

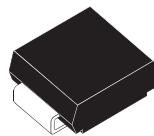
1.Description

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

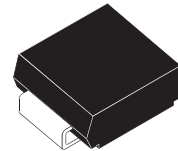
2.Features

- 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

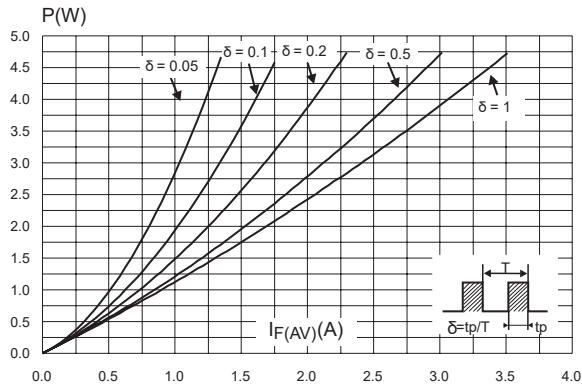


Figure 1: Conduction losses versus average current

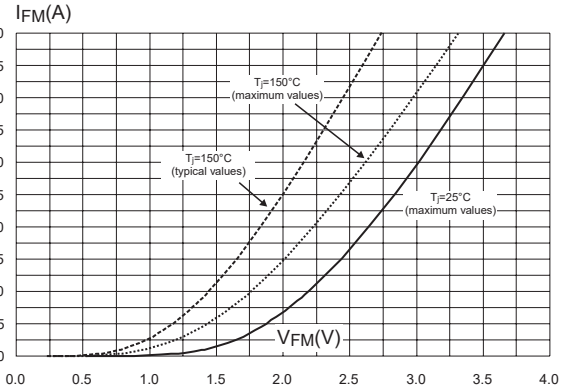
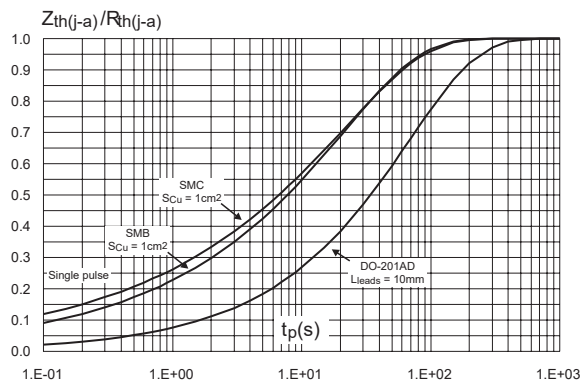
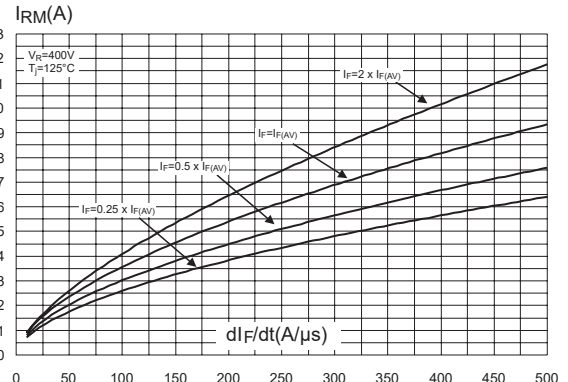
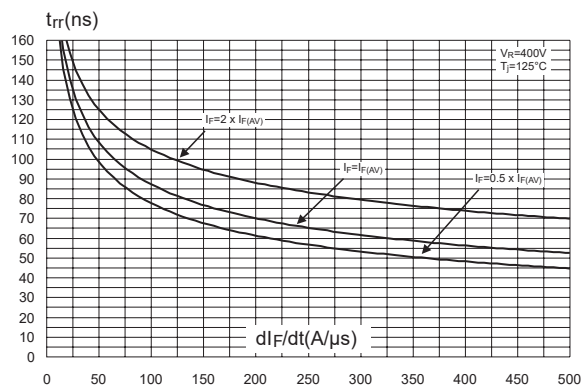
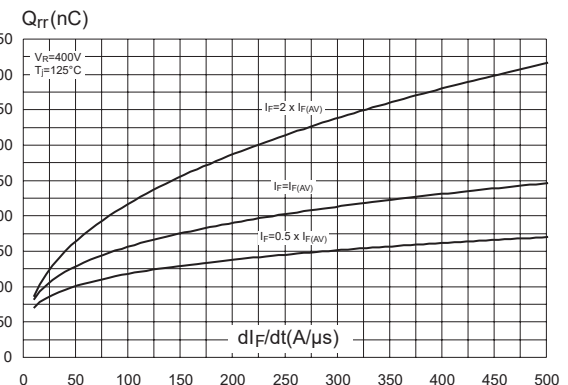


