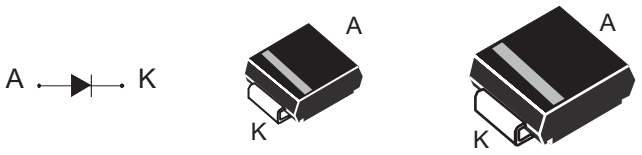
1.Description

This device is an ultrafast diode based on a high voltage planar technology, it is perfectly suited for freewheeling, clamping, snubbering, demagnetization in power supplies and other power switching applications.
Housed in SMB and SMC packages, this diode reduces the losses in high switching frequency operations.

2.Features

- Low forward voltage drop
- High reliability
- High surge current capability
- Soft switching for reduced EMI disturbances
- Planar technology

3.Pinning Information



SMB **SMC**

Table 1. Device summary

Symbol	Value
$I_{F(AV)}$	2A
V_{RRM}	1200V
T_j	175°C
$V_{F(typ)}$	1.0V
$t_{rr(max)}$	75ns

4.Absolute Ratings (Limiting Values)

Parameter			Symbol	Value	Unit
Repetitive Peak Reverse Voltage			V_{RRM}	1200	V
Voltage RMS			$V_{(RMS)}$	850	V
Average Forward Current δ = 0.5	SMB	T_L=90°C	$I_{F(AV)}$	2	A
	SMC	T_L=105°C		2	A
RMS Forward Current			$I_{F(RMS)}$	10	A
Forward Surge Current, t=8.3ms			I_{FSM}	40	A
Storage Temperature Range			T_{STG}	-50 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	°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	V_R=V_{RRM}			10	μA
	T_J=125°C					100	μA
Forward Voltage Drop	T_J=25°C	V_F	I_F=2A			1.75	V
	T_J=125°C				1.07	1.5	V
	T_J=150°C				1.0		V

7.Dynamic Characteristics

Parameter		Symbol	Conditions	Typ	Max	Unit
Reverse Recovery Time	T_J=25°C	t_{rr}	I_F=1A, dI_F/dt=-100A/μs, V_R=30V		75	ns
Forward Recovery Time	T_J=25°C	t_{fr}	I_F=2A,dI_F/dt=50A/μs,V_{FR}=1.1xV_{Fmax}		500	ns
Forward Recovery Voltage	T_J=25°C	V_{FP}	I_F=2A,dI_F/dt=50A/μs,V_{FR}=1.1xV_{Fmax}		30	V

8.1 Typical Characteristic

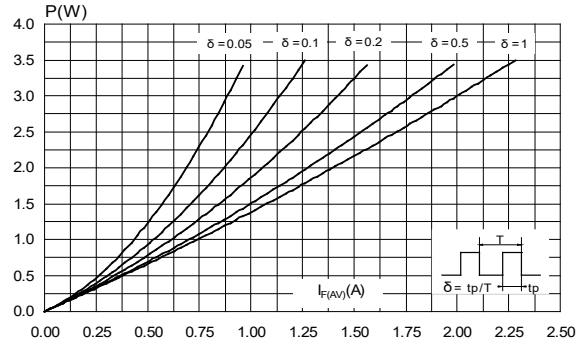


Figure 1: Conduction losses versus average forward current

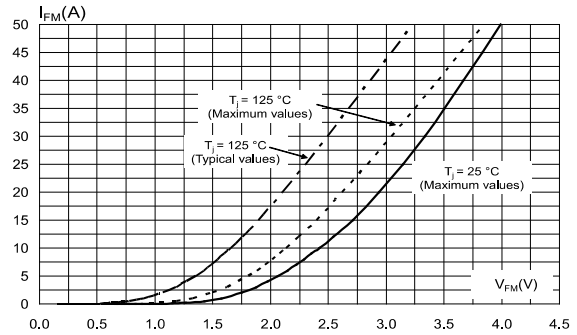


Figure 2: Forward voltage drop versus forward current

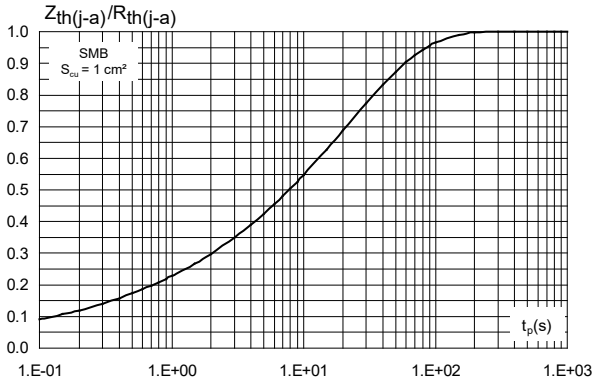


Figure 3: Relative variation of thermal impedance junction to ambient versus pulse duration (Epoxy printed circuit board FR4, S_{CU}=1cm²)

