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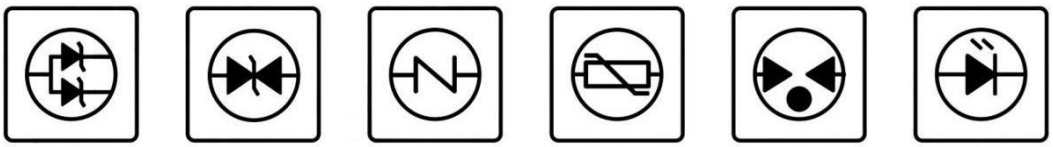
SEMICONDUCTOR



STTH1L06x-MS

Product specification

STTH1L06x-MS

ultrafast high voltage rectifier

Description

The STTH1L06x-MS, which is using Turbo 2 600 V technology, is specially suited as boost diode in discontinuous or critical mode power factor corrections.
The device is also intended for use as a free wheeling diode in power supplies and other power switching applications.

Features

- Low forwarded voltage drop
- High reliability
- High surge current capability
- Soft switching for reduced EMI disturbances
- Planar technology

Reference News

STTH1L06A-MS	MARKING
 DO-214AC(SMA)	MSKSEMI HL6

STTH1L06U-MS	MARKING
 DO-214AA(SMB)	MSKSEMI BL6

Device summary

Symbol	Value
$I_{F(AV)}$	1 A
V_{RRM}	600 V
I_R (max)	75 μA
T_j(max)	175 °C
V_F (max)	1.05 V
t_{rr} (max)	80 ns

Characteristics

Absolute ratings (limiting values)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			600	V
$I_{F(RMS)}$	Forward rms voltage	SMA / SMB		7	A
$I_{F(AV)}$	Average forward current δ = 0.5	SMA	T_c = 135 °C	1	A
		SMB	T_c = 145 °C		
I_{FSM}	Surge non repetitive forward current	t_p = 10 ms sinusoidal SMA / SMB		20	A
T_{stg}	Storage temperature range			-65 to + 175	°C
T_j	Maximum operating junction temperature			175	°C

Thermal parameters

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

1. Rth(j-a) is measured with a copper area S = 5 cm^2 (see *Figure 14.*)

Static electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
I_R	Reverse leakage current	T_j = 25 °C	V_R = 600 V			1	µA
		T_j = 150 °C			10	75	
V_F	Forward voltage drop	T_j = 25 °C	I_F = 1 A			1.3	V
		T_j = 150 °C			0.85	1.05	

To evaluate the conduction losses use the following equation:P = 0.89 x $I_{F(AV)}$ + 0.165 $I_{F}^{2}{}_{(RMS)}$

Dynamic characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
t_{rr}	Reverse recovery time	T_j = 25 °C	I_F = 1 A,dI_F/dt = -50, A/µs, V_R = 30 V		55	80	ns
t_{fr}	Forward recovery time	T_j = 25 °C	I_F = 1 A, dI_F/dt = 100 A/µs V_{FR} = 3.5 V			50	ns
V_{FP}	Forward recovery voltage	T_j = 25 °C	I_F = 1 A, dI_F/dt = 100 A/µs			10	V

