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SMBYW01-200

HIGH EFFICIENCY FAST RECOVERY DIODE

MAIN PRODUCT CHARACTERISTICS

I_{F(AV)}	1 A
V_{RRM}	200 V
V_{F(max)}	0.71 V
T_{j(max)}	150 °C

FEATURES AND BENEFITS

- VERY LOW SWITCHING LOSSES
- LOW FORWARD VOLTAGE DROP BIPOLAR DEVICE
- LOW PEAK FORWARD VOLTAGE FOR TELECOM TRANSIENT OPERATION SUCH AS IN LIGHTING PROTECTION CIRCUITS



DESCRIPTION

Single chip rectifier suited to Switch Mode Power Supplies and high frequency DC to DC converters. Packaged in SMB, this surface mount device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
V _{RRM}	Perpetitive peak reverse voltage		200	V
I _{F(RMS)}	RMS forward current		8	A
I _{F(AV)}	Average forward current	T _{lead} =140°C δ = 0.5	1	A
I _{FSM}	Surge non repetitive forward current	t _p =10ms sinusoidal	60	A
T _{stg}	Storage and junction temperature range		- 65 to + 150	°C
T _j	Maximum operating junction temperature		150	°C

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THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
Rth (j-l)	Junction to lead	13	°C/W

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameters	Test Conditions		Min.	Typ.	Max.	Unit
V _F *	Forward voltage drop	T _j = 25°C	I _F = 1 A			0.9	V
		T _j = 150°C	I _F = 1 A		0.65	0.7	
I _R **	Reverse leakage current	T _j = 25°C	V _R = V _{RRM}			3	μA
		T _j = 125°C			180	400	

Pulse test : * tp = 380 μs, δ < 2 %

** tp = 5 ms, δ < 2 %

To evaluate the maximum conduction losses use the following equation :

$$P = 0.58 \times I_{F(AV)} + 0.118 \times I_{F(RMS)}^2$$

RECOVERY CHARACTERISTICS

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
t _{rr}	T _j = 25°C	I _F = 0.5 A	I _{rr} = 0.25 A I _R = 1A			25	ns
		I _F = 1 A	di _F /dt = - 50 A/μs V _R = 30V		25	35	
t _{fr}	T _j = 25°C	I _F = 1A	di _F /dt = 100 A/μs			25	ns
V _{FP}	T _j = 25°C	I _F = 1A	di _F /dt = 100 A/μs			5	V

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Fig. 1: Average forward power dissipation versus average forward current .

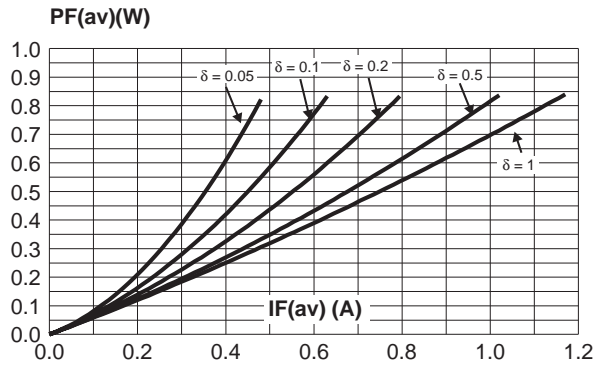


Fig. 2: Peak current versus form factor.

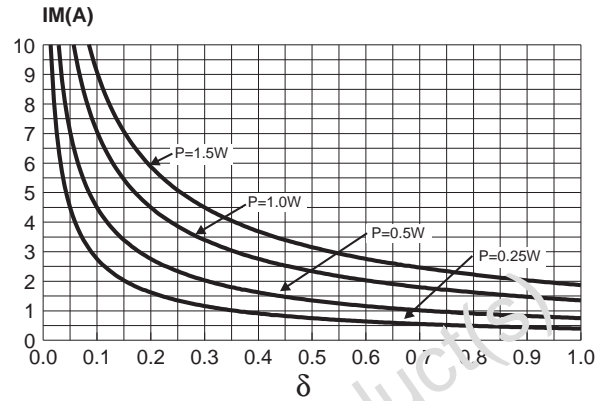


Fig. 3: Average forward current versus ambient temperature ($\delta=0.5$).

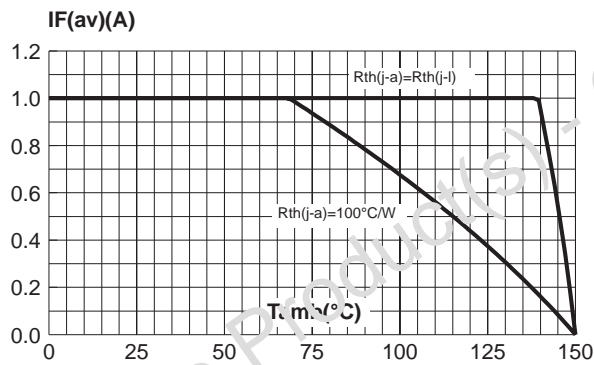


Fig. 4: Non repetitive surge peak forward current versus overload duration.

