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SEMICONDUCTOR



ESD



TVS



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MOV



GDT



PLED

STPS1L40xxx-MS

Product specification

Description

Single chip Schottky rectifiers suited to switched mode power supplies and high frequency DC to DC converters.

Packaged in SMA, SMB and SOD123FL, this device is especially intended for surface mounting and used in low voltage, high frequency inverters, free-wheeling and polarity protection applications.

Features

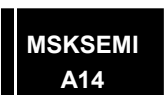
- Very small conduction losses
- Negligible switching losses
- Low forward voltage drop
- Surface mount miniature packages
- Avalanche capability specified

Reference News

STPS1L40A-MS	MARKING
 DO-214AC(SMA)	

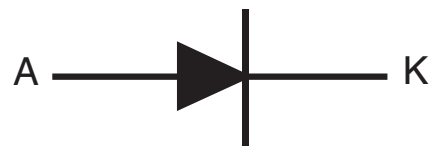
STPS1L40U-MS	MARKING
 DO-214AA(SMB)	

STPS1L40ZF-MS	MARKING
 SOD-123FL	

STPS1L40AFN-MS	MARKING
 SMAF	

Device summary

Symbol	Value
$I_{F(AV)}$	1 A
V_{RRM}	40 V
$V_F(\text{typ.})$	0.37 V
$T_J(\text{max.})$	175 °C



Absolute Ratings (limiting values, at 25 °C unless otherwise specified)

Symbol	Parameter			Value	Unit
V _{RRM}	Repetitive peak reverse voltage			40	V
I _{F(RMS)}	Forward rms current	SMA/SMB		8	A
I _{F(AV)}	Average forward current $\delta = 0.5$, square wave	SMA/SMB	T _L = 155 °C	1	A
		SMAF	T _L = 160 °C		
		SOD-123FL	T _L = 160 °C		
I _{FSM}	Surge non repetitive forward current	SMA/SMB	t _p = 10 ms sinusoidal	60	A
		SMAF		60	
		SOD-123F		50	
P _{ARM}	Repetitive peak avalanche power		t _p = 10 μ s, T _j = 125 °C	65	W
T _{stg}	Storage temperature range			-65 to +175	°C
T _j	Operating junction temperature ⁽¹⁾			+175	°C

Thermal parameters

Symbol	Parameter		Max. value	Unit
R _{th(j-l)}	Junction to lead	SMA	30	°C/W
		SMAF	20	
		SMB	25	
		SOD-123FL	20	

Static electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
I _R (1)	Reverse leakage current	T _j = 25 °C	V _R = V _{RRM}	-		35	μ A
		T _j = 125 °C		-	6	10	mA
V _F (1)	Forward voltage drop	T _j = 25 °C	I _F = 1 A	-		0.50	V
		T _j = 125 °C		-	0.37	0.42	
		T _j = 25 °C	I _F = 2 A	-		0.63	
		T _j = 125 °C		-	0.50	0.61	

Characteristics (curves)

Figure 1. Average forward power dissipation versus average forward current

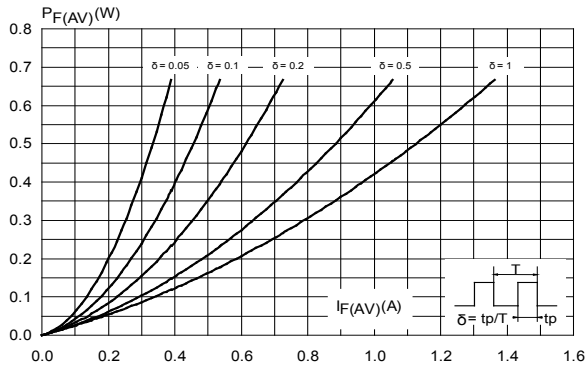


Figure 2. Average forward current versus ambient temperature (SMA, $\delta = 0.5$)