Figure 1. Conduction losses versus average current

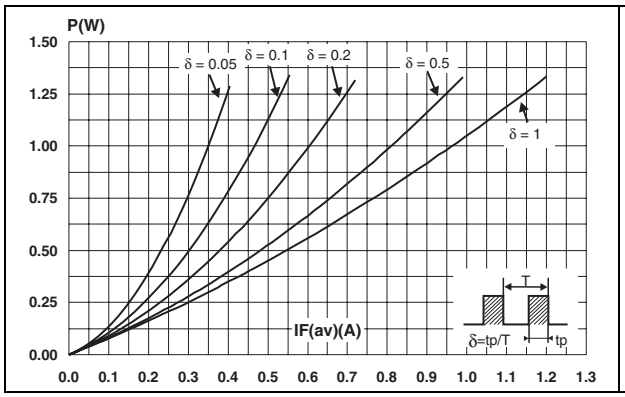


Figure 2. Forward voltage drop versus forward current

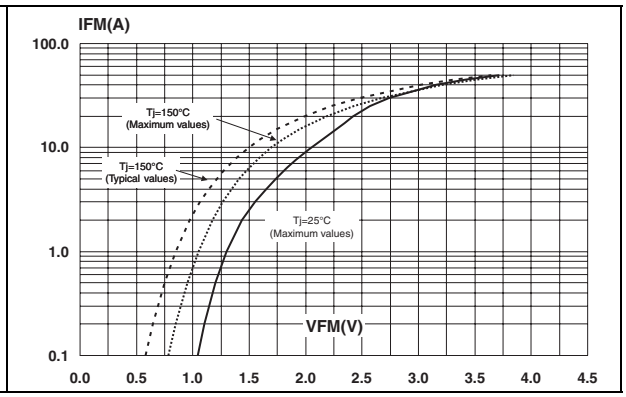


Figure 3. Relative variation of thermal impedance junction ambient versus pulse duration

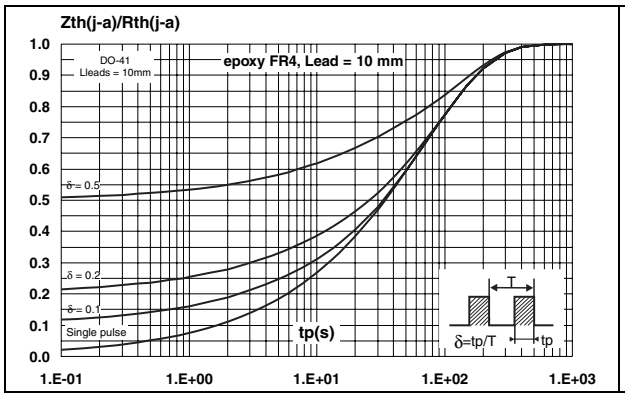


Figure 4. Relative variation of thermal impedance junction ambient versus pulse duration

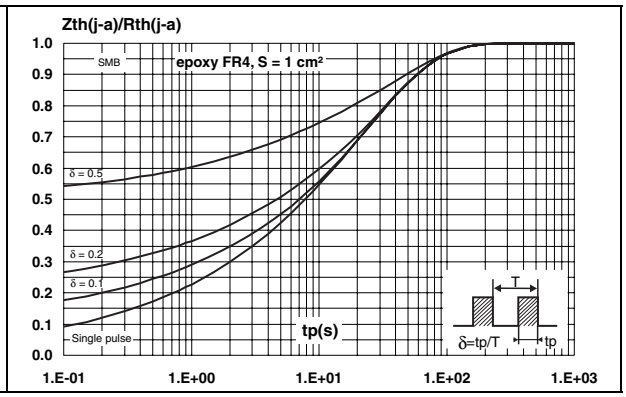


Figure 5. Relative variation of thermal impedance junction ambient versus pulse duration (epoxy FR4)

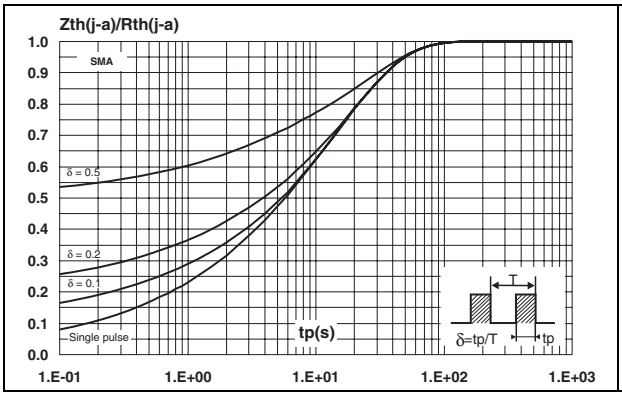


Figure 6. Peak reverse recovery current versus dI_F/dt (90% confidence)

