UMW STTH2R06

High efficiency ultrafast diode

1.Description

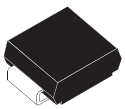
It is specially suited for switching mode base drive and transistor circuits. Packaged in axial, SMA, SMB and SMC, this device is intended for use in high frequency inverters, free wheeling and polarity protection.

2.Features

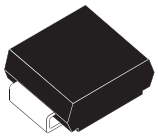
- Very low conduction losses
- Negligible switching losses
- Low forward and reverse recovery times
- High junction temperature

3.Pinning Information

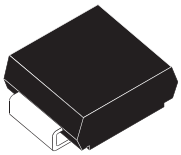




SMA



SMB



SMC

Table 1. Device summary

Symbol	Value
$I_{F(AV)}$	2A
V_{RRM}	600V
T_j	175°C
$V_{F(typ)}$	1.0V
$t_{rr(typ)}$	35ns

4.Absolute Ratings (Limiting Values)

Parameter			Symbol	Value	Unit
Repetitive Peak Reverse Voltage			V_{RRM}	600	V
Forward RMS Voltage			$I_{F(RMS)}$	7	A
Average Forward Current δ = 0.5	SMA	T_L=85°C	$I_{F(AV)}$	2	A
	SMB	T_L=100°C		2	A
	SMC	T_L=115°C		2	A
Surge Non Repetitive Forward Current	SMA/SMB/SMC	t_p=10ms sinusoidal	I_{FSM}	30	A
Storage Temperature Range			T_{STG}	-65 to 175	°C
Maximum Operating Junction Temperature			T_J	-40 to 175	°C

5.Thermal Parameters

Parameter		Symbol	Max	Units
Junction To Lead	SMA	$R_{th(j-l)}$	30	°C/W
	SMB		25	°C/W
	SMC		20	°C/W

6.Static Electrical Characteristics

Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Reverse Leakage Current	T_J=25°C	I_R(1)	V_R=V_{RRM}			2	μA
	T_J=150°C				12	85	μA
Forward Voltage Drop	T_J=25°C	V_F(2)	I_F=2A			1.7	V
	T_J=150°C				1.0	1.25	V

1. Pulse test: t_p=5ms, δ < 2 %

2. Pulse test: t_p=380μs, δ < 2 %

To evaluate the maximum conduction losses use the following equation:

$P=1 \times I_{F(AV)} + 0.125\ I_{F\ (RMS)}^{2}$

7.Dynamic Characteristics

Parameter		Symbol	Conditions	Typ	Max	Unit
Reverse Recovery Time	T_J=25°C	t_{rr}	I_F=0.5A, I_{rr}=0.25A, I_R=1A		30	ns
			I_F=1A, dI_F/dt=-50A/μs, V_R=30V	35	50	ns
Forward Recovery Time	T_J=25°C	t_{fr}	I_F=2A, dI_F/dt=100A/μs		100	ns
Forward Recovery Voltage	T_J=25°C	V_{FP}	V_{FR}=1.1 x V_{Fmax}		10	V

