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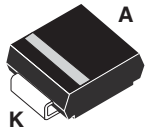
STPS3L60U-Y

Automotive power Schottky rectifier

Datasheet – production data



SMB
STPS3L60UY

Table 1. Device summary

Symbol	Value
$I_{F(AV)}$	3 A
V_{RRM}	60 V
$T_{j\ (max)}$	150 °C
$V_{F\ (max)}$	0.61 V

Features

- Negligible switching losses
- Low forward voltage drop
- Avalanche capability specified
- AEC-Q101 qualified

Description

Surface mount power Schottky rectifier suited for high frequency DC to DC converters. Packaged in SMB, this device is intended for use in low voltage, high frequency inverters and small battery chargers and for applications where there are space constraints.

1 Characteristics

Table 2. Absolute ratings(1)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		60	V
$I_{F(RMS)}$	RMS forward current		10	A
$I_{F(AV)}$	Average forward current	T_L = 105 °C δ = 0.5	3	A
I_{FSM}	Surge non repetitive forward current	t_p = 10 ms Sinusoidal	100	A
P_{ARM}	Repetitive peak avalanche power	t_p = 1 µs T_j = 25 °C	2000	W
T_{stg}	Storage temperature range		-65 to + 150	°C
T_j	Operating junction temperature(2) range		-40 to + 150	°C
dV/dt	Critical rate of rise reverse voltage		10000	V/µs

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

Table 3. Thermal resistance

Symbol	Parameter	Value	Unit
$R_{th\ (j-l)}$	Junction to leads	20	°C/W

Table 4. Static electrical characteristics

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R (1)	Reverse leakage current	T_j = 25 °C	$V_R = V_{RRM}$	-	-	150	µA
		T_j = 100 °C		-	4	15	mA
		T_j = 125 °C		-	14	30	
V_F (1)	Forward voltage drop	T_j = 25 °C	I_F = 3 A	-	-	0.62	V
		T_j = 100 °C		-	0.53	0.61	
		T_j = 125 °C		-	0.51	0.59	
		T_j = 25 °C	I_F = 6 A	-	-	0.79	
		T_j = 100 °C		-	0.62	0.71	
		T_j = 125 °C		-	0.6	0.69	

1. Pulse test: t_p = 380 µs, δ < 2%

To evaluate the conduction losses use the following equation:

$P = 0.44 \times I_{F(AV)} + 0.05 \times I_F{}^2{}_{(RMS)}$

Figure 1. Average forward power dissipation versus average forward current

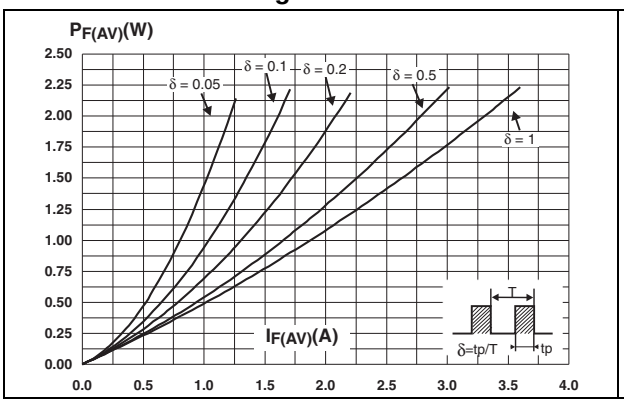


Figure 2. Average forward current versus ambient temperature (δ = 0.5)

