

MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

STPS5L60x-MS

Product specification

Description

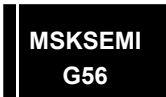
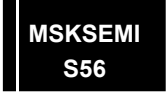
Power Schottky rectifier suited for switch mode power supplies and high frequency inverters.

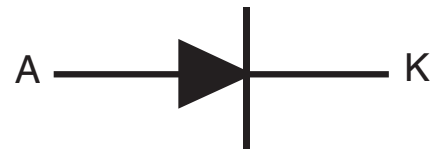
This device is intended for use in low voltage output for small battery chargers and consumer SMPS such as DVD and set-top box.

Features

- Negligible switching losses
- Low forward voltage drop for higher efficiency
- Low thermal resistance
- Avalanche capability specified

Reference News

STPS5L60U-MS	MARKING
 DO-214AA(SMB)	
STPS5L60S-MS	MARKING
 DO-214AB(SMC)	



Device summary

Symbol	Value
$I_{F(AV)}$	5 A
V_{RRM}	60 V
$T_j(max.)$	150 °C
$V_f(max.)$	0.48 V

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			15	A
$I_{F(AV)}$	Average forward current	SMC	$T_L = 100^{\circ}C, \delta = 0.5$	5	A
		SMB	$T_L = 80^{\circ}C, \delta = 0.5$		
I_{FSM}	Surge non repetitive forward current, half sine wave, $t_p = 10\text{ ms}$	SMC		150	A
		SMB		90	
P_{ARM}	Repetitive peak avalanche power		$t_p = 10\text{ }\mu s, T_j = 125\text{ }^{\circ}C$	280	W
T_{stg}	Storage temperature range			-65 to +175	°C
T_j	Maximum 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	SMC	15	°C/W
		SMB	20	

Static electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
$I_R^{(1)}$	Reverse leakage current	$T_j = 25\text{ °C}$	$V_R = V_{RRM}$	-		0.22	mA
		$T_j = 100\text{ °C}$		-	10	25	
		$T_j = 110\text{ °C}$		-	25	55	
		$T_j = 125\text{ °C}$		-	40	100	
$V_F^{(1)}$	Forward voltage drop	$T_j = 25\text{ °C}$	$I_F = 5A$	-	0.47	0.52	V
		$T_j = 100\text{ °C}$		-	0.43	0.49	
		$T_j = 125\text{ °C}$		-	0.42	0.48	

1. Pulse test: $t_p = 380\text{ }\mu s$, $\delta < 2\%$

To evaluate the conduction losses use the following equation:

$$P = 0.39 \times I_{F(AV)} + 0.028 I_F^2(RMS)$$

Figure 1. Average forward power dissipation versus average current

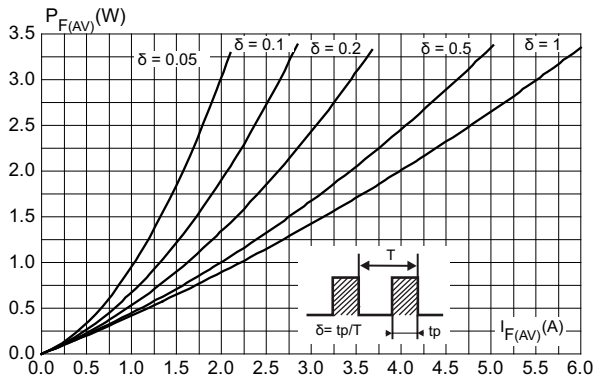


Figure 2. Average forward current versus ambient temperature ($\delta = 0.5$)

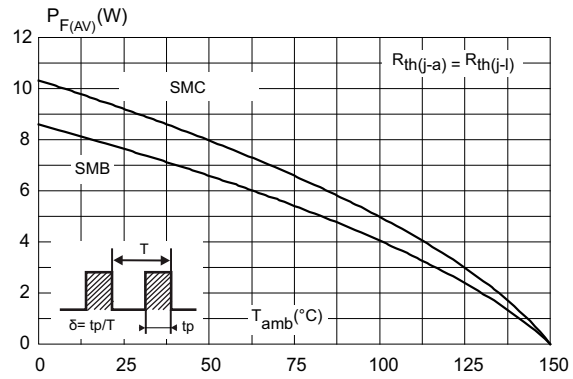


Figure 3. Normalized avalanche power derating versus pulse duration

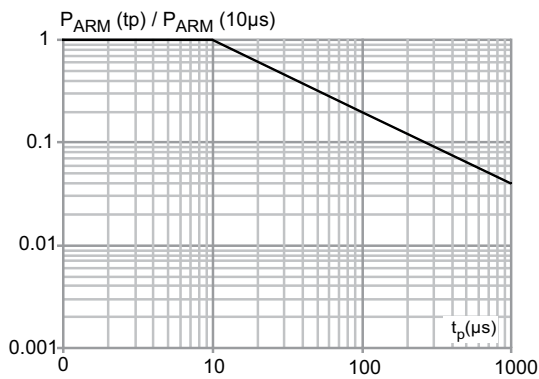


Figure 4. Relative variation of thermal impedance junction to lead versus pulse duration, SMB

