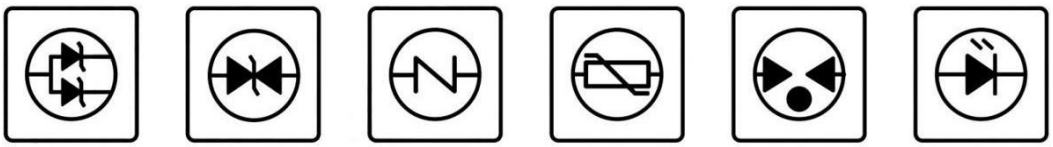
MSKSEMI 美森科
SEMICONDUCTOR



STPS340xx-MS

Product specification

STPS340xx-MS

Power Schottky rectifier

Description

Single chip Schottky rectifier suited for switch mode power supplies and high frequency DC to DC converters.
Packaged in DPAK, SMC, SMB, and SMBflat, this device is intended for use in low and medium voltage operation, high frequency inverters, free wheeling and polarity protection applications where low switching losses are required.

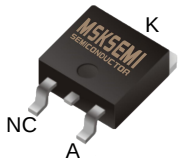
Features

- Very small conduction losses
- Negligible switching losses
- Low forward voltage drop
- Low thermal resistance
- Extremely fast switching
- Surface mounted device
- Avalanche capability specified

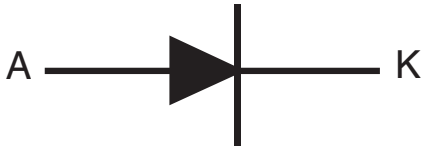
Reference News

STPS340U-MS	MARKING
 DO-214AA(SMB)	MSKSEMI U34

STPS340S-MS	MARKING
 DO-214AB(SMC)	MSKSEMI S34

STPS340B-MS	MARKING
 TO-252	MSKSEMI S340

STPS340UF-MS	MARKING
 SMBF	MSKSEMI FU34



Device summary

$I_{F(AV)}$	3 A
V_{RRM}	40 V
T_j(max)	150 °C
V_F (max)	0.57 V

Characteristics

Absolute Ratings (limiting values)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			40	V
$I_{F(RMS)}$	Forward rms current		TO-252	6	A
$I_{F(AV)}$	Average forward current	T_c = 135 °C δ = 0.5	TO-252	3	A
		T_L = 105 °C δ = 0.5	SMB/SMC		
		T_L = 115 °C δ = 0.5	SMBF		
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		1300	W
T_{stg}	Storage temperature range			-65 to + 150	°C
T_j	Operating junction temperature (1)			150	°C

1. $\frac{dPtot}{dTj} < \frac{1}{Rth(j-a)}$ 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	SMB	25	°C/W
		SMBF	15	
		SMC	20	
$R_{th(j-c)}$	Junction to case	TO-252	5.5	°C/W

Static electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
I_R(1)	Reverse leakage current	T_j = 25 °C	$V_R = V_{RRM}$			20	µA
		T_j = 125 °C			2	10	mA
$V_{F(1)}$	Forward voltage drop	T_j = 25 °C	I_F = 3 A			0.63	V
		T_j = 125 °C			0.52	0.57	
		T_j = 25 °C	I_F = 6 A			0.84	
		T_j = 125 °C			0.63	0.72	

1. Pulse test: t_p = 380 µs, δ < 2%

To evaluate the conduction losses use the following equation:
$P = 0.42 \times I_{F(AV)} + 0.050\ I_{F}{}^{2}{}_{(RMS)}$

Figure 1. Average forward power dissipation versus average forward current (per diode)

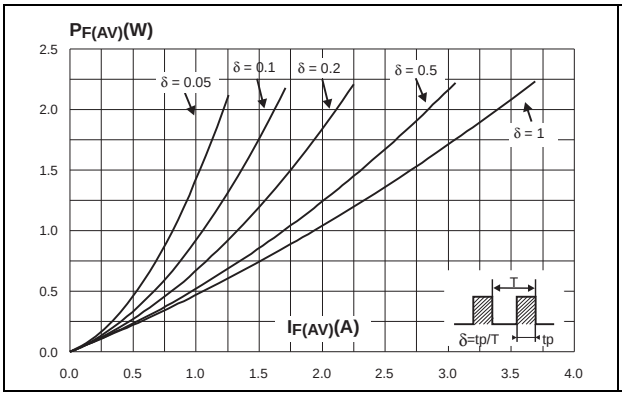


Figure 2. Average forward current versus ambient temperature (δ = 0.5, per diode) (DPAK / SMB / SMC)

