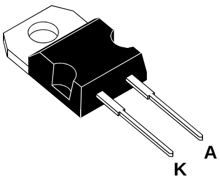
BYW80(F)-200

HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

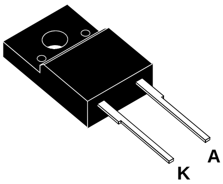
FEATURES

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



TO-220AC
(Plastic)

BYW80-200



isolated
ISOWATT220AC
(Plastic)

BYW80F-200

DESCRIPTION

Single chip rectifier suited for switchmode power supply and high frequency DC to DC converters.
Packaged in TO-220AC, 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			20	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$	TO-220AC	Tc=120°C	10	A
		ISOWATT220AC	Tc=95°C	10	
I_{FSM}	Surge non repetitive forward current		tp=10ms sinusoidal	100	A
Tstg Tj	Storage and junction temperature range			- 65 to + 150 - 65 to + 150	°C °C

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

THERMAL RESISTANCE

Symbol	Parameter		Value	Unit
$R_{th\ (j\text{-}c)}$	Junction to case	TO-220AC	2.5	°C/W
		ISOWATT220AC	4.7	

ELECTRICAL CHARACTERISTICS
STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I_R *	$T_j = 25°C$	$V_R = V_{RRM}$			10	µA
	$T_j = 100°C$				1	mA
V_F **	$T_j = 125°C$	$I_F = 7$ A			0.85	V
	$T_j = 125°C$	$I_F = 15$ A			1.05	
	$T_j = 25°C$	$I_F = 15$ 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 :
$P = 0.65 \times I_{F(AV)} + 0.027 \times I_F{}^2{}_{(RMS)}$

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
trr	$T_j = 25°C$	$I_F = 0.5A$ $I_{rr} = 0.25A$ $I_R = 1A$			25	ns
		$I_F = 1A$ $dI_F/dt = -50A/µs$ $V_R = 30V$			35	
tfr	$T_j = 25°C$	$I_F = 1A$ $t_r = 10$ ns $V_{FR} = 1.1 \times V_F$		15		ns
V_{FP}	$T_j = 25°C$	$I_F = 1A$ $t_r = 10$ ns		2		V

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

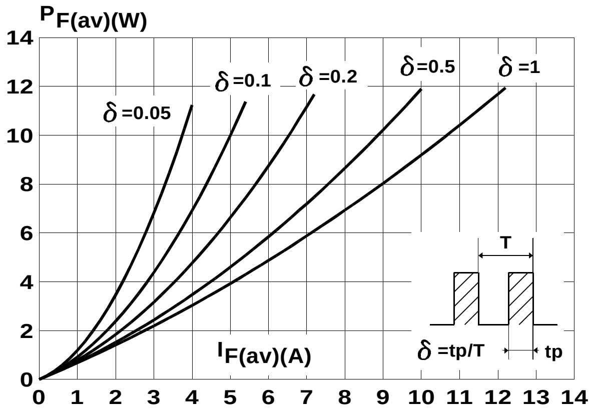


Fig.2 : Peak current versus form factor.

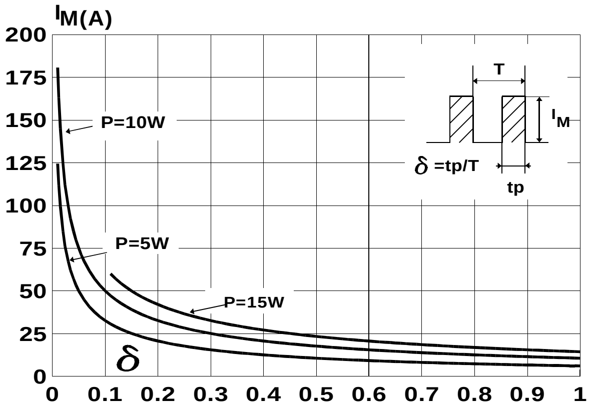


Fig.3 : Forward voltage drop versus forward current (maximum values).