Figure 2: Forward voltage drop versus forward current

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

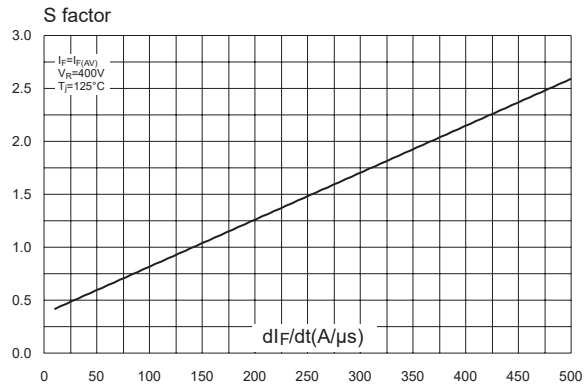
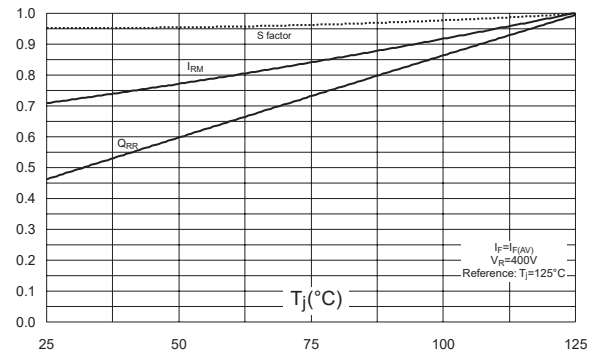
Figure 7: Softness factor versus dI_F/dt (typical values)

