

1.Description

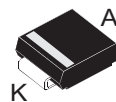
The STTH1R06, which is using 2600V technology, is specially suited as boost diode in discontinuous or critical mode power factor corrections.

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

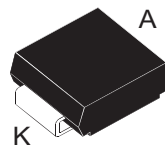
2.Features

- 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	175°C
$V_{F(typ)}$	1.0V
$t_{rr(max)}$	25ns



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	$V_R = V_{RRM}$			1	μA
	$T_J = 150^\circ\text{C}$				10	75	μA
Forward Voltage Drop	$T_J = 25^\circ\text{C}$	V_F	$I_F = 1\text{A}$			1.7	V
	$T_J = 150^\circ\text{C}$				1.0	1.25	V

To evaluate the conduction losses use the following equation:

$$P = 1.03 \times I_{F(AV)} + 0.27 I_{F(RMS)}^2$$



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7.Dynamic Characteristics

Parameter		Symbol	Conditions	Typ	Max	Unit
Reverse Recovery Time	$T_J=25^{\circ}\text{C}$	t_{rr}	$I_F=0.5\text{A}, I_{rr}=0.25\text{A}, I_R=1\text{A}$		25	ns
			$I_F=1\text{A}, dI_F/dt=-50\text{A}/\mu\text{s}, V_R=30\text{V}$	30	45	ns
Forward Recovery Time	$T_J=25^{\circ}\text{C}$	t_{fr}	$I_F=1\text{A}, dI_F/dt=100\text{A}/\mu\text{s}$		100	ns
Forward Recovery Voltage	$T_J=25^{\circ}\text{C}$	V_{FP}	$V_{FR}=1.1 \times V_{Fmax}$		10	V



8.1 Typical Characteristic

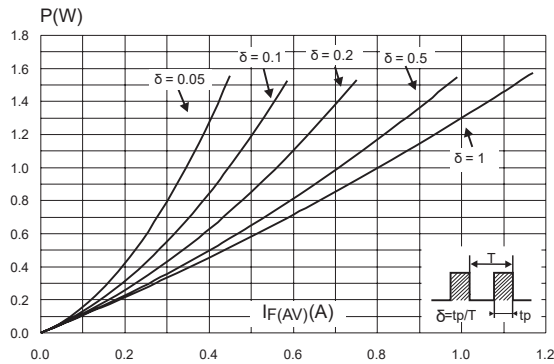


Figure 1: Conduction losses versus average current

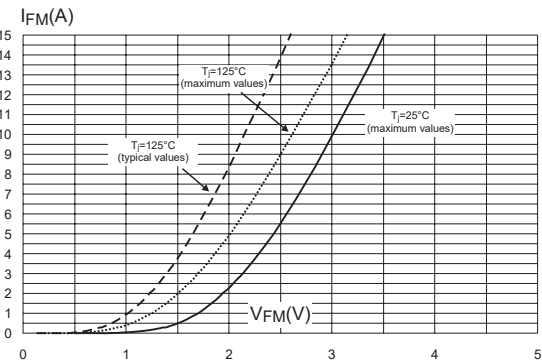


Figure 2: Forward voltage drop versus forward current

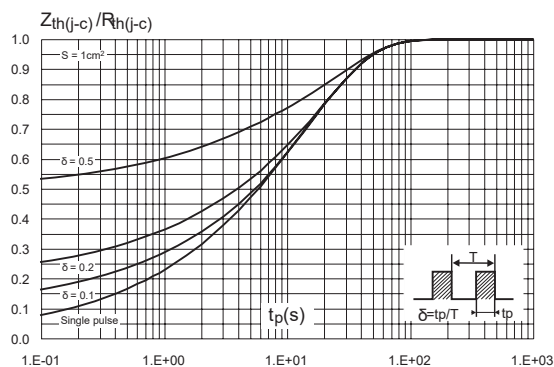


Figure 3: Relative variation of thermal impedance junction to case vs pulse duration (SMA)

