

1.Description

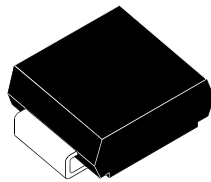
The STTH1L06/U/A, is specially suited as boost diode in discontinuous or critical mode power factor corrections.

The device is also intended for use as a free wheeling diode in power supplies and other power switching applications.

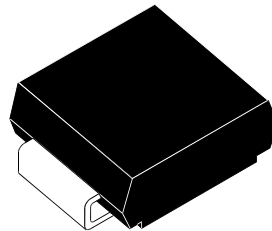
2.Features

- Ultrafast switching
- Low reverse recovery current
- Reduces switching and conduction losses
- Low thermal resistance

3.Pinning Information



SMA



SMB

Table 1. Device summary

Symbol	Value
$I_{F(AV)}$	1A
V_{RRM}	600V
$I_{R(max)}$	75 μ A
$T_{j(max)}$	175°C
$V_{F(max)}$	1.05V
$t_{rr(max)}$	80ns



4. Absolute Ratings (Limiting Values)

Parameter			Symbol	Value	Unit
Repetitive Peak Reverse Voltage			V _{RRM}	600	V
Forward RMS Voltage	SMA / SMB		I _{F(RMS)}	7	A
Average Forward Current δ = 0.5	SMA	T _C =135°C	I _{F(AV)}	1	A
	SMB	T _C =145°C		1	A
Surge Non Repetitive Forward Current	t _p =10 ms sinusoidal SMA/SMB		I _{FSM}	20	A
Storage Temperature Range			T _{STG}	-65 to 175	°C
Maximum Operating Junction Temperature			T _J	175	°C

5. Thermal Parameters

Parameter		Symbol	Max	Units
Junction To Lead	SMA	$R_{th(j-l)}$	30	$^\circ\text{C/W}$
	SMB		25	$^\circ\text{C/W}$

1. $R_{th(j-a)}$ is measured with a copper area $S=5\text{cm}^2$ (see Figure 14.)

6. Static Electrical Characteristics

Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Reverse Leakage Current	$T_J = 25^\circ\text{C}$	I_R	$V_R = 600\text{V}$			1	μA
	$T_J = 150^\circ\text{C}$				10	75	μA
Forward Voltage Drop	$T_J = 25^\circ\text{C}$	V_F	$I_F = 1\text{A}$			1.3	V
	$T_J = 150^\circ\text{C}$				0.85	1.05	V

To evaluate the conduction losses use the following equation:

$$P = 0.89 \times I_{F(AV)} + 0.165 I_{F(RMS)}^2$$



7.Dynamic Characteristics

Parameter		Symbol	Conditions	Typ	Max	Unit
Reverse Recovery Time	$T_J=25^{\circ}\text{C}$	t_{rr}	$I_F=1\text{A}$, $dI_F/dt=-50\text{ A}/\mu\text{s}$, $V_R=30\text{V}$	55	80	ns
Forward Recovery Time	$T_J=25^{\circ}\text{C}$	t_{fr}	$I_F=1\text{A}$, $dI_F/dt=100\text{ A}/\mu\text{s}$, $V_{FR}=3.5\text{V}$		50	ns
Forward Recovery Voltage	$T_J=25^{\circ}\text{C}$	V_{FP}	$I_F=1\text{A}$, $dI_F/dt=100\text{A}/\mu\text{s}$		10	V



