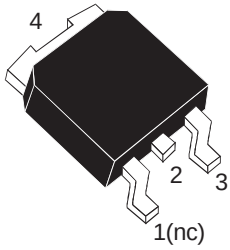
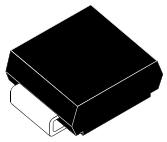
SMBYW04-200
BYW4200B

HIGH EFFICIENCY FAST RECOVERY DIODE

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	**4 A**
V_{RRM}	**200 V**
V_F **(max)**	**0.85 V**
Tj (max)	**150 °C**





DPAK
BYW4200B

SMC
(JEDEC DO-214AB)
SMBYW04-200

FEATURES AND BENEFITS

- SUITED TO SMPS AND DRIVES
- SURFACE MOUNT PACKAGE
- VERY LOW FORWARD LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- HIGH SURGE CURRENT CAPABILITY

DESCRIPTION

Single chip rectifier suited to Switch Mode Power Supplies and high frequency converters.

Packaged in DPAK and SMC, this surface mount device is intended for use in low voltage, high frequency inverters, free wheeling and rectification applications.

ABSOLUTE RATINGS (limiting values)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			200	V
$I_{F(RMS)}$	RMS forward current			10	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$	DPAK SMC	Tcase = 130°C Tlead = 70°C	4	A
I_{FSM}	Surge non repetitive forward current		tp = 10 ms sinusoidal	70	A
Tstg	Storage temperature range			- 65 to + 150	°C
Tj	Maximum operating junction temperature			150	°C

THERMAL RESISTANCE

Symbol	Parameter	Package	Value	Unit
$R_{th\ (j-c)}$	Junction to case	DPAK	5	°C/W
$R_{th\ (j-l)}$	Junction to leads	SMC	20	°C/W

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Tests Conditions	Tests Conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	Tj = 25°C	$V_R = V_{RRM}$			10	µA
		Tj = 100°C			0.15	0.5	mA
V_F **	Forward voltage drop	Tj = 25°C	I_F = 12 A			1.25	V
		Tj = 100°C	I_F = 4 A		0.8	0.85	

Pulse test : * tp = 5 ms, δ < 2 %
** tp = 380 µs, δ < 2%

To evaluate the maximum conduction losses use the following equation :
$P = 0.7 \times I_{F(AV)} + 0.037\ I_F{}^2{}_{(RMS)}$

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t_{rr}	Tj = 25°C	I_F = 1A dI_F/dt = -50 A/µs V_F = 30V		26	35	ns
t_{fr}	Tj = 25°C	I_F = 4A dI_F/dt = -50 A/µs V_{FR} = 1.1 x V_F max		20		ns
V_{FP}	Tj = 25°C	I_F = 4A dI_F/dt = -50 A/µs		5		V

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

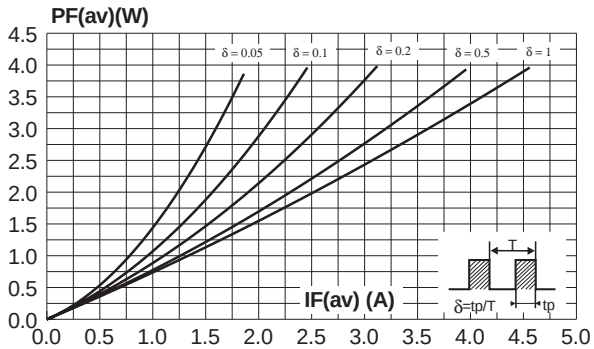


Fig. 2: Peak current versus form factor.

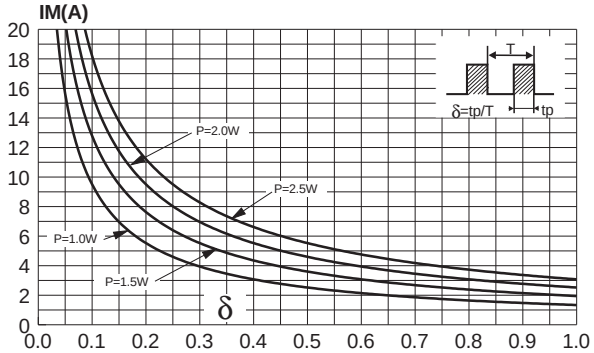


Fig. 3: Average forward current versus ambient temperature (δ=0.5).