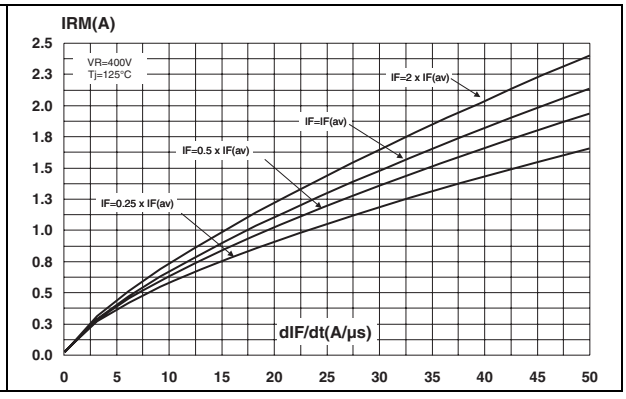


Figure 7. Reverse recovery time versus dI_F/dt (90% confidence)

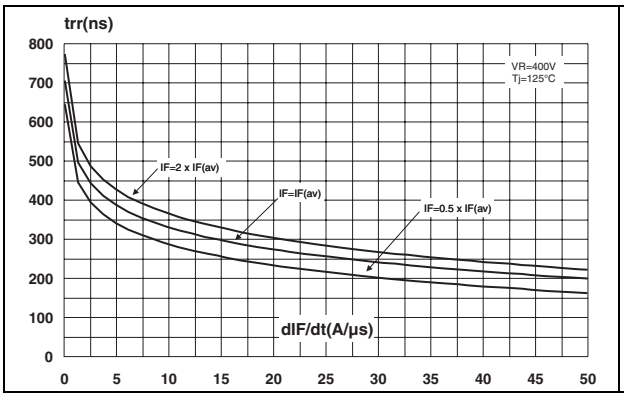


Figure 8. Reverse recovery charges versus dI_F/dt (90% confidence)

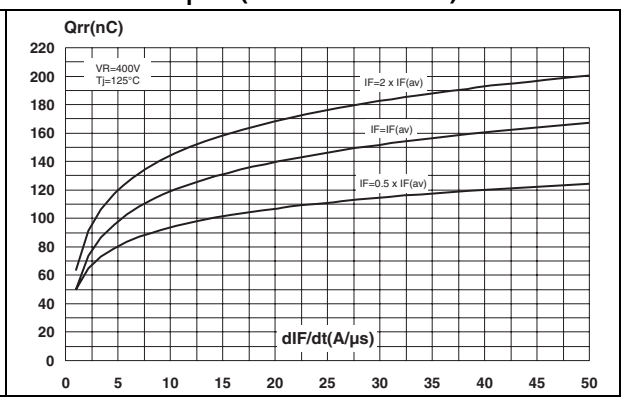


Figure 9. Softness factor versus dI_F/dt (typical values)

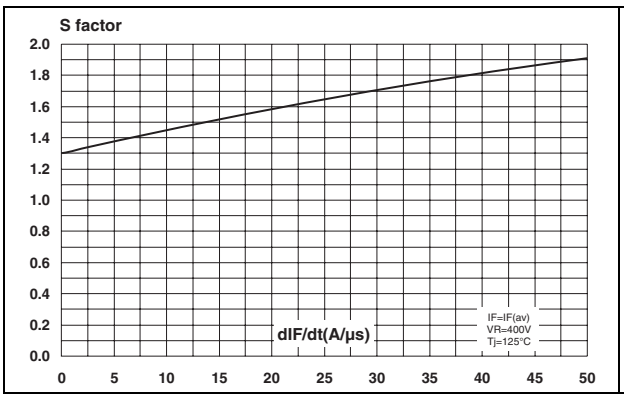


Figure 10. Relative variations of dynamic parameters versus junction temperature

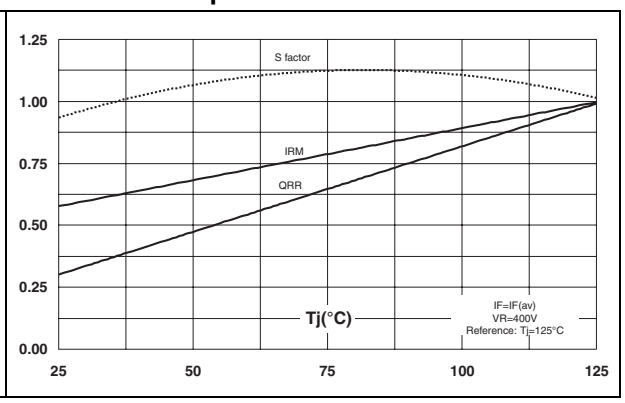


Figure 11. Transient peak forward voltage versus dI_F/dt (90% confidence)

