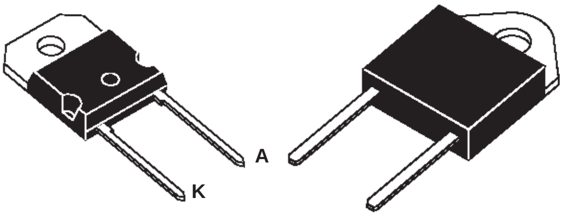
BYW77P/PI-200

HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

FEATURES

- SUITED FOR SMPS
- VERY LOW FORWARD LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- HIGH SURGE CURRENT CAPABILITY
- HIGH AVALANCHE ENERGY CAPABILITY
- INSULATED VERSION :
  Insulating voltage = 2500 V DC
  Capacitance = 12 pF



SOD93 (Plastic) **BYW77P-200**	**isolated** **DOP3I** (Plastic) **BYW77PI-200**

DESCRIPTION

Single chip rectifier suited for switchmode power supply and high frequency DC to DC converters. Packaged in SOD93, or DOP3I this device is intended for use in low voltage, high frequency inverters, free wheeling and polarity protection applications.

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter			Value	Unit
$I_{F(RMS)}$	RMS forward current			50	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$	SOD93	Tc=125°C	25	A
		TOP3I	Tc=100°C	25	
I_{FSM}	Surge non repetitive forward current		tp=10ms sinusoidal	500	A
Tstg Tj	Storage and junction temperature range			- 40 to + 150 - 40 to + 150	°C °C

Symbol	Parameter	Value	Unit
V_{RRM}	Repetitive peak reverse voltage	200	V

THERMAL RESISTANCE

Symbol	Parameter		Value	Unit
Rth (j-c)	Junction to case	SOD93	1.0	°C/W
		DOP3I	1.8	

ELECTRICAL CHARACTERISTICS
STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I_R *	$T_j = 25°C$	$V_R = V_{RRM}$			25	µA
	$T_j = 100°C$				2.5	mA
V_F **	$T_j = 125°C$	$I_F = 20$ A			0.85	V
	$T_j = 125°C$	$I_F = 40$ A			1.00	
	$T_j = 25°C$	$I_F = 40$ A			1.15	

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

To evaluate the conduction losses use the following equation :
$P = 0.7 \times I_{F(AV)} + 0.0075 \times I_{F}^{2}{}_{(RMS)}$

RECOVERY CHARACTERISTICS

Symbol	Test Conditions			Min.	Typ.	Max.	Unit
trr	$T_j = 25°C$	$I_F = 0.5A$ $I_R = 1A$	$I_{rr} = 0.25A$			35	ns
		$I_F = 1A$ $V_R = 30V$	$dI_F/dt = -50A/µs$			50	
tfr	$T_j = 25°C$	$I_F = 1A$ $V_{FR} = 1.1 \times V_F$	tr = 5 ns		10		ns
V_{FP}	$T_j = 25°C$	$I_F = 1A$	tr = 5 ns		1.5		V

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

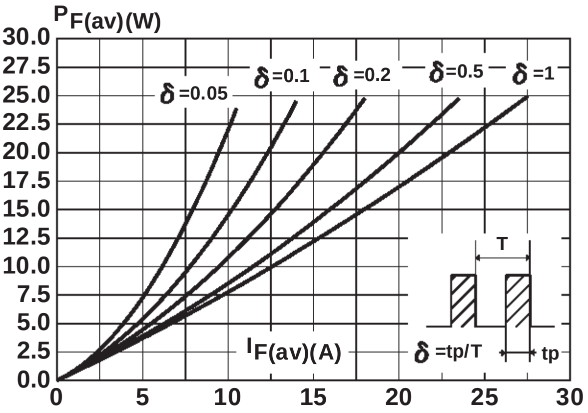


Fig.2 : Peak current versus form factor.

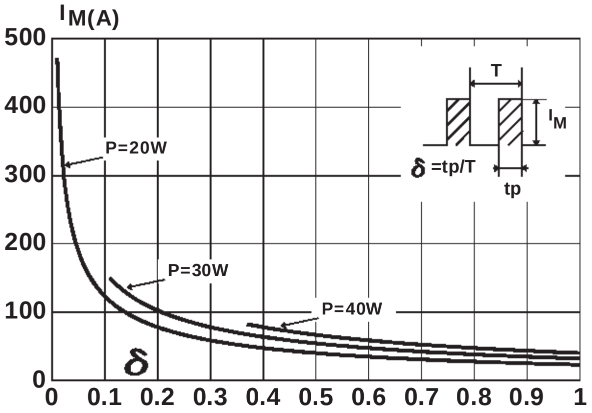


Fig.3 : Forward voltage drop versus forward current (maximum values).