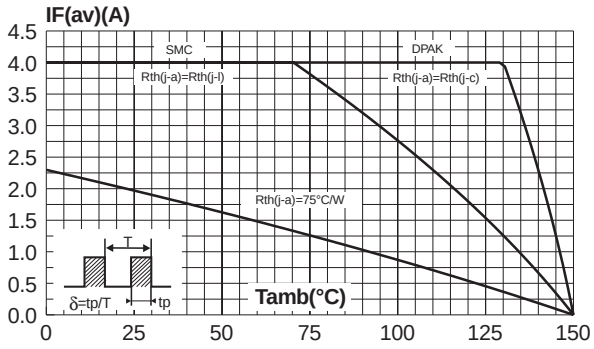


Fig. 4: Forward voltage drop versus forward current (maximum values).

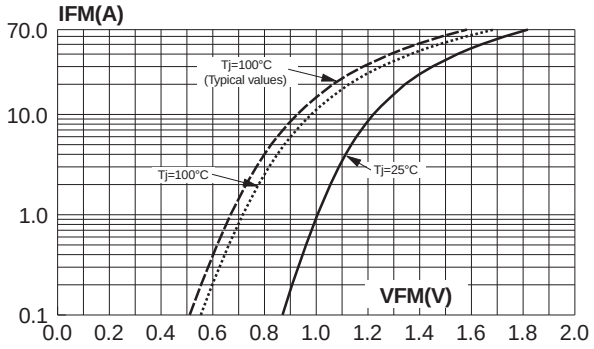


Fig. 5-1: Non repetitive surge peak forward current versus overload duration (SMBYW04-200).

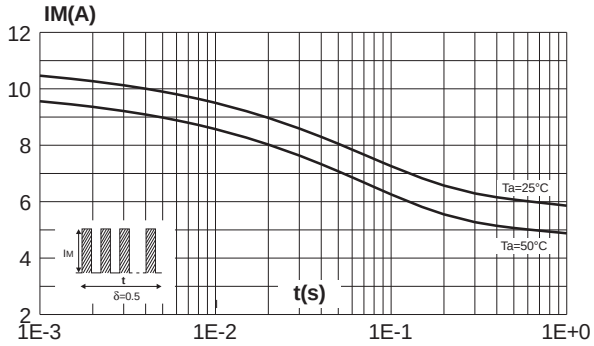


Fig. 5-2: Non repetitive surge peak forward current versus overload duration (BYW4200B).

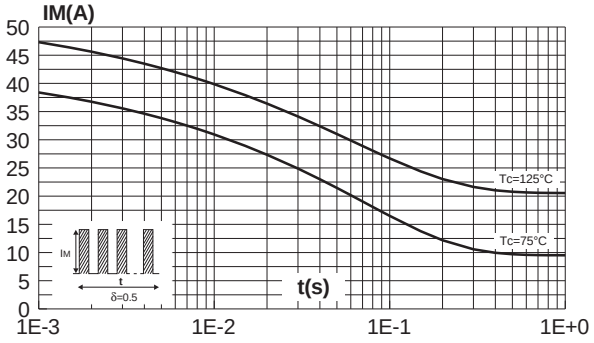


Fig. 6-1: Variation of thermal impedance junction to ambient versus pulse duration (recommended pad layout, epoxy FR4, e(Cu)=35µm) (SMBYW04-200).

