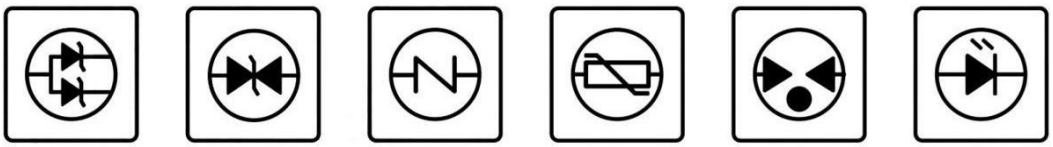
MSKSEMI 美森科
SEMICONDUCTOR



STPS1L60xx-MS

Product specification

STPS1L60xx-MS

Power Schottky rectifier

Description

Axial and surface mount power Schottky rectifiers suited to switched mode power supplies and high frequency DC to DC converters.

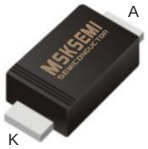
Packaged in SMA and SOD123FL, this device is especially intended for use in low voltage, high frequency inverters and small battery chargers.

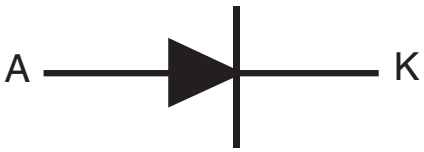
Features

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

Reference News

STPS1L60A-MS	MARKING
 DO-214AC(SMA)	MSKSEMI GB6

STPS1L60FZ-MS	MARKING
 SOD-123FL	MSKSEMI 1L6



Device summary

Symbol	Value
$I_{F(AV)}$	1 A
V_{RRM}	60 V
V_F(typ.)	0.50 V
T_j(max.)	175 °C

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

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			60	V
$I_{F(RMS)}$	Forward rms current		SMA	10	A
$I_{F(AV)}$	Average forward current δ = 0.5, square wave	SMA	T_L = 155 °C	1	A
		SOD-123FL	T_L = 160 °C		
I_{FSM}	Surge non repetitive forward current	SMA	t_p = 10 ms sinusoidal	40	A
		SOD-123FL		50	
P_{ARM}	Repetitive peak avalanche power		t_p = 10 µs, T_j = 125 °C	85	W
T_{stg}	Storage temperature range			-65 to +175	°C
T_j	Operating junction temperature range(1)			-40 to +175	°C

Notes:

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

Copyright© Msksemi Incorporated

Thermal resistance

Symbol	Parameter		Max. value	Unit
$R_{th(j-l)}$	Junction to lead	SMA	30	°C/W
		SOD-123FL	20	

Static electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
I_R *(1)*	Reverse leakage current	T_j = 25 °C	$V_R = V_{RRM}$	-		50	µA
		T_j = 100 °C		-	1.5	5	mA
		T_j = 125 °C		-	5.6	21	
V_F *(1)*	Forward voltage drop	T_j = 25 °C	I_F = 1 A	-		0.57	V
		T_j = 125 °C		-	0.50	0.54	
		T_j = 25 °C	I_F = 2 A	-		0.75	
		T_j = 125 °C		-	0.60	0.66	

Notes:

(1)Pulse test: t_p = 380 µs, δ < 2%

To evaluate the conduction losses, use the following equation:

$P = 0.42 \times I_{F(AV)} + 0.12 \times I_{F^2(RMS)}$

Copyright© Msksemi Incorporated

Characteristics (curves)

Figure 1: Average forward power dissipation versus average forward current

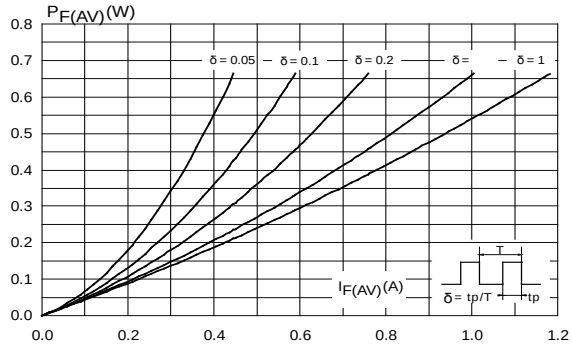


Figure 2: Average forward current versus ambient temperature (δ = 0.5)