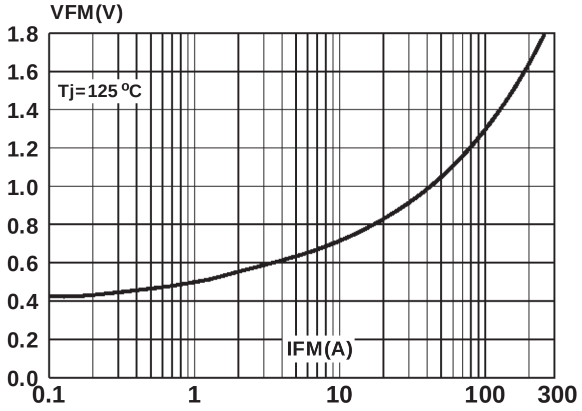


Fig.4 : Relative variation of thermal impedance junction to case versus pulse duration.

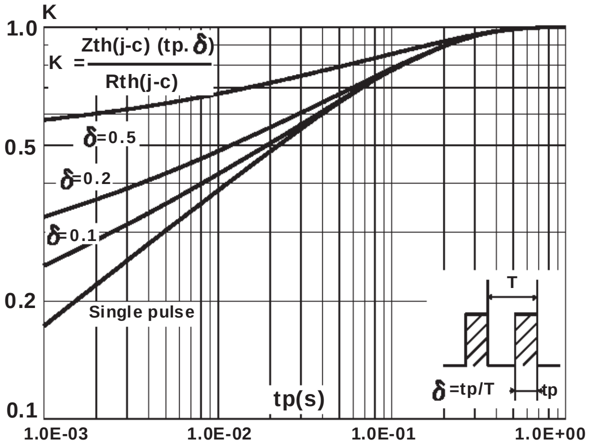


Fig.5 : Non repetitive surge peak forward current versus overload duration.
(BYW81P)

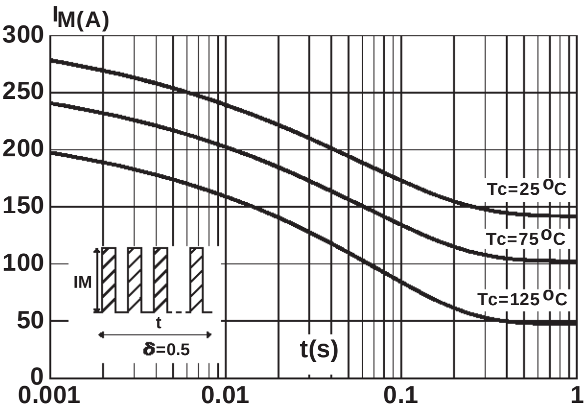


Fig.6 : Non repetitive surge peak forward current versus overload duration.
(BYW81PI)

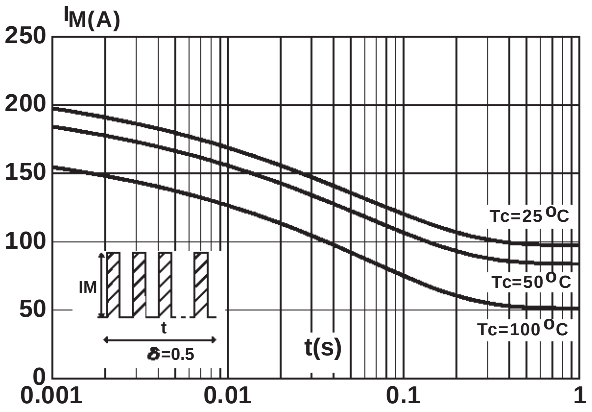


Fig.7 : Average current versus ambient temperature.
(duty cycle : 0.5) (SOD93)

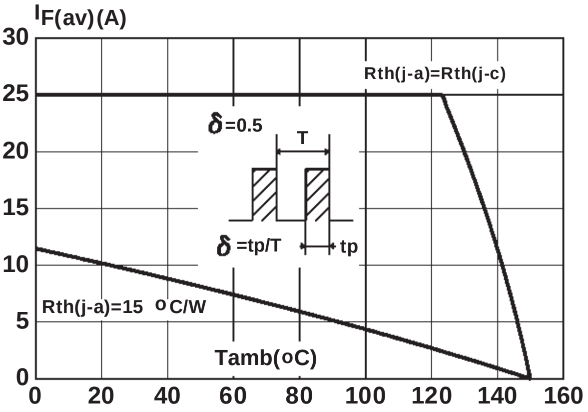


Fig.8 : Average current versus ambient temperature.
(duty cycle : 0.5) (DOP3I)

