

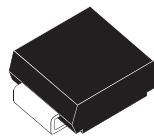
1.Description

The STTH3R06, which is using 2600V technology, is specially suited for use in switching power supplies, inverters and as a free wheeling diode.

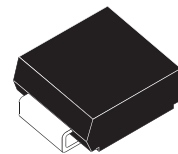
2.Features

- Ultrafast switching
- Low forward voltage drop
- Low thermal resistance
- Low leakage current (platinum doping)

3.Pinning Information



SMB



SMC

Table 1. Device summary

Symbol	Value
$I_{F(AV)}$	3A
V_{RRM}	600V
$I_{R(max)}$	100 μ A
T_j	175°C
$V_{F(typ)}$	1V
$t_{rr(max)}$	35ns



4. Absolute Ratings (Limiting Values)

Parameter			Symbol	Value	Unit
Repetitive Peak Reverse Voltage			V _{RRM}	600	V
RMS Forward Current			I _{F(RMS)}	10	A
Average Forward Current δ = 0.5	SMB	T _L =55°C	I _{F(AV)}	3	A
	SMC	T _L =80°C		3	A
Surge Non Repetitive Forward Current	t _p =10ms sinusoidal SMB/SMC		I _{FSM}	45	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	SMB	$R_{th(j-l)}$	25	$^\circ\text{C/W}$
	SMC		20	$^\circ\text{C/W}$

6. Static Electrical Characteristics

Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Reverse Leakage Current	$T_J = 25^\circ\text{C}$	I_R	$V_R = V_{RRM}$			3	μA
	$T_J = 150^\circ\text{C}$				15	100	μA
Forward Voltage Drop	$T_J = 25^\circ\text{C}$	V_F	$I_F = 3\text{A}$			1.7	V
	$T_J = 150^\circ\text{C}$				1.0	1.25	V

To evaluate the conduction losses use the following equation:

$$P = 1.03 \times I_{F(AV)} + 0.09 I_{F(RMS)}^2$$



7.Dynamic Characteristics

Parameter		Symbol	Conditions	Typ	Max	Unit
Reverse Recovery Time	$T_J=25^{\circ}\text{C}$	t_{rr}	$I_F=0.5\text{A}, I_{rr}=0.25\text{A}, I_R=1\text{A}$		30	ns
			$I_F=1\text{A}, dI_F/dt=-50\text{A}/\mu\text{s}, V_R=30\text{V}$	35		ns
Forward Recovery Time	$T_J=25^{\circ}\text{C}$	t_{fr}	$I_F=3\text{A}, dI_F/dt=100\text{A}/\mu\text{s}, V_{FR}=1.1\times V_{Fmax}$		100	ns
Forward Recovery Voltage		V_{FP}	$I_F=3\text{A}, dI_F/dt=100\text{A}/\mu\text{s}$		10	V