8.1 Typical Characteristic

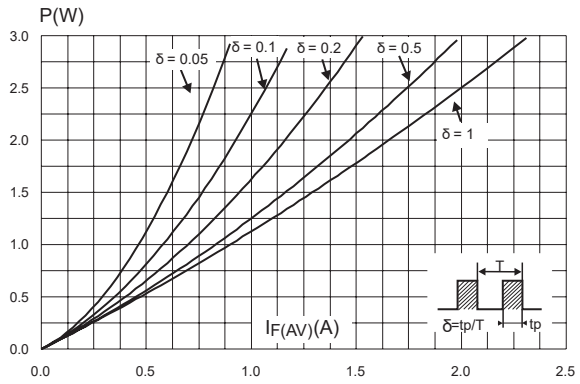


Figure 1: Conduction losses versus average current

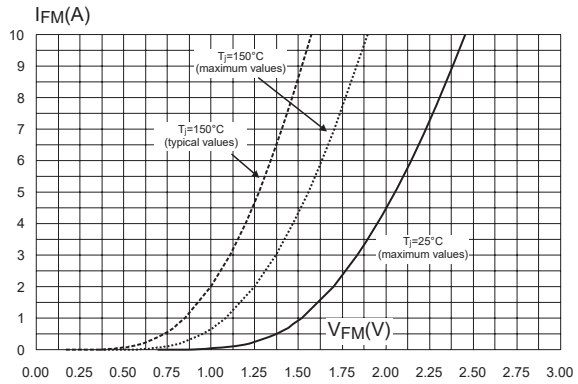


Figure 2: Forward voltage drop versus forward current

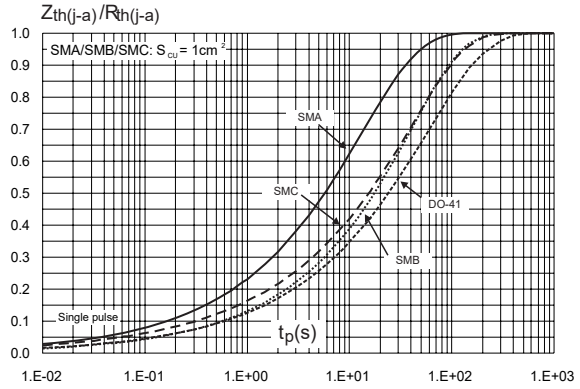


Figure 3: Relative variation of thermal impedance junction to case vs pulse duration

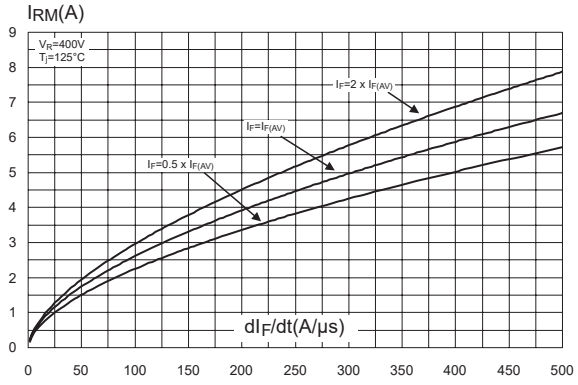


Figure 4: Peak reverse recovery current versus dI_F/dt (typical values)

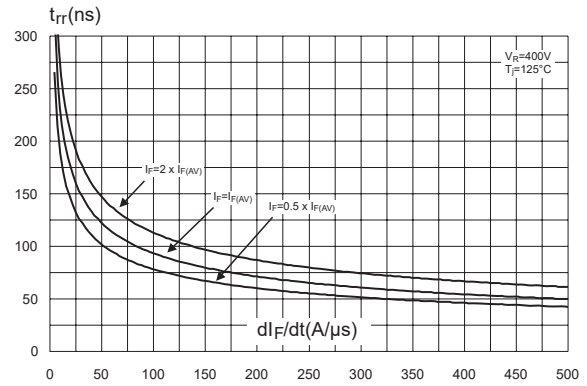


Figure 5: Reverse recovery time versus dI_F/dt (typical values)

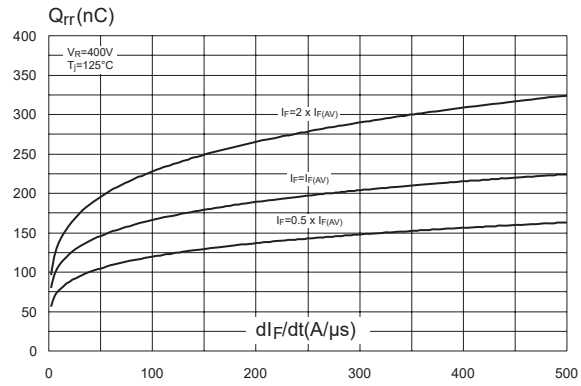


Figure 6: Reverse recovery charges versus dI_F/dt (typical values)