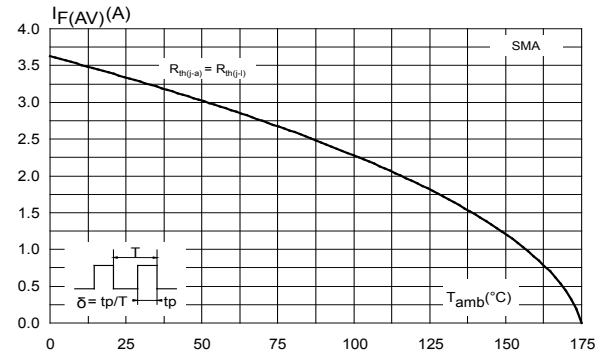


Figure 3. Average forward current versus ambient temperature (SMB, $\delta = 0.5$)

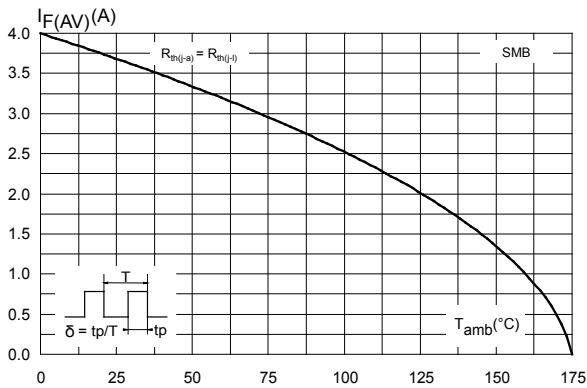


Figure 4. Average forward current versus ambient temperature (SOD123FL, SMAF $\delta = 0.5$)

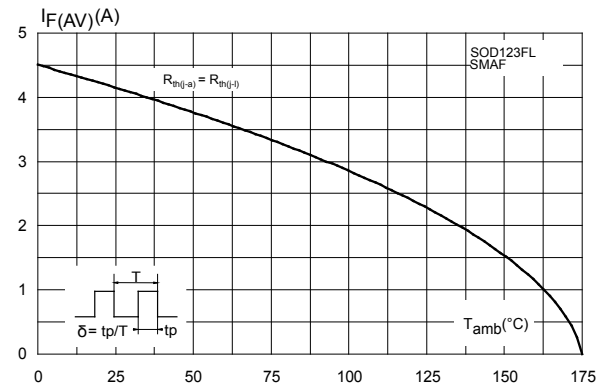


Figure 5. Normalized avalanche power derating versus pulse duration ($T_J = 125^\circ\text{C}$)

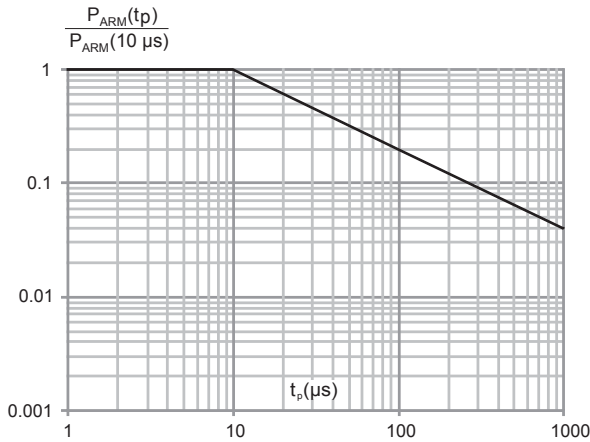


Figure 6. Relative variation of thermal impedance junction to ambient versus pulse duration (SMA)