8.1 Typical Characteristic

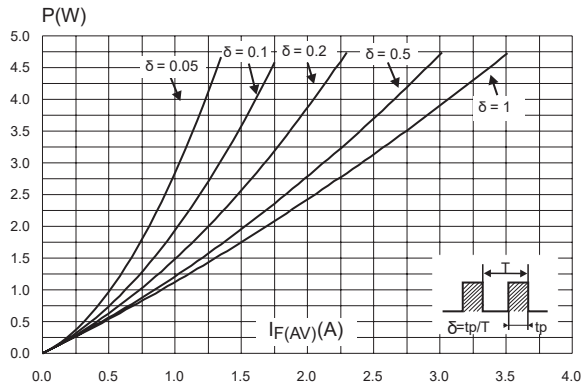


Figure 1: Conduction losses versus average current

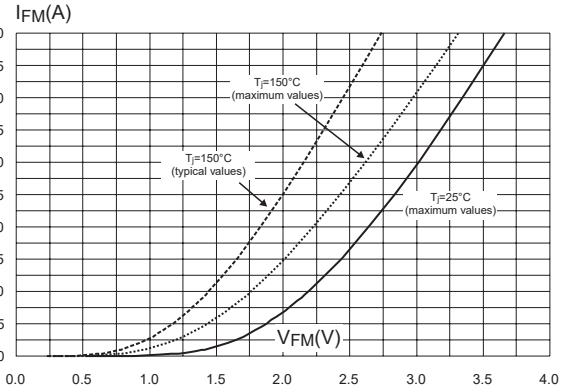
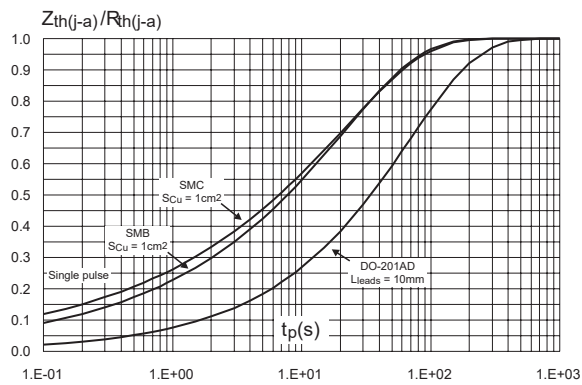
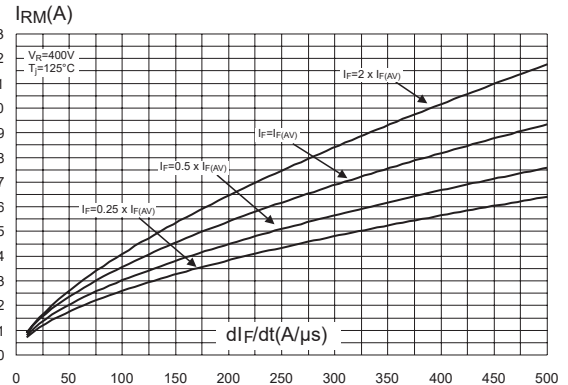
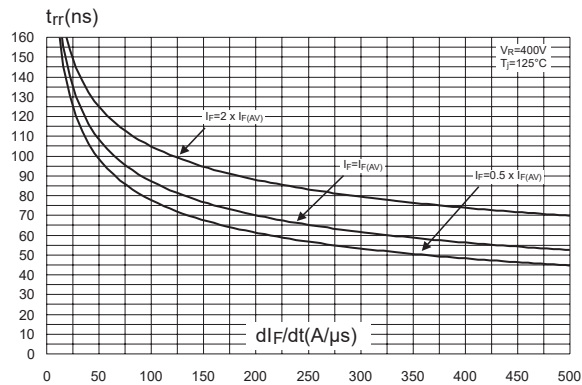
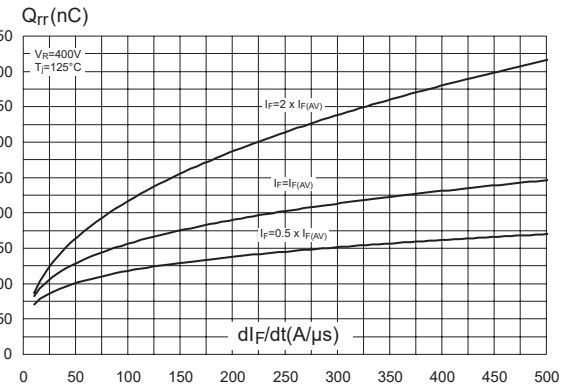


Figure 2: Forward voltage drop versus forward current

Figure 3: Relative variation of thermal impedance junction ambient versus pulse duration(epoxyprinted circuit FR4, $L_{leads}=10mm$, $S_{Cu}=1cm^2$)Figure 4: Peak reverse recovery current versus dI_F/dt (typical values)Figure 5: Reverse recovery time versus dI_F/dt (typical values)Figure 6: Reverse recovery charges versus dI_F/dt (typical values)



