



STPS3L40S

POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

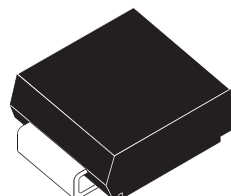
$I_{F(AV)}$	3 A
V_{RRM}	40 V
$T_j \text{ (max)}$	150°C
$V_F \text{ (max)}$	0.44 V

FEATURES AND BENEFITS

- NEGLIGIBLE SWITCHING LOSSES
- LOW THERMAL RESISTANCE
- LOW FORWARD VOLTAGE DROP
- AVALANCHE CAPABILITY SPECIFIED

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	$t_p = 10 \text{ ms} \quad \text{Sinusoidal}$	75	A
I_{RRM}	Repetitive peak reverse current	$t_p = 2 \mu\text{s square} \quad F = 1\text{kHz}$	1	A
P_{ARM}	Repetitive peak avalanche power	$t_p = 1 \mu\text{s} \quad T_j = 25^\circ\text{C}$	1300	W
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

STPS3L40S

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 :

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

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

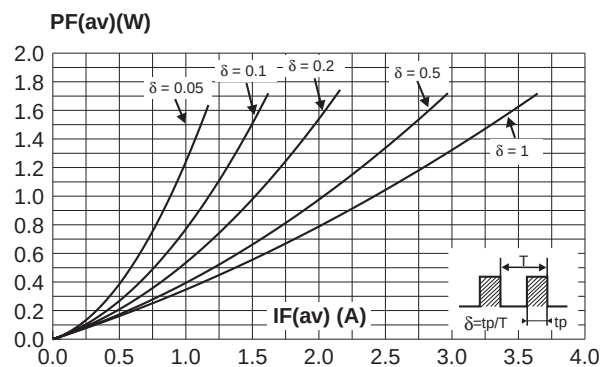


Fig. 2: Average forward current versus ambient temperature ($\delta = 0.5$).

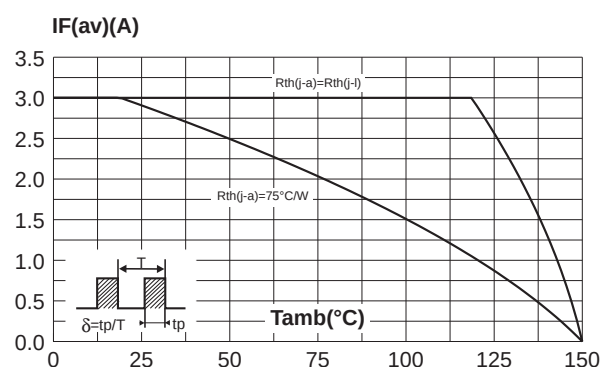


Fig. 3: Normalized avalanche power derating versus pulse duration.

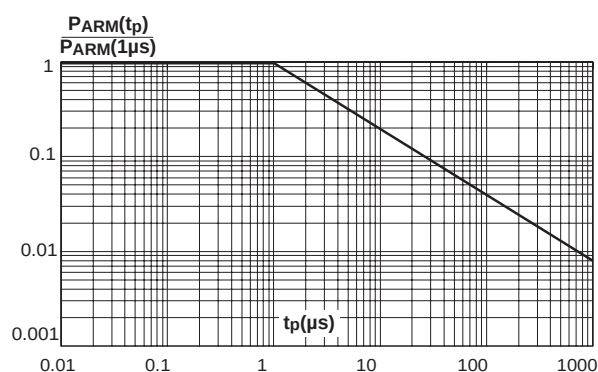


Fig. 4: Normalized avalanche power derating versus junction temperature.

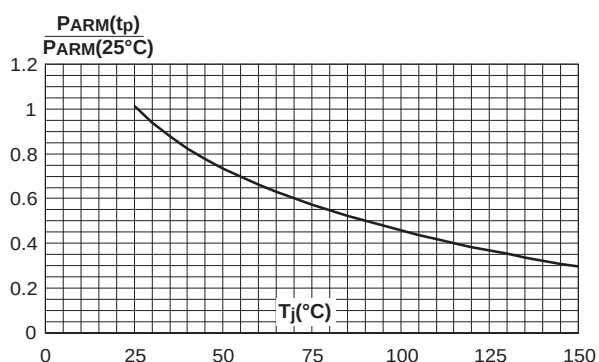


Fig. 5: Non repetitive surge peak forward current versus overload duration (maximum values).

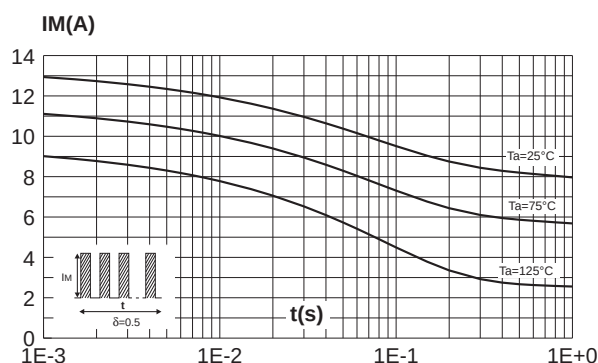


Fig. 6: Relative variation of thermal impedance junction to ambient versus pulse duration (epoxy printed circuit board, e(Cu)=35μm, recommended pad layout).

