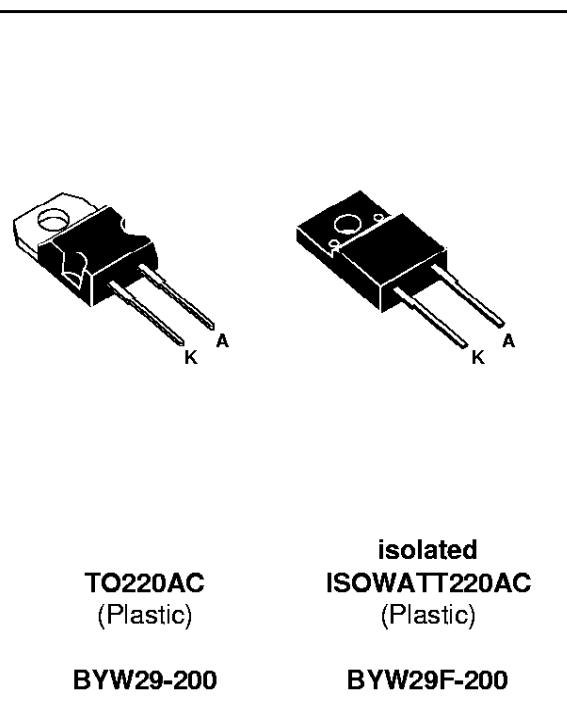


HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

FEATURES

- SUITED FOR SMPS
- VERY LOW FORWARD LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- HIGH SURGE CURRENT CAPABILITY
- HIGH AVALANCHE ENERGY CAPABILITY
- INSULATED VERSION (ISOWATT220AC) :
 - Insulating voltage = 2000 V DC
 - Capacitance = 12 pF



DESCRIPTION

Single chip rectifier suited for switchmode power supply and high frequency DC to DC converters. Packaged in TO220AC or ISOWATT220AC 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			16	A
I _{F(AV)}	Average forward current $\delta = 0.5$	TO220AC	T _c =120°C	8	A
		ISOWATT220AC	T _c =100°C	8	
I _{FSM}	Surge non repetitive forward current		t _p =10ms sinusoidal	80	A
T _{stg} T _j	Storage and junction temperature range			- 65 to + 150 - 65 to + 150	°C °C

Symbol	Parameter	BYW29-(F)				Unit
		50	100	150	200	
V _{RRM}	Repetitive peak reverse voltage	50	100	150	200	V

BYW29(F)

THERMAL RESISTANCE

Symbol	Parameter		Value	Unit
R_{th} (j-c)	Junction to case	TO220AC	2.8	°C/W
		ISOWATT220AC	5.0	

ELECTRICAL CHARACTERISTICS STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I_R *	$T_j = 25^\circ C$	$V_R = V_{RRM}$			10	μA
	$T_j = 100^\circ C$				0.6	mA
V_F **	$T_j = 125^\circ C$	$I_F = 5 A$			0.85	V
	$T_j = 125^\circ C$	$I_F = 10 A$			1.05	
	$T_j = 25^\circ C$	$I_F = 10 A$			1.15	

Pulse test : * $t_p = 5$ ms, duty cycle < 2 %

** $t_p = 380 \mu s$, duty cycle < 2 %

To evaluate the conduction losses use the following equation :

$$P = 0.65 \times I_{F(AV)} + 0.040 \times I_F^2(RMS)$$

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
trr	$T_j = 25^\circ C$	$I_F = 0.5A$	$I_{rr} = 0.25A$		25	ns
		$I_R = 1A$			35	
tfr	$T_j = 25^\circ C$	$I_F = 1A$	$dI_F/dt = -50A/\mu s$			ns
		$V_{FR} = 1.1 \times V_F$				
V _{FP}	$T_j = 25^\circ C$	$I_F = 1A$	$tr = 10 ns$	15		ns
				2		V