8.2 Typical Characteristic

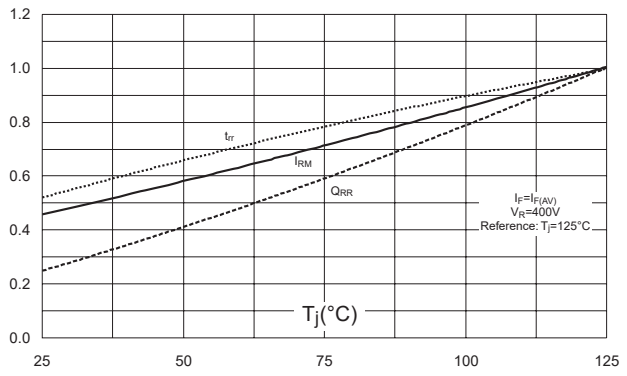


Figure 7: Relative variations of dynamic parameters versus junction temperature

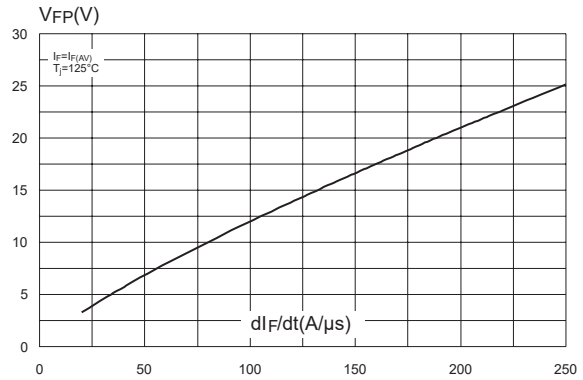


Figure 8: Transient peak forward voltage versus dI_F/dt (typical values)

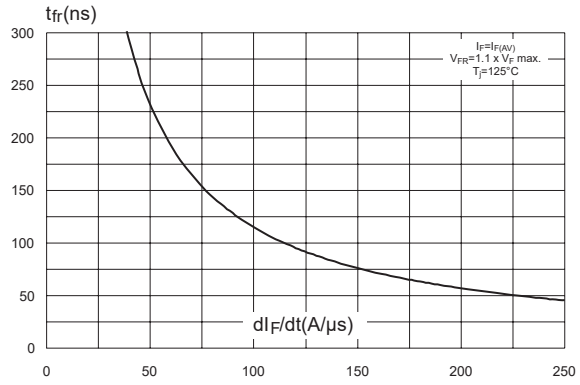


Figure 9: Forward recovery time versus dI_F/dt (typical values)

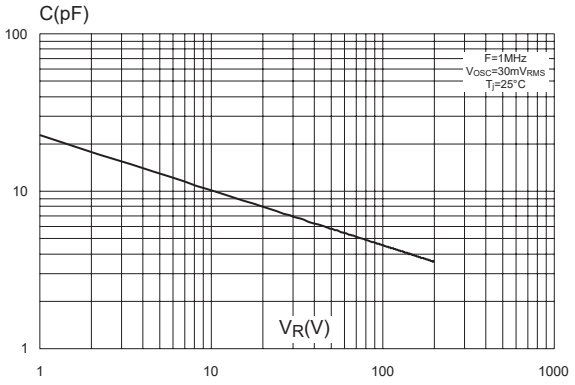


Figure 10: Junction capacitance versus reverse voltage applied (typical values)

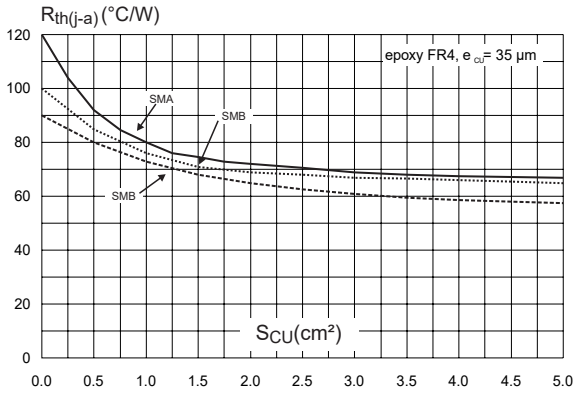
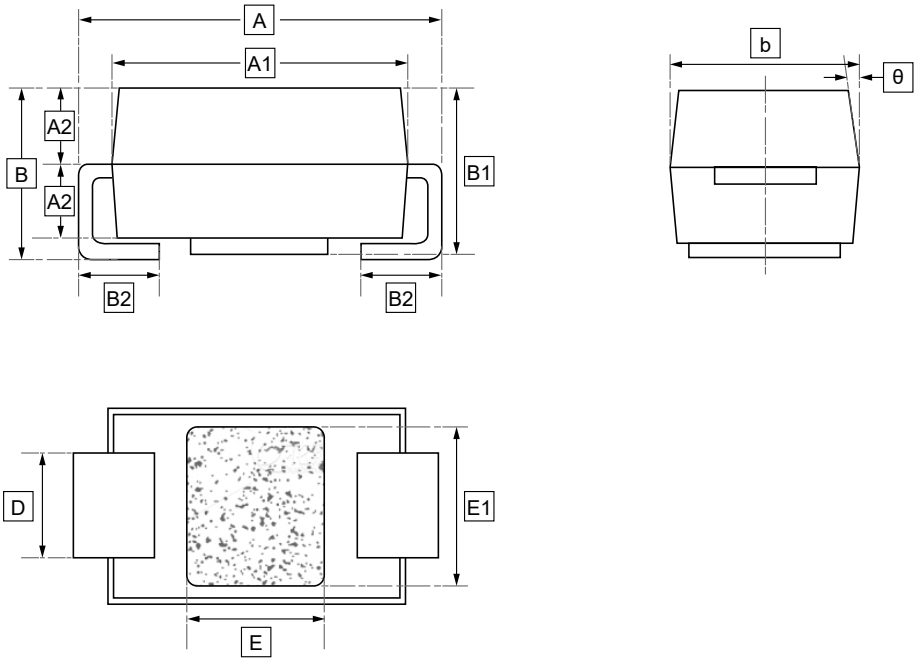