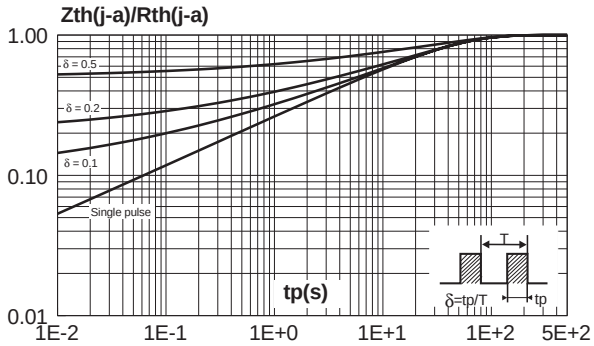


Fig. 6-2: Variation of thermal impedance junction to case versus pulse duration (BYW4200B).

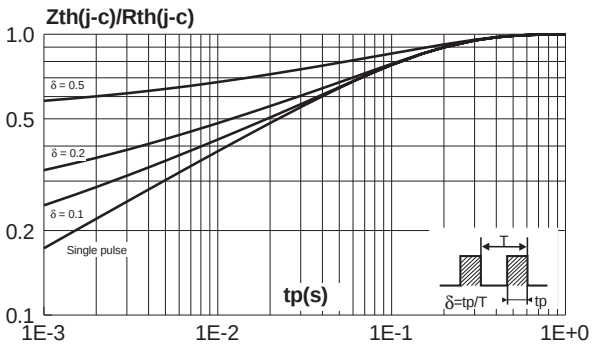


Fig. 7: Reverse recovery current versus dI_F/dt.

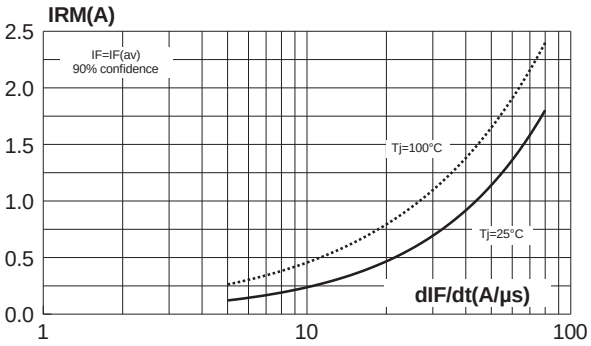


Fig. 8: Reverse recovery time versus dI_F/dt.

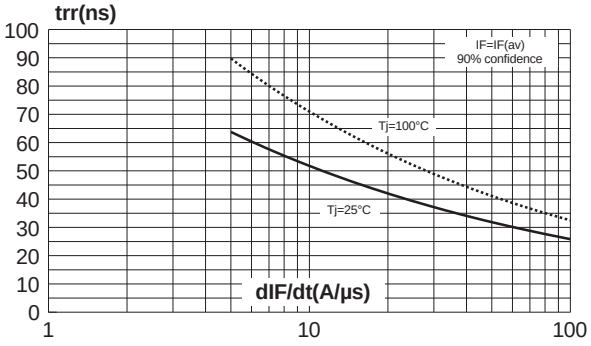


Fig. 9: Junction capacitance versus reverse voltage applied (typical values).

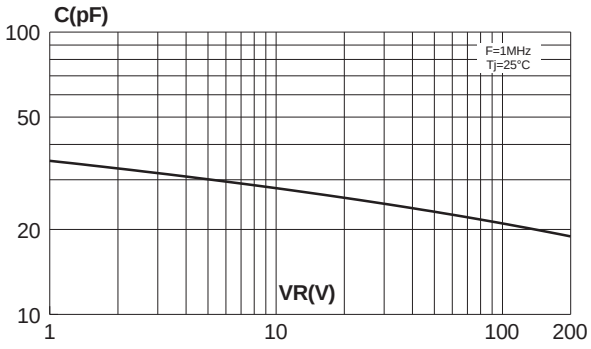


Fig. 10: Dynamic parameters versus junction temperature.