8.1 Typical Characteristic

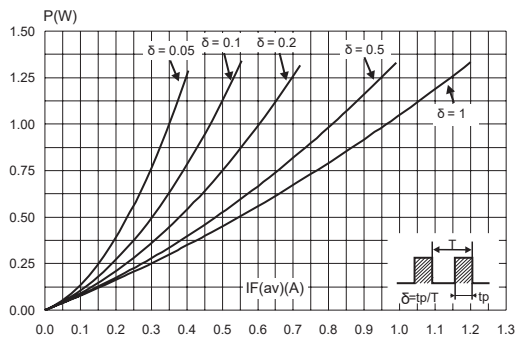


Figure 1: Conduction losses versus average current

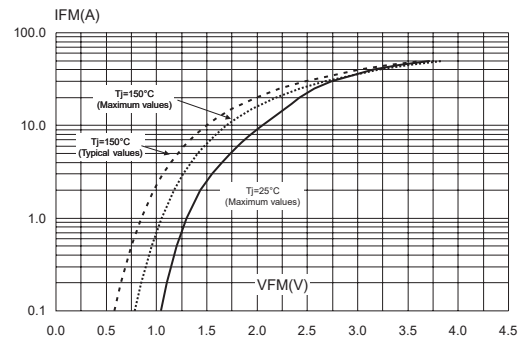


Figure 2: Forward voltage drop versus forward current

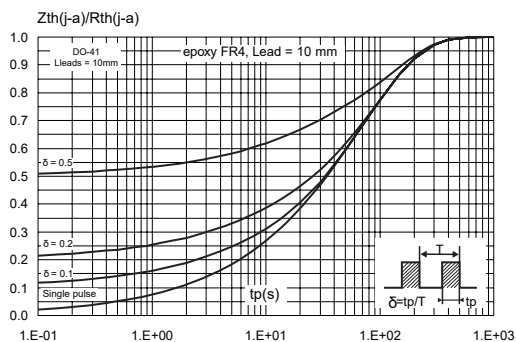


Figure 3: Relative variation of thermal impedance junction ambient versus pulse duration

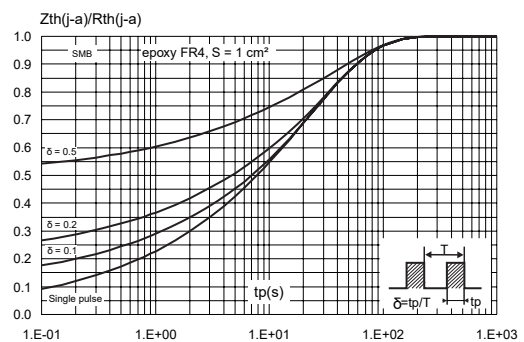


Figure 4: Relative variation of thermal impedance junction ambient versus pulse duration

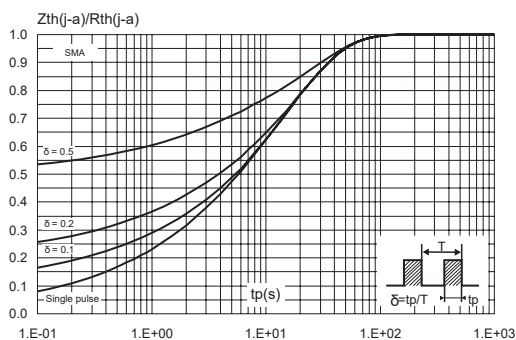
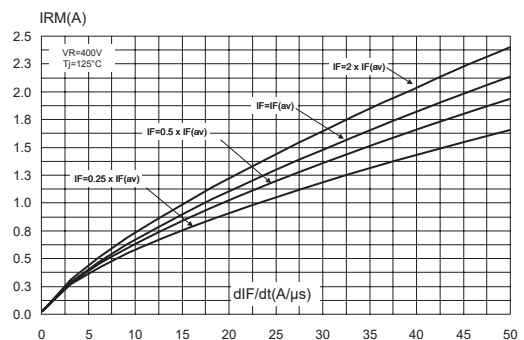


Figure 5: Relative variation of thermal impedance junction ambient versus pulse duration (epoxy FR4)

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



8.2 Typical Characteristic

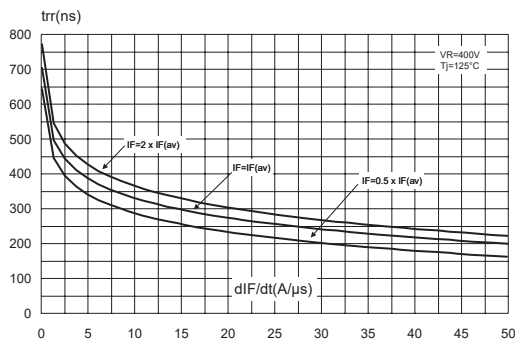


Figure 7: Reverse recovery time versus dI_F/dt (90% confidence)

