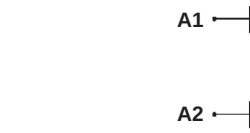
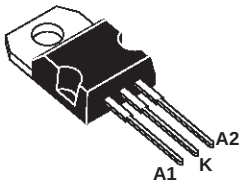
BYW51(F)-200

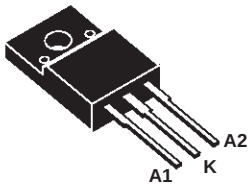
HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

FEATURES

- SUITED FOR SMPS
- VERY LOW FORWARD LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- HIGH SURGE CURRENT CAPABILITY
- HIGH AVALANCHE ENERGY CAPABILITY
- INSULATED VERSION (ISOWATT220AB) :
  Insulating voltage = 2000 V DC
  Capacitance = 12 pF







TO220AB
(Plastic)

BYW51-200

isolated
ISOWATT220AB
(Plastic)

BYW51F-200

DESCRIPTION

Dual center tap rectifier suited for switchmode power supply and high frequency DC to DC converters.
Packaged in TO220AB, or ISOWATT220AB 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			Per diode	20	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$	TO220AB	Tc=120°C	Per diode	10	A
		ISOWATT220AB	Tc=95°C	Per diode	10	
I_{FSM}	Surge non repetitive forward current		tp=10ms sinusoidal	Per diode	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
Rth (j-c)	Junction to case	TO220AB	Per diode	2.5	°C/W
			Total	1.4	
		ISOWATT220AB	Per diode	5.1	
			Total	4.05	
Rth (c)	Coupling	TO220AB		0.25	°C/W
		ISOWATT220AB		3.0	

When the diodes 1 and 2 are used simultaneously :
Tj-Tc (diode 1) = P(diode 1) x Rth(j-c) (Per diode) + P(diode 2) x Rth(c)

ELECTRICAL CHARACTERISTICS (Per diode)
STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
I_R *	T_j = 25°C	$V_R = V_{RRM}$			15	µA
	T_j = 100°C				1	mA
V_F **	T_j = 125°C	I_F = 8 A			0.85	V
	T_j = 125°C	I_F = 16 A			1.05	
	T_j = 25°C	I_F = 16 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 :
$P = 0.65 \times I_{F(AV)} + 0.025 \times I_{F}^{2}{}_{(RMS)}$

RECOVERY CHARACTERISTICS

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

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

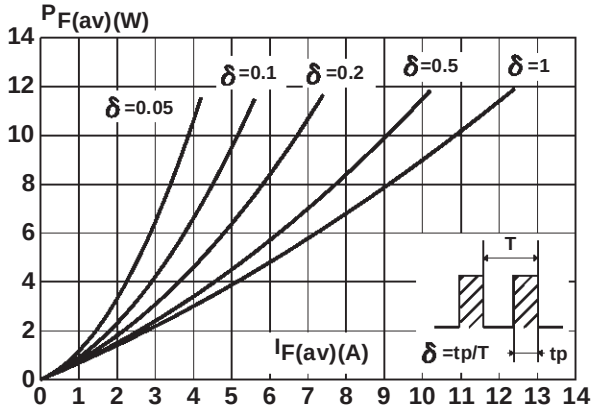


Fig.2 : Peak current versus form factor.

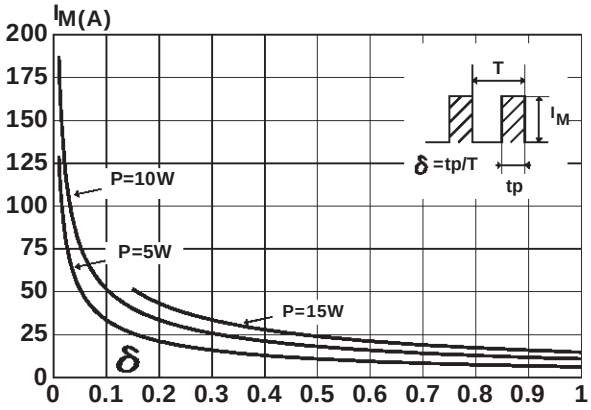


Fig.3 : Forward voltage drop versus forward current (maximum values).