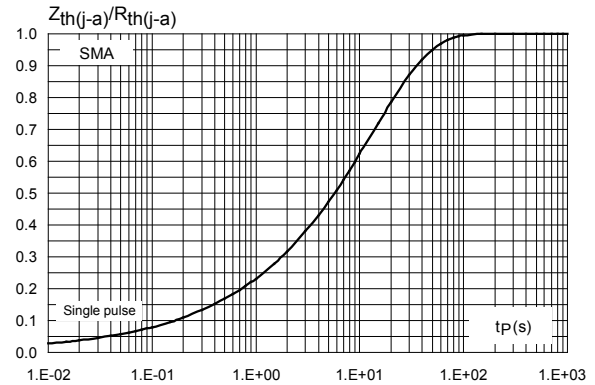


Figure 7. Relative variation of thermal impedance junction to ambient versus pulse duration (SMB)

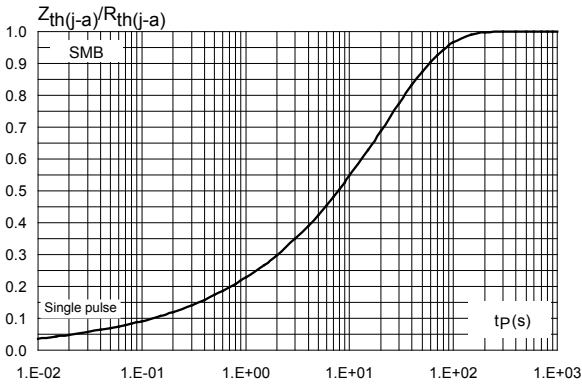


Figure 8. Relative variation of thermal impedance junction to lead versus pulse duration (SOD123FL)

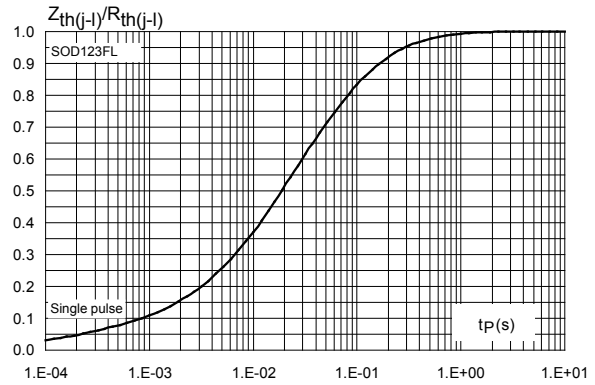


Figure 9. Reverse leakage current versus reverse voltage applied (typical values)

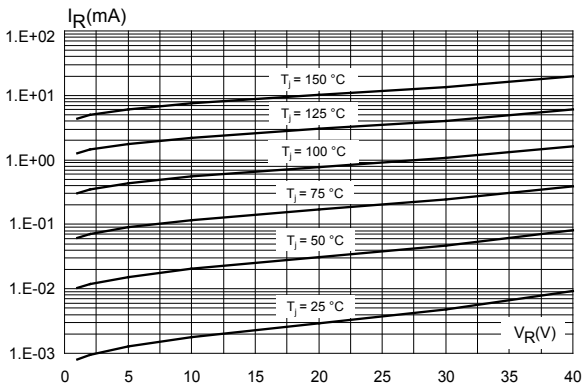


Figure 10. Junction capacitance versus reverse voltage applied (typical values)

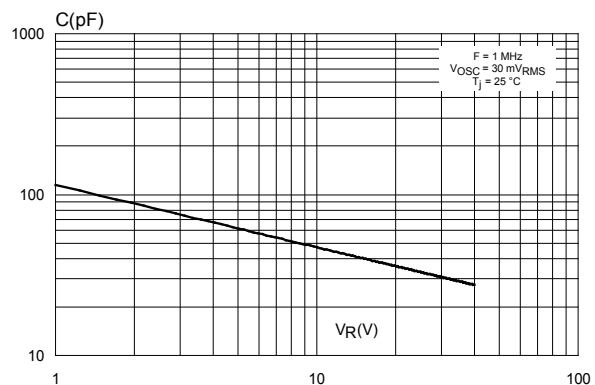


Figure 11. Forward voltage drop versus forward current (typical values)