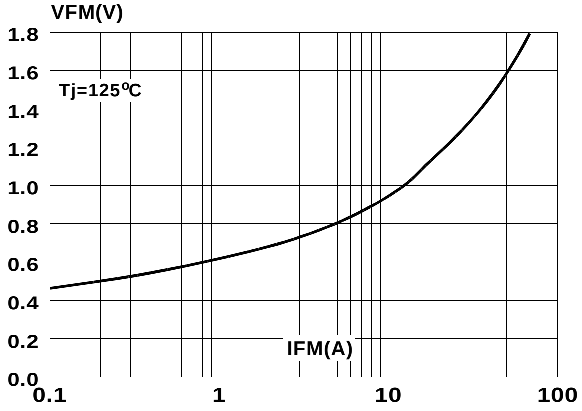


Fig.4 : Relative variation of thermal impedance junction to case versus pulse duration.
(TO-220AC)

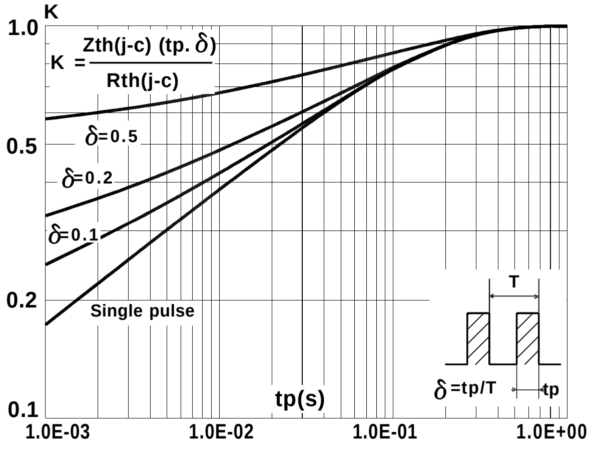


Fig.5 : Relative variation of thermal impedance junction to case versus pulse duration.
(ISOWATT220AC)

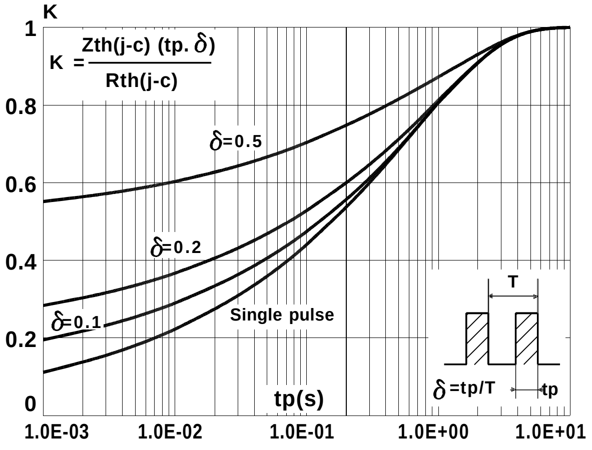


Fig.6 : Non repetitive surge peak forward current versus overload duration.
(TO-220AC)

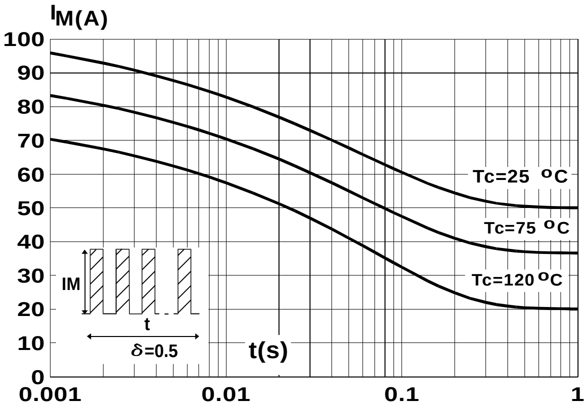


Fig.7 : Non repetitive surge peak forward current versus overload duration.
(ISOWATT220AC)

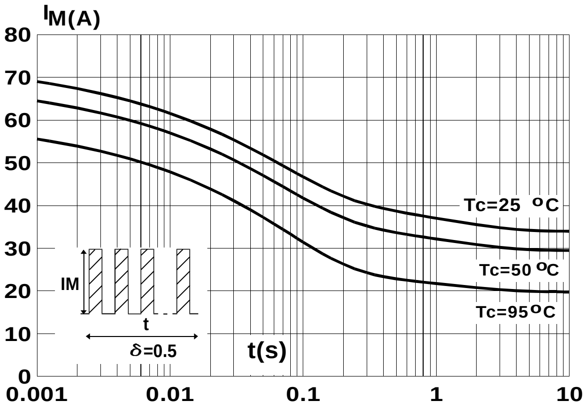


Fig.8 : Average current versus ambient temperature.
(duty cycle : 0.5) (TO-220AC)