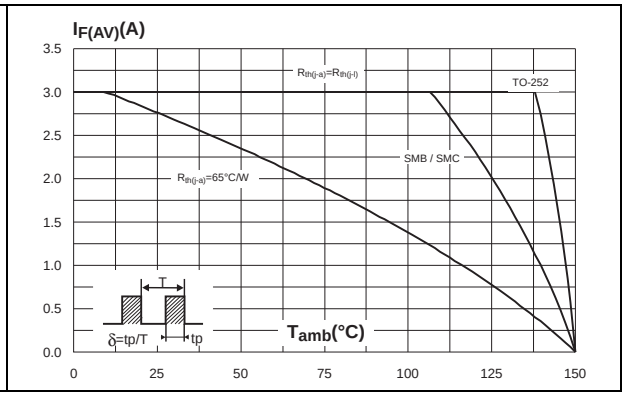


Figure 3. Average forward current versus ambient temperature (δ = 0.5, per diode) (SMBF)

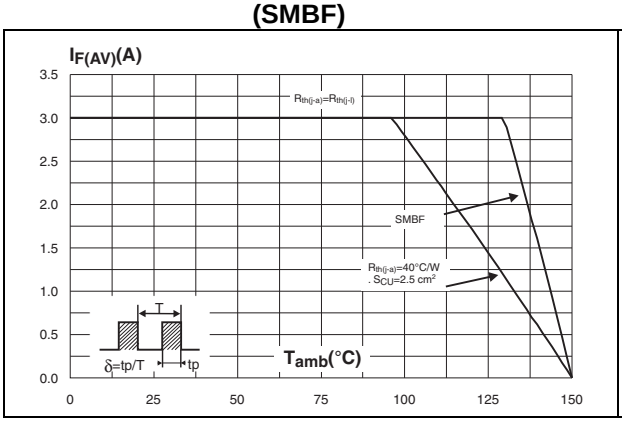


Figure 4. Non repetitive surge peak forward current versus overload duration (maximum values) (TO-252)

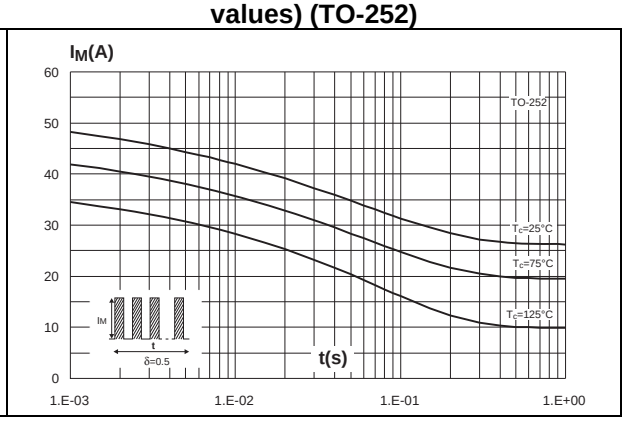


Figure 5. Non repetitive surge peak forward current versus overload duration (maximum values) (SMB)

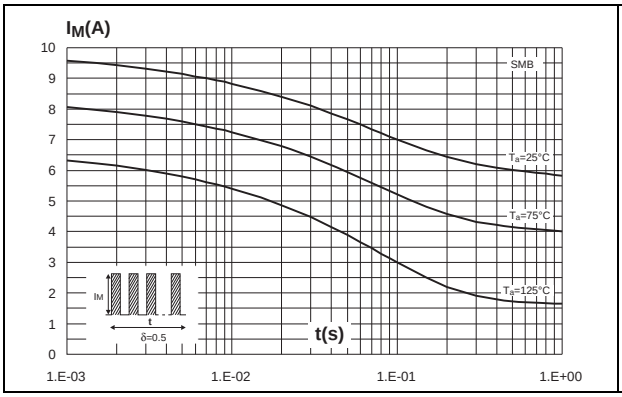


Figure 6. Non repetitive surge peak forward current versus overload duration (maximum values) (SMC)

