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SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

STPS2L30xx-MS

Product specification

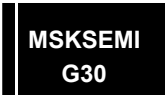
Description

Single Schottky rectifier suited to switched mode power supplies and high frequency DC to DC converters, freewheel diode and integrated circuit latch up protection. Packaged in SMA and low profile SMA and SMB, this device is especially intended for use in parallel with MOSFETs in synchronous rectification.

Features

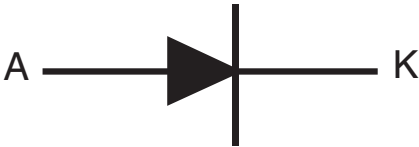
- Low cost device with low drop forward voltage for less power dissipation
- Optimized conduction/reverse losses trade-off which lead to the highest yield in the applications
- Surface mount miniature packages
- Avalanche capability specified

Reference News

STPS2L30A-MS	MARKING
 DO-214AC(SMA)	
STPS2L30UF-MS	MARKING
 SMBF	
STPS2L30AF-MS	MARKING
 SMAF	

Device summary

$I_{F(AV)}$	2 A
V_{RRM}	30 V
$T_J(max)$	150 °C
$V_F(max)$	0.375 V



Characteristics

Absolute ratings (limiting values)

Symbol	Parameter			Value	Unit
V _{RRM}	Repetitive peak reverse voltage			30	V
I _{F(AV)}	Average forward current	SMAF	T _L = 130 °C δ = 0.5	2	A
		SMA	T _L = 120 °C δ = 0.5		
		SMBF	T _L = 135 °C δ = 0.5		
I _{FSM}	Surge non repetitive forward current		t _p = 10 ms sinusoidal	75	A
P _{ARM}	Repetitive peak avalanche power		t _p = 1 μs T _j = 25 °C	1500	W
T _{stg}	Storage temperature range			-65 to + 150	°C
T _j	Operating junction temperature ⁽¹⁾			150	°C

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

Thermal resistance

Symbol	Parameter		Value	Unit
R _{th(j-l)}	Junction to lead	SMAF	20	°C/W
		SMA	30	
		SMBF	15	

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}			200	μA
		T _j = 100 °C			6	15	mA
V _{F(1)}	Forward voltage drop	T _j = 25 °C	I _F = 2 A			0.45	V
		T _j = 125 °C			0.325	0.375	
		T _j = 25 °C	I _F = 4 A			0.53	
		T _j = 125 °C			0.43	0.51	

1. Pulse test: t_p = 380 μs, δ < 2%

To evaluate the conduction losses use the following equation:

$$P = 0.24 \times I_{F(AV)} + 0.068 I_{F(RMS)}^2$$

Figure 1. Average forward power dissipation versus average forward current

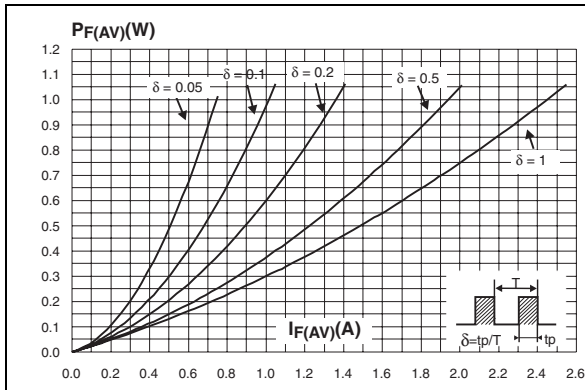


Figure 2. Average forward current versus ambient temperature ($\delta = 0.5$) SMA