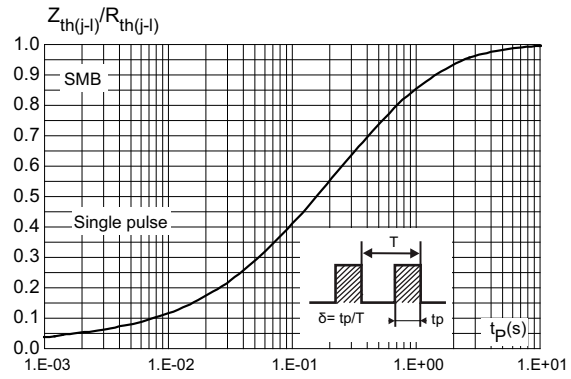


Figure 5. Relative variation of thermal impedance junction to ambient versus pulse duration, SMC

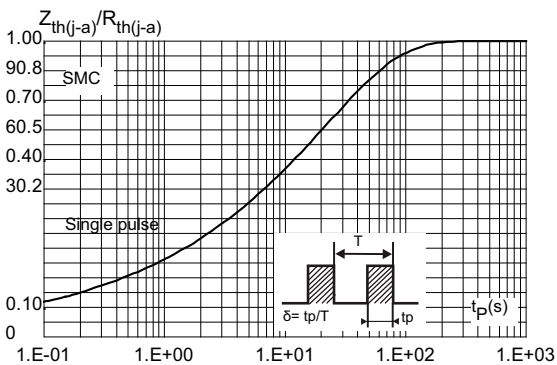


Figure 6. Reverse leakage current versus reverse voltage applied (typical values)

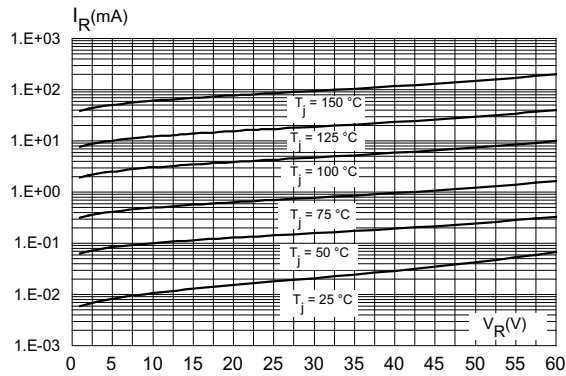


Figure 7. Junction capacitance versus reverse voltage applied (typical values)

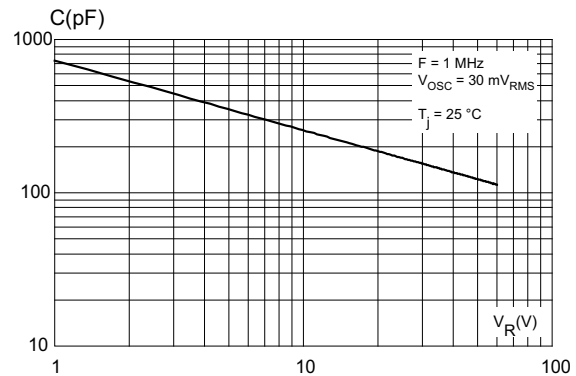


Figure 8. Forward voltage drop versus forward current (low level)

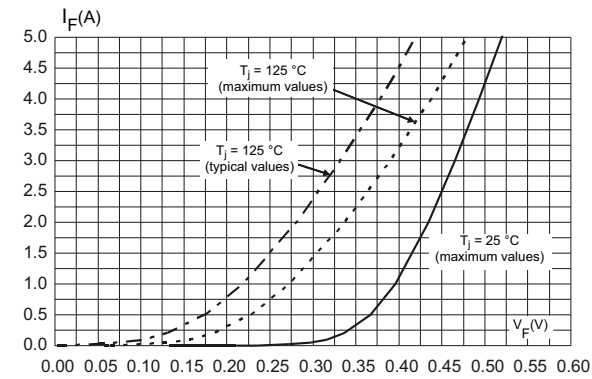


Figure 9. Forward voltage drop versus forward current (High level)

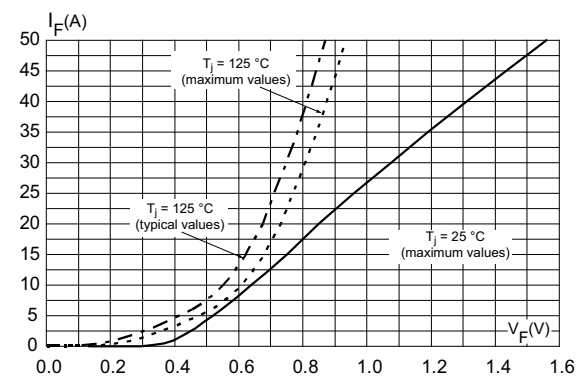


Figure 11. Thermal resistance junction to ambient versus copper surface under each lead SMB (typical values)

