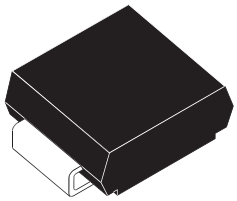
STPS3L40S

POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

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



SMC
(JEDEC DO-214AB)

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.

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	Tc = 120°C δ = 0.5	3	A
I_{FSM}	Surge non repetitive forward current	tp = 10 ms Sinusoidal	75	A
I_{RRM}	Repetitive peak reverse current	tp=2 µs square F=1kHz	1	A
T_{stg}	Storage temperature range		- 65 to + 175	°C
Tj	Maximum operating junction temperature *		150	°C
dV/dt	Critical rate of rise of reverse voltage		10000	V/µs

* : $\frac{dPtot}{dTj} < \frac{1}{Rth(j-a)}$ thermal runaway condition for a diode on its own heatsink

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	Tj = 25°C	$V_R = V_{RRM}$		100	µA
		Tj = 125°C		16	40	mA
V_F *	Forward voltage drop	Tj = 25°C	I_F = 3 A		0.5	V
		Tj = 125°C	I_F = 3 A	0.40	0.44	
		Tj = 25°C	I_F = 6 A		0.62	
		Tj = 125°C	I_F = 6 A	0.52	0.58	

Pulse test : * tp = 380 µs, δ < 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.

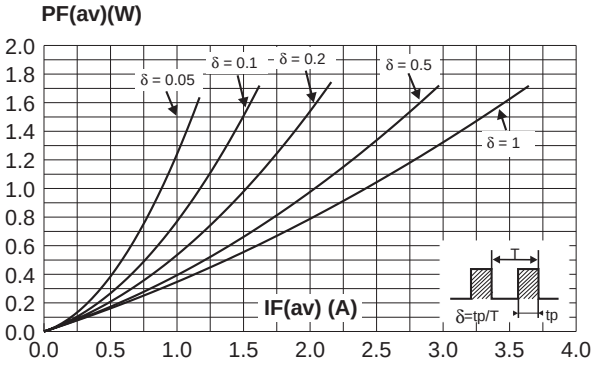


Fig. 2: Average forward current versus ambient temperature(δ = 0.5).

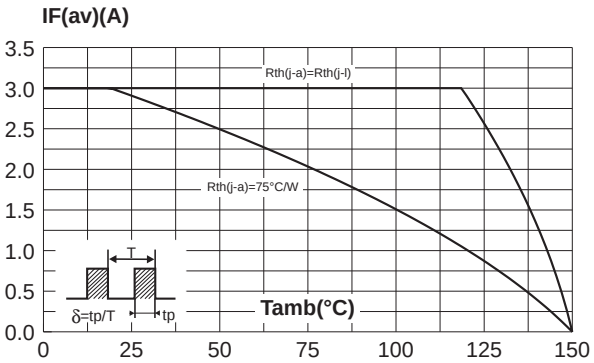


Fig. 3: Non repetitive surge peak forward current versus overload duration (maximum values).

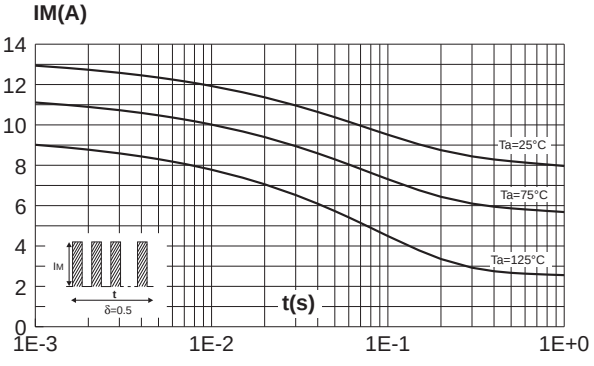


Fig. 4: Relative variation of thermal impedance junction to ambient versus pulse duration (epoxy printed circuit board, e(Cu)=35µm, recommended pad layout).

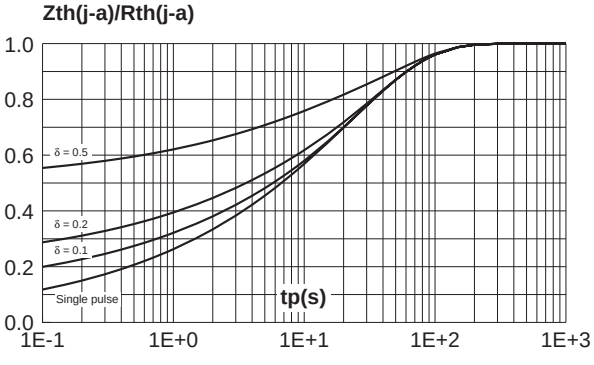


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values).