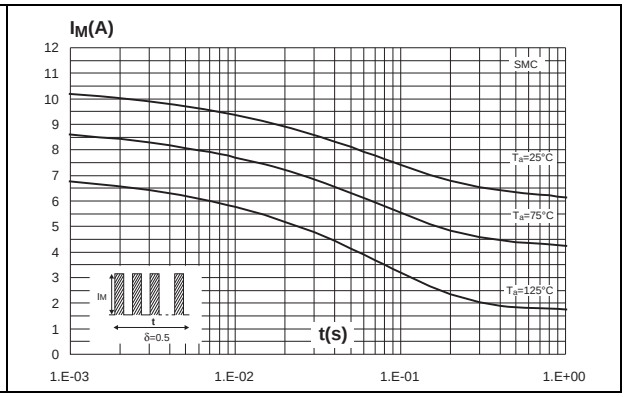


Figure 7. Non repetitive surge peak forward current versus overload duration (maximum values) SMBF

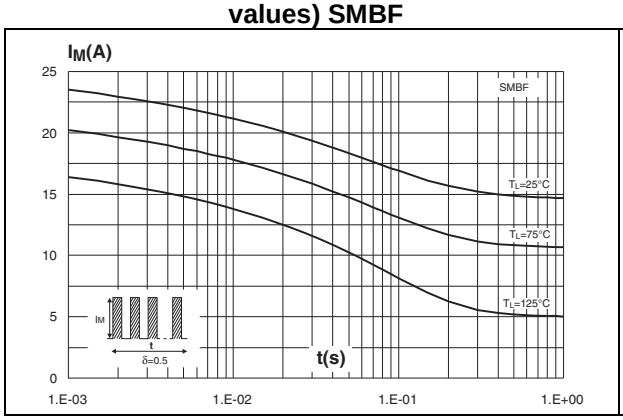


Figure 8. Normalized avalanche power derating versus pulse duration

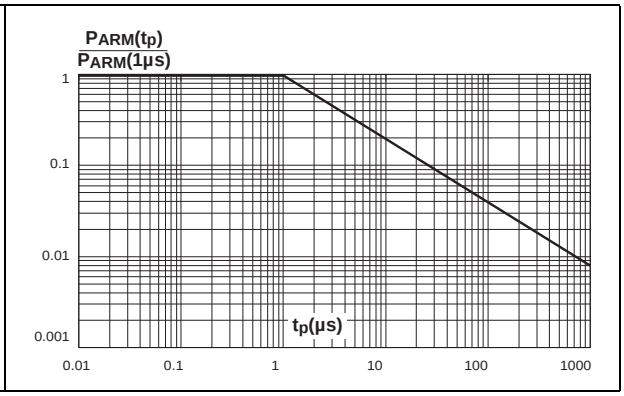


Figure 9. Normalized avalanche power derating versus junction temperature

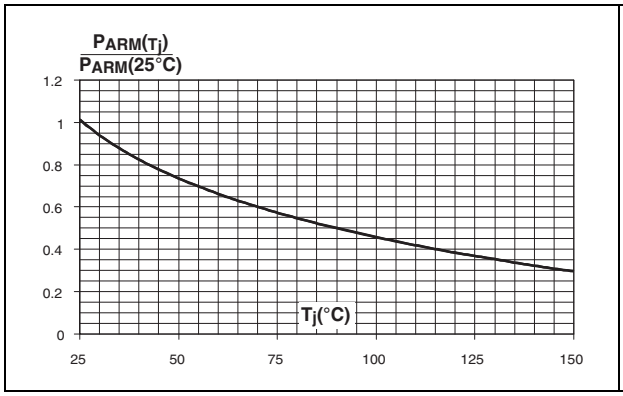


Figure 10. Relative variation of thermal impedance junction to ambient versus pulse duration (TO-252)