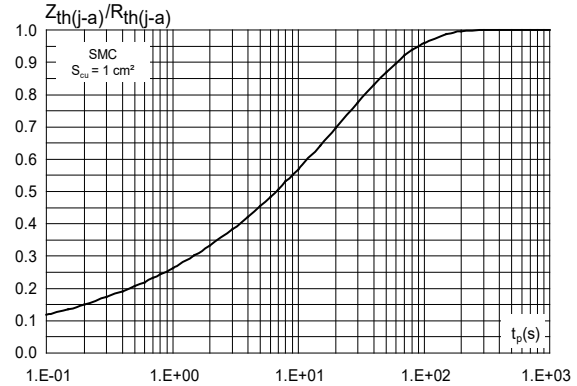


Figure 4: Relative variation of thermal impedance junction to ambient versus pulse duration (Epoxy printed circuit board FR4, S_{CU}=1cm²)

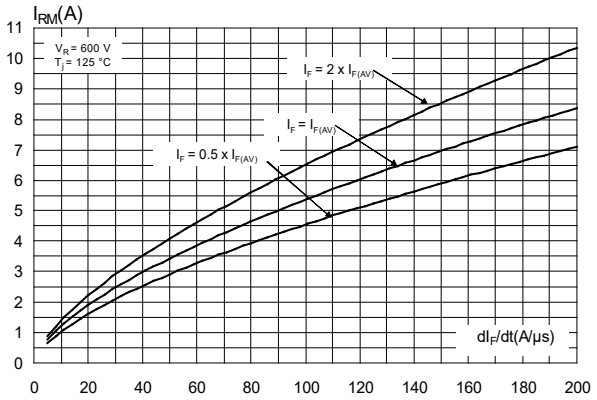


Figure 5: Reverse recovery current versus dI_F/dt (typical values)

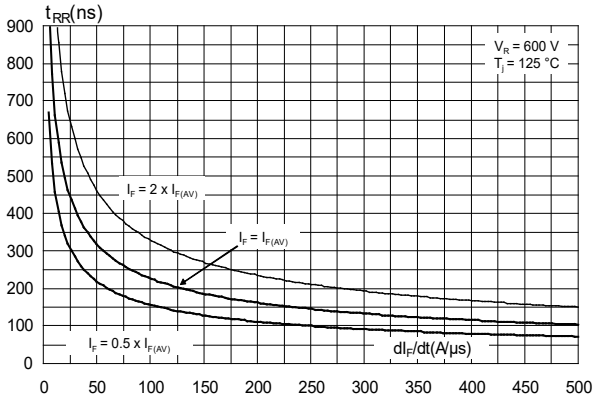


Figure 6: Reverse recovery current versus dI_F/dt (typical values)

8.2 Typical Characteristic

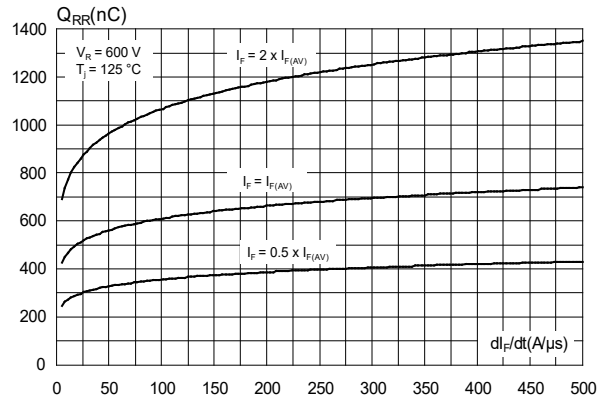


Figure 7: Reverse recovery charges versus dI_F/dt (typical values)

