

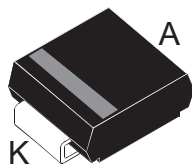
1.Description

The STTH102, which is using 200V planar technology, is specially suited for switching mode base drive and transistor circuits. The device is also intended for use as a free wheeling diode in power supplies and other power switching applications.

2.Features

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

3.Pinning Information



SMA

Table 1. Device summary

Symbol	Value
$I_{F(AV)}$	1A
V_{RRM}	200V
$T_{J(max)}$	175°C
$V_{F(max)}$	0.78V
$t_{rr(max)}$	20ns



4. Absolute Ratings (Limiting Values)

Parameter			Symbol	Value	Unit
Repetitive Peak Reverse Voltage			V_{RRM}	200	V
Average Forward Current $\delta = 0.5$	SMA	$T_L = 90^\circ\text{C}$	$I_{F(AV)}$	1	A
Surge Non Repetitive Forward Current	SMA	$t_p = 10\text{ms}$ Sinusoidal	I_{FSM}	40	A
Storage Temperature Range			T_{STG}	-65 to 175	$^\circ\text{C}$
Maximum Operating Junction Temperature			T_J	175	$^\circ\text{C}$
Critical Rate of Rise of Reverse Voltage			dV/dt	10000	$\text{V}/\mu\text{s}$

5. Thermal Parameters

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

6. Static Electrical Characteristics

Parameter		Symbol	Conditions	Min	Typ	Max	Unit
Reverse Leakage Current	$T_J = 25^\circ\text{C}$	$I_R^{(1)}$	$V_R = V_{RRM}$			1	μA
	$T_J = 125^\circ\text{C}$				1	25	μA
Forward Voltage Drop	$T_J = 25^\circ\text{C}$	$V_F^{(2)}$	$I_F = 700\text{mA}$ (SMA)			0.9	V
	$T_J = 25^\circ\text{C}$		$I_F = 1\text{A}$			0.97	V
	$T_J = 125^\circ\text{C}$		$I_F = 1\text{A}$		0.68	0.78	V

1. Pulse test: $t_p = 5\text{ms}$, $\delta < 2\%$

2. Pulse test: $t_p = 380\mu\text{s}$, $\delta < 2\%$

To evaluate the conduction losses use the following equation:

$$P = 0.65 \times I_{F(AV)} + 0.130 I_F^2(RMS)$$



7.Dynamic Characteristics

Parameter		Symbol	Conditions	Typ	Max	Unit
Reverse Recovery Time	$T_J=25^{\circ}\text{C}$	t_{rr}	$I_F=0.5\text{A}, I_{RR}=0.25\text{A}, I_R=1\text{A}$	12	20	ns
Forward Recovery Time	$T_J=25^{\circ}\text{C}$	t_{fr}	$I_F=1\text{A}, dI_F/dt=50\text{A/ms}, V_{FR}=1.1\times V_{Fmax}$	50		ns
Forward Recovery Voltage	$T_J=25^{\circ}\text{C}$	V_{FP}	$I_F=1\text{A}, dI_F/dt=50\text{A/ms}$	1.8		V



8.1 Typical Characteristic

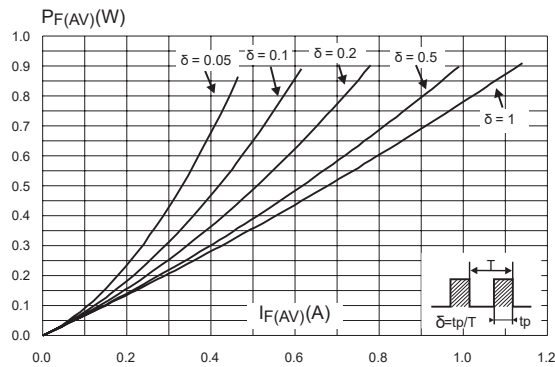


Figure 1: Average forward power dissipation versus average forward current (SMA)

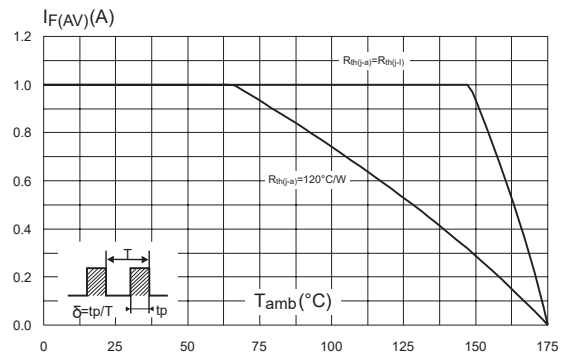


Figure 2: Average forward current versus ambient temperature ($\delta = 0.5$) (SMA)