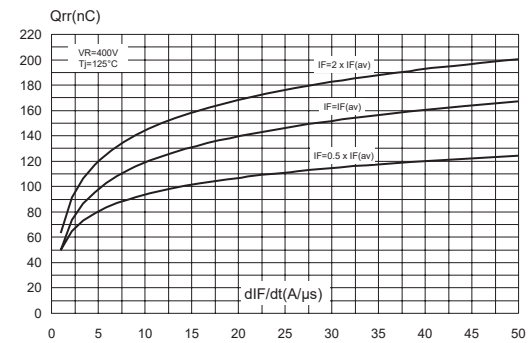


Figure 8: Reverse recovery charges versus dI_F/dt (90% confidence)

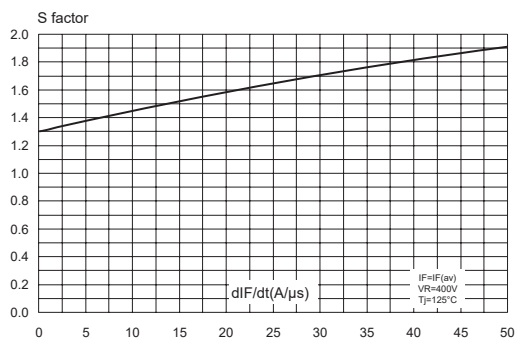


Figure 9: Softness factor versus dI_F/dt (typical values)

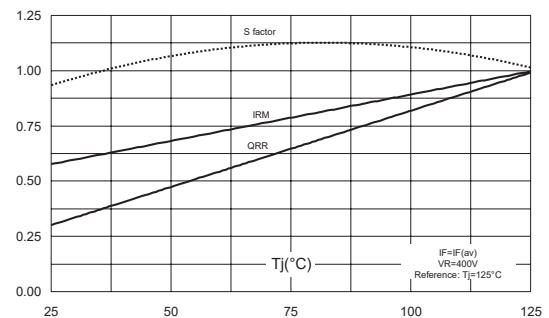


Figure 10: Relative variations of dynamic parameters versus junction temperature

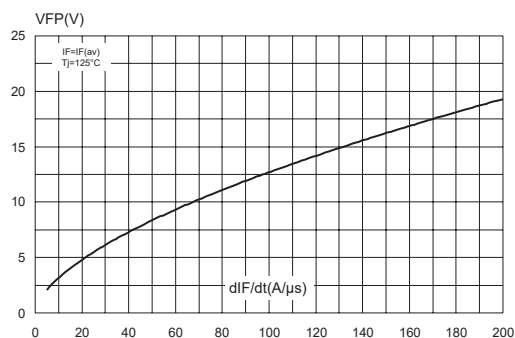


Figure 11: Transient peak forward voltage versus dI_F/dt (90% confidence)