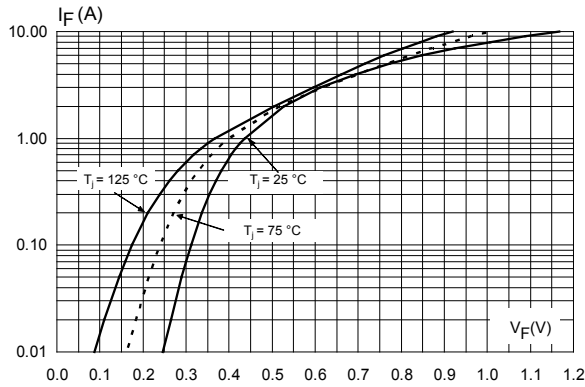


Figure 12. Thermal resistance junction to ambient versus copper surface under each lead (typical values)

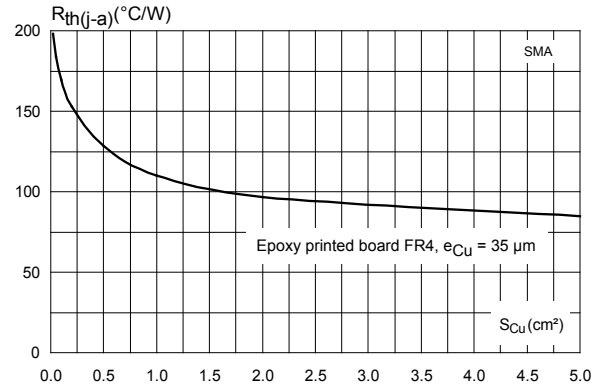


Figure 13. Thermal resistance junction to ambient versus copper surface under each lead (typical values)

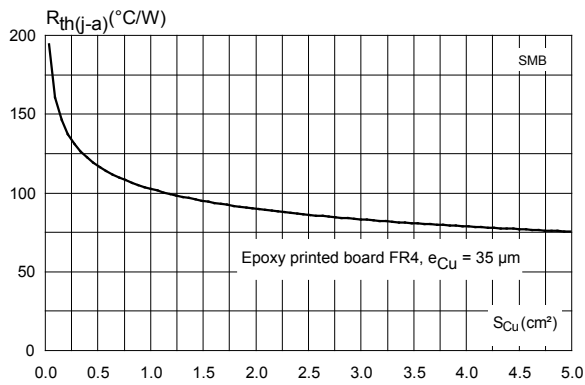


Figure 14. Thermal resistance junction to ambient versus copper surface under each lead (typical values)

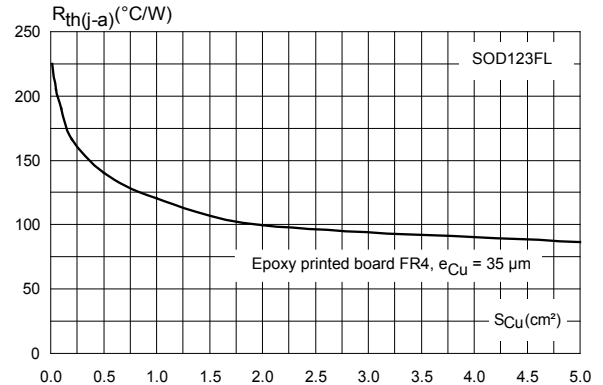
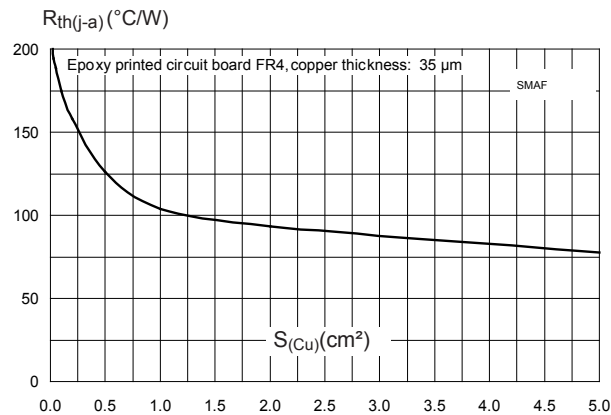
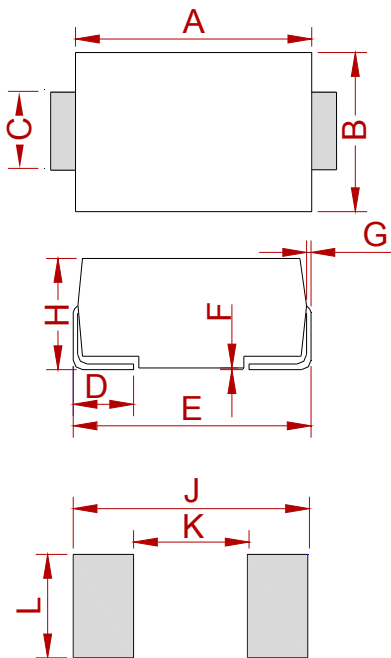