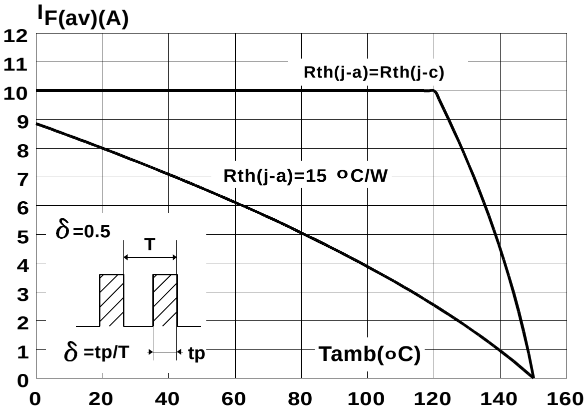


Fig.9 : Average current versus ambient temperature.
(duty cycle : 0.5) (ISOWATT220AC)

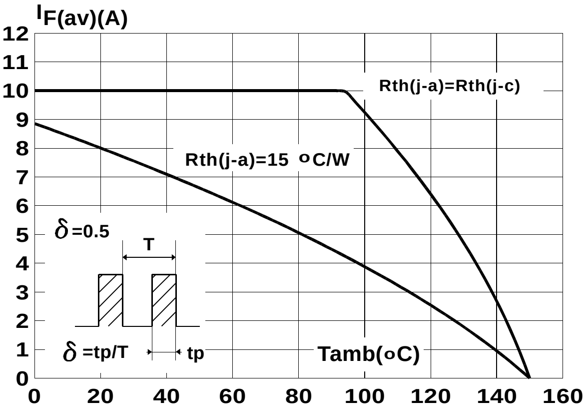


Fig.10 : Junction capacitance versus reverse voltage applied (Typical values).

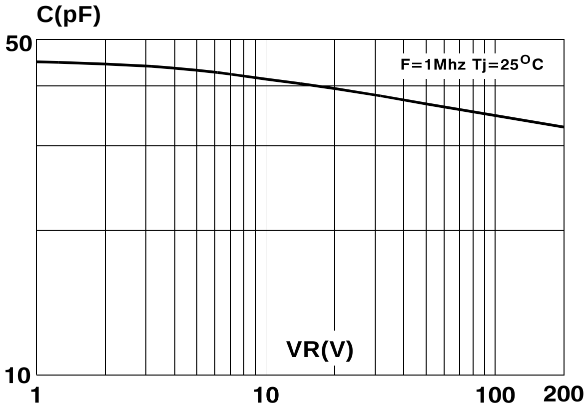
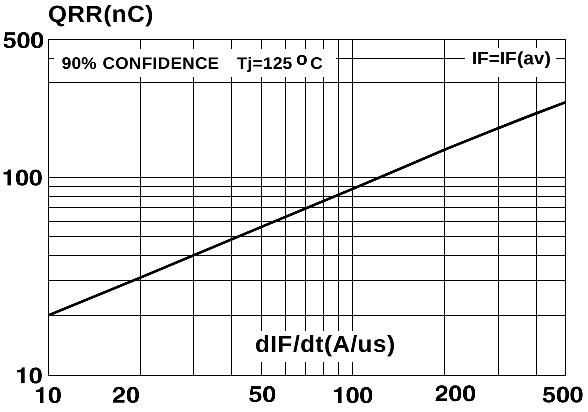


Fig.11 : Recovery charges versus dI$_F$/dt.



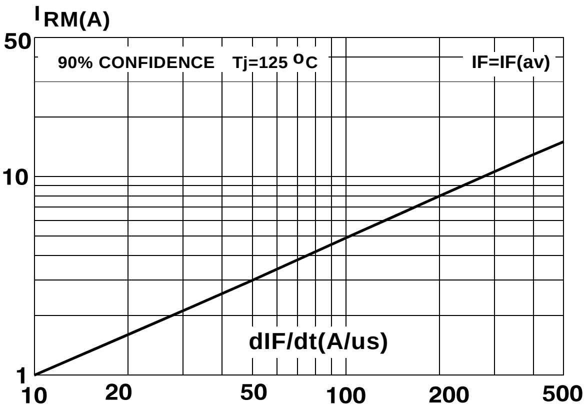


Fig.12 : Peak reverse current versus dIF/dt.