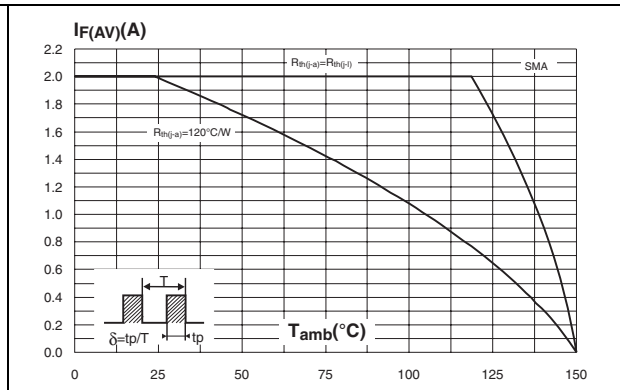


Figure 3. Average forward current versus ambient temperature ($\delta = 0.5$) SMBF

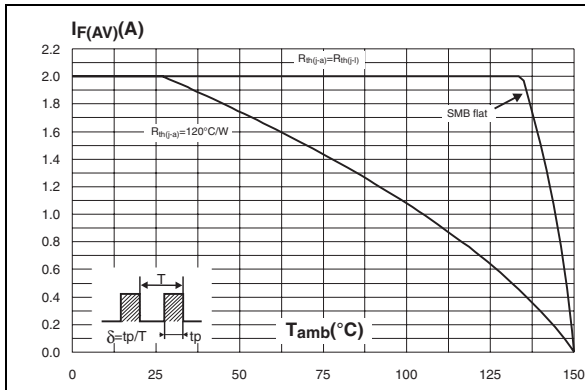


Figure 4. Average forward current versus ambient temperature ($\delta = 0.5$) SMAF

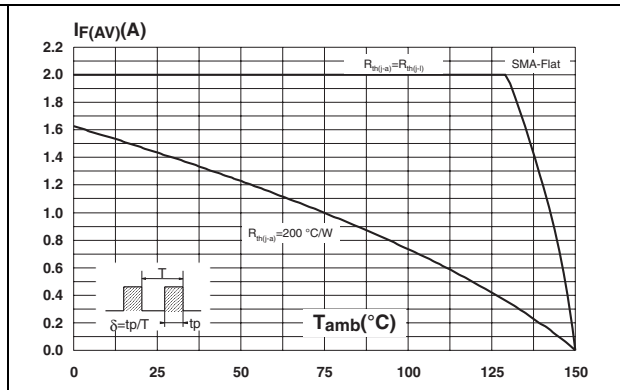


Figure 5. Non repetitive surge peak forward current versus overload duration (maximum values) SMA

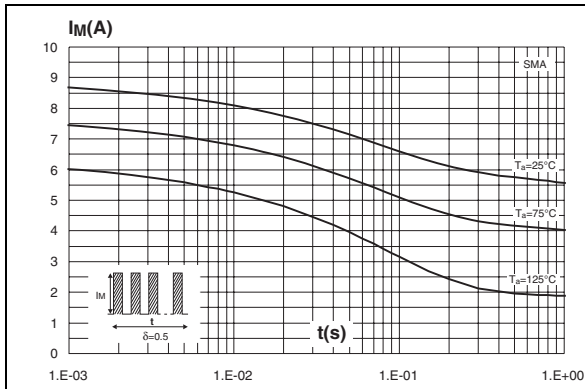


Figure 6. Non repetitive surge peak forward current versus overload duration (maximum values) SMBF

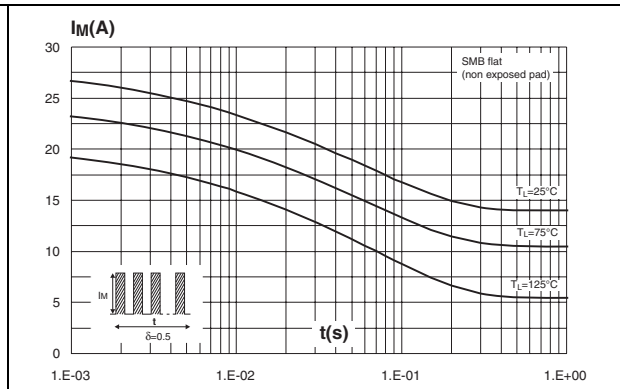


Figure 7. Non repetitive surge peak forward current versus overload duration (maximum values) SMAF