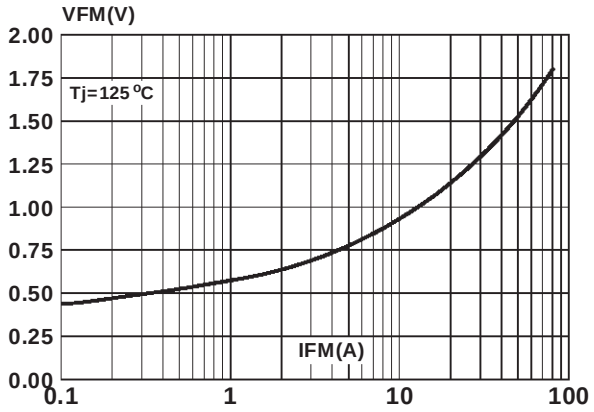


Fig.4 : Relative variation of thermal impedance junction to case versus pulse duration. (TO220AB)

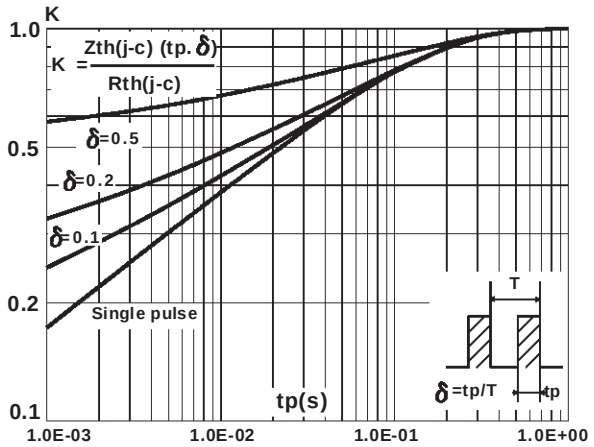


Fig.5 : Relative variation of thermal impedance junction to case versus pulse duration. (ISOWATT220AB)

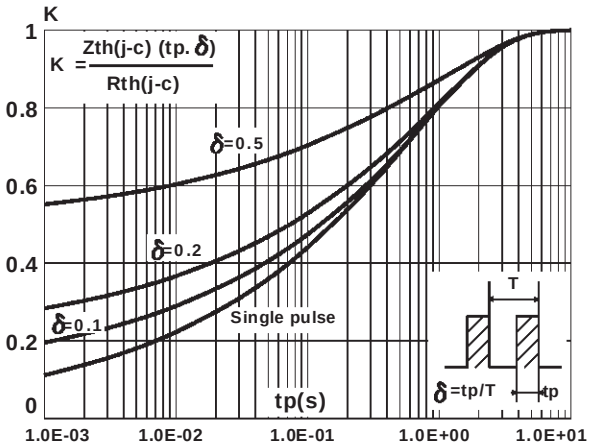


Fig.6 : Non repetitive surge peak forward current versus overload duration.
(TO220AB)

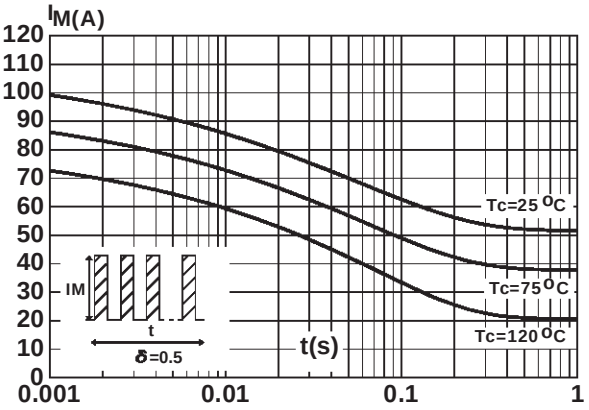


Fig.7 : Non repetitive surge peak forward current versus overload duration.
(ISOWATT220AB)

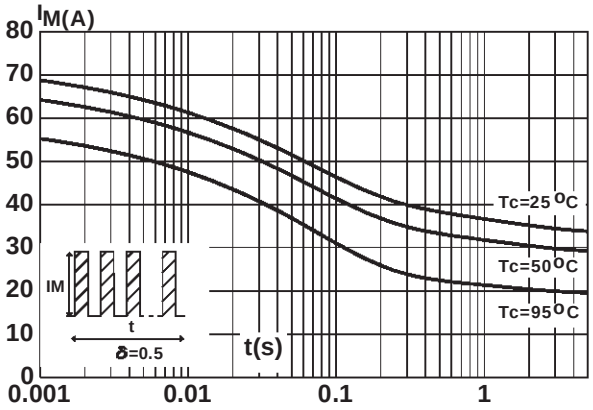


Fig.8 : Average current versus ambient temperature.
(duty cycle : 0.5) (TO220AB)