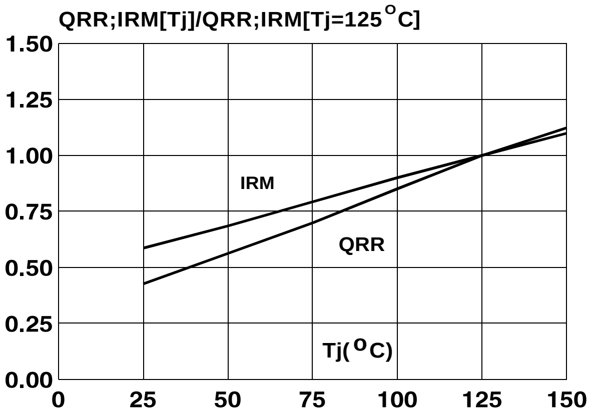
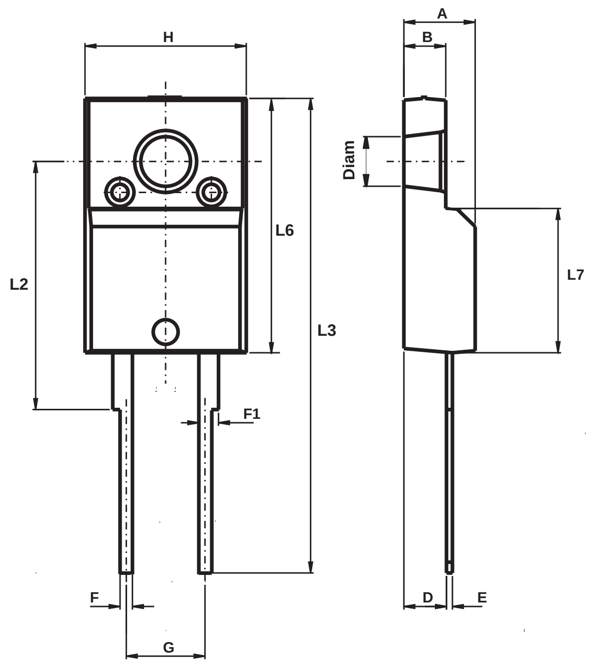


Fig.13 : Dynamic parameters versus junction temperature.

PACKAGE MECHANICAL DATA

ISOWATT220AC (JEDEC outline)

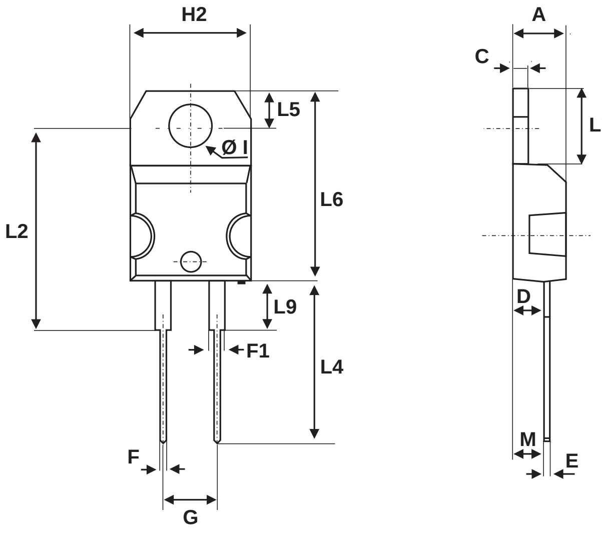


REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	2.50		2.70	0.098		0.106
D	2.40		2.75	0.094		0.108
E	0.40		0.70	0.016		0.028
F	0.75		1.00	0.030		0.039
F1	1.15		1.70	0.045		0.067
G	4.95		5.20	0.195		0.205
H	10.00		10.40	0.394		0.409
L2		16.00			0.630	
L3	28.60		30.60	1.125		1.205
L6	15.90		16.40	0.626		0.646
L7	9.00		9.30	0.354		0.366
Diam	3.00		3.20	0.118		0.126

Cooling method : C
Marking : Type number
Weight : 2 g
Recommended torque value : 0.55m.N
Maximum torque value : 0.70m.N

PACKAGE MECHANICAL DATA

TO-220AC (JEDEC outline)



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
C	1.23	1.32	0.048	0.051
D	2.40	2.72	0.094	0.107
E	0.49	0.70	0.019	0.027
F	0.61	0.88	0.024	0.034
F1	1.14	1.70	0.044	0.066
G	4.95	5.15	0.194	0.202
H2	10.00	10.40	0.393	0.409
L2	16.40 typ.		0.645 typ.	
L4	13.00	14.00	0.511	0.551
L5	2.65	2.95	0.104	0.116
L6	15.25	15.75	0.600	0.620
L7	6.20	6.60	0.244	0.259
L9	3.50	3.93	0.137	0.154
M	2.6 typ.		0.102 typ.	
Diam. I	3.75	3.85	0.147	0.151

Cooling method : C
Marking : Type number
Weight : 1.86 g
Recommended torque value : 0.8m.N
Maximum torque value : 1.0m.N

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