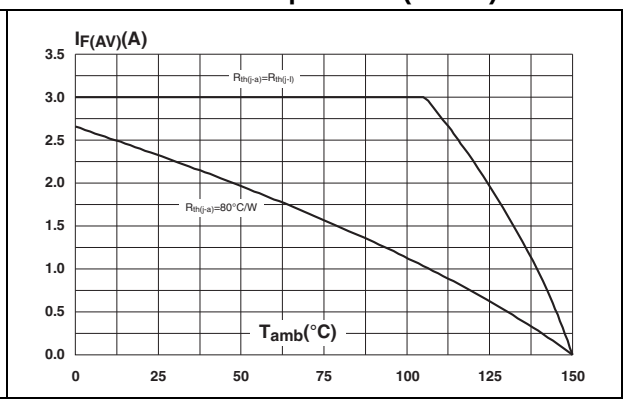


Figure 3. Normalized avalanche power derating versus pulse duration

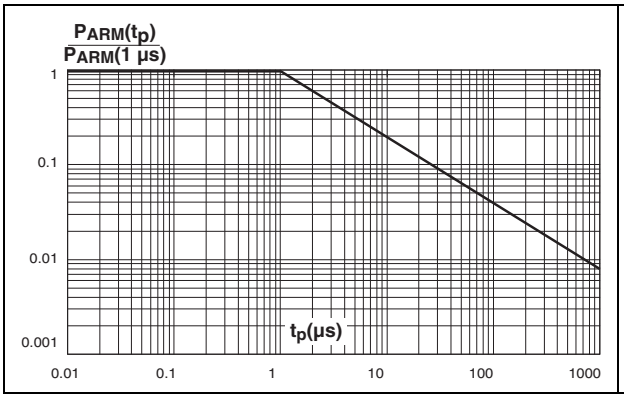


Figure 4. Normalized avalanche power derating versus junction temperature

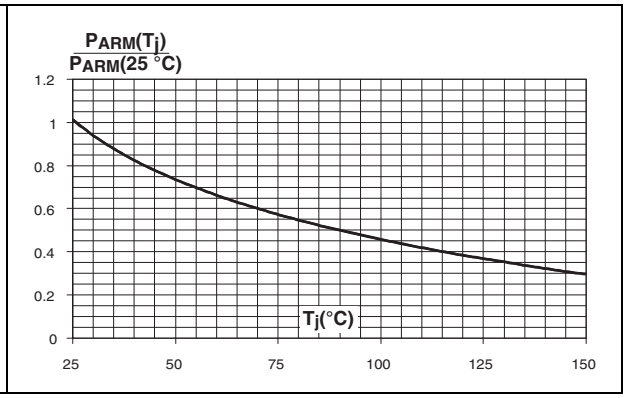


Figure 5. Non repetitive surge peak forward current versus overload duration (maximum values)

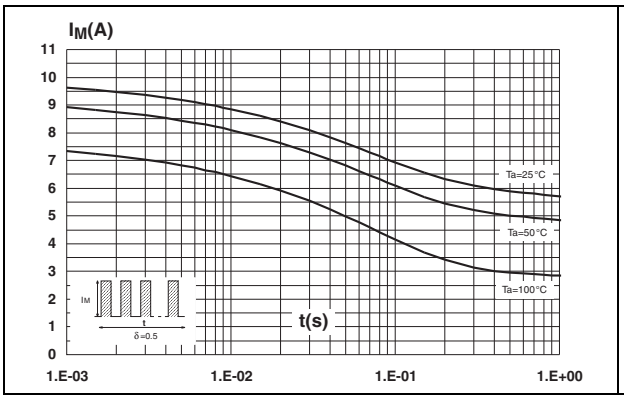


Figure 6. Relative variation of thermal impedance junction to ambient versus pulse duration

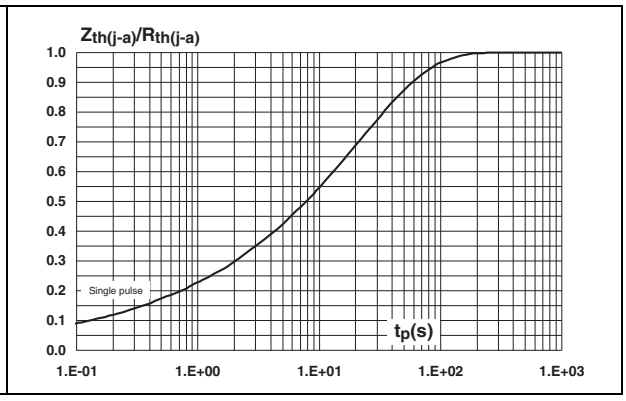


Figure 7. Reverse leakage current versus reverse voltage applied (typical values)