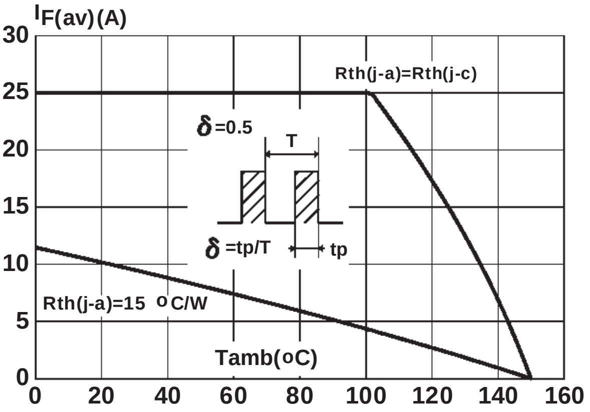


Fig.9 : Junction capacitance versus reverse voltage applied (Typical values).

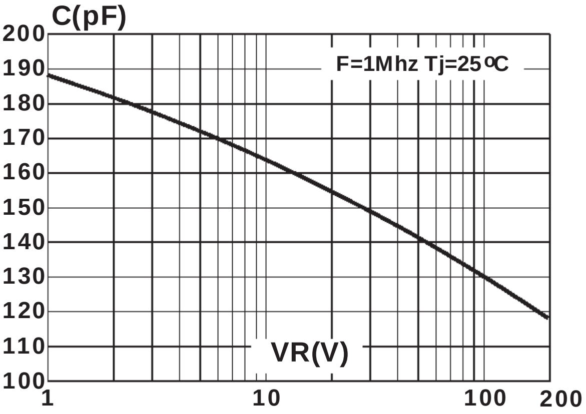


Fig.10 : Recovery charges versus dI_F/dt.

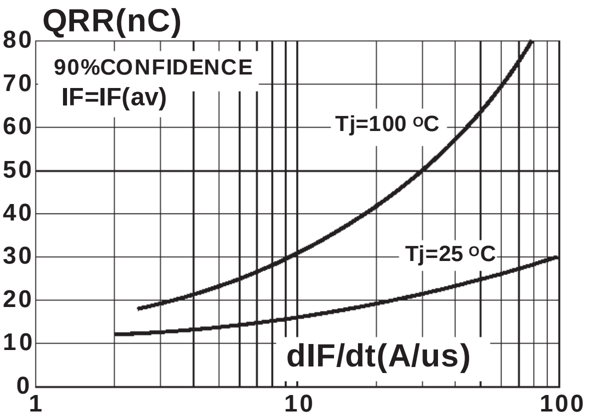


Fig.11 : Peak reverse current versus dIF/dt.

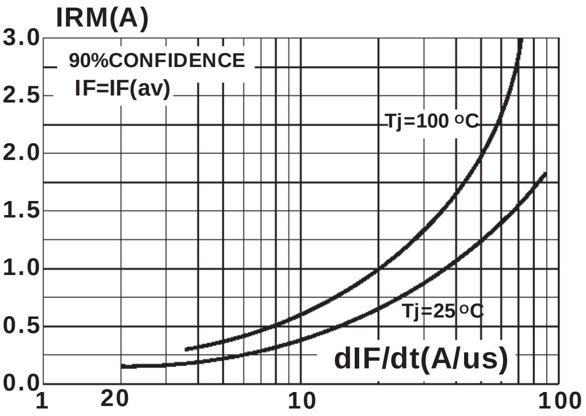
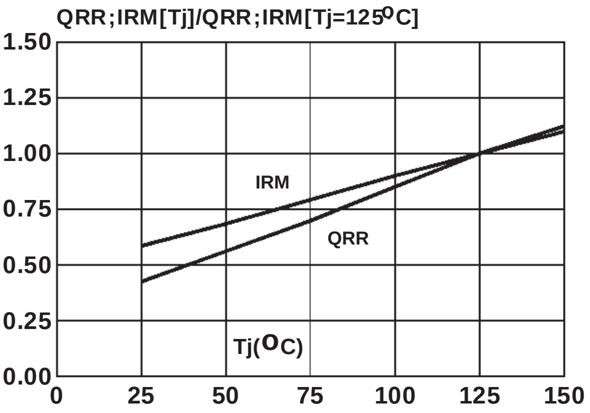
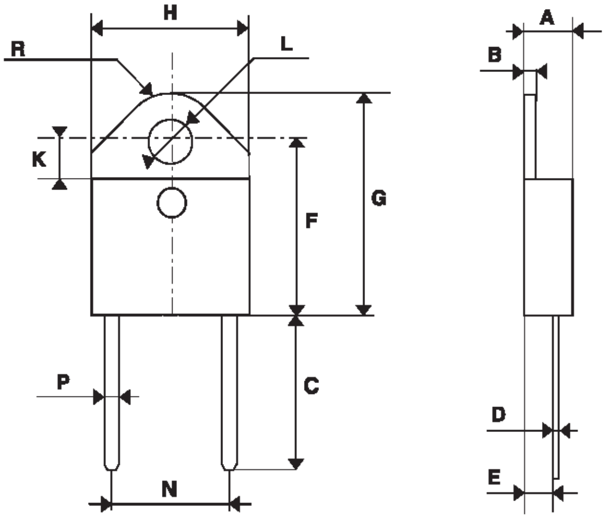


