

MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

STPS140x-MS

Product specification

Description

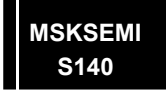
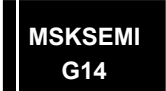
Single chip Schottky rectifiers suited to Switched Mode Power Supplies and high frequency DC to DC converters.

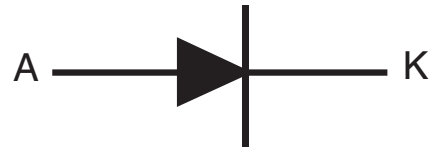
Packaged in SMA and SMB, this device is especially intended for surface mounting and used in low voltage, high frequency inverters, free wheeling and polarity protection applications.

Features

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

Reference News

STPS140A-MS	MARKING
 DO-214AC(SMA)	
STPS140U-MS	MARKING
 DO-214AA(SMB)	



Main Product Characteristics

$I_{F(AV)}$	1 A
V_{RRM}	40 V
$T_j(max)$	150°C
$V_F(max)$	0.5 V

Absolute Ratings (limiting values)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			40	V
$I_{F(RMS)}$	RMS forward voltage			7	A
$I_{F(AV)}$	Average forward current	SMA	$T_L = 130^{\circ}C \quad \delta = 0.5$	1	A
		SMB	$T_L = 135^{\circ}C \quad \delta = 0.5$		
I_{FSM}	Surge non repetitive forward current		tp = 10ms sinusoidal	60	A
I_{RRM}	Repetitive peak reverse current		tp = 2μs F = 1kHz square	1	A
I_{RSM}	Non repetitive peak reverse current		tp = 100μs square	1	A
P_{ARM}	Repetitive peak avalanche power		tp = 1μs Tj = 25°C	900	W
T_{stg}	Storage temperature range			-65 to + 150	°C
T_j	Maximum operating junction temperature *			150	°C
dV/dt	Critical rate of rise of reverse voltage			10000	V/μs

*: $\frac{dP_{tot}}{dT_j} > \frac{1}{R_{th(j-a)}}$ thermal runaway condition for a diode on its own heatsink

Thermal resistance

Symbol	Parameter		Value	Unit
$R_{th(j-l)}$	Junction to lead	SMA	30	°C/W
		SMB	25	

Static electrical characteristics

Symbol	Parameter	Tests conditions	Min.	Typ	Max.	Unit
I_R^*	Reverse leakage current	$T_j = 25^\circ\text{C}$			12	μA
		$T_j = 100^\circ\text{C}$			2	mA
V_F^{**}	Forward voltage drop	$T_j = 25^\circ\text{C}$			0.55	V
		$T_j = 125^\circ\text{C}$			0.43	
		$T_j = 25^\circ\text{C}$			0.65	
		$T_j = 125^\circ\text{C}$			0.53	

Pulse test: * $t_p = 5 \text{ ms}$, $\delta < 2\%$
 ** $t_p = 380 \mu\text{s}$, $\delta < 2\%$

To evaluate the conduction losses use the following equation: $P = 0.4 \times I_F(\text{AV}) + 0.10 I_F^2(\text{RMS})$

Figure 1: Average forward power dissipation versus average forward current

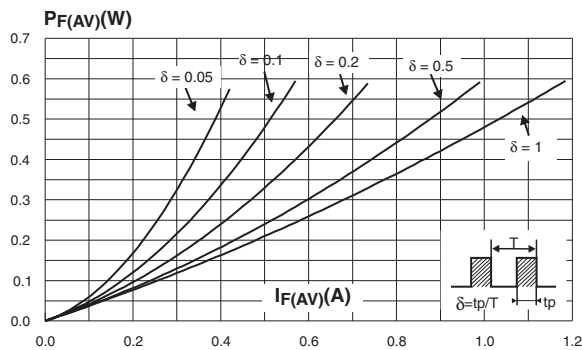


Figure 2: Average forward current versus ambient temperature ($\delta = 0.5$)