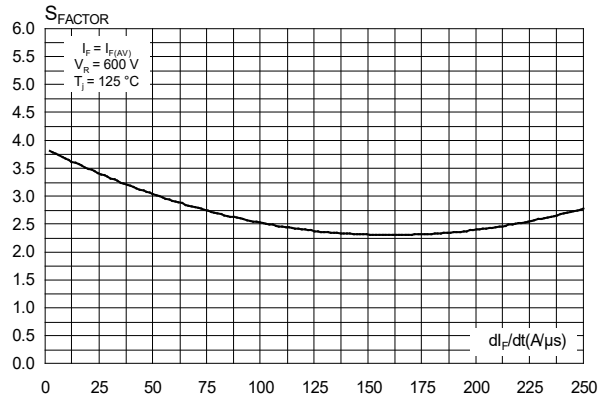


Figure 8: Softness factor versus dI_F/dt (typical values)

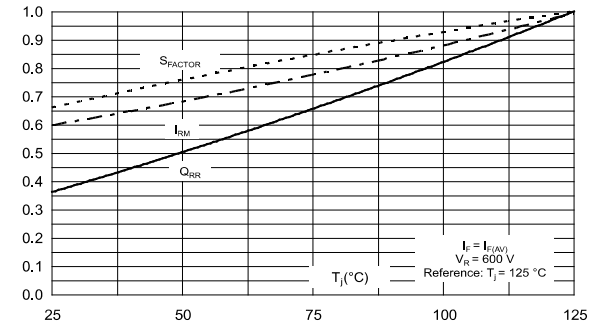


Figure 9: Relative variations of dynamic parameters versus junction temperature

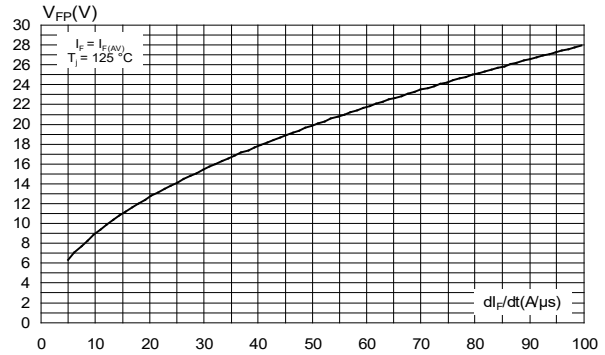


Figure 10: Transient peak forward voltage versus dI_F/dt (typical values)

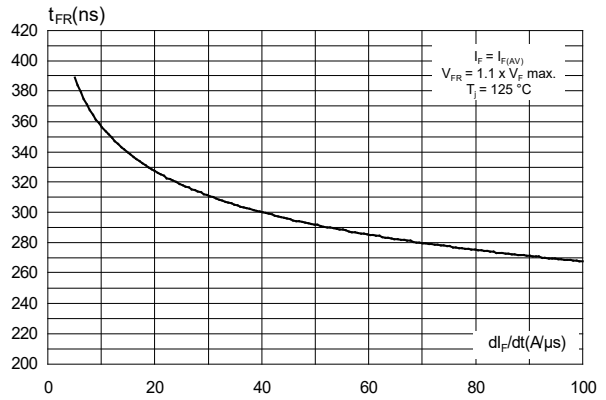


Figure 11: Forward recovery time versus dI_F/dt (typical values)

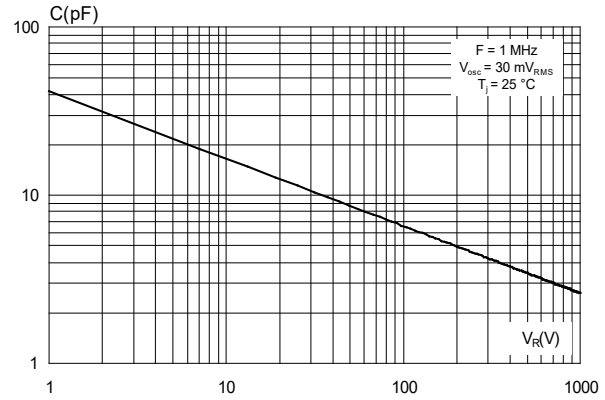


Figure 12: Junction capacitance versus reverse voltage applied (typical values)