Fig.12 : Dynamic parameters versus junction temperature.



PACKAGE MECHANICAL DATA

DOP3I (isoluted)

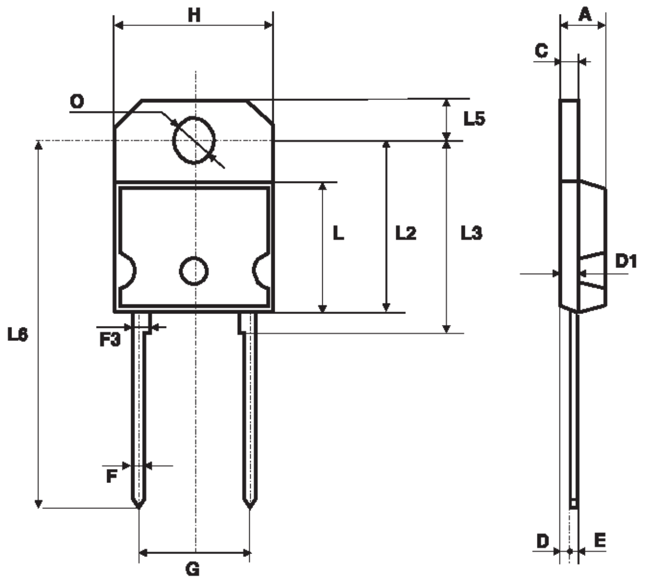


REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.4	4.6	0.173	0.181
B	1.45	1.55	0.057	0.061
C	14.35	15.60	0.565	0.614
D	0.5	0.7	0.020	0.028
E	2.7	2.9	0.106	0.114
F	15.8	16.5	0.622	0.650
G	20.4	21.1	0.815	0.831
H	15.1	15.5	0.594	0.610
K	3.4	3.65	0.134	0.144
L	4.08	4.17	0.161	0.164
N	10.8	11.3	0.425	0.444
P	1.20	1.40	0.047	0.055
R	4.60 typ.		0.181 typ.	

Cooling method : C
Marking : Type number
Weight : 4.52 g
Recommended torque value : 0.8m.N
Maximum torque value : 1.0m.N

PACKAGE MECHANICAL DATA

SOD93



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.70		4.90	0.185		0.193
C	1.17		1.37	0.046		0.054
D		2.50			0.098	
D1		1.27			0.050	
E	0.50		0.78	0.020		0.031
F	1.10		1.30	0.043		0.051
F3		1.75			0.069	
G	10.80		11.10	0.425		0.437
H	14.70		15.20	0.578		0.598
L			12.20			0.480
L2			16.20			0.638
L3		18.0			0.709	
L5	3.95		4.15	0.156		0.163
L6		31.00			1.220	
O	4.00		4.10	0.157		0.161

Cooling method : C
Marking : Type number
Weight : 3.79 g
Recommended torque value : 0.8m.N
Maximum torque value : 1.0m.N

STMicroelectronics GROUP OF COMPANIES
Australia - Brazil - China - Finland - France - Germany - Hong Kong - India - Italy - Japan - Malaysia
Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - U.S.A.

http://www.st.com