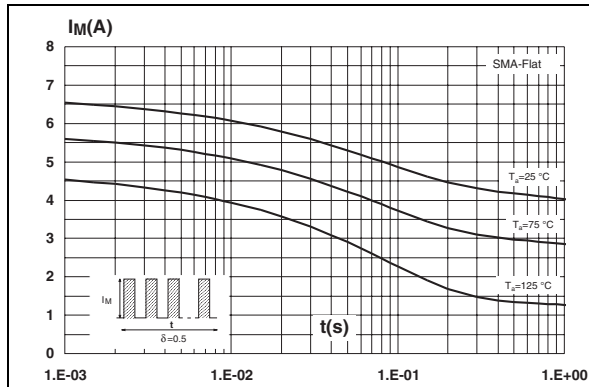


Figure 8. Normalized avalanche power derating versus pulse duration

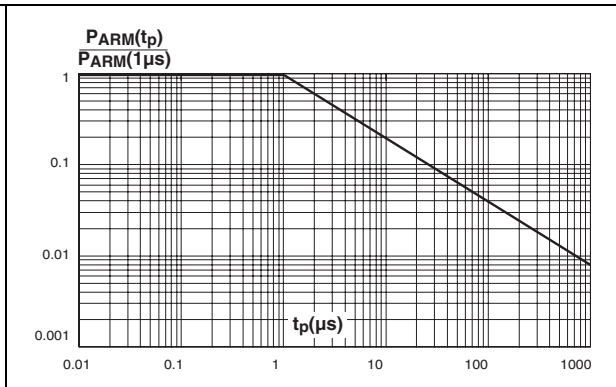


Figure 9. Normalized avalanche power derating junction temperature

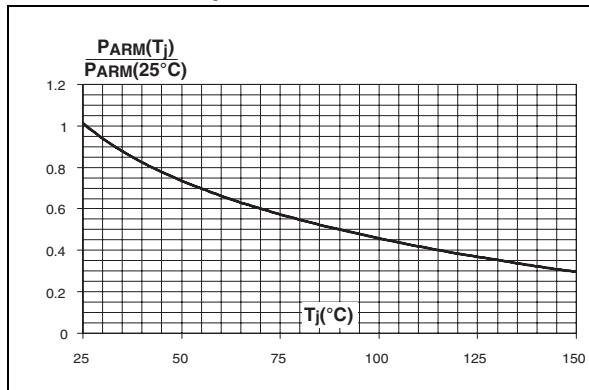


Figure 10. Relative variation of thermal impedance, junction to ambient, versus pulse duration - SMA

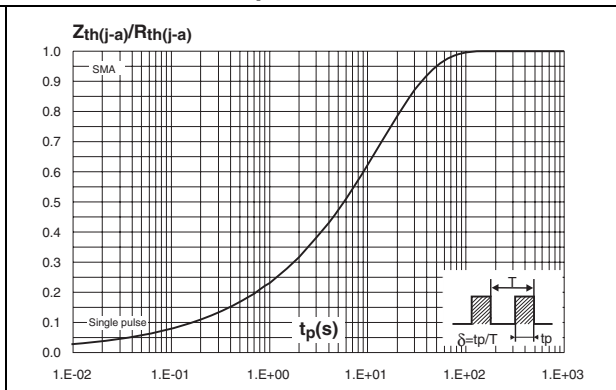


Figure 11. Relative variation of thermal impedance junction to lead versus pulse duration - SMBF