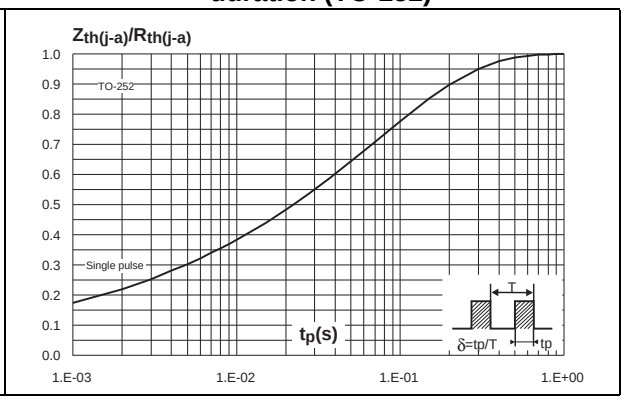


Figure 11. Relative variation of thermal impedance junction to ambient versus pulse duration (SMB)

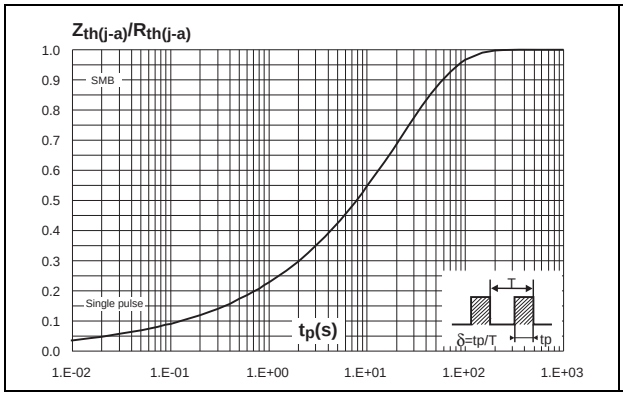


Figure 12. Relative variation of thermal impedance junction to ambient versus pulse duration (SMC)

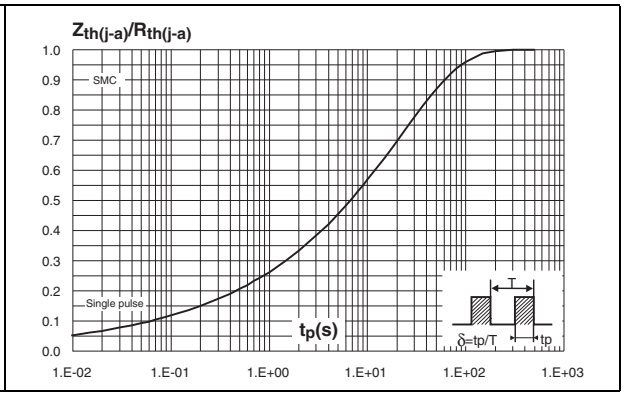


Figure 13. Relative variation of thermal impedance junction to lead versus pulse duration - SMBF

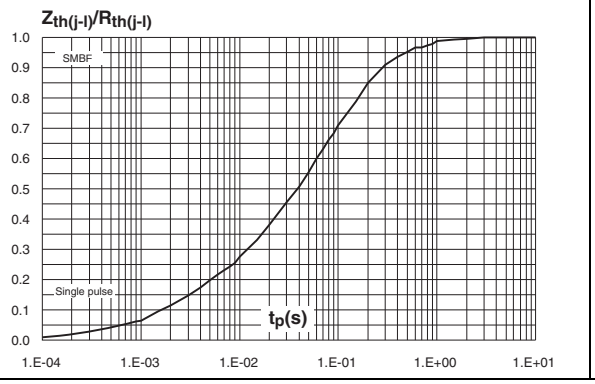


Figure 14. Reverse leakage current versus reverse voltage applied (typical values)