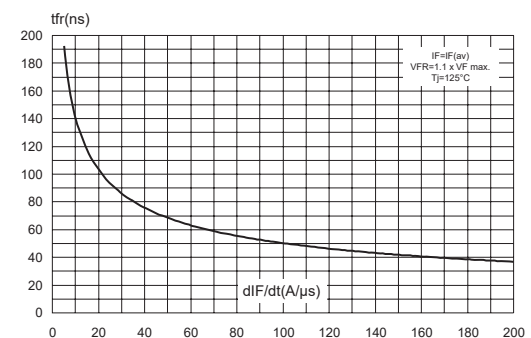
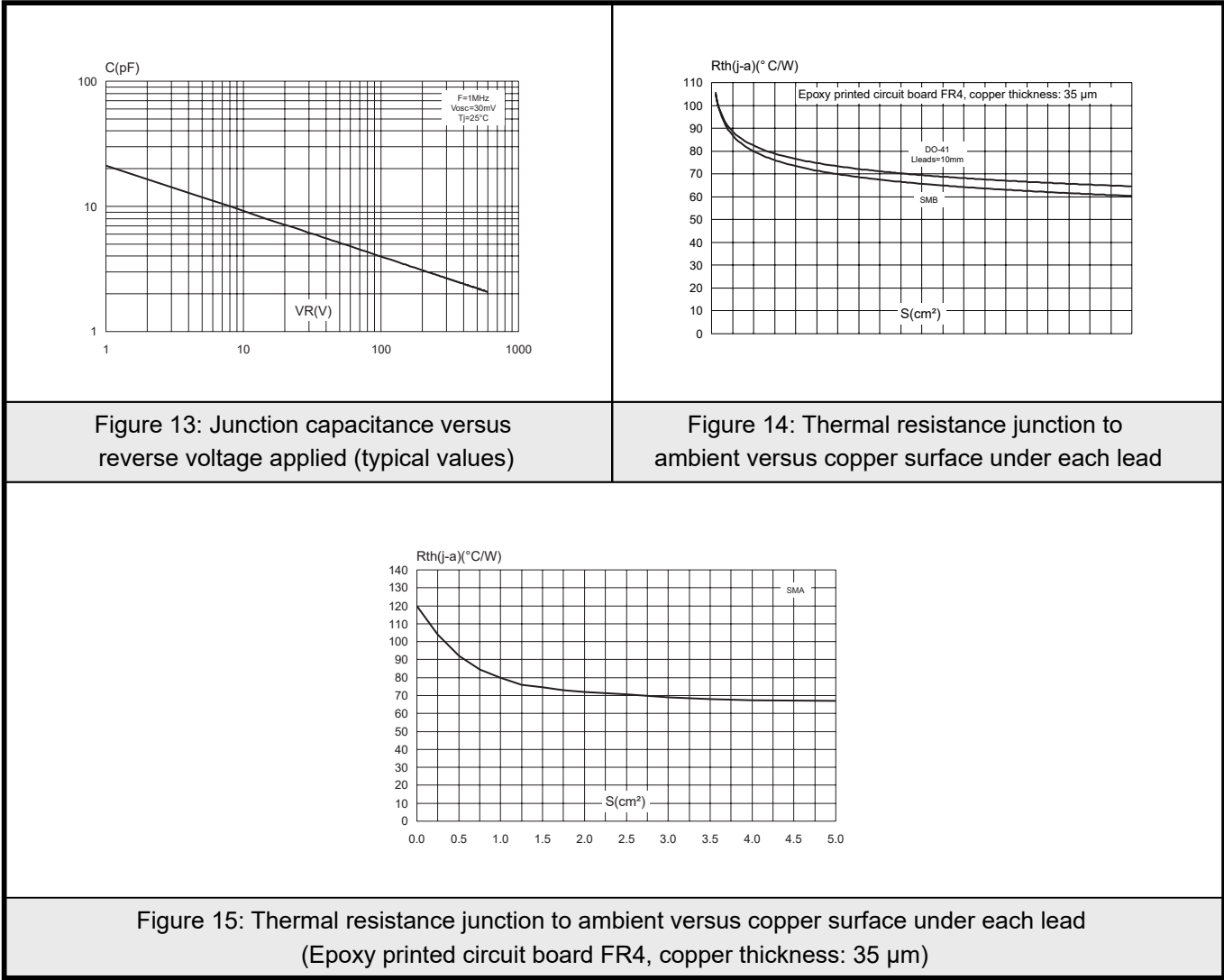


Figure 12: Forward recovery time versus dI_F/dt (90% confidence)