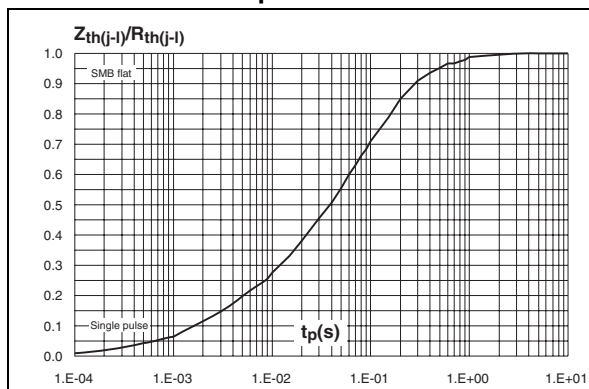


Figure 12. Relative variation of thermal impedance junction to ambient versus pulse duration - SMAF

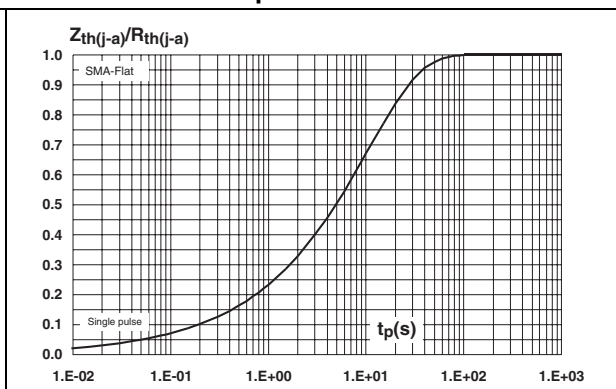


Figure 13. Reverse leakage current versus reverse voltage applied (typical values)

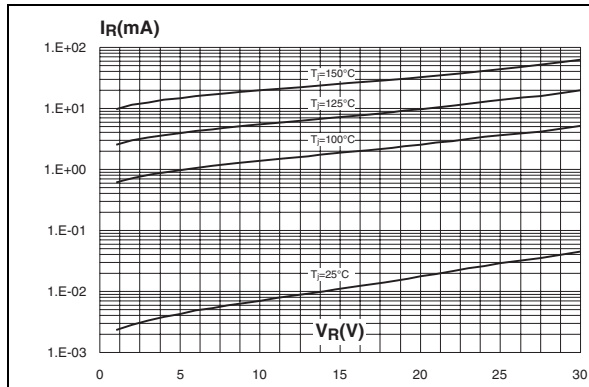


Figure 14. Junction capacitance versus reverse voltage applied (typical values)

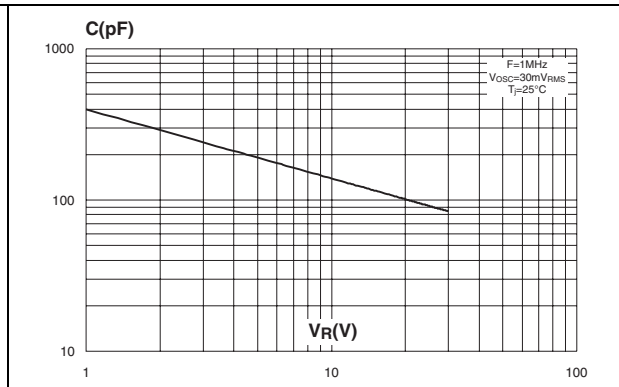


Figure 15. Forward voltage drop versus forward current (high level)

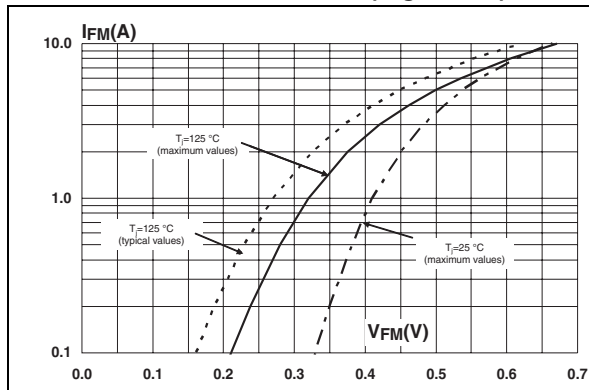


Figure 16. Forward voltage drop versus forward current (low level)