Figure 11: Thermal resistance junction to ambient versus copper surface under each lead

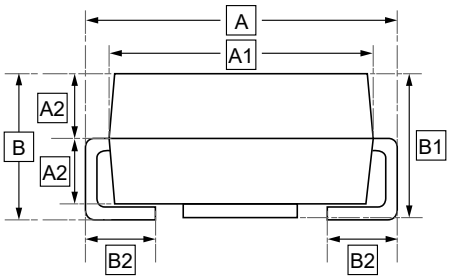
9.1 SMA Package Outline Dimensions

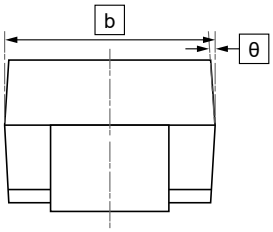


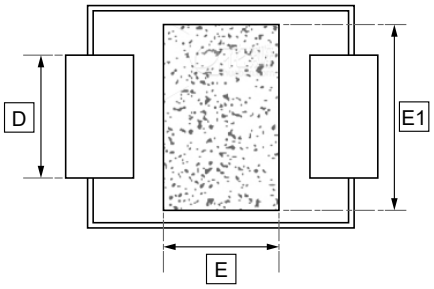
DIMENSIONS (mm are the original dimensions)

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



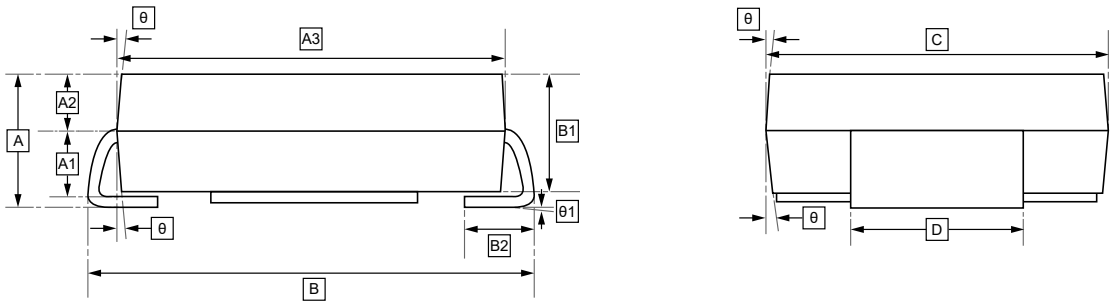




DIMENSIONS (mm are the original dimensions)

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	

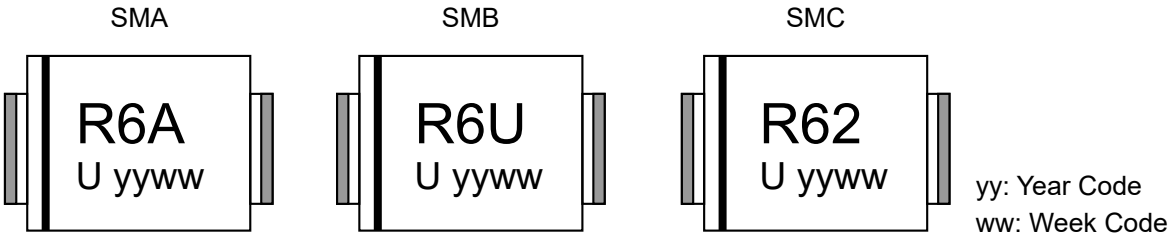
9.3 SMC Package Outline Dimensions



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 STTH2R06A	R6A	SMA	5000	Tape and reel
UMW STTH2R06U	R6U	SMB	2500	Tape and reel
UMW STTH2R06S	R62	SMC	2500	Tape and reel

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