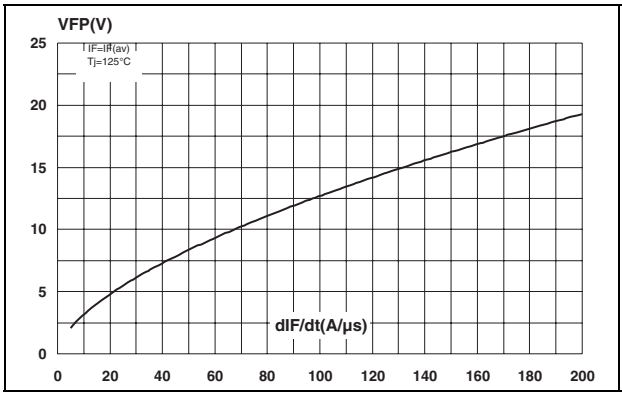


Figure 12. Forward recovery time versus dI_F/dt (90% confidence)

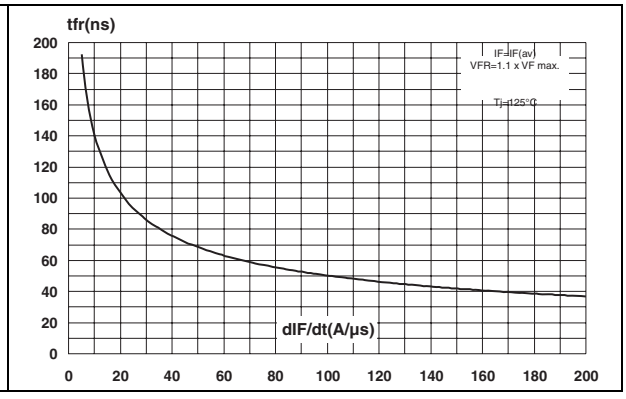


Figure 13. Junction capacitance versus reverse voltage applied (typical values)

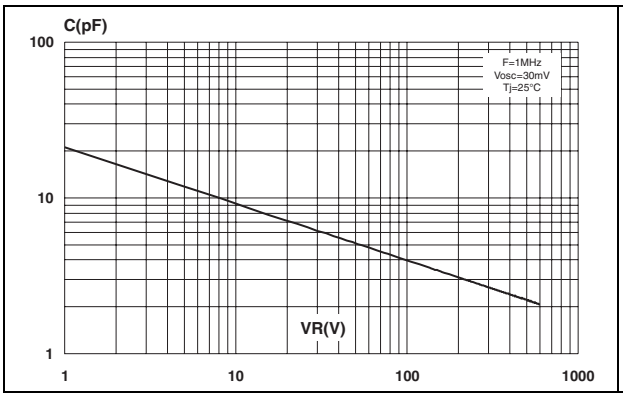


Figure 14. Thermal resistance junction to ambient versus copper surface under each lead