Figure 8: Relative variations of dynamic parameters versus junction temperature

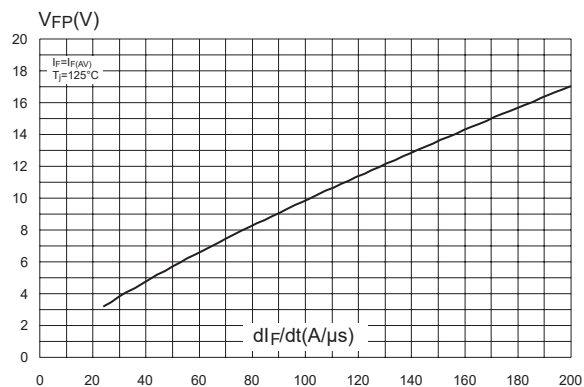
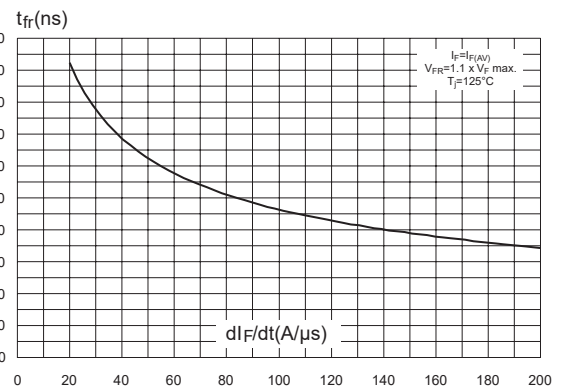
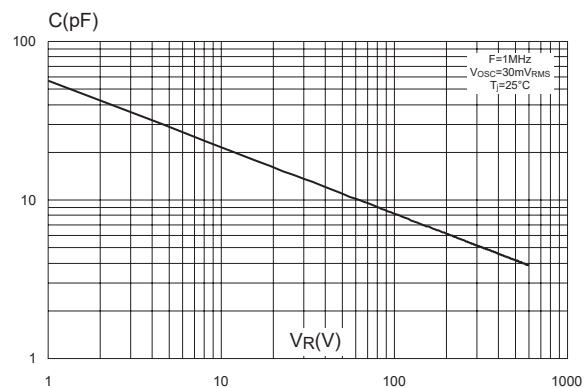
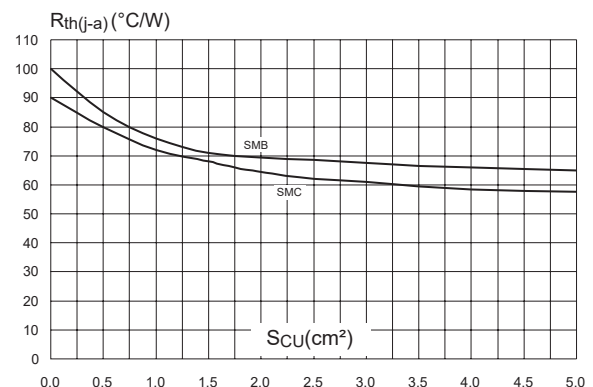
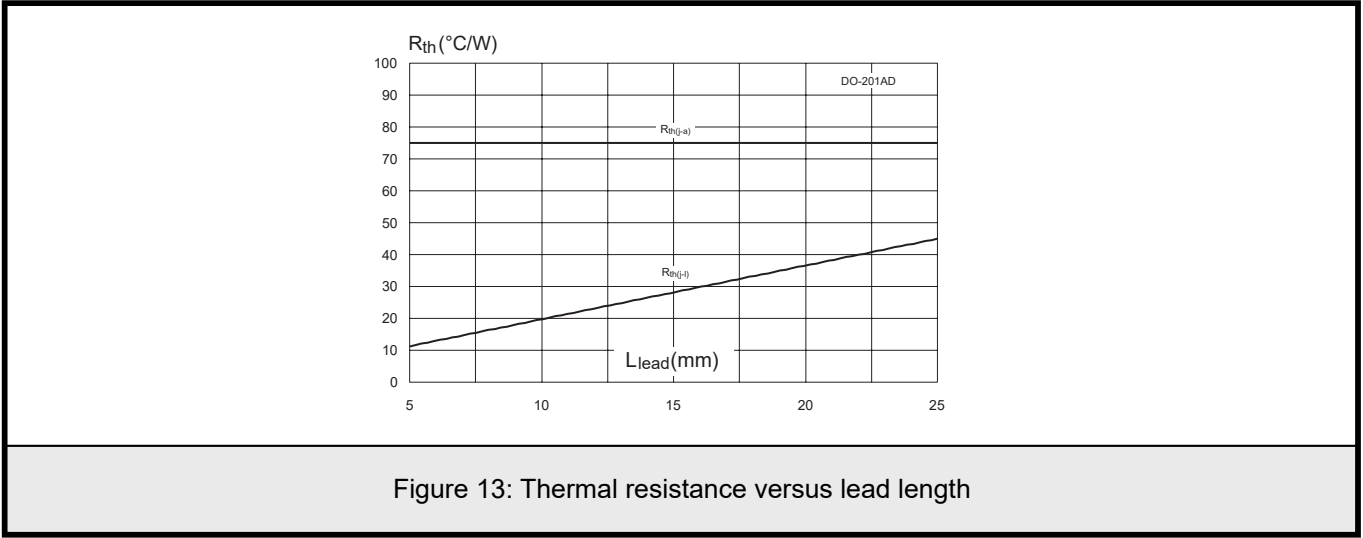
Figure 9: Transient peak forward voltage versus dI_F/dt (typical values)Figure 10: Forward recovery time versus dI_F/dt (typical values)

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

Figure 12: Thermal resistance junction to ambient versus copper surface under lead (epoxy FR4, $e_{CU}=35\mu m$) (SMB / SMC)

