



STPS3L40S

POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

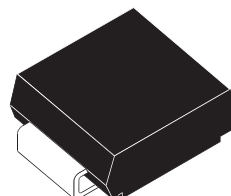
$I_{F(AV)}$	3 A
V_{RRM}	40 V
$T_j \text{ (max)}$	150°C
$V_F \text{ (max)}$	0.44 V

FEATURES AND BENEFITS

- Negligible switching losses
- Low thermal resistance
- Low forward voltage drop

DESCRIPTION

Schottky rectifier suited for Switched Mode Power Supplies and high frequency DC to DC converters. Packaged in SMC, this device is intended for use in DC/DC chargers.



SMC
(JEDEC DO-214AB)

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		40	V
$I_{F(RMS)}$	RMS forward current		10	A
$I_{F(AV)}$	Average forward current	$T_c = 120^\circ\text{C} \quad \delta = 0.5$	3	A
I_{FSM}	Surge non repetitive forward current	$t_p = 10 \text{ ms}$ Sinusoidal	75	A
I_{RRM}	Repetitive peak reverse current	$t_p = 2 \mu\text{s}$ square $F = 1\text{kHz}$	1	A
T_{stg}	Storage temperature range		- 65 to + 175	°C
T_j	Maximum operating junction temperature *		150	°C
dV/dt	Critical rate of rise of reverse voltage		10000	V/ μs

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

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THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-l)}$	Junction to leads	18	°C/W

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Typ.	Max.	Unit
I_R^*	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$		100	μA
		$T_j = 125^\circ\text{C}$		16	40	mA
V_F^*	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 3\text{ A}$		0.5	V
		$T_j = 125^\circ\text{C}$	$I_F = 3\text{ A}$	0.40	0.44	
		$T_j = 25^\circ\text{C}$	$I_F = 6\text{ A}$		0.62	
		$T_j = 125^\circ\text{C}$	$I_F = 6\text{ A}$	0.52	0.58	

Pulse test : * $t_p = 380\text{ }\mu\text{s}$, $\delta < 2\%$

To evaluate the maximum conduction losses use the following equation :

$$P = 0.30 \times I_{F(AV)} + 0.047 I_{F(RMS)}^2$$

Fig. 1: Average forward power dissipation versus average forward current.

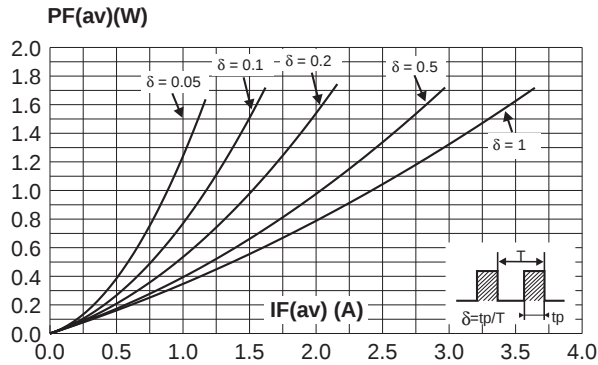


Fig. 3: Non repetitive surge peak forward current versus overload duration (maximum values).

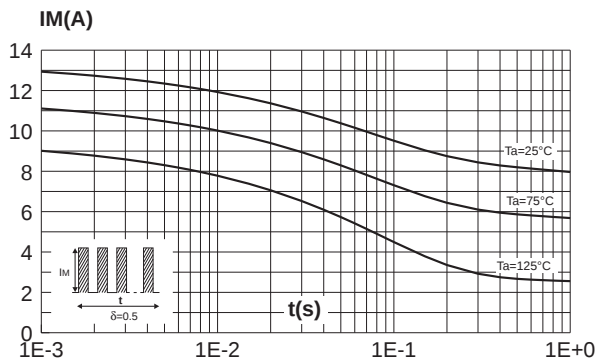


Fig. 2: Average forward current versus ambient temperature ($\delta = 0.5$).

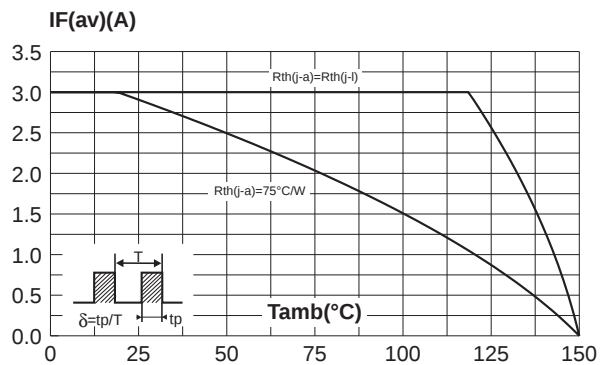


Fig. 4: Relative variation of thermal impedance junction to ambient versus pulse duration (epoxy printed circuit board, $e(\text{Cu})=35\mu\text{m}$, recommended pad layout).

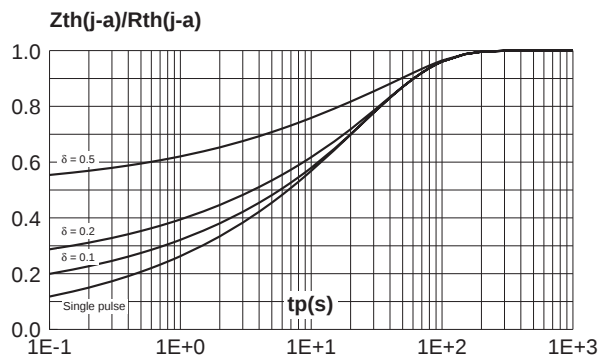


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values).