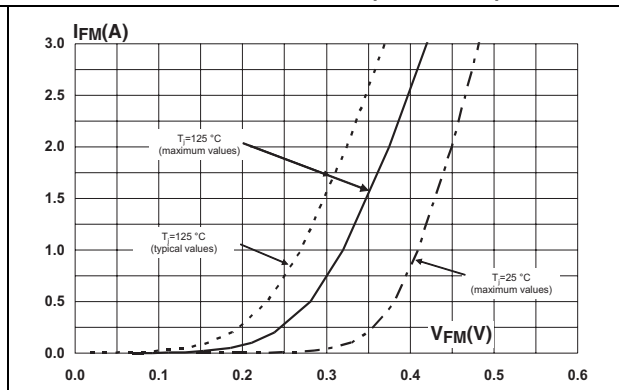


Figure 17. Thermal resistance junction to ambient versus copper surface under each lead (epoxy printed board FR4, copper thickness = 35 μ m) (SMA, SMBF)

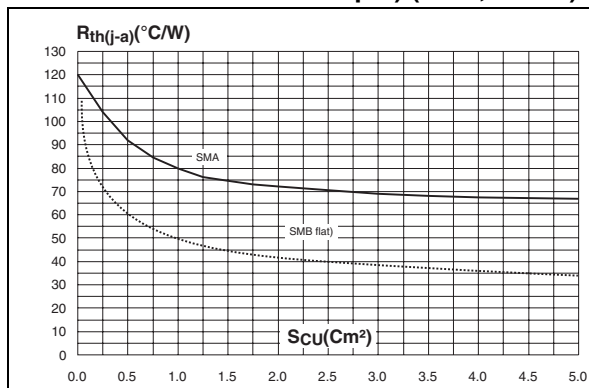
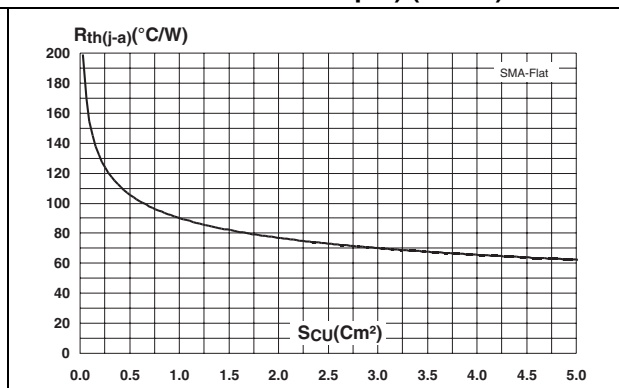
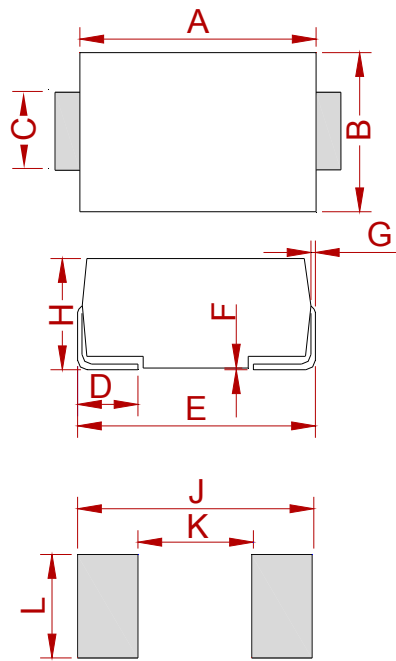


Figure 18. Thermal resistance junction to ambient versus copper surface under each lead (epoxy printed board FR4, copper thickness = 35 μ m) (SMAF)