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

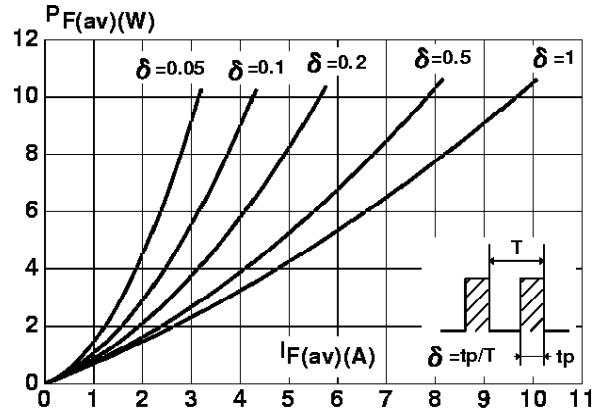


Fig.2 : Peak current versus form factor.

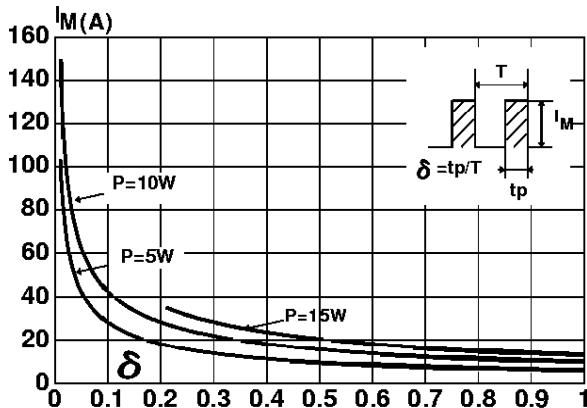


Fig.3 : Forward voltage drop versus forward current (maximum values).

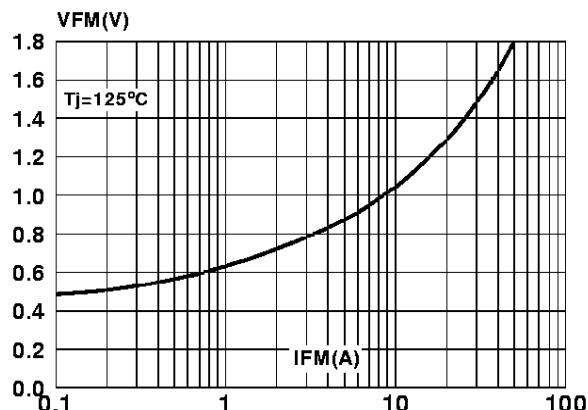


Fig.4 : Relative variation of thermal impedance junction to case versus pulse duration.
(TO220AC)

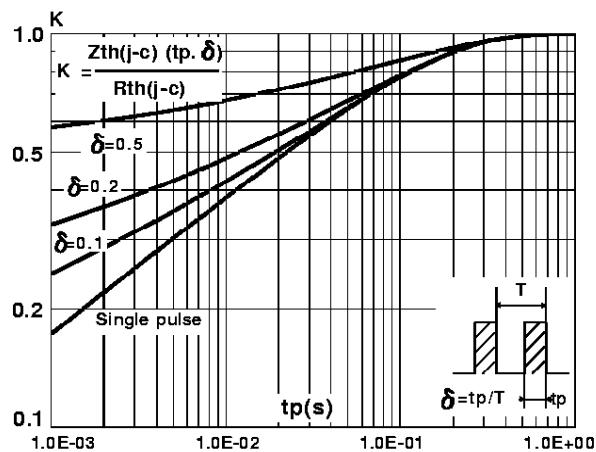
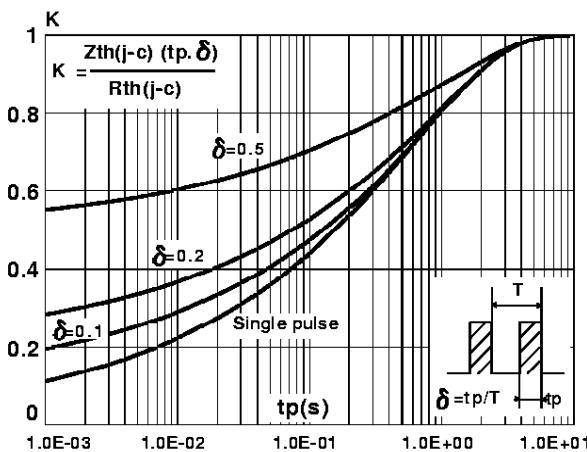