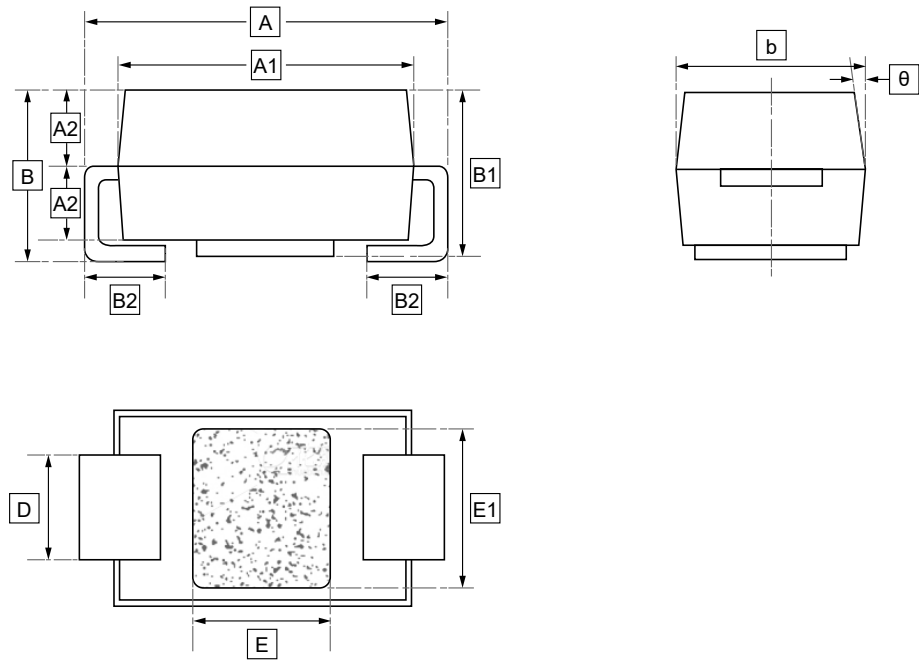


8.3 Typical Characteristic





9.1 SMA Package Outline Dimensions

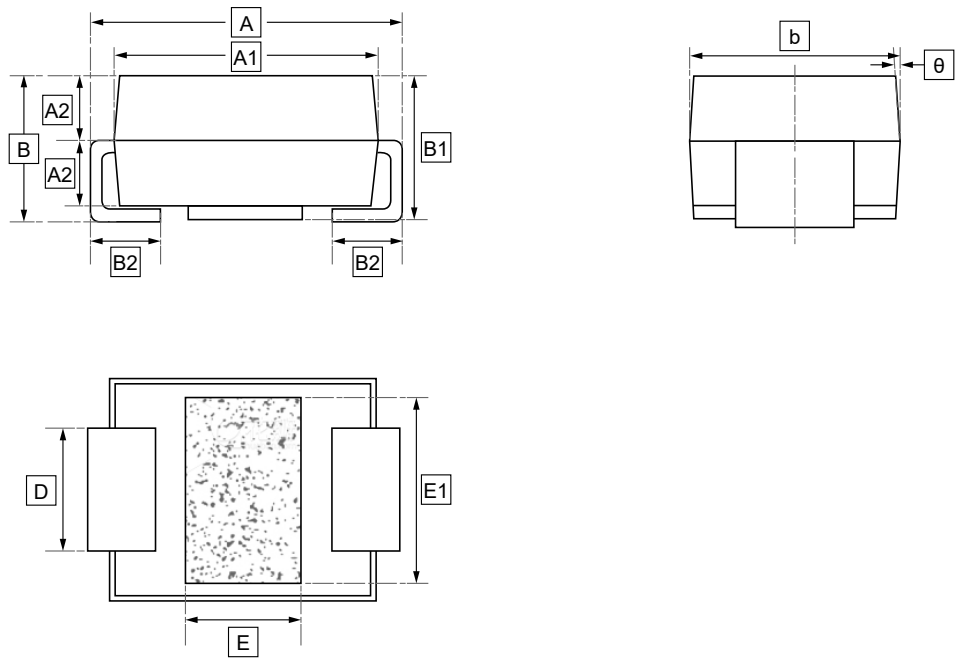


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	B	B1	B2	b	D	E	E1	θ
Min	4.9	4.05	0.97	2.18	2.15	1.0	2.55	1.38	1.8	2.0	5°
Max	5.1	4.15	1.03	2.38	2.25	1.4	2.65	1.42	2.0	2.2	



9.2 SMB Package Outline Dimensions

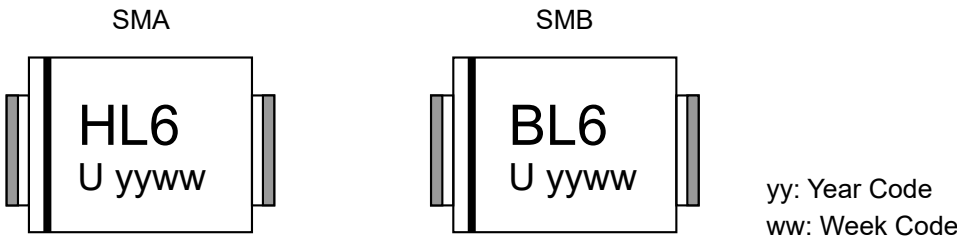


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	B	B1	B2	b	D	E	E1	θ
Min	5.1	4.4	1.02	2.25	2.25	1.0	3.55	1.98	1.8	2.9	5°
Max	5.3	4.5	1.08	2.45	2.35	1.4	3.65	2.02	2.0	3.1	



10.Ordering Information



Order Code	Marking	Package	Base QTY	Delivery Mode
UMW STTH1L06A	HL6	SMA	5000	Tape and reel
UMW STTH1L06U	BL6	SMB	2500	Tape and reel



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