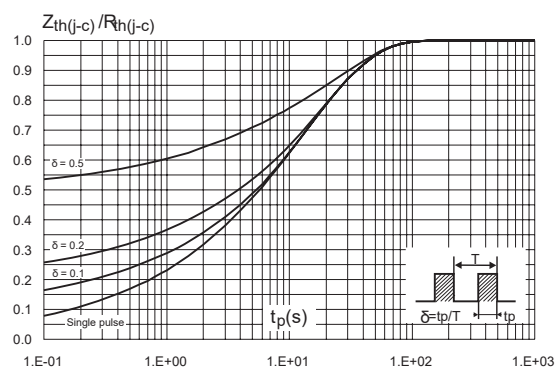


Figure 3: Relative variation of thermal impedance junction to ambient versus pulse duration (epoxy printed circuit board, $e_{(Cu)} = 35 \mu m$, recommended pad layout) (SMA)

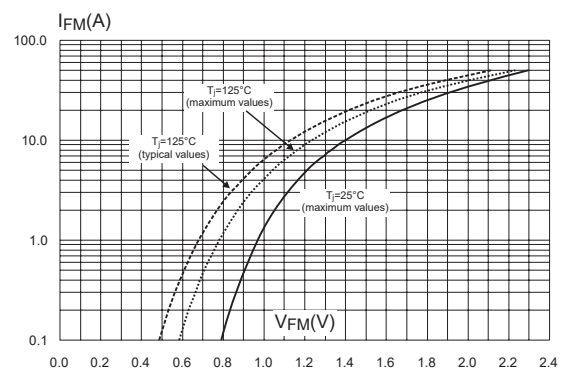


Figure 4: Forward voltage drop versus forward current

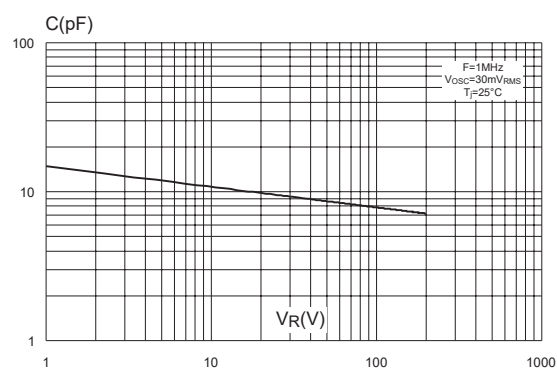


Figure 5: Junction capacitance versus reverse voltage applied (typical values)

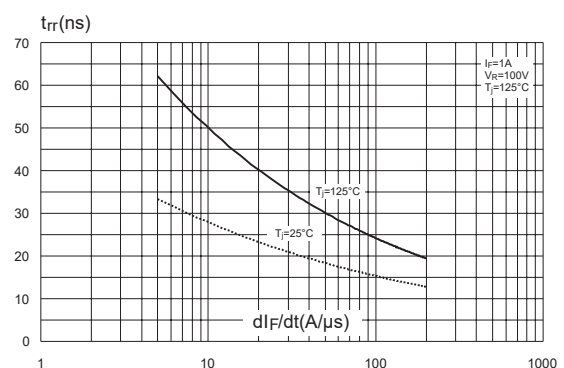


Figure 6: Reverse recovery time versus dI_F/dt (90% confidence)



8.2 Typical Characteristic

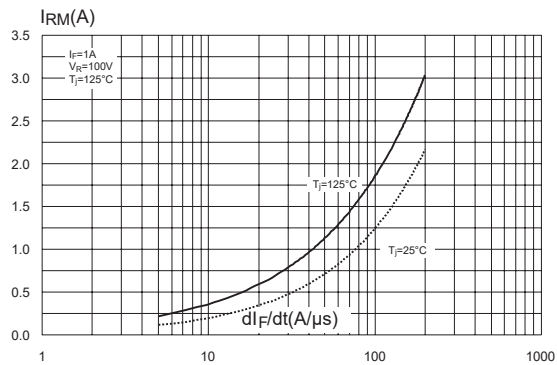


Figure 7: Peak recovery current versus dI_F/dt (90% confidence)

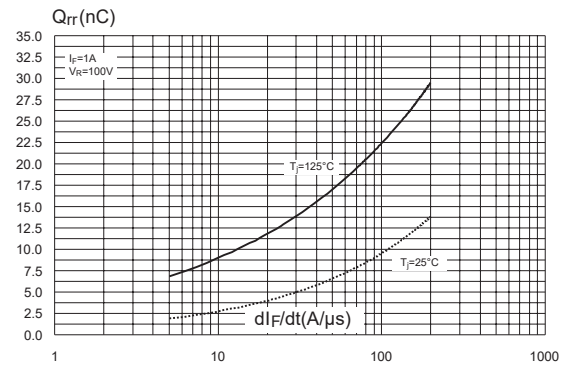


Figure 8: Reverse recovery charges versus dI_F/dt (90% confidence)