Figure 15. Thermal resistance junction to ambient versus copper surface under each lead (SMAF)



PACKAGE MECHANICAL DATA



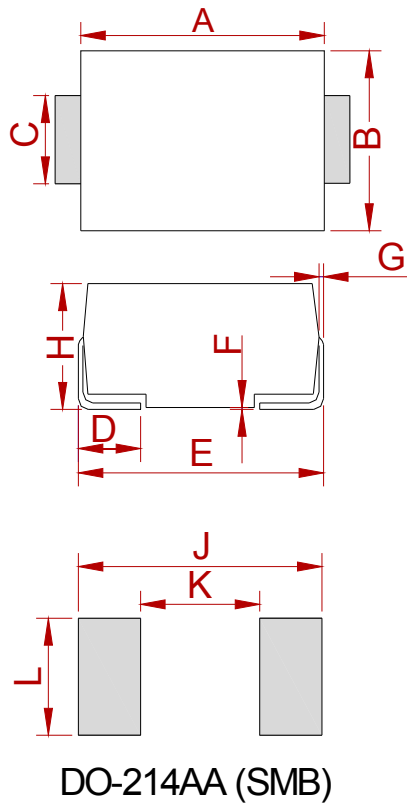
DO-214AC (SMA)

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.25	4.65	0.167	0.183
B	2.50	2.90	0.098	0.114
C	1.35	1.65	0.053	0.065
D	0.76	1.52	0.030	0.060
E	4.93	5.28	0.194	0.208
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	1.98	2.41	0.078	0.095
J	6.50		0.256	
K		2.30		0.090
L	1.70		0.067	