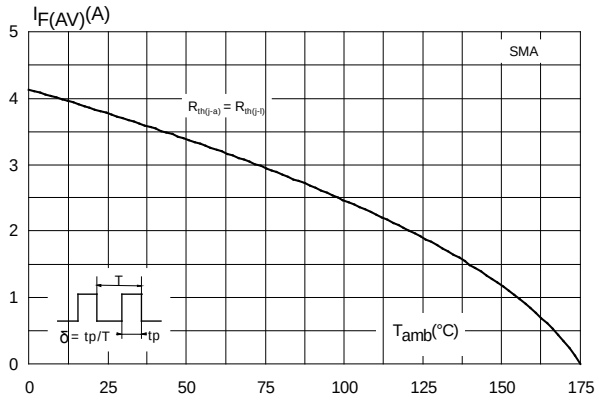


Figure 3: Average forward current versus ambient temperature (δ = 0.5)

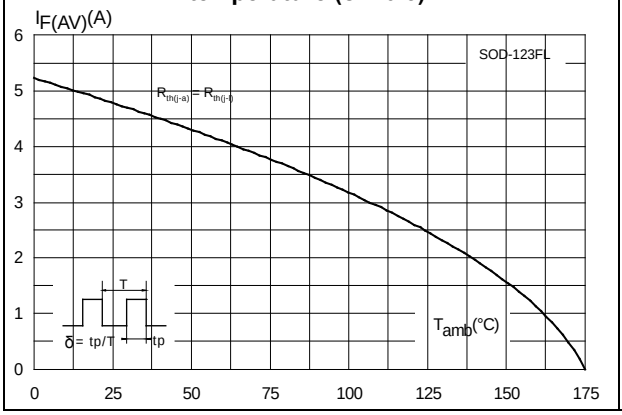


Figure 4: Normalized avalanche power derating versus pulse duration (T_j = 125 °C)

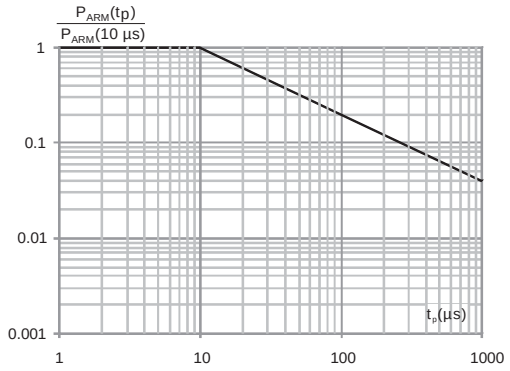


Figure 5: Relative variation of thermal impedance junction to ambient versus pulse duration

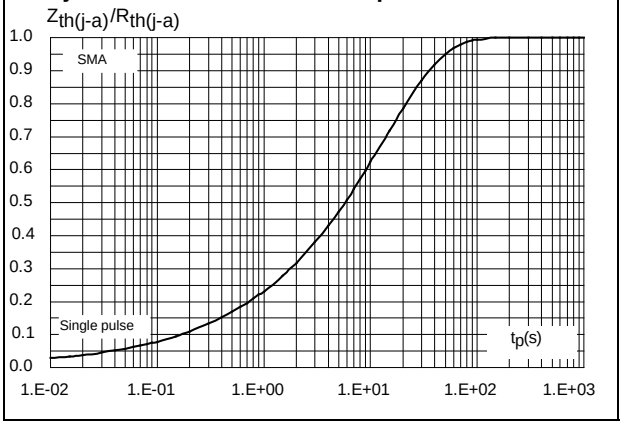
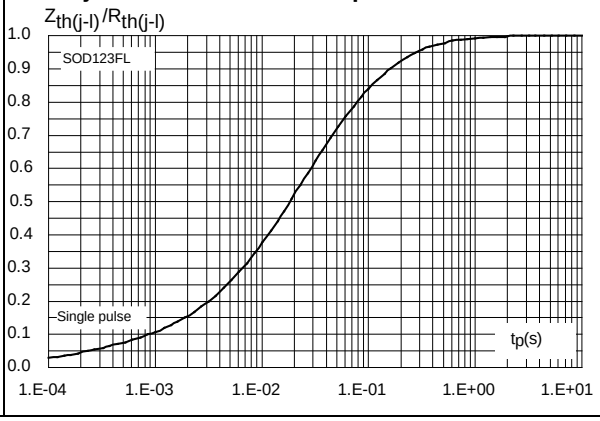