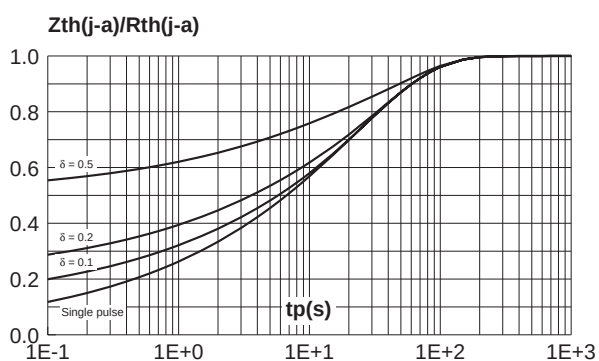


Fig. 7: Reverse leakage current versus reverse voltage applied (typical values).

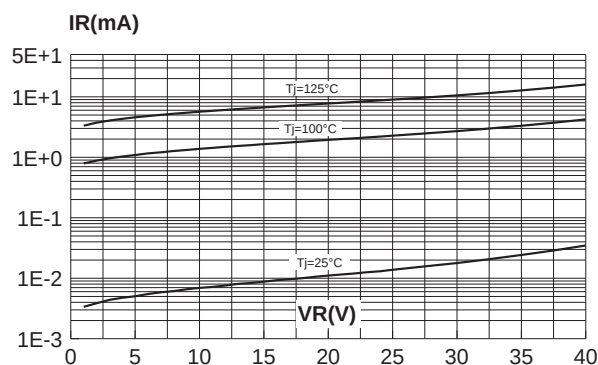


Fig. 8: Junction capacitance versus reverse voltage applied (typical values).

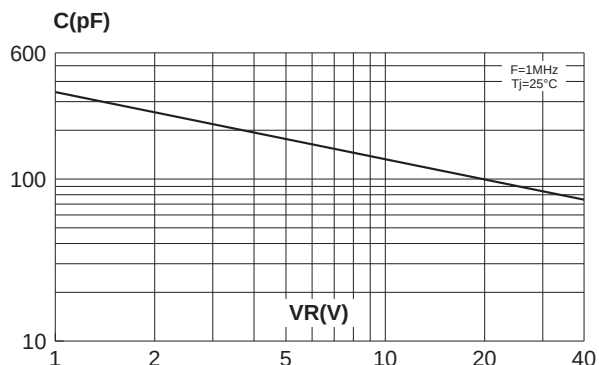


Fig. 9: Forward voltage drop versus forward current (maximum values).

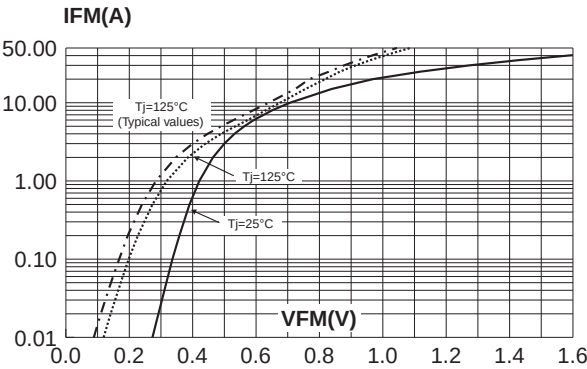


Fig. 10: Non repetitive surge peak forward current versus number of cycles.

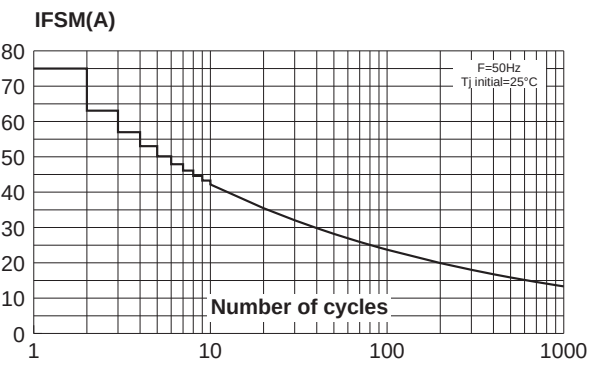
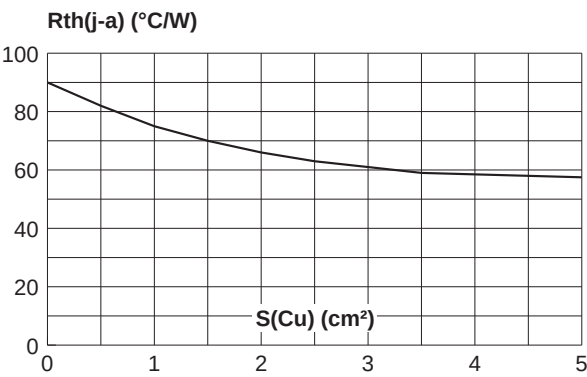


Fig. 11: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: $35\mu\text{m}$).

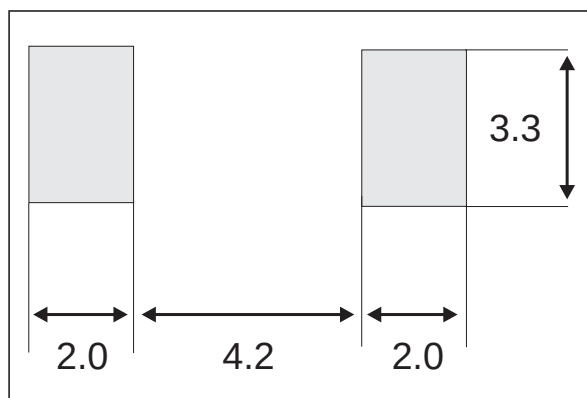


PACKAGE MECHANICAL DATA

SMC

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
- BAND INDICATES CATHODE

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