8.2 Typical Characteristic

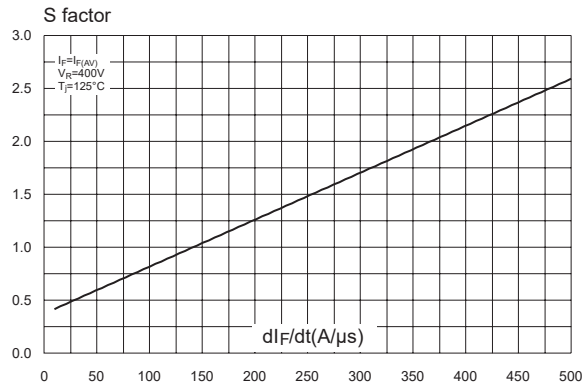
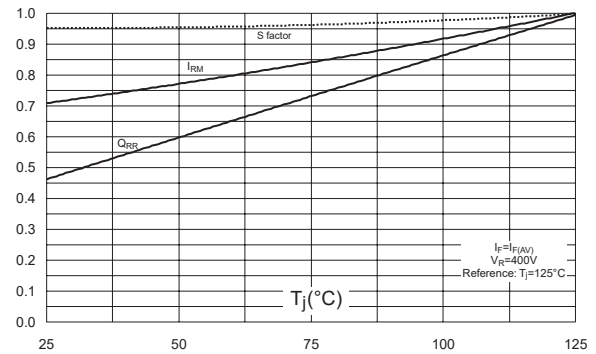
Figure 7: Softness factor versus dI_F/dt (typical values)

Figure 8: Relative variations of dynamic parameters versus junction temperature

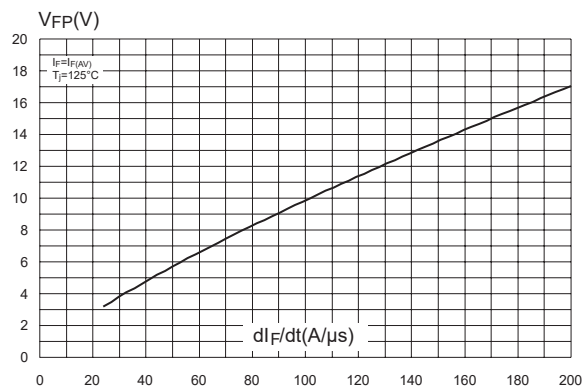
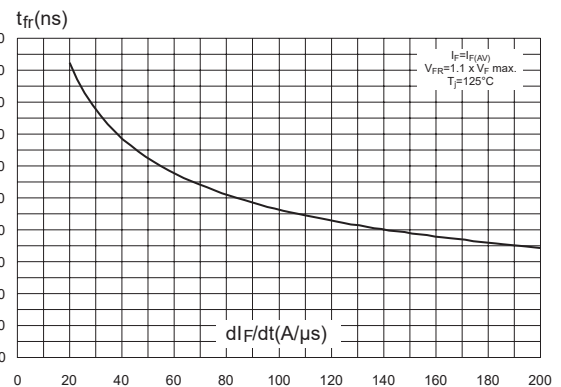
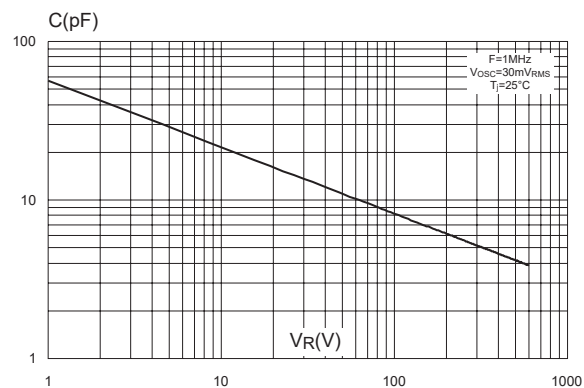
Figure 9: Transient peak forward voltage versus dI_F/dt (typical values)Figure 10: Forward recovery time versus dI_F/dt (typical values)

Figure 11: Junction capacitance versus reverse voltage applied (typical values)