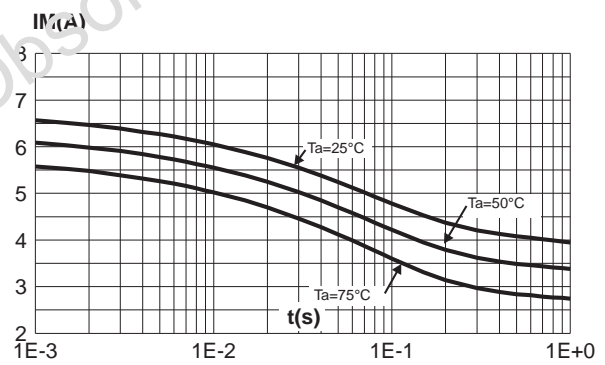


Fig. 5: Variation of thermal impedance junction to ambient versus pulse duration (recommended pad layout, epoxy FR4, $e(Cu)=35\mu m$).

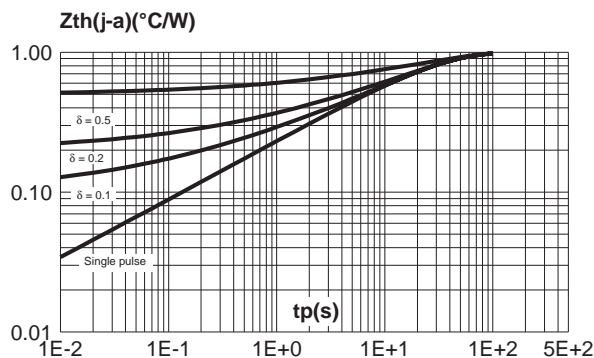
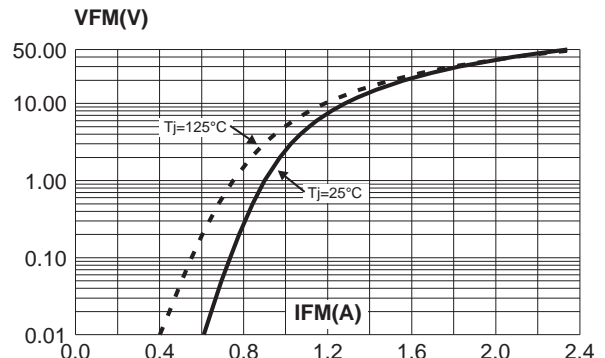


Fig 6: Forward voltage drop versus forward current (maximum values).



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Fig. 7: Junction capacitance versus reverse voltage applied (typical values).

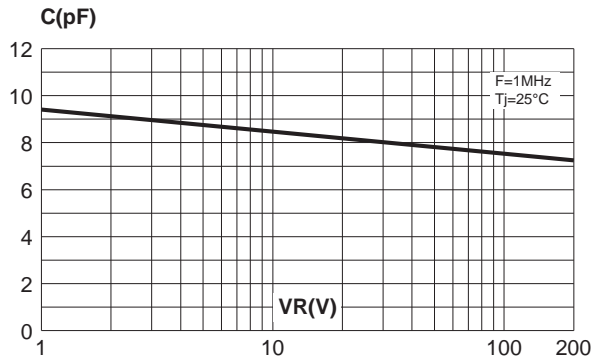


Fig. 8: Reverse recovery current versus dI_F/dt .

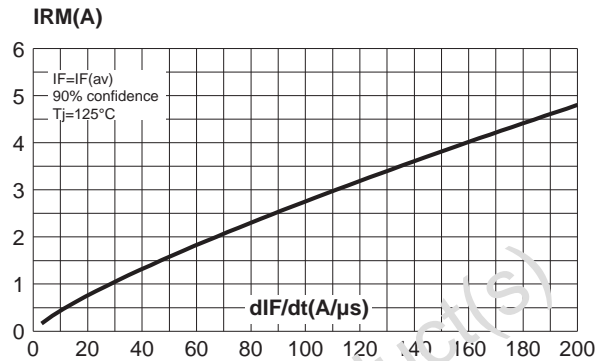


Fig. 9: Reverse recovery time versus dI_F/dt .

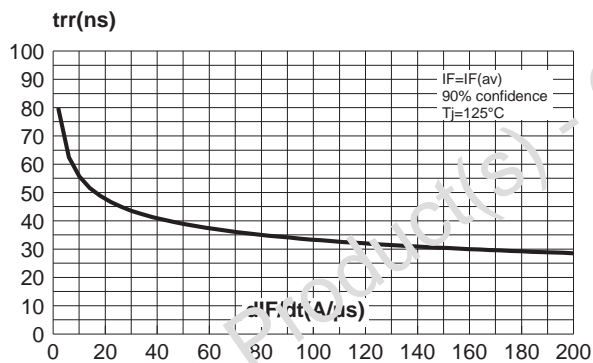


Fig. 10: Reverse recovery charges versus dI_F/dt .