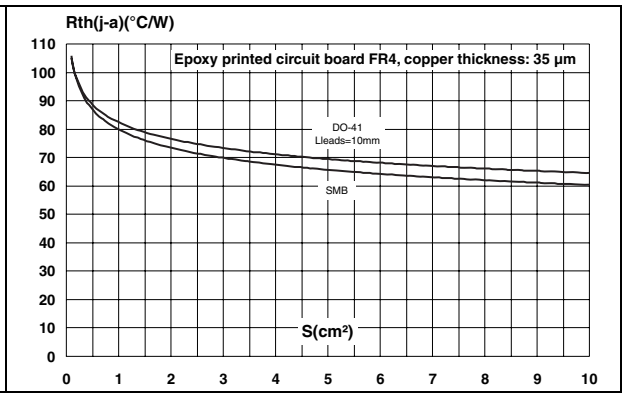
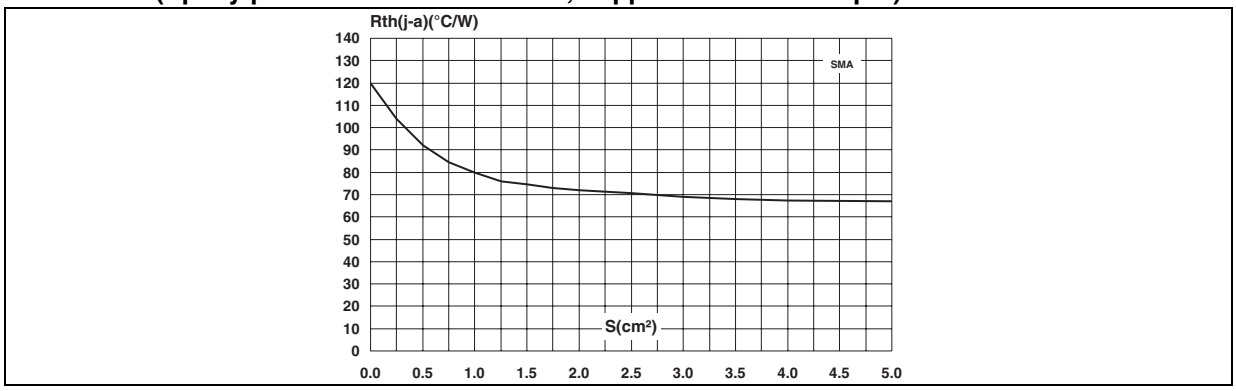
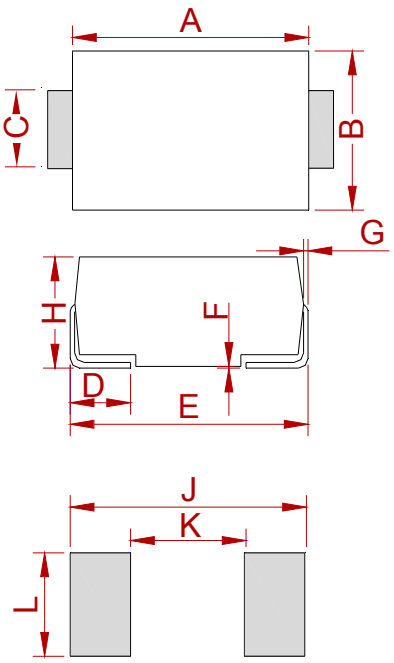


Figure 15. Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, copper thickness: 35 µm)



PACKAGE MECHANICAL DATA



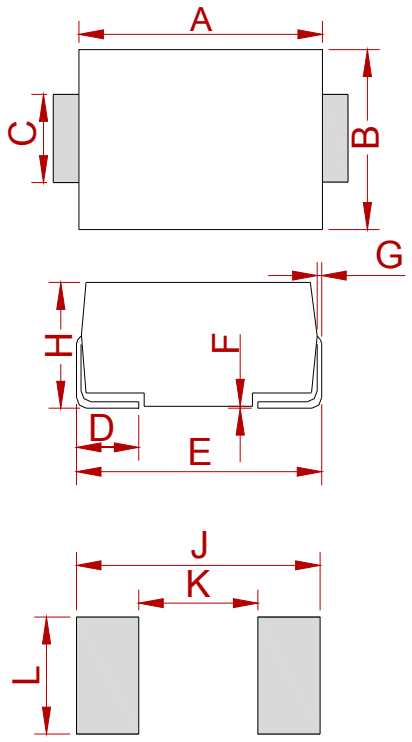
DO-214AC (SMA)

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
STTH1L06A-MS	DO-214AC (SMA)	5000

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
STTH1L06U-MS	DO-214AA (SMB)	2500

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