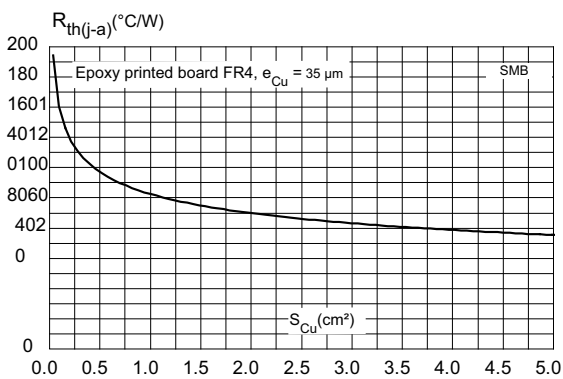
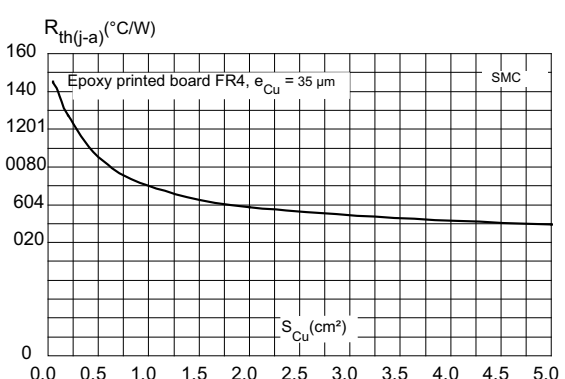
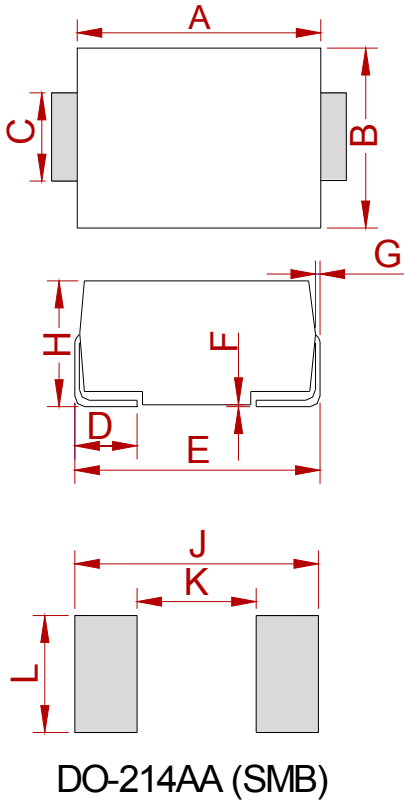


Figure 13. Thermal resistance junction to ambient versus copper surface under each lead SMC (typical values)



PACKAGE MECHANICAL DATA

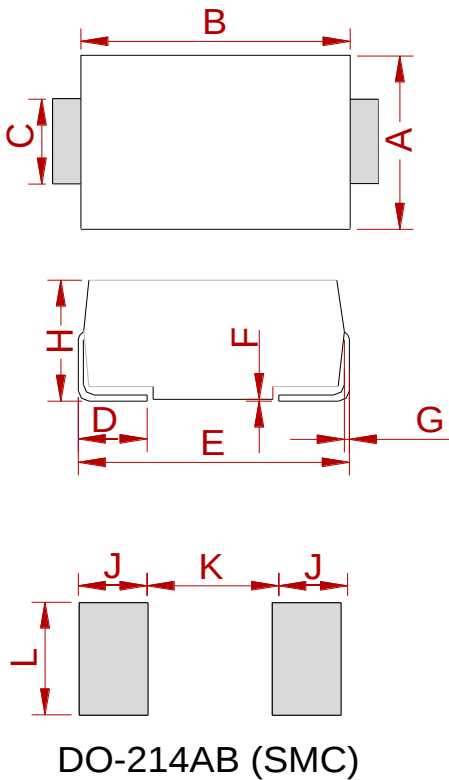


Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.25	4.75	0.167	0.187
B	3.30	3.94	0.130	0.155
C	1.85	2.21	0.073	0.087
D	0.76	1.52	0.030	0.060
E	5.08	5.59	0.200	0.220
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	2.11	2.44	0.083	0.096
J	6.80		0.270	
K		2.60		0.100
L	2.40		0.090	

REELS SPECIFICATION

P/N	PKG	QTY
STPS5L60U-MS	DO-214AA (SMB)	2500

PACKAGE MECHANICAL DATA



Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	5.75	6.25	0.226	0.246
B	6.90	7.40	0.272	0.291
C	2.75	3.25	0.108	0.128
D	0.95	1.52	0.037	0.060
E	7.70	8.20	0.303	0.323
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	2.15	2.62	0.085	0.103
J	2.40		0.094	
K		4.20		0.165
L	3.30		0.130	

REEL SPECIFICATION

P/N	PKG	QTY
STPS5L60S-MS	DO-214AB (SMC)	2500

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 specification of any and all MSKSEMI Semiconductor products described or contained 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's products or equipment.

■ MSKSEMI Semiconductor strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that 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 and error prevention circuits for safe design, 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 the authorities 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 infringement of intellectual property rights or other rights of third parties.

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