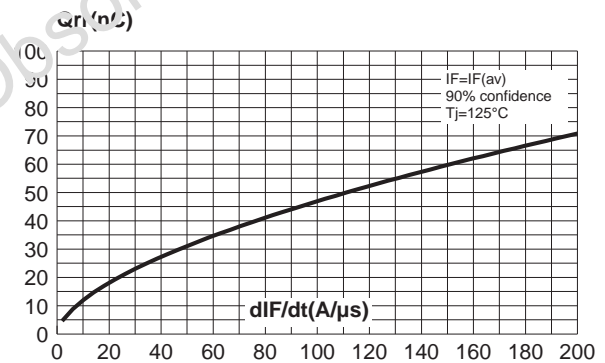


Fig. 11: Dynamic parameters versus junction temperature.

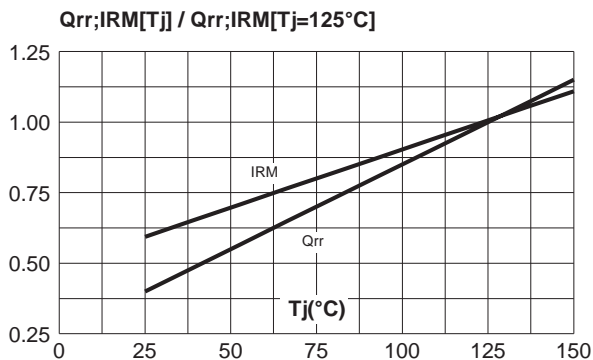
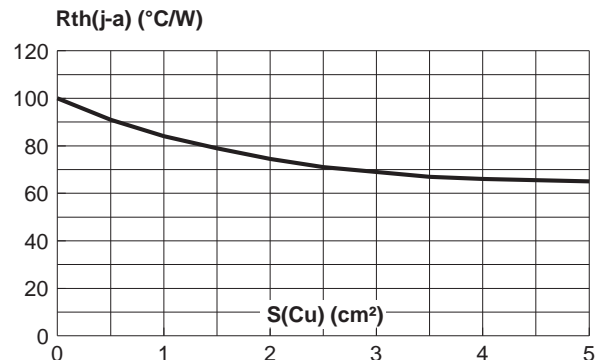


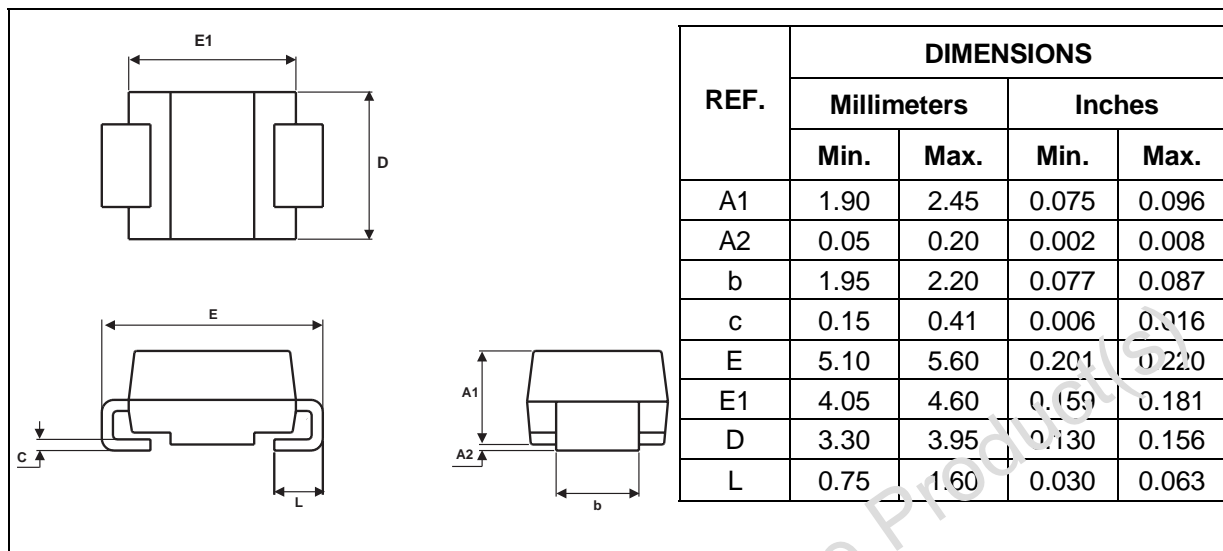
Fig. 12: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, copper thickness: 35μm)



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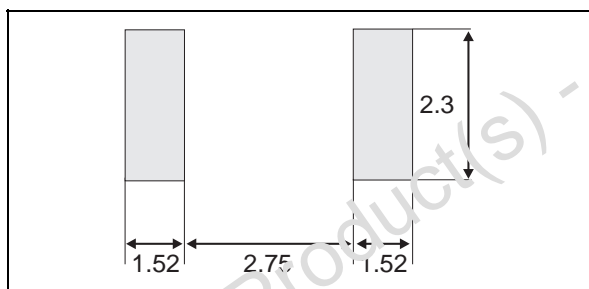
PACKAGE MECHANICAL DATA

SMB



FOOT PRINT DIMENSIONS (in millimeters)

SMB (Plastic)



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
SMBYW01-200	B20	SMB	0.11g	2500	Tape & reel

■ Band indicates cathode

■ Epoxy meets UL94,V0

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