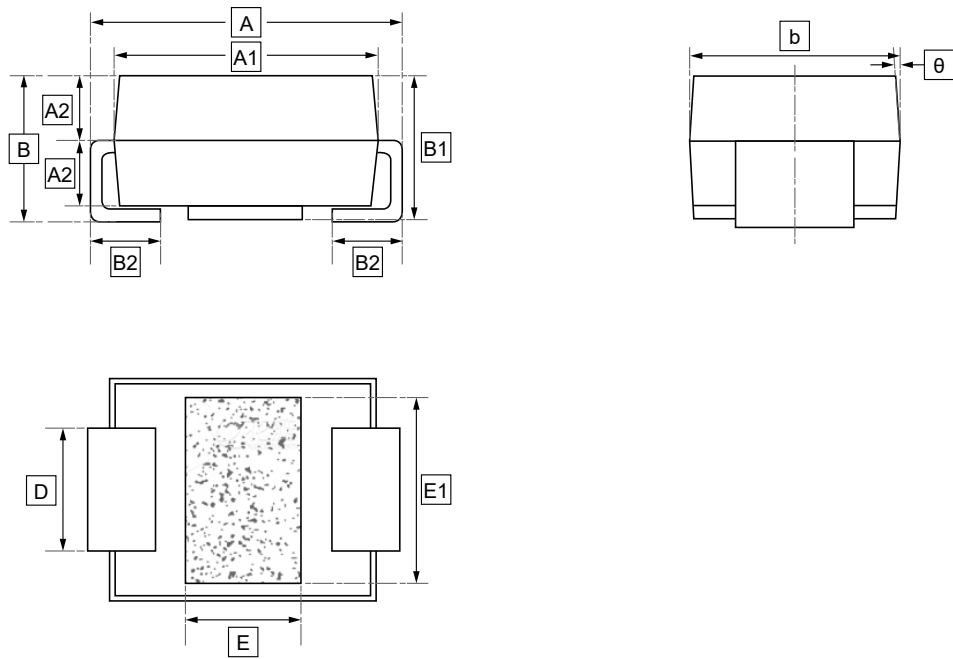


8.3 Typical Characteristic





9.1 SMB Package Outline Dimensions

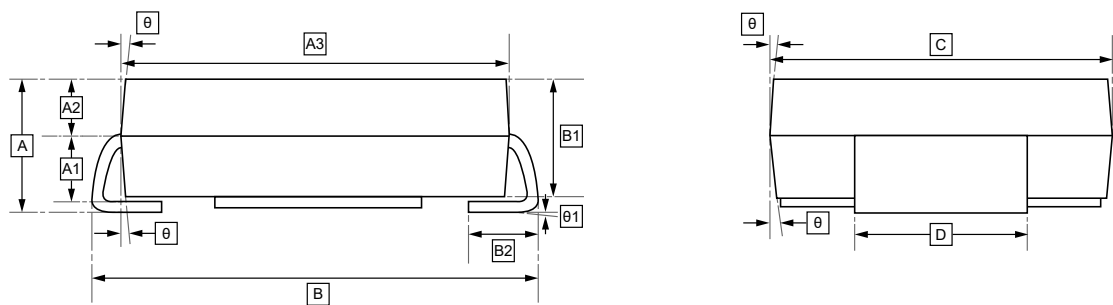


DIMENSIONS (mm are the original dimensions)

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

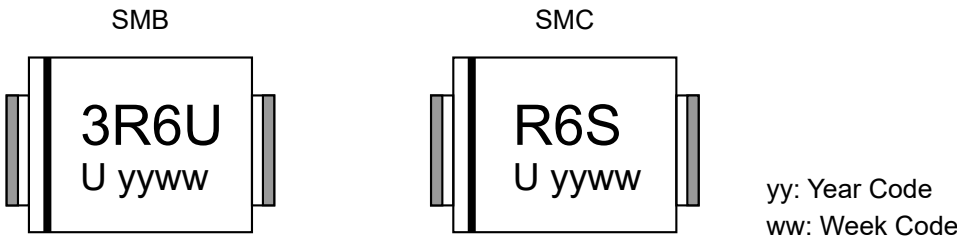


DIMENSIONS (mm are the original dimensions)

Symbol	A	A1	A2	A3	B	B1	B2	C	D	θ	θ1
Min	2.2	1.0	0.9	6.7	7.7	2.0	1.0	5.7	2.8	0°	0°
Max	2.6	1.4	1.2	6.9	8.2	2.5	1.4	6.2	3.2	5°	5°



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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