Fig.5 : Relative variation of thermal impedance junction to case versus pulse duration.
(ISOWATT220AC)



BYW29(F)

Fig.6 : Non repetitive surge peak forward current versus overload duration.
(TO220AC)

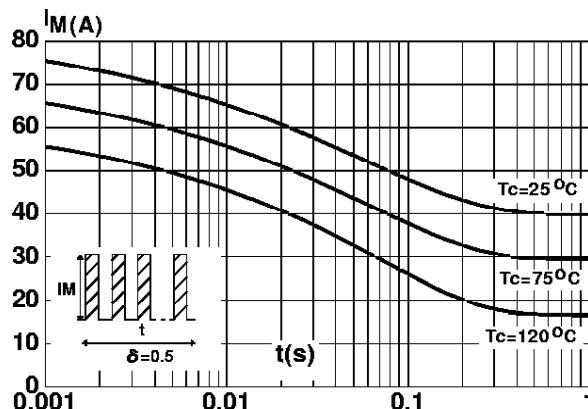


Fig.8 : Average current versus ambient temperature.
(duty cycle : 0.5) (TO220AC)

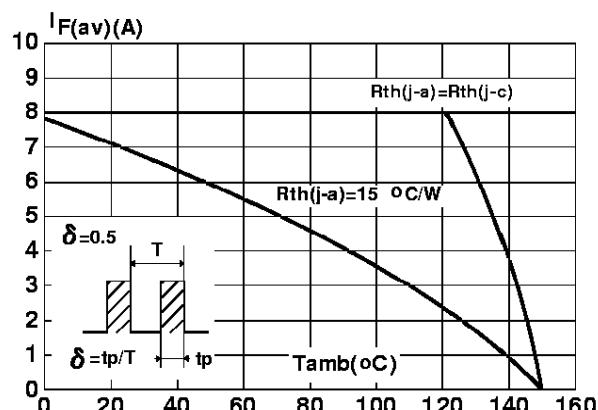


Fig.10 : Junction capacitance versus reverse voltage applied (Typical values).

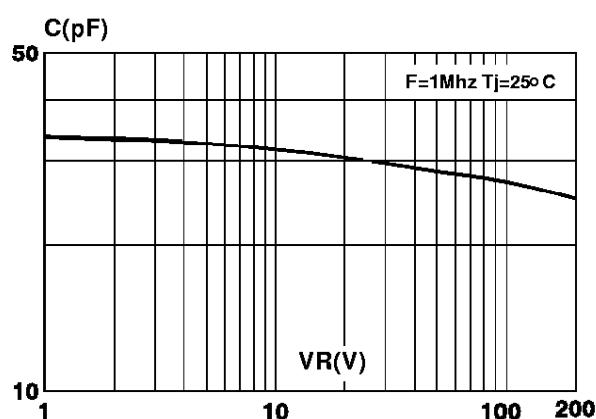


Fig.7 : Non repetitive surge peak forward current versus overload duration.
(ISOWATT220AC)

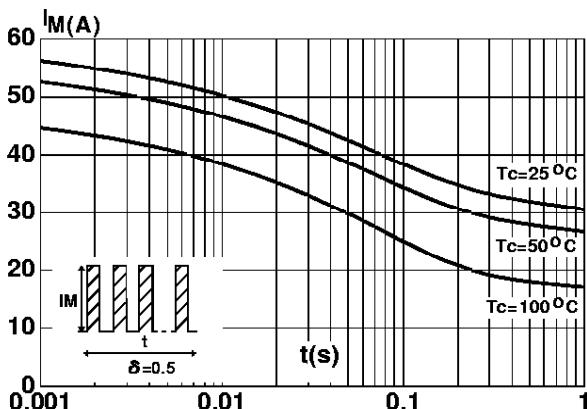


Fig.9 : Average current versus ambient temperature.
(duty cycle : 0.5) (ISOWATT220AC)