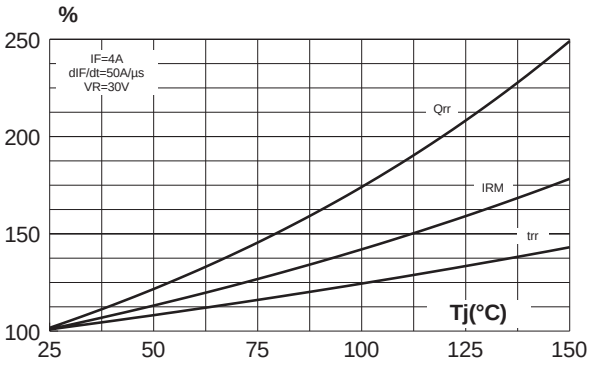


Fig. 11-1: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, copper thickness: 35mm) (SMBYW04-200).

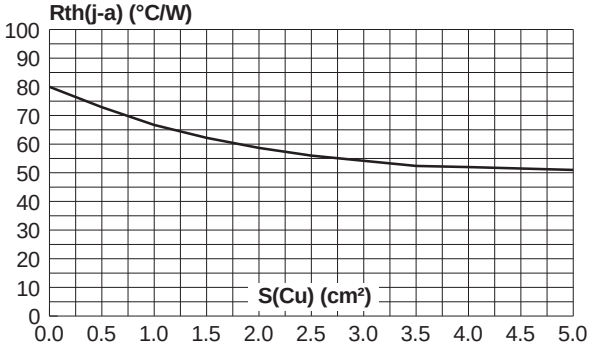
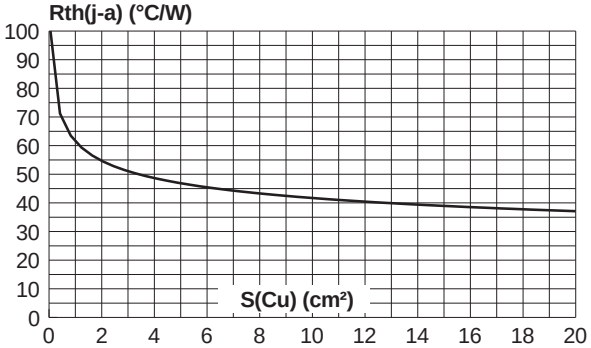
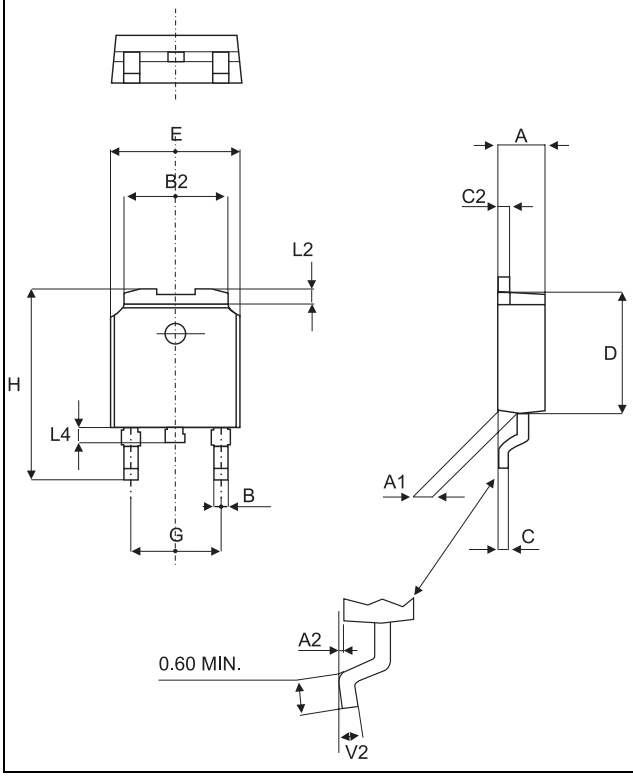


Fig. 11-2: Thermal resistance junction to ambient versus copper surface under tab (Epoxy printed circuit board FR4, copper thickness: 35mm) (BYW4200B).