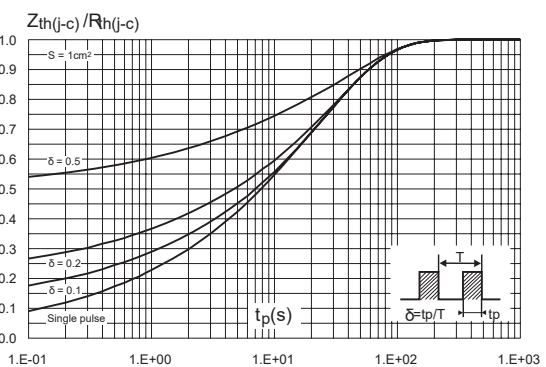
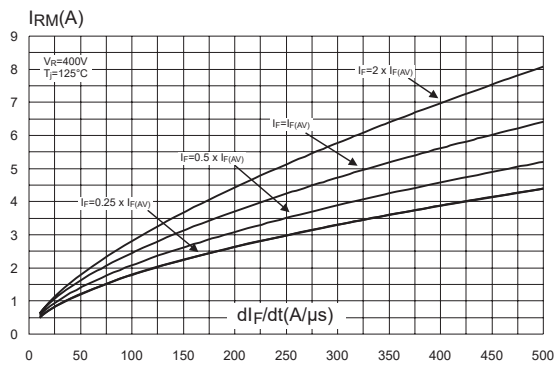
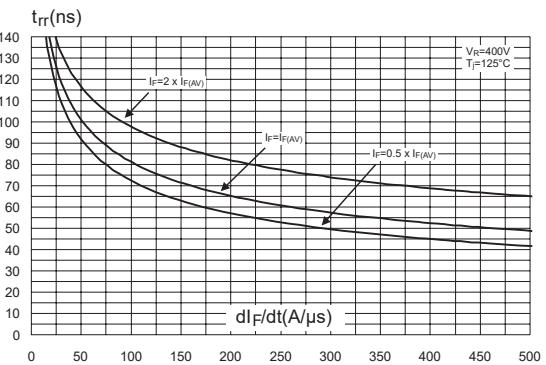


Figure 4: Relative variation of thermal impedance junction to case vs pulse duration (SMB)

Figure 5: Peak reverse recovery current vs dI_F/dt (typical values)Figure 6: Reverse recovery time versus dI_F/dt (typical values)



8.2 Typical Characteristic

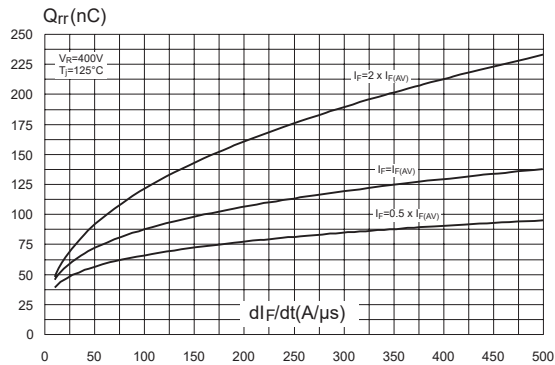


Figure 7: Reverse recovery charges versus dI_F/dt (typical values)

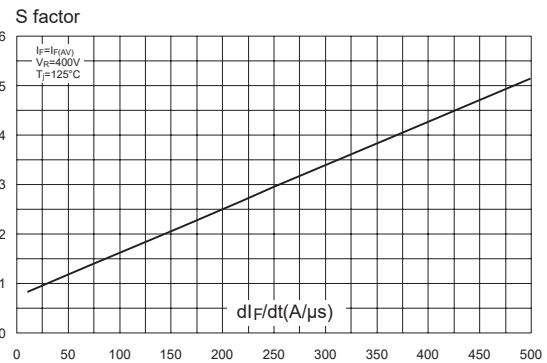


Figure 8: Reverse recovery softness factor vs dI_F/dt (typical values)

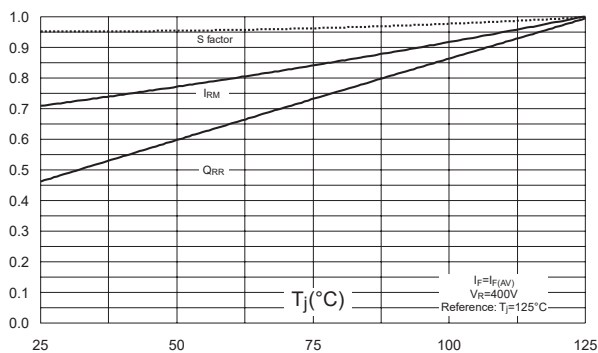


Figure 9: Relative variations of dynamic parameters vs junction temperature

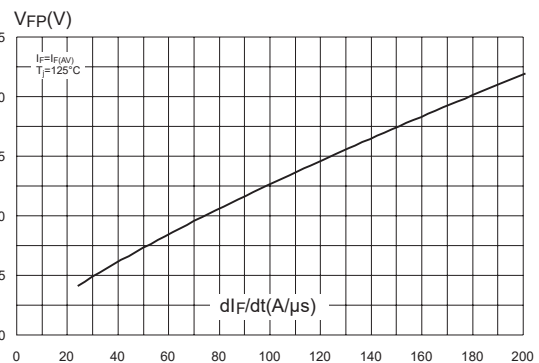


Figure 10: Transient peak forward voltage vs dI_F/dt (typical values)