PACKAGE MECHANICAL DATA



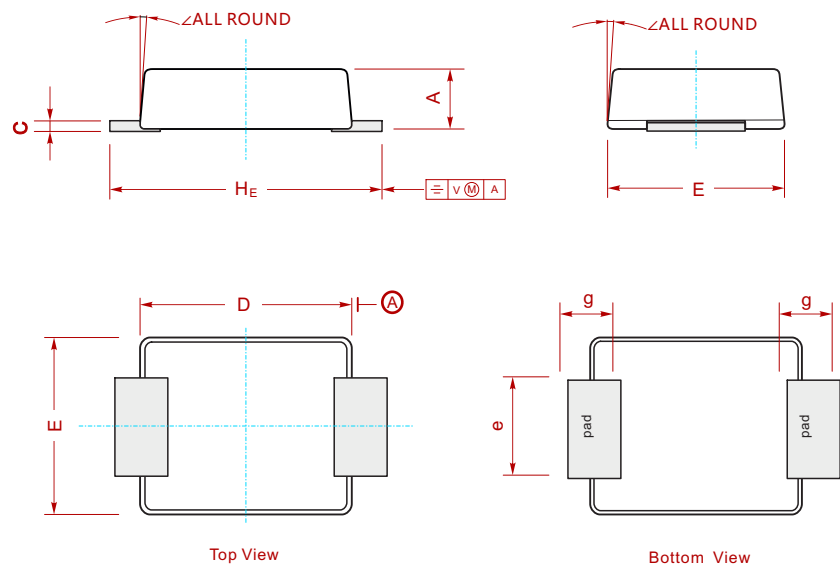
DO-214AC (SMA)

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
STPS2L30A-MS	DO-214AC (SMA)	5000

PACKAGEECHANICALDATA



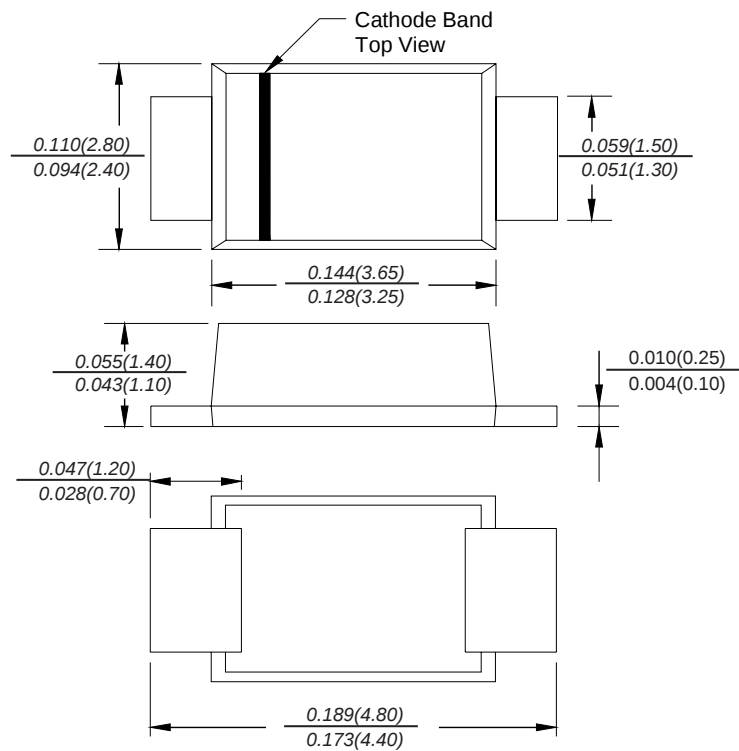
UNIT		A	C	D	E	H _E	e	g	∠
mm	max	1.3	0.26	4.4	3.7	5.5	2.2	1.0	9°
	min	1.1	0.18	4.2	3.5	5.1	1.9		
mil	max	51	10	173	146	216	86	40	
	min	43	7	165	138	200	75		

Order information

P/N	PKG	QTY
STPS2L30UF-MS	SMBF	5000

PACKAGE MECHANICAL DATA

SMAF



Dimensions in inches and (millimeters)

REEL SPECIFICATION

P/N	PKG	QTY
STPS2L30AF-MS	SMAF	3000

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