Figure 6: Relative variation of thermal impedance junction to lead versus pulse duration



Copyright© Msksemi Incorporated

Figure 7: Relative variation of thermal impedance junction to lead versus pulse duration

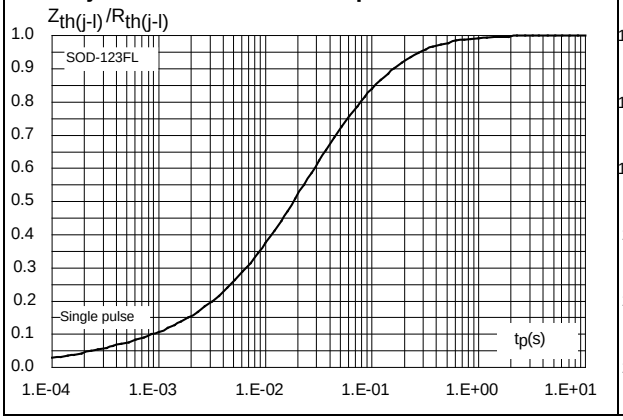


Figure 8: Reverse leakage current versus reverse voltage applied (typical values)

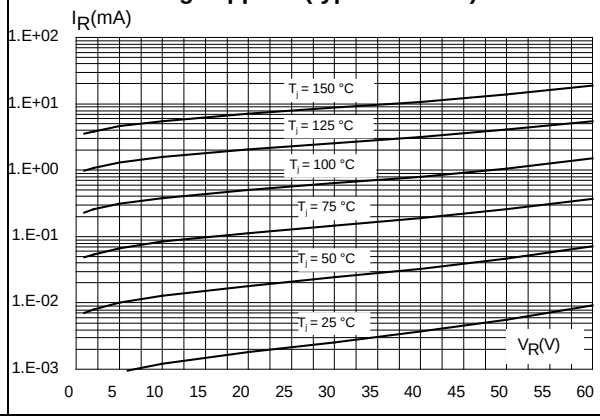


Figure 9: Thermal resistance junction to ambient versus copper surface under each lead (typical values)

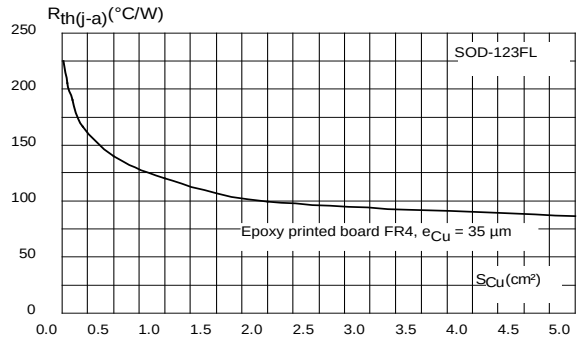


Figure 10: Junction capacitance versus reverse voltage applied (typical values)