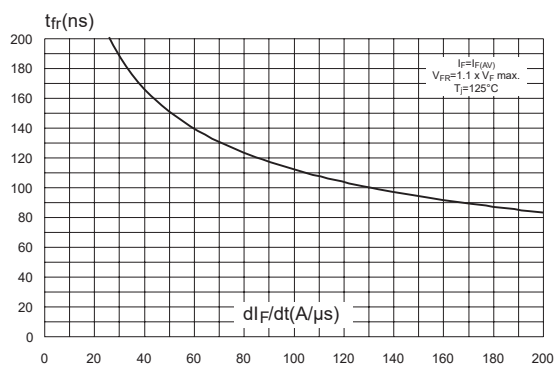


Figure 11: Forward recovery time vs dI_F/dt (typical values)

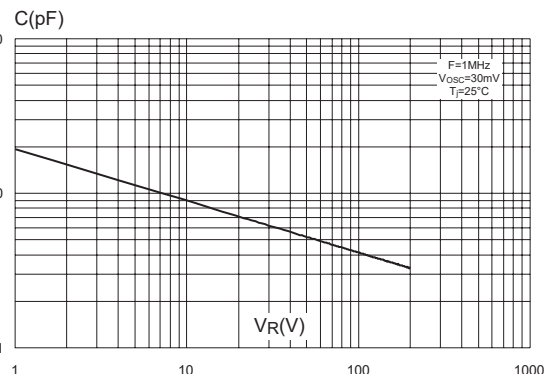
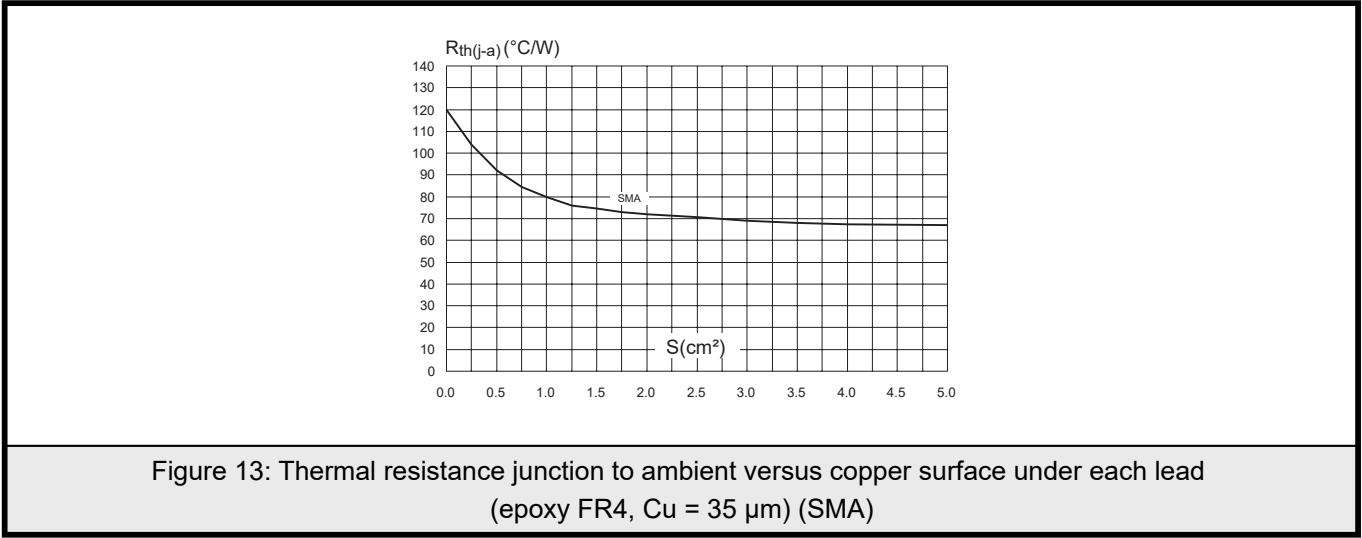


Figure 12: Junction capacitance versus reverse voltage applied (typical values)