8.3 Typical Characteristic

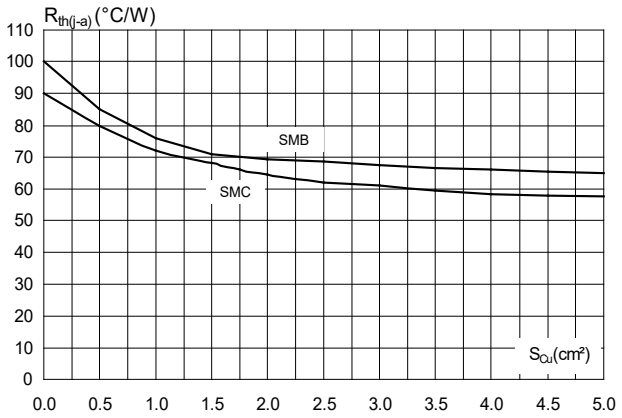
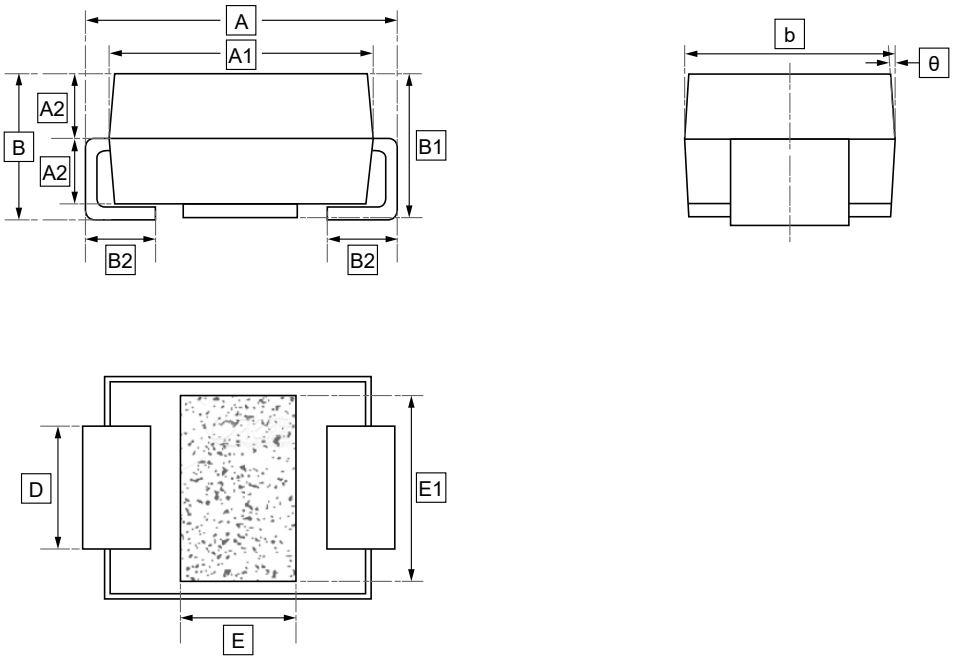


Figure 13: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, e_{CU}=35µm)

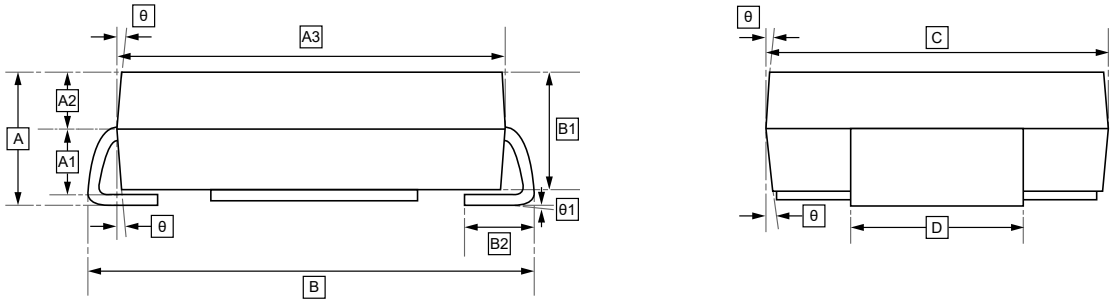
9.1 SMB Package Outline Dimensions



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



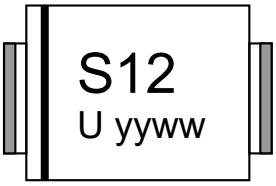
DIMENSIONS (mm are the original dimensions)

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

SMB

SMC



yy: Year Code
ww: Week Code

Order Code	Marking	Package	Base QTY	Delivery Mode
UMW STTH212U	U22	SMB	2500	Tape and reel
UMW STTH212S	S12	SMC	2500	Tape and reel

11.Disclaimer

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