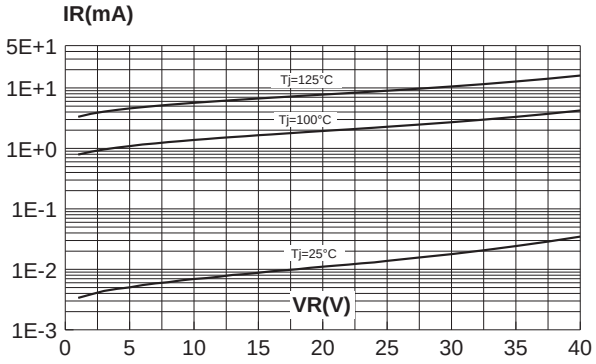


Fig. 6: Junction capacitance versus reverse voltage applied (typical values).

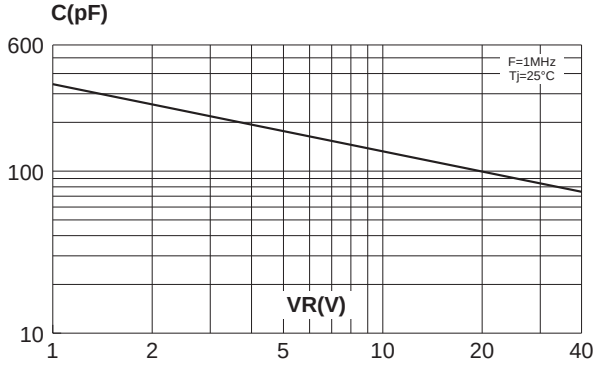


Fig. 7: Forward voltage drop versus forward current (maximum values).

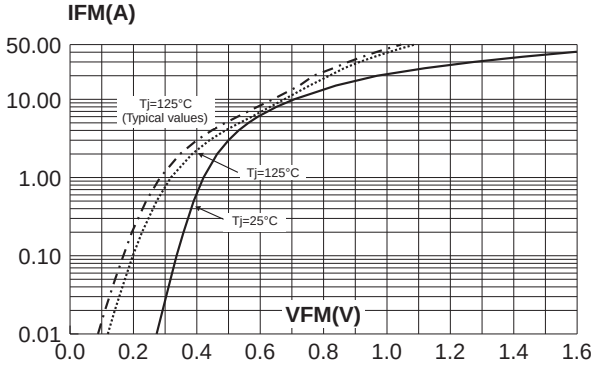


Fig. 8: Non repetitive surge peak forward current versus number of cycles.

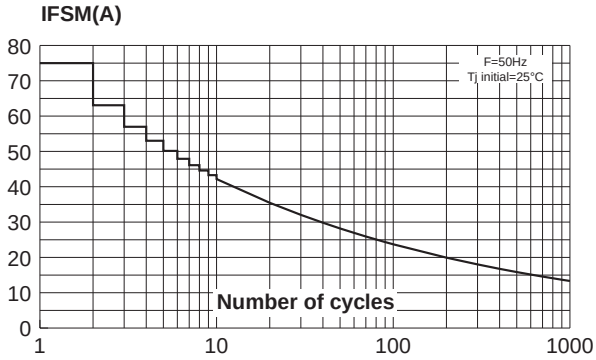
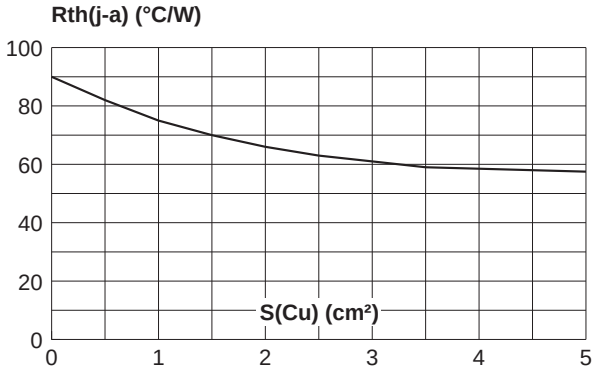
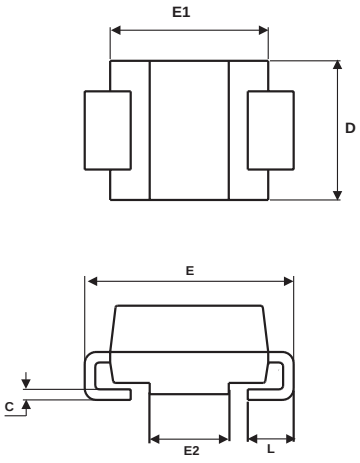


Fig. 9: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35µm).



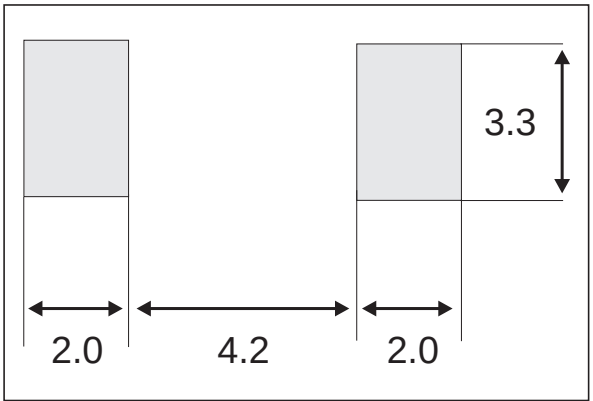
PACKAGE MECHANICAL DATA

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