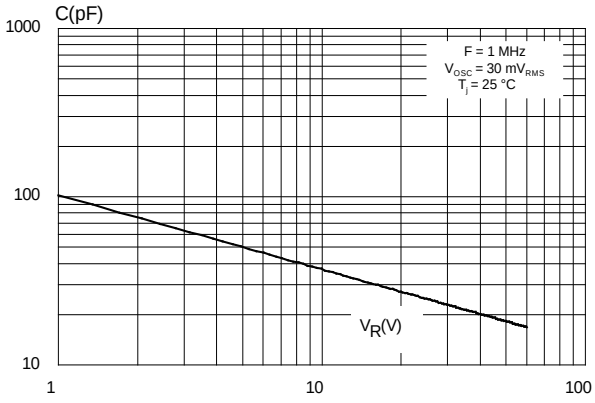


Figure 11: Forward voltage drop versus forward current (typical values)

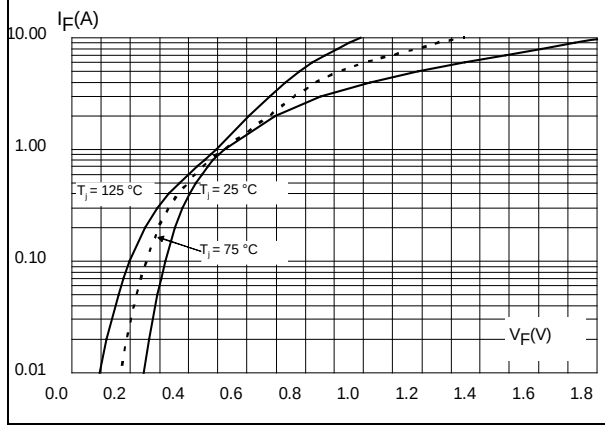
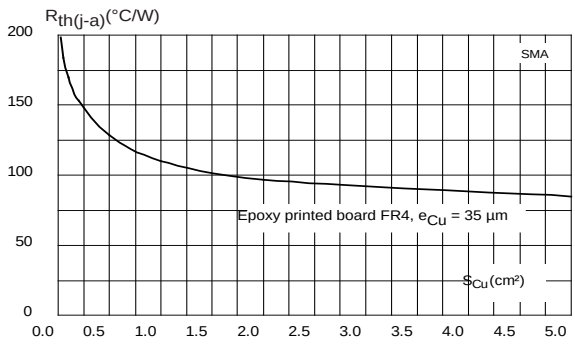
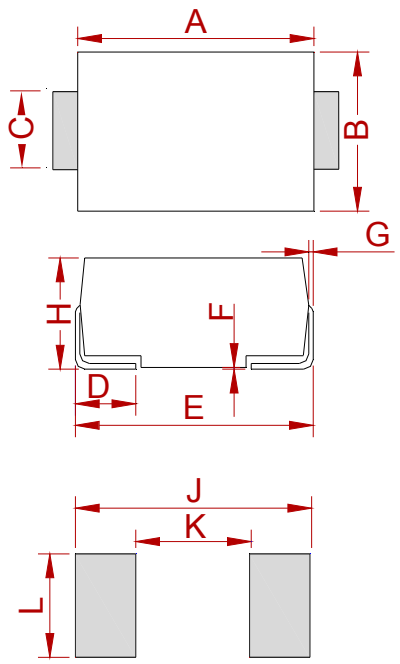


Figure 12: Thermal resistance junction to ambient versus copper surface under each lead (typical values)



Copyright© Msksemi Incorporated

PACKAGE MECHANICAL DATA



DO-214AC (SMA)