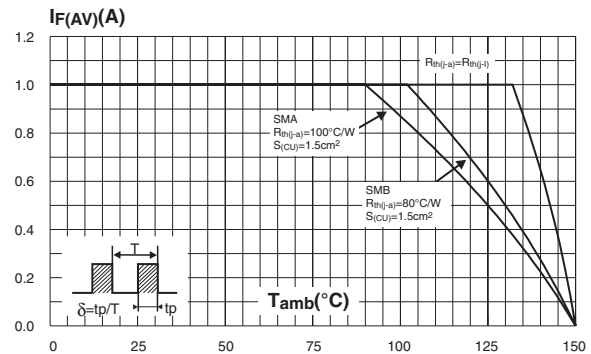


Figure 3: Normalized avalanche power derating versus pulse duration

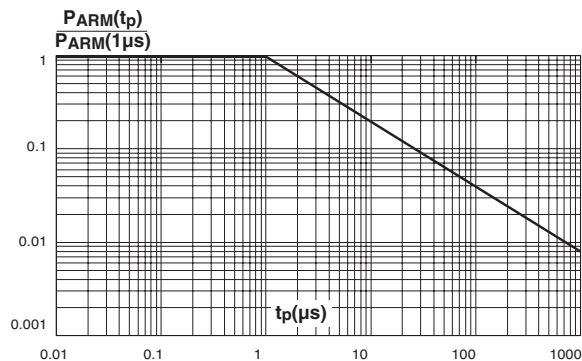


Figure 4: Normalized avalanche power derating versus junction temperature

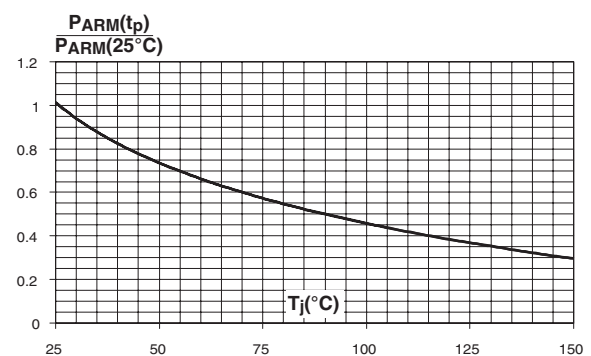


Figure 5: Non repetitive surge peak forward current versus overload duration (maximum values) (SMA)

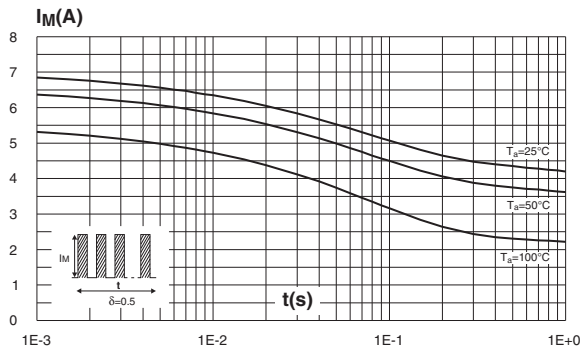


Figure 6: Non repetitive surge peak forward current versus overload duration (maximum values) (SMB)

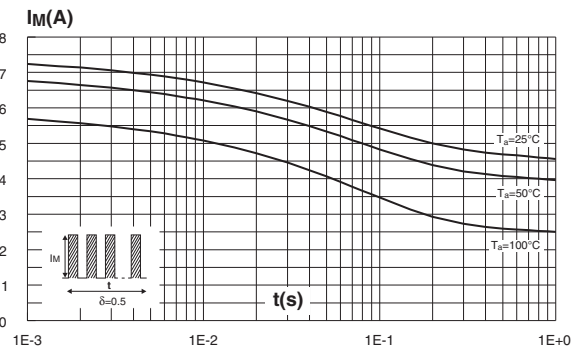


Figure 7: Relative variation of thermal impedance junction to ambient versus pulse duration (epoxy printed circuit board, e(Cu)=35μm, recommended pad layout) (SMA)