REEL SPECIFICATION

P/N	PKG	QTY
STPS1L40A-MS	DO-214AC (SMA)	5000

PACKAGE MECHANICAL DATA



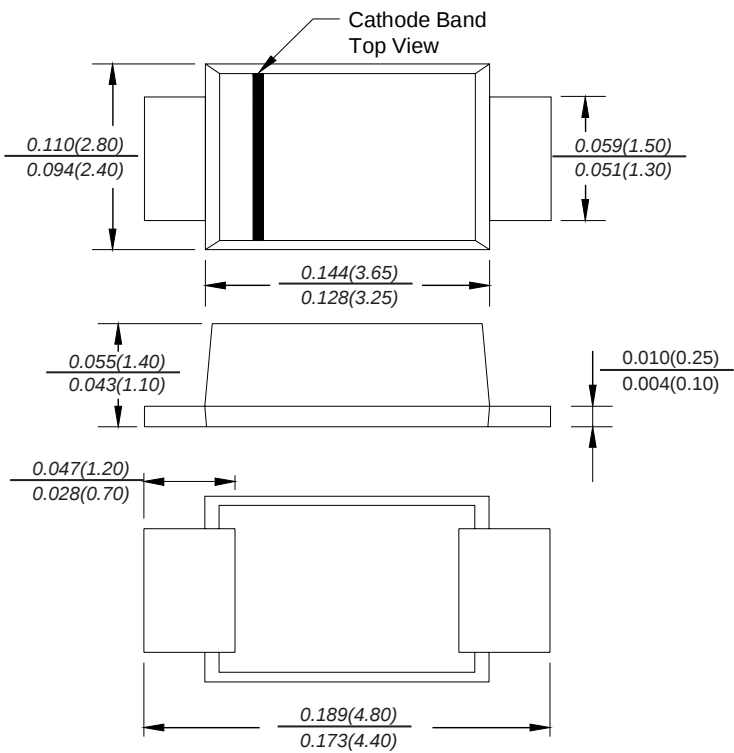
Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.25	4.75	0.167	0.187
B	3.30	3.94	0.130	0.155
C	1.85	2.21	0.073	0.087
D	0.76	1.52	0.030	0.060
E	5.08	5.59	0.200	0.220
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	2.11	2.44	0.083	0.096
J	6.80		0.270	
K		2.60		0.100
L	2.40		0.090	

REELSPECIFICATION

P/N	PKG	QTY
STPS1L40U-MS	DO-214AA (SMB)	2500

PACKAGE MECHANICAL DATA

SMAF

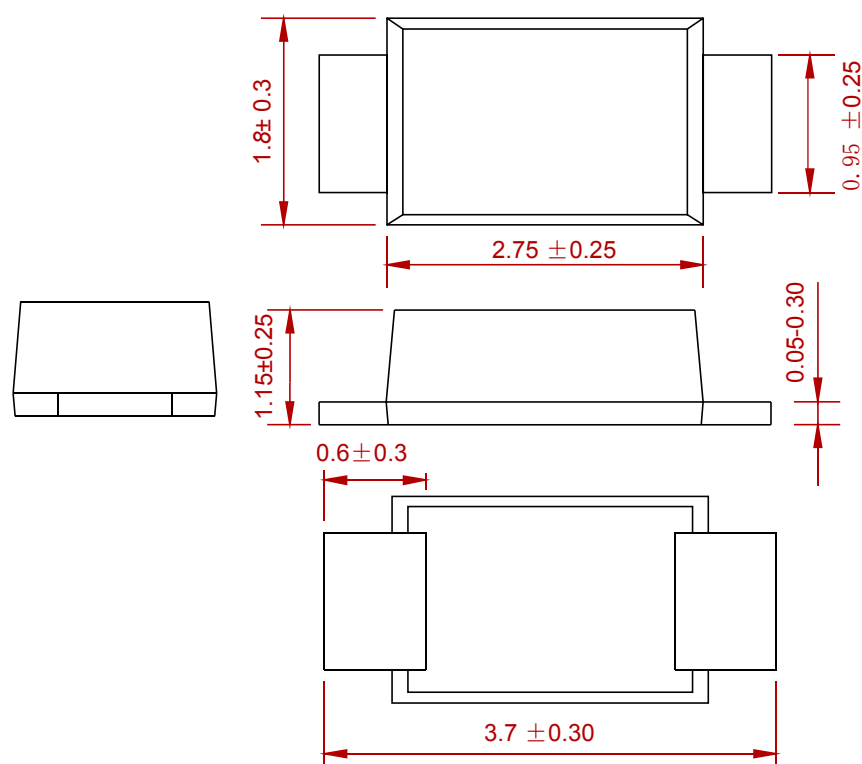


Dimensions in inches and (millimeters)

REEL SPECIFICATION

P/N	PKG	QTY
STPS1L40AFN-MS	SMAF	3000

PACKAGE MECHANICAL DATA



Dimensions in millimeters

REEL SPECIFICATION

P/N	PKG	QTY
STPS1L40ZF-MS	SOD-123FL	3000

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