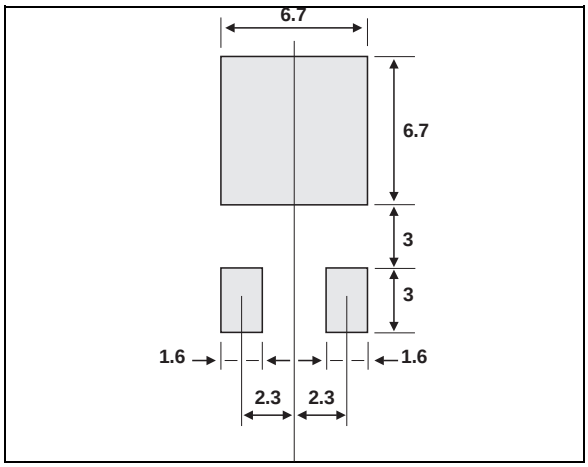


PACKAGE MECHANICAL DATA
DPAK



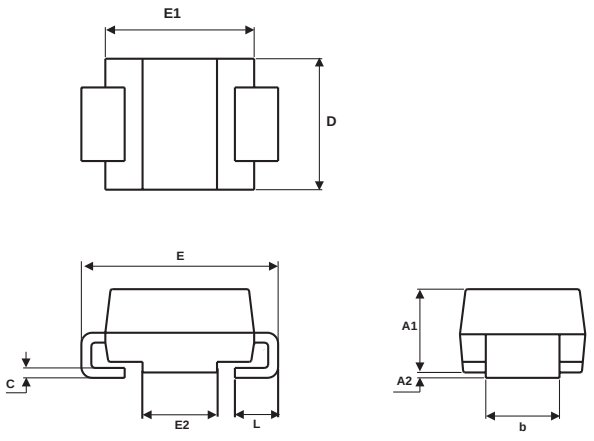
REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max	Min.	Max.
A	2.20	2.40	0.086	0.094
A1	0.90	1.10	0.035	0.043
A2	0.03	0.23	0.001	0.009
B	0.64	0.90	0.025	0.035
B2	5.20	5.40	0.204	0.212
C	0.45	0.60	0.017	0.023
C2	0.48	0.60	0.018	0.023
D	6.00	6.20	0.236	0.244
E	6.40	6.60	0.251	0.259
G	4.40	4.60	0.173	0.181
H	9.35	10.10	0.368	0.397
L2	0.80 typ.		0.031 typ.	
L4	0.60	1.00	0.023	0.039
V2	0°	8°	0°	8°

FOOT PRINT (in millimeters)



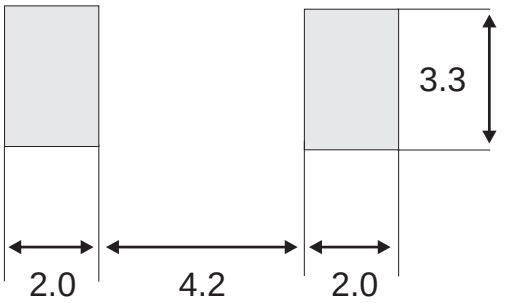
PACKAGE MECHANICAL DATA

SMC



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.45	0.075	0.096
A2	0.05	0.20	0.002	0.008
b	2.90	3.2	0.114	0.126
c	0.15	0.41	0.006	0.016
E	7.75	8.15	0.305	0.321
E1	6.60	7.15	0.260	0.281
E2	4.40	4.70	0.173	0.185
D	5.55	6.25	0.218	0.246
L	0.75	1.60	0.030	0.063

FOOT PRINT (in millimeters)



Ordering code	Marking	Package	Weight	Base qty	Delivery mode
SMBYW04-200	D20	SMC	0.243g	2500	Tape and reel
BYW4200B	W4200	DPAK	0.30g	75	Tube
BYW4200B-RL	W4200	DPAK	0.30g	2500	Tape and reel

- Epoxy meets UL 94,V0
- Band indicates cathode