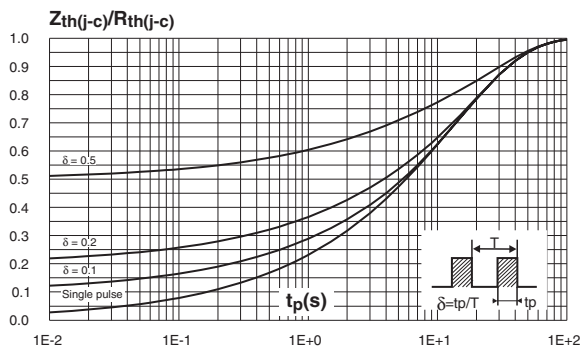


Figure 8: Relative variation of thermal impedance junction to ambient versus pulse duration (epoxy printed circuit board, e(Cu)=35μm, recommended pad layout) (SMB)

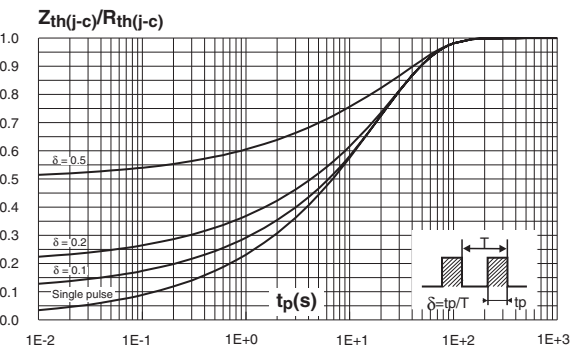


Figure 9: Reverse leakage current versus reverse voltage applied (typical values)

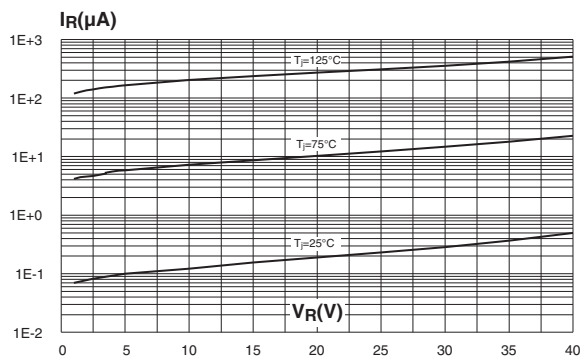


Figure 10: Junction capacitance versus reverse voltage applied (typical values)

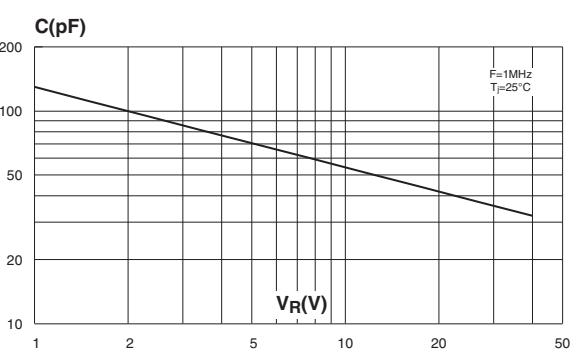


Figure 11: Forward voltage drop versus forward current (maximum values)

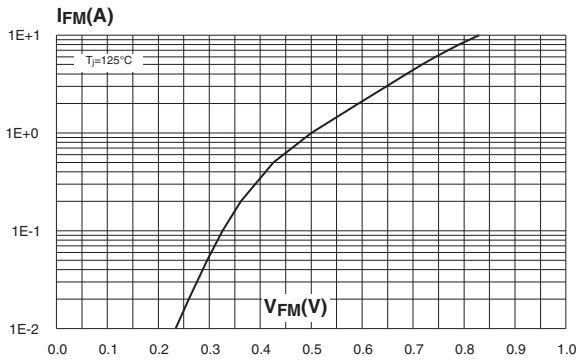


Figure 12: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, copper thickness: 35 μm) (SMA)