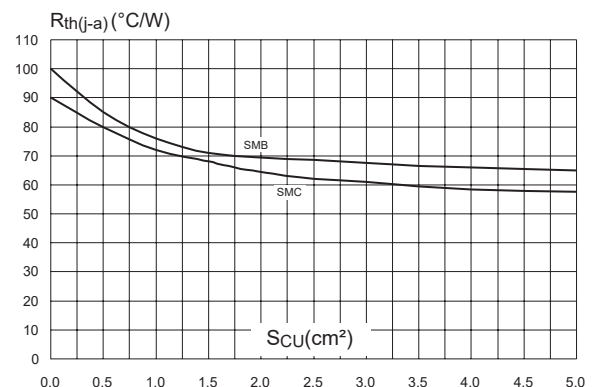
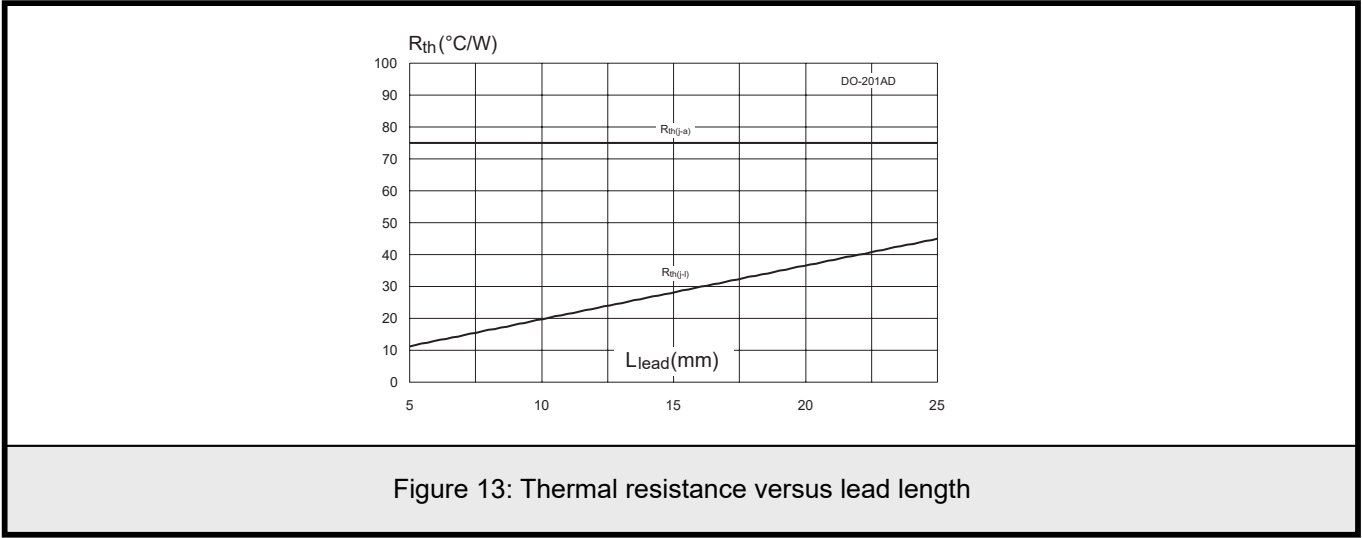


Figure 12: Thermal resistance junction to ambient versus copper surface under lead (epoxy FR4, eCU=35μm) (SMB / SMC)

