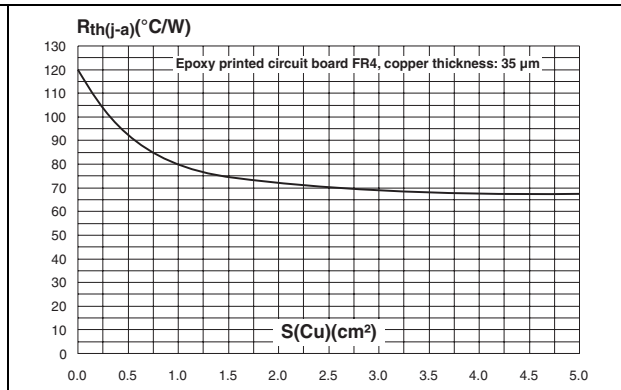
**Figure 8. Junction capacitance versus reverse voltage applied (typical values)**



**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

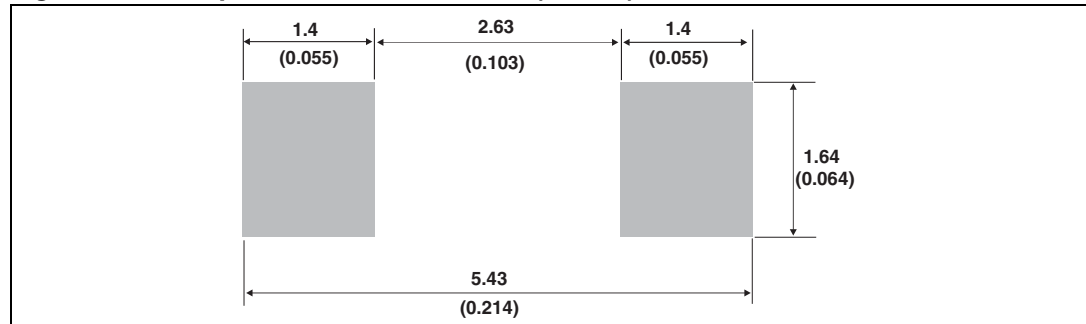
- Epoxy meets UL94, V0
- Lead-free package

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**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.

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