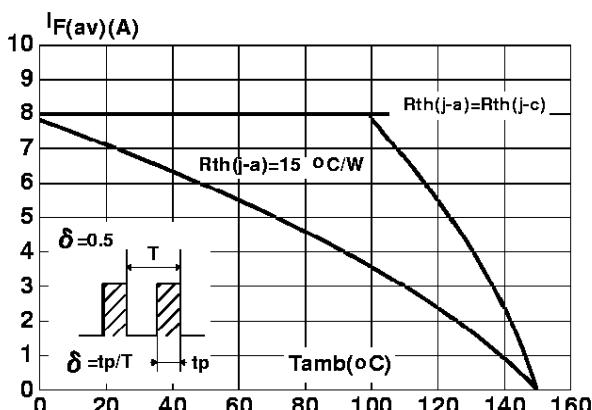


Fig.11 : Recovery charges versus dIf/dt.

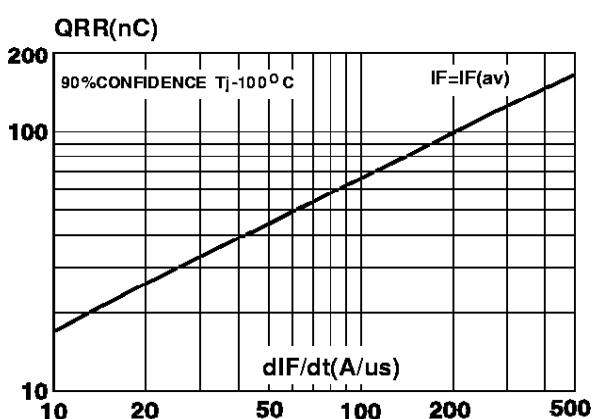
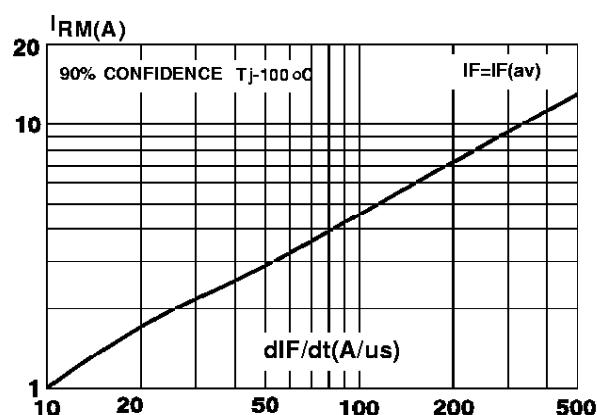
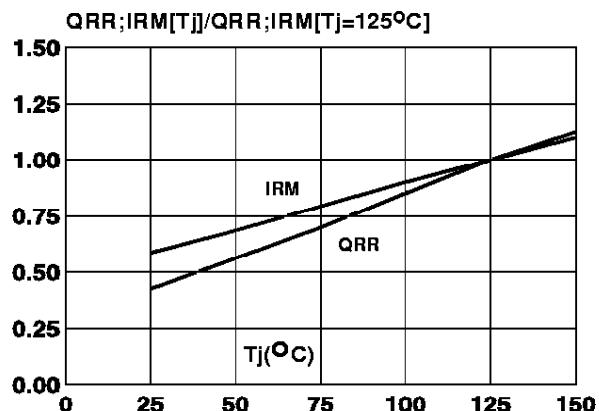
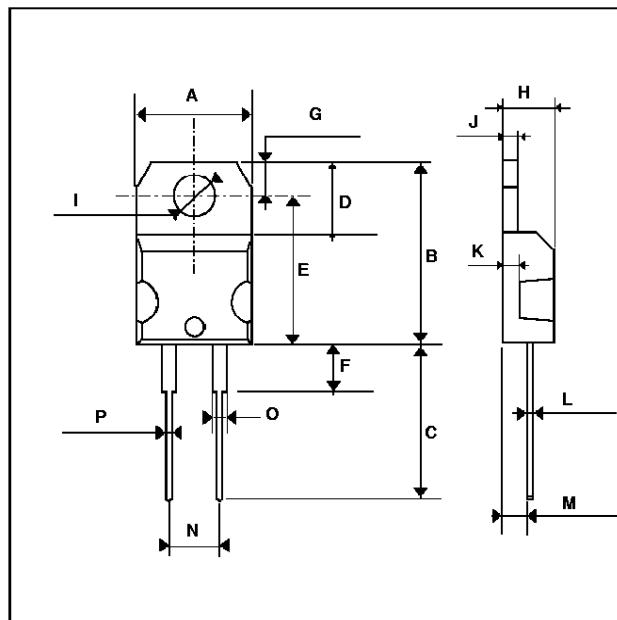