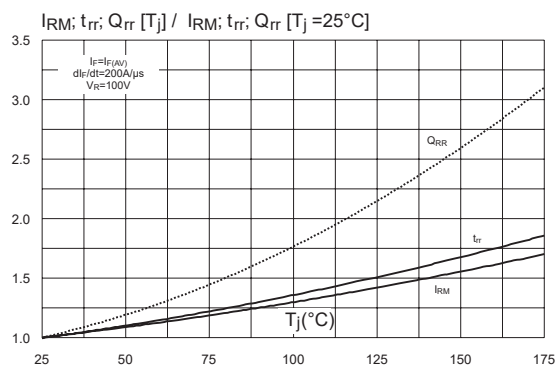


Figure 9: Relative variations of dynamic parameters versus junction temperature

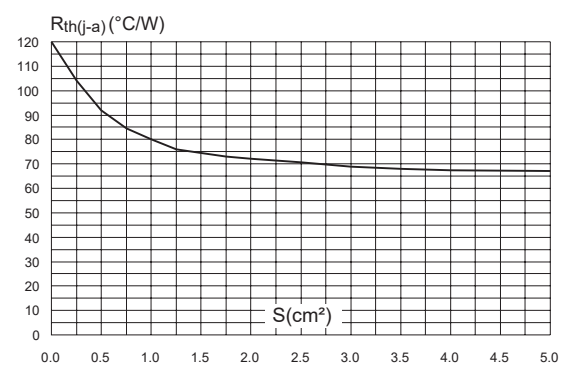
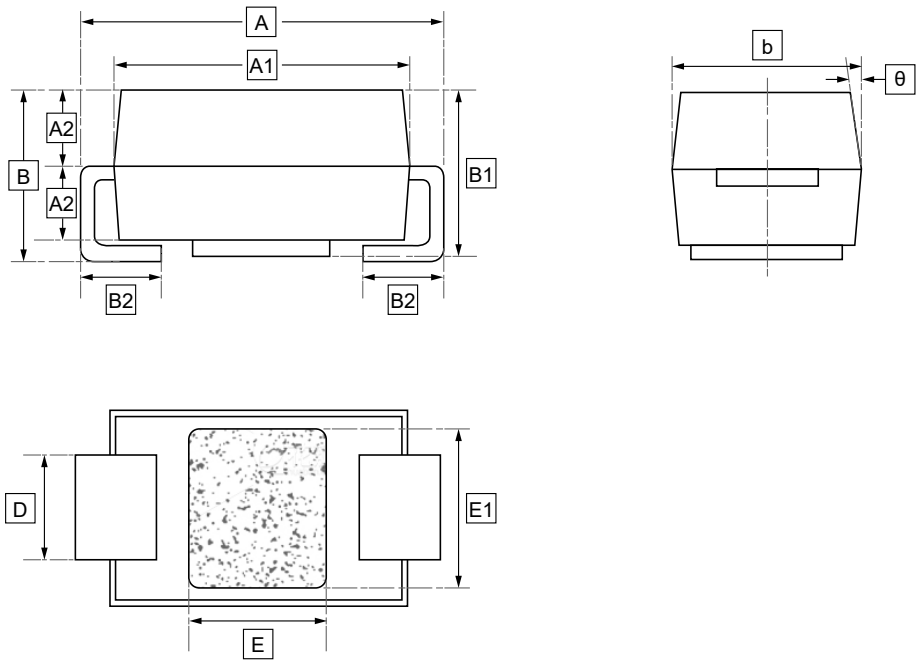


Figure 10: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, copper thickness: 35 μm) (SMA)



9.SMA Package Outline Dimensions

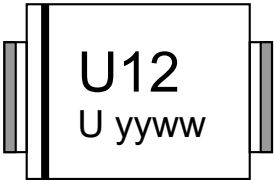


DIMENSIONS (mm are the original dimensions)

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	



10.Ordering Information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW STTH102A	SMA	5000	Tape and reel



11.Disclaimer

UMW reserves the right to make changes to all products, specifications. Customers should obtain the latest version of product documentation and verify the completeness and currency of the information before placing an order.

When applying our products, please do not exceed the maximum rated values, as this may affect the reliability of the entire system. Under certain conditions, any semiconductor product may experience faults or failures. Buyers are responsible for adhering to safety standards and implementing safety measures during system design, prototyping, and manufacturing when using our products to prevent potential failure risks that could lead to personal injury or property damage.

Unless explicitly stated in writing, UMW products are not intended for use in medical, life-saving, or life-sustaining applications, nor for any other applications where product failure could result in personal injury or death. If customers use or sell the product for such applications without explicit authorization, they assume all associated risks.

When reselling, applying, or exporting, please comply with export control laws and regulations of China, the United States, the United Kingdom, the European Union, and other relevant countries, regions, and international organizations.

This document and any actions by UMW do not grant any intellectual property rights, whether express or implied, by estoppel or otherwise. The product names and marks mentioned herein may be trademarks of their respective owners.