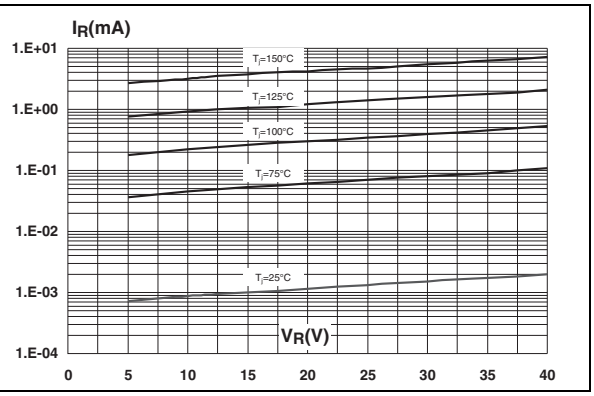


Figure 15. Junction capacitance versus reverse voltage applied (typical values)

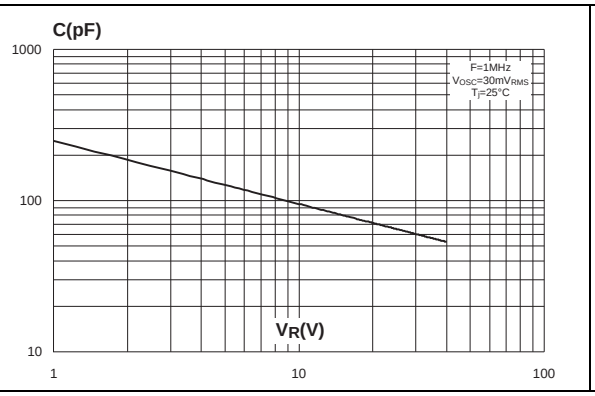


Figure 16. Forward voltage drop versus forward current

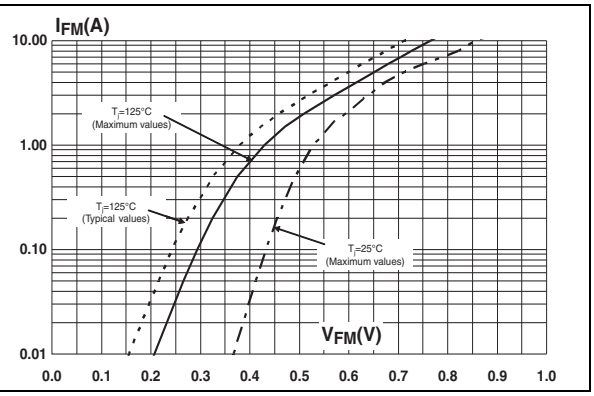


Figure 17. Thermal resistance junction to ambient versus copper surface under each lead (TO-252)

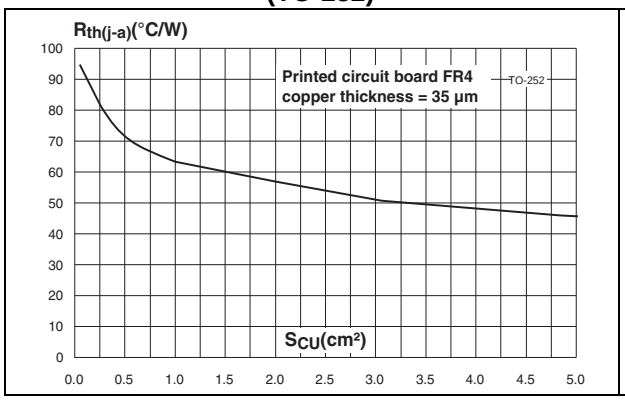


Figure 18. Thermal resistance junction to ambient versus copper surface under each lead (SMB / SMC)