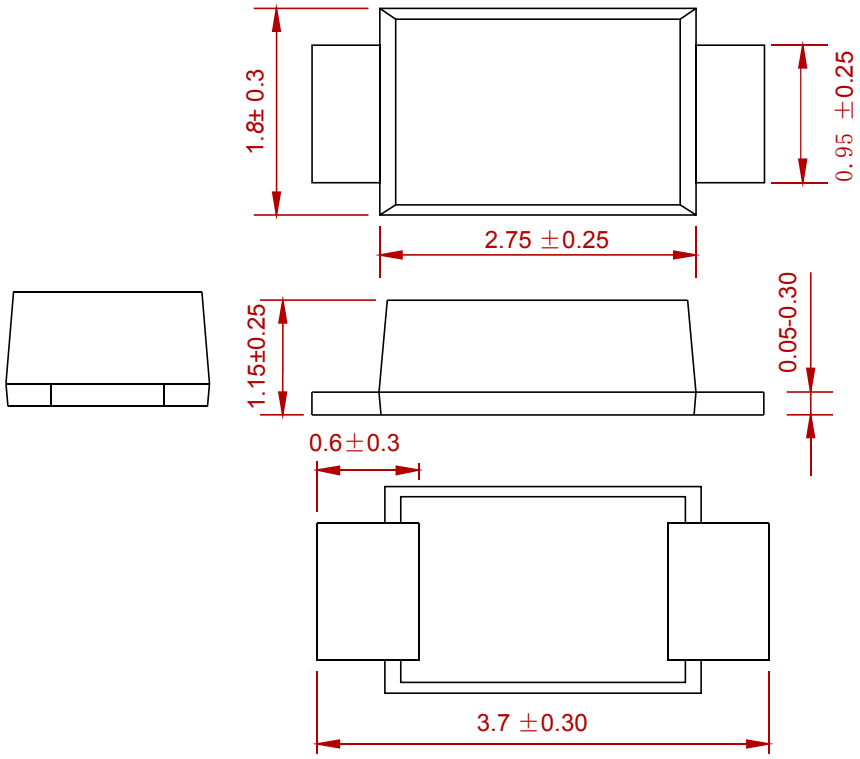
Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.25	4.65	0.167	0.183
B	2.50	2.90	0.098	0.114
C	1.35	1.65	0.053	0.065
D	0.76	1.52	0.030	0.060
E	4.93	5.28	0.194	0.208
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	1.98	2.41	0.078	0.095
J	6.50		0.256	
K		2.30		0.090
L	1.70		0.067	

REEL SPECIFICATION

P/N	PKG	QTY
STPS1L60A-MS	DO-214AC (SMA)	5000

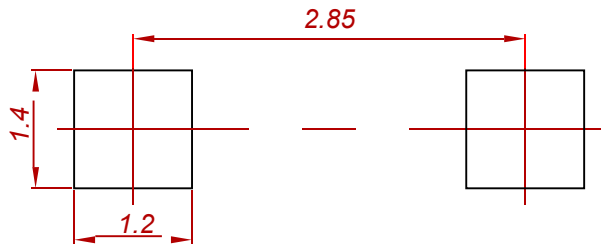
Copyright© Msksemi Incorporated

PACKAGE MECHANICAL DATA



Dimensions in millimeters

Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.

REEL SPECIFICATION

P/N	PKG	QTY
STPS1L60FZ-MS	SOD-123FL	3000

Copyright© Msksemi Incorporated

Attention

■ Any and all MSKSEMI Semiconductor products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your MSKSEMI Semiconductor representative nearest you before using any MSKSEMI Semiconductor products described or contained herein in such applications.

■ MSKSEMI Semiconductor assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specificationsof any andall MSKSEMI Semiconductor products described orcontained herein.

■ Specifications of any and all MSKSEMI Semiconductor products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer'sproducts orequipment.

■ MSKSEMI Semiconductor. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with someprobability. It is possiblethat these probabilistic failures could give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits anderror prevention circuitsfor safedesign, redundant design, and structural design.

■ In the event that any or all MSKSEMI Semiconductor products(including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from theauthorities concerned in accordance with the above law.

■ No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of MSKSEMI Semiconductor.

■ Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. MSKSEMI Semiconductor believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringementsof intellectual property rights or other rightsof third parties.

■ Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. Whendesigning equipment, referto the "Delivery Specification" for the MSKSEMI Semiconductor productthat you intend to use.

Copyright© Msksemi Incorporated