Fig.12 : Peak reverse current versus $dI/F/dt$.**Fig.13** : Dynamic parameters versus junction temperature.

BYW29(F)

PACKAGE MECHANICAL DATA

TO220AC (JEDEC outline)



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	10	10.4	0.393	0.409
B	15.2	15.9	0.598	0.626
C	13	14	0.511	0.551
D	6.2	6.6	0.244	0.260
E	16.4 typ.		0.645 typ.	
F	3.5	4.2	0.137	0.165
G	2.65	2.95	0.104	0.116
H	4.4	4.6	0.173	0.181
I	3.75	3.85	0.147	0.151
J	1.23	1.32	0.048	0.051
K	1.27 typ.		0.050 typ.	
L	0.49	0.70	0.019	0.027
M	2.4	2.72	0.094	0.107
N	4.95	5.15	0.194	0.203
O	1.14	1.70	0.044	0.067
P	0.61	0.88	0.024	0.034

Cooling method : C

Marking : Type number

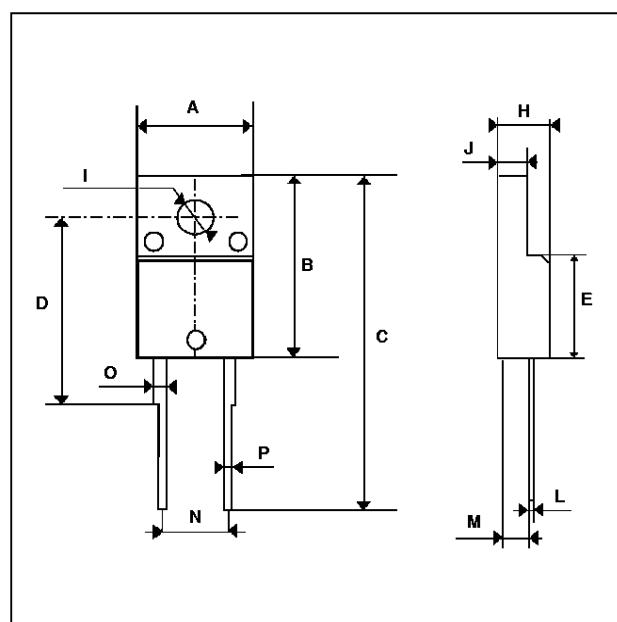
Weight : 1.9 g

Recommended torque value : 0.8m.N

Maximum torque value : 1.0m.N

PACKAGE MECHANICAL DATA

ISOWATT220AC (JEDEC outline)



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	10	10.4	0.393	0.409
B	15.9	16.4	0.626	0.645
C	28.6	30.6	1.126	1.204
D	16 typ		0.630 typ	
E	9	9.3	0.354	0.366
H	4.4	4.6	0.173	0.181
I	3	3.2	0.118	0.126
J	2.5	2.7	0.098	0.106
L	0.4	0.7	0.015	0.027
M	2.4	2.75	0.094	0.108
N	4.95	5.2	0.195	0.204
O	1.15	1.7	0.045	0.067
P	0.75	1	0.030	0.039

Cooling method : C

Marking : Type number

Weight : 2 g

Recommended torque value : 0.55m.N

Maximum torque value : 0.70m.N

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