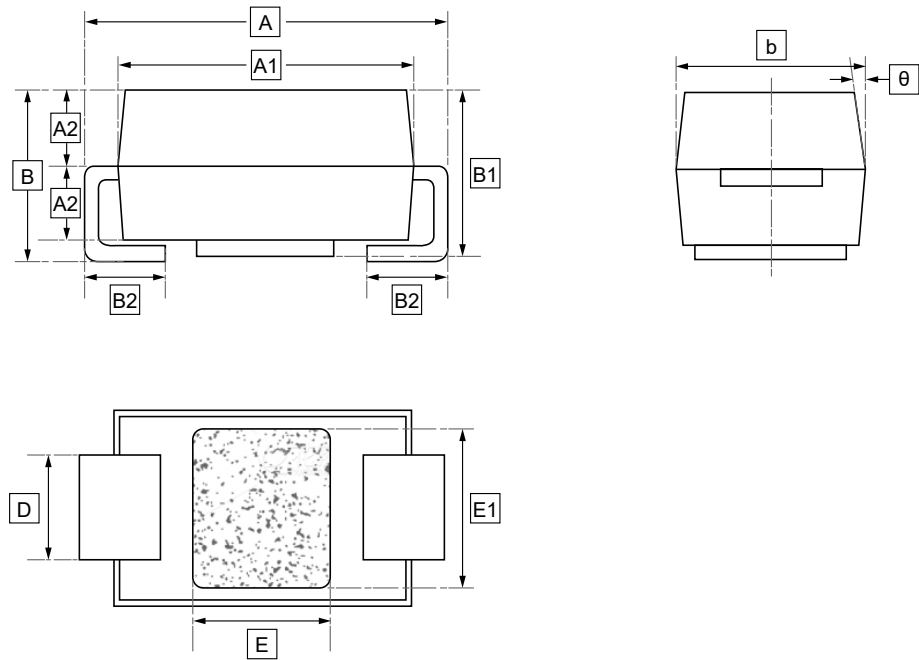


8.3 Typical Characteristic





9.1 SMA Package Outline Dimensions

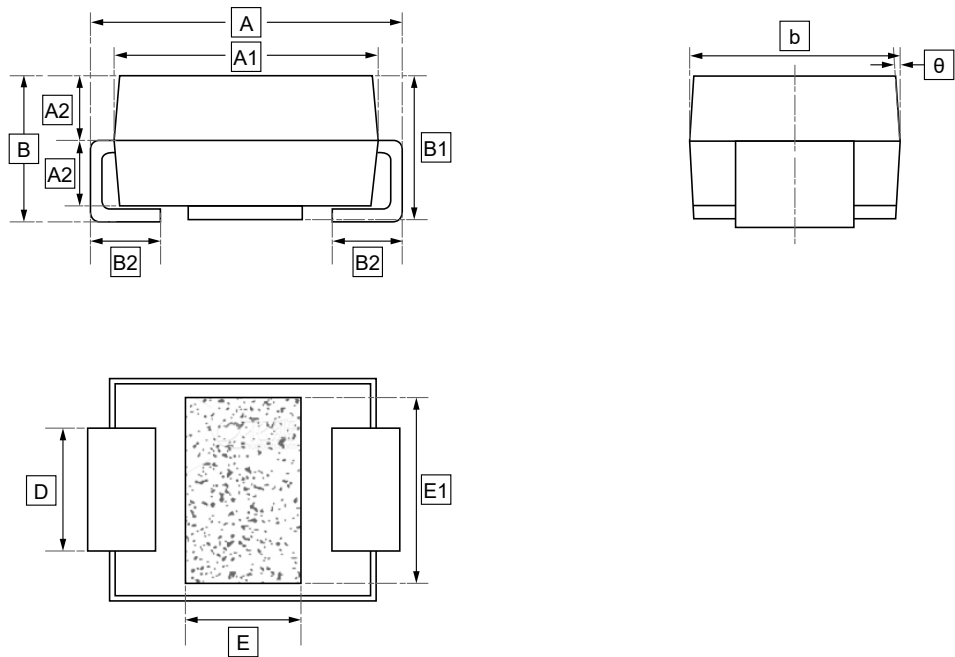


DIMENSIONS (mm are the original dimensions)

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



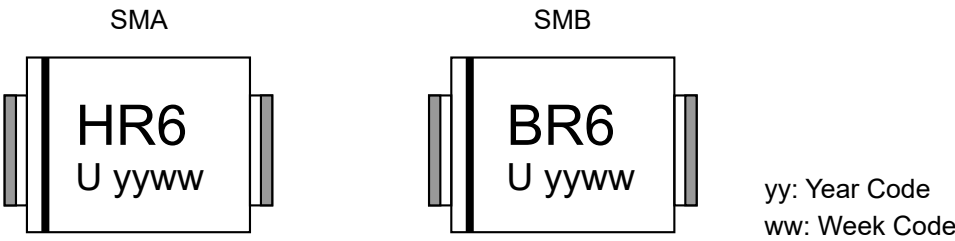
DIMENSIONS (mm are the original dimensions)

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	



UMW STTH1R06

10.Ordering Information



Order Code	Marking	Package	Base QTY	Delivery Mode
UMW STTH1R06A	HR6	SMA	5000	Tape and reel
UMW STTH1R06U	BR6	SMB	2500	Tape and reel



11.Disclaimer

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