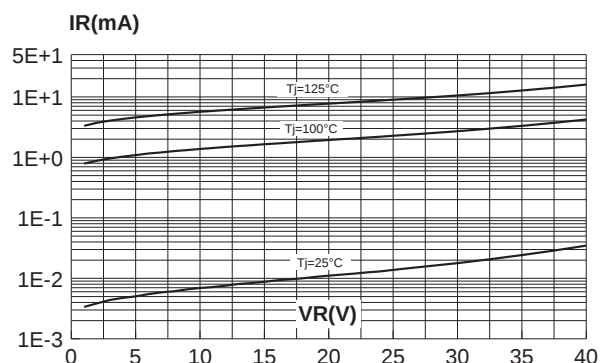


Fig. 6: Junction capacitance versus reverse voltage applied (typical values).

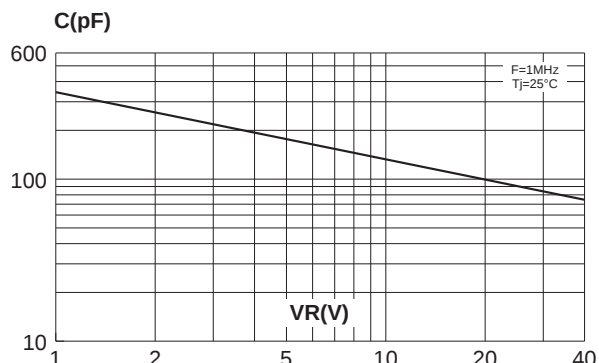


Fig. 7: Forward voltage drop versus forward current (maximum values).

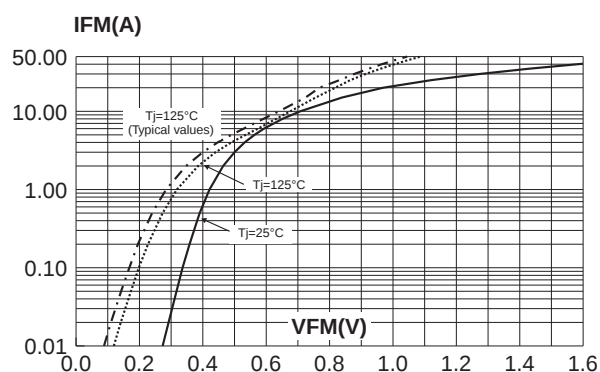


Fig. 8: Non repetitive surge peak forward current versus number of cycles.

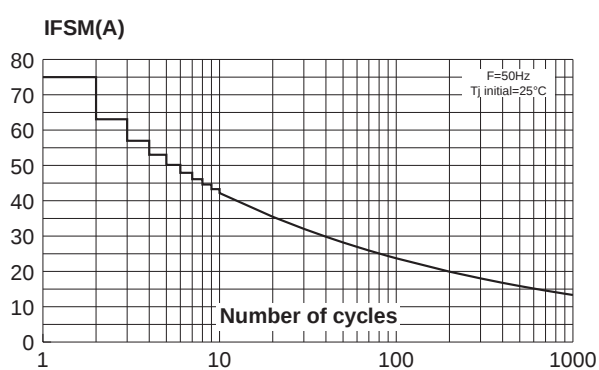
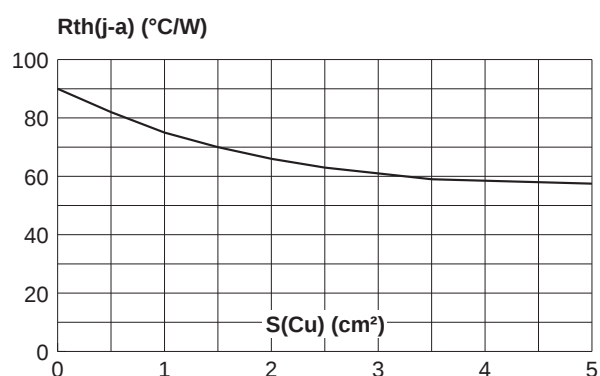


Fig. 9: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: $35\mu\text{m}$).



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PACKAGE MECHANICAL DATA

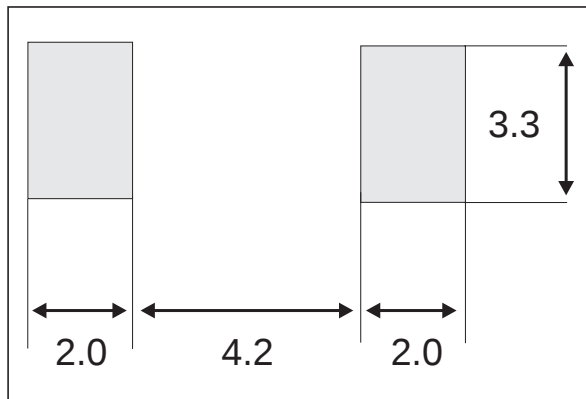
SMC

The figure displays three mechanical views of the STPS3L40S package:

- Top View:** Shows the package footprint with dimensions E1 (total width) and D (total height).
- Side View:** Shows the package profile with dimensions E (total width), E2 (width of the base), L (lead length), and C (lead height).
- End View:** Shows the package profile with dimensions A1 (total height), A2 (height of the base), and b (width of the base).

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	2.90	3.2	0.114	0.126
c	0.15	0.41	0.006	0.016
E	7.75	8.15	0.305	0.321
E1	6.60	7.15	0.260	0.281
E2	4.40	4.70	0.173	0.185
D	5.55	6.25	0.218	0.246
L	0.75	1.60	0.030	0.063

FOOT PRINT (in millimeters)



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS3L40S	S3L4	SMC	0.24g	2500	Tape and reel

- Epoxy meets UL94,V0

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