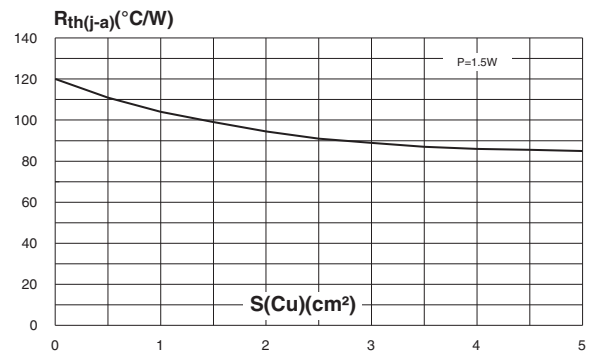
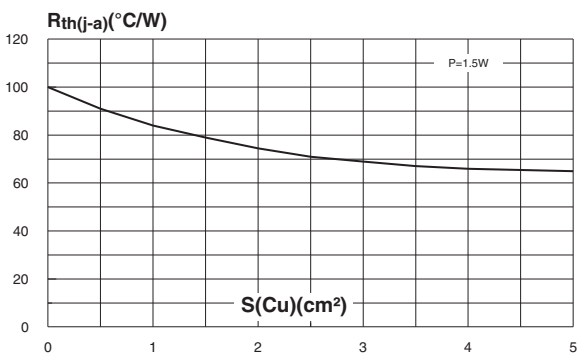
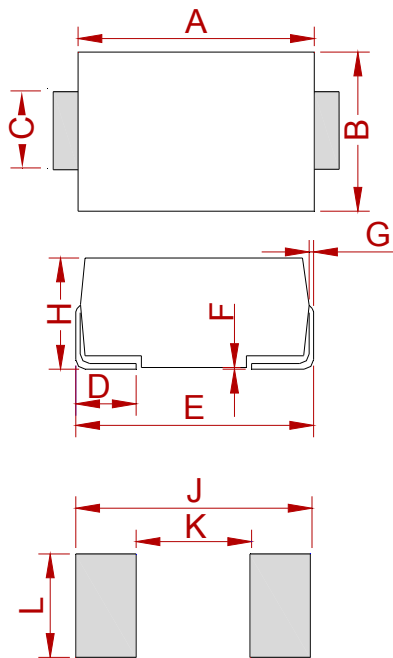


Figure 13: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, copper thickness: 35 μm) (SMB)



PACKAGE MECHANICAL DATA



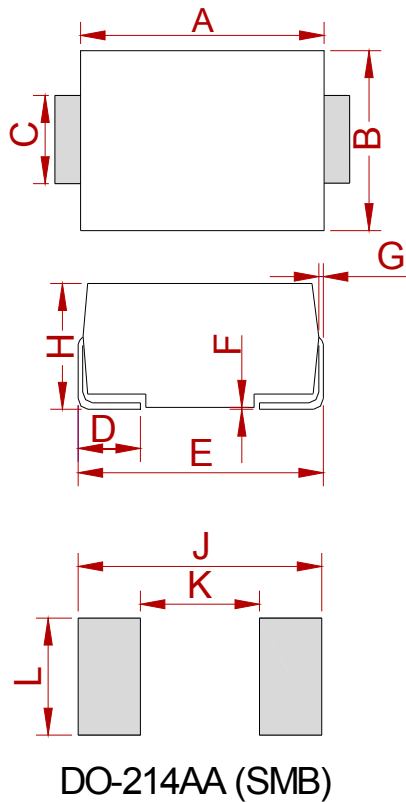
DO-214AC (SMA)

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
STPS140A-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
STPS140U-MS	DO-214AA (SMB)	2500

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