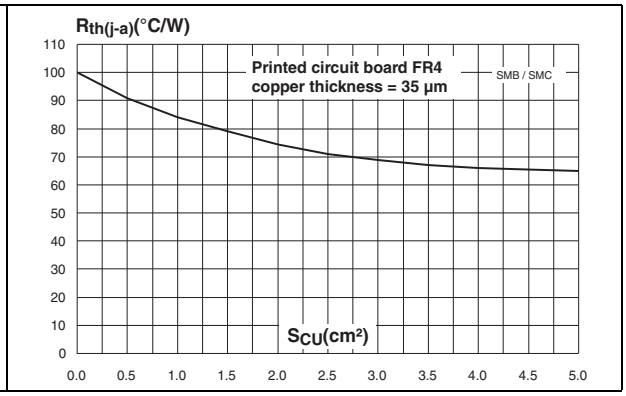
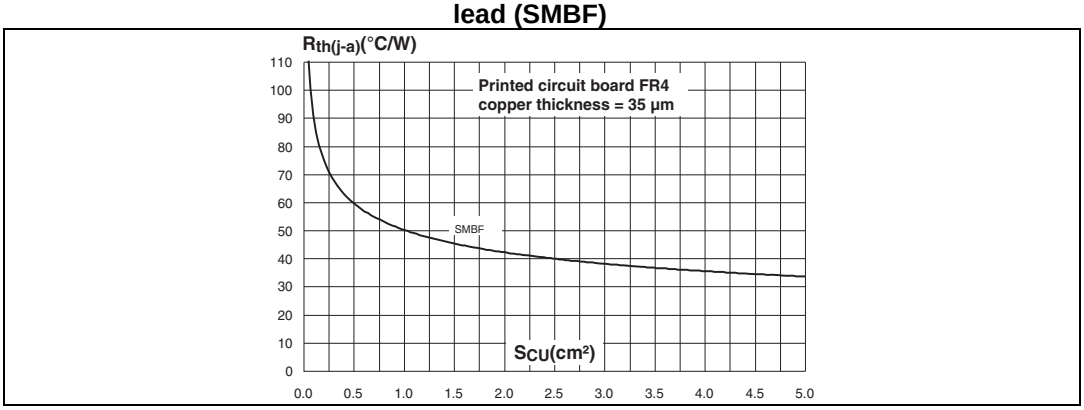
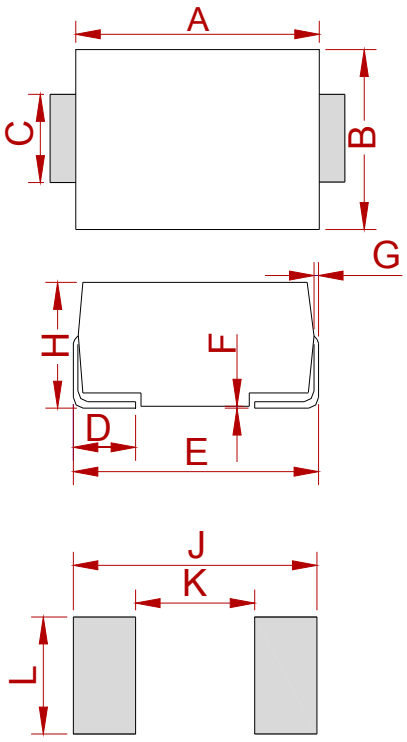


Figure 19. Thermal resistance junction to ambient versus copper surface under each lead (SMBF)



PACKAGE MECHANICAL DATA



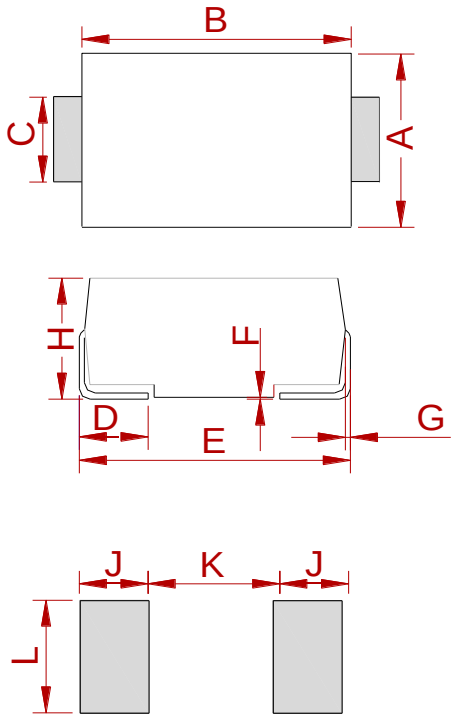
DO-214AA (SMB)

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
STPS340U-MS	DO-214AA (SMB)	2500