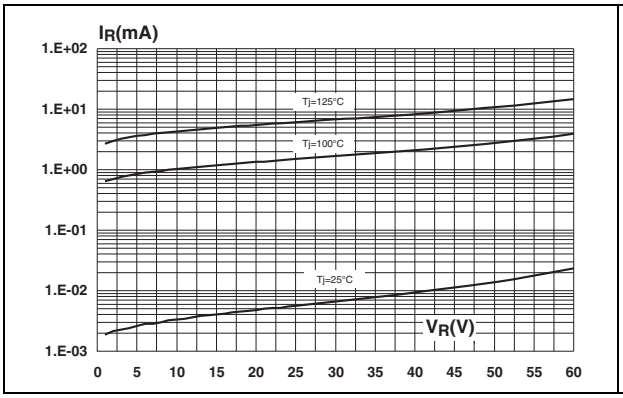


Figure 8. Junction capacitance versus reverse voltage applied (typical values)

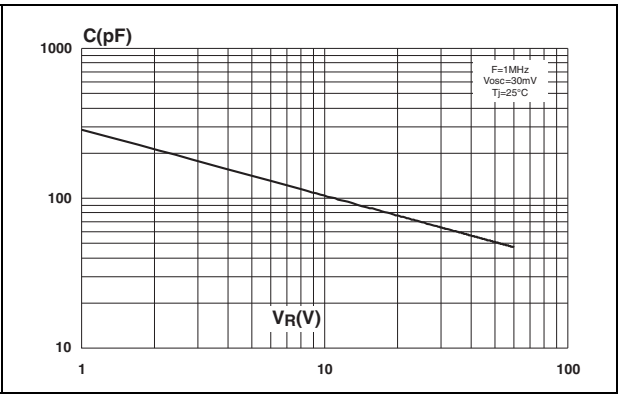


Figure 9. Forward voltage drop versus forward current (high level)

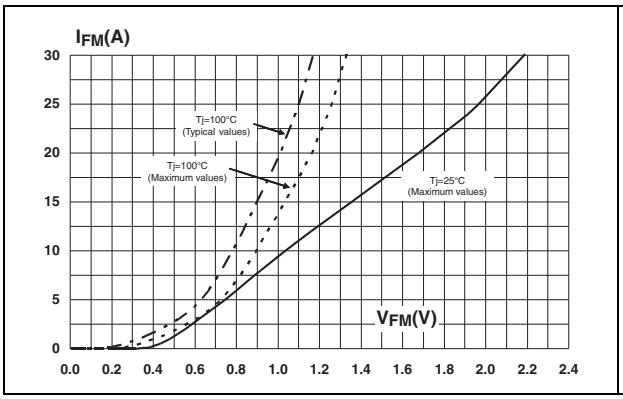


Figure 10. Forward voltage drop versus forward current (low level)

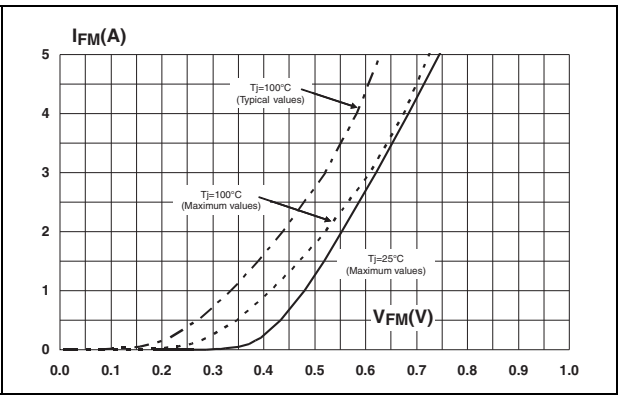
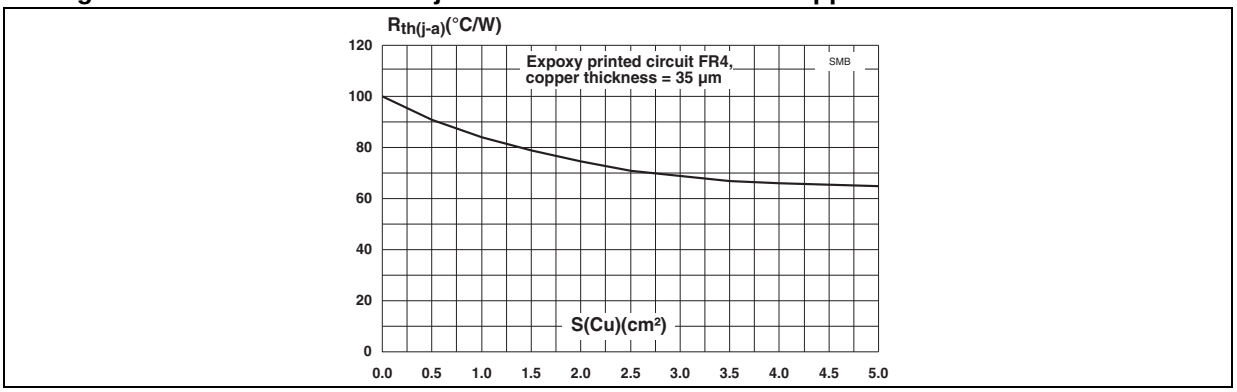