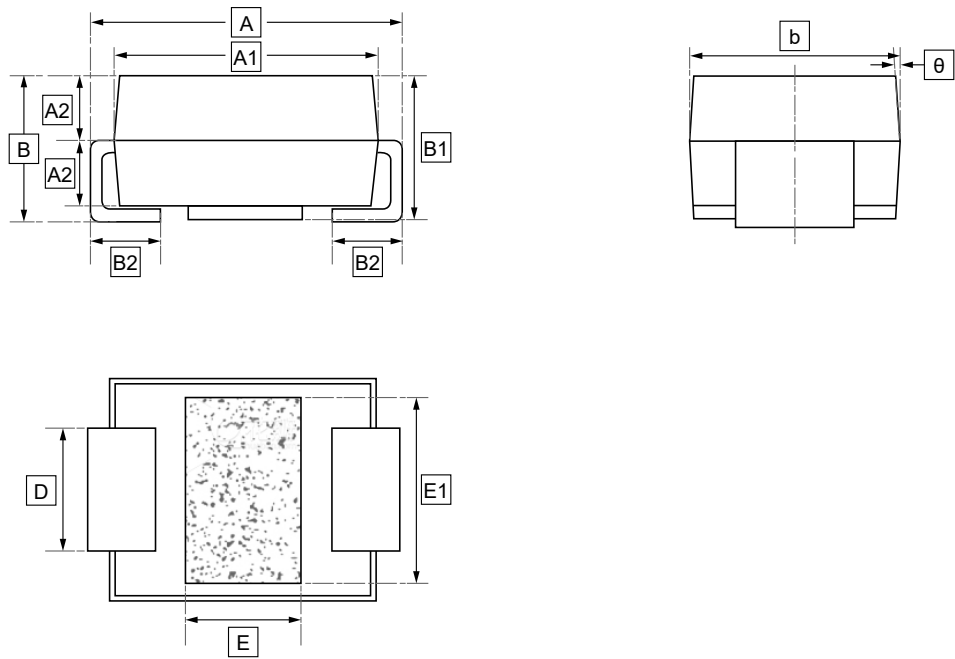


8.3 Typical Characteristic





9.1 SMB Package Outline Dimensions

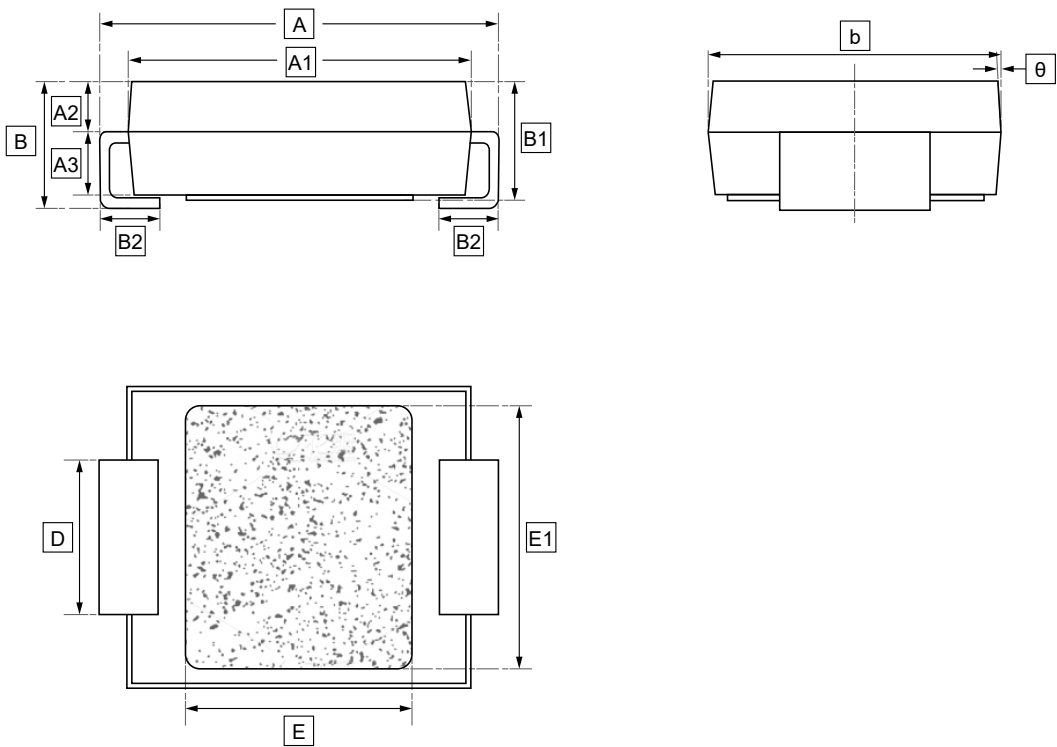


DIMENSIONS (mm are the original dimensions)

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	



9.2 SMC Package Outline Dimensions

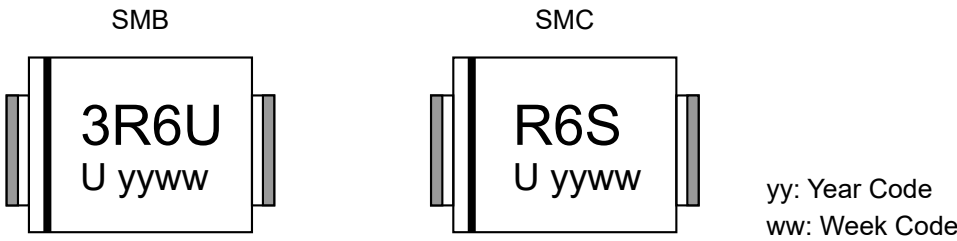


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	A3	B	B1	B2	b	D	E	E1	θ
Min	7.9	6.8	0.97	1.17	2.35	2.25	1.0	5.8	2.98	4.4	5.0	5°
Max	8.1	6.9	1.03	1.23	2.55	2.35	1.4	5.9	3.02	4.6	5.2	



10.Ordering Information



Order Code	Marking	Package	Base QTY	Delivery Mode
UMW STTH3R06U	3R6U	SMB	2500	Tape and reel
UMW STTH3R06S	R6S	SMC	2500	Tape and reel



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