PACKAGE MECHANICAL DATA



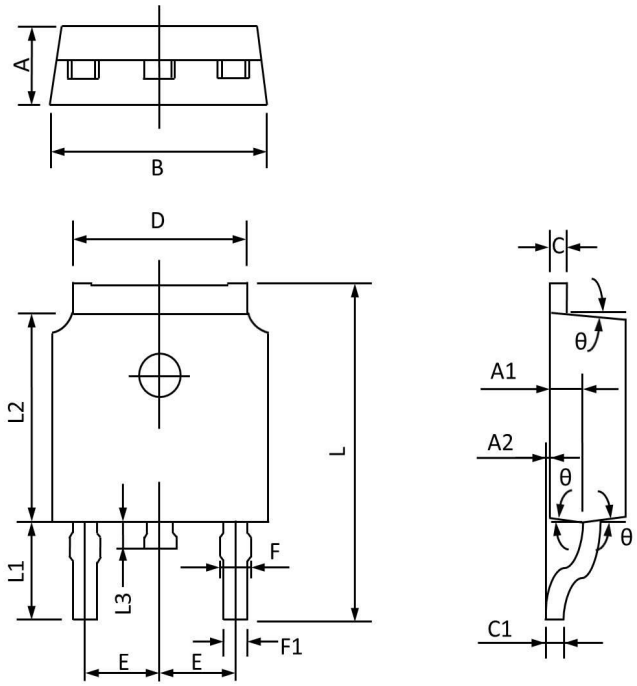
DO-214AB (SMC)

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
STPS340S-MS	DO-214AB (SMC)	2500

TO252 PACKAGE INFORMATION

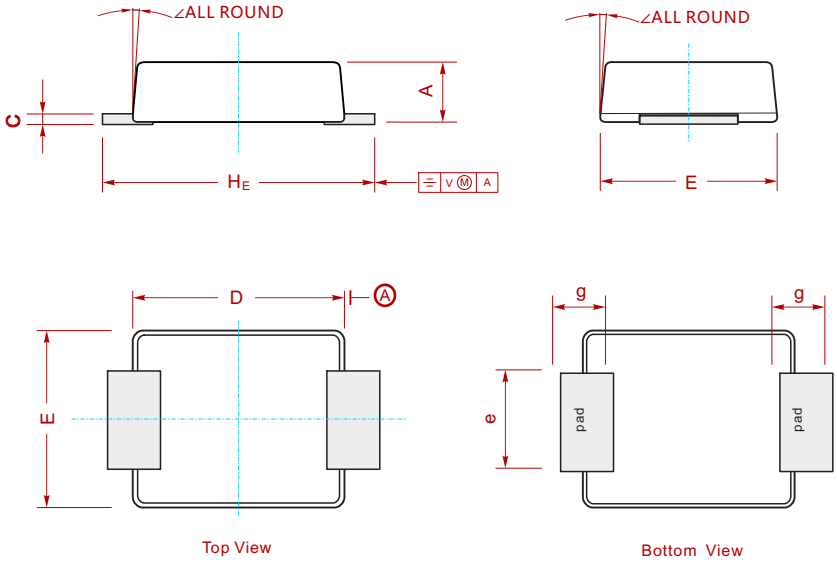


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	2.450	2.150	0.096	0.085
A1	1.200	0.910	0.047	0.036
A2	0.150	0.000	0.006	0.000
B	6.800	6.300	0.268	0.248
C	0.580	0.350	0.023	0.014
C1	0.550	0.380	0.022	0.015
D	5.500	5.100	0.217	0.201
E	2.390	2.000	0.094	0.079
F	0.940	0.600	0.037	0.024
F1	0.860	0.500	0.034	0.020
L	10.400	9.400	0.409	0.370
L1	3.000	2.400	0.118	0.094
L2	6.200	5.300	0.244	0.209
L3	1.200	0.600	0.047	0.024
θ	9°	3°	9°	3°

REELSPECIFICATION

P/N	PKG	QTY
STPS340B-MS	TO-252	2500

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
STPS340UF-MS	SMBF	5000

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.