Figure 11. Thermal resistance junction to ambient versus copper surface under each lead



2 Package information

- Epoxy meets UL94,V0
- Lead-free package

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Figure 12. SMB dimension definitions

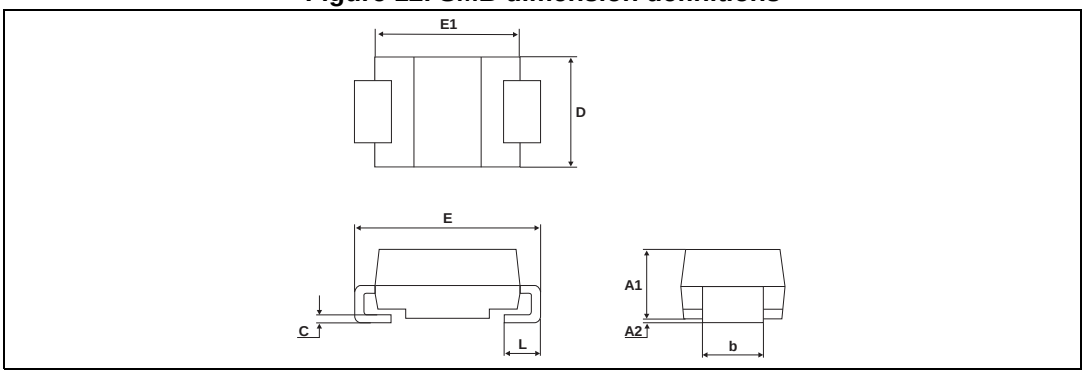
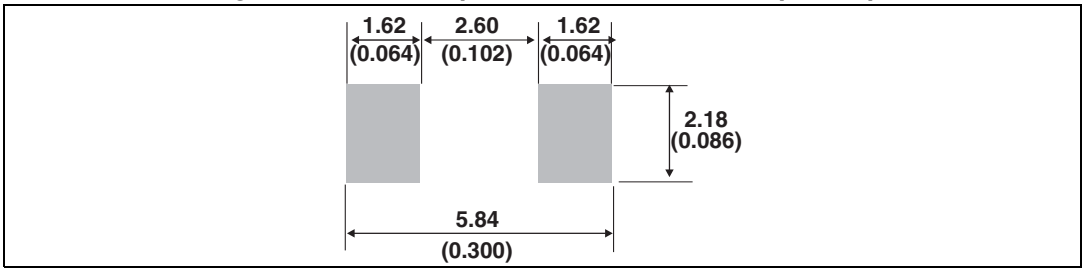


Table 5. SMB dimension values

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.45	0.075	0.096
A2	0.05	0.20	0.002	0.008
b	1.95	2.20	0.077	0.087
c	0.15	0.40	0.006	0.016
D	3.30	3.95	0.130	0.156
E	5.10	5.60	0.201	0.220
E1	4.05	4.60	0.159	0.181
L	0.75	1.50	0.030	0.059

Figure 13. SMB footprint, dimensions in mm (inches)



3 Ordering information

Table 6. Ordering information

Order codes	Marking	Package	Weight	Base qty	Delivery mode
STPS3L60UY	G36Y	SMB	0.107 g	2500	Tape and reel

4 Revision history

Table 7. Document revision history

Date	Revision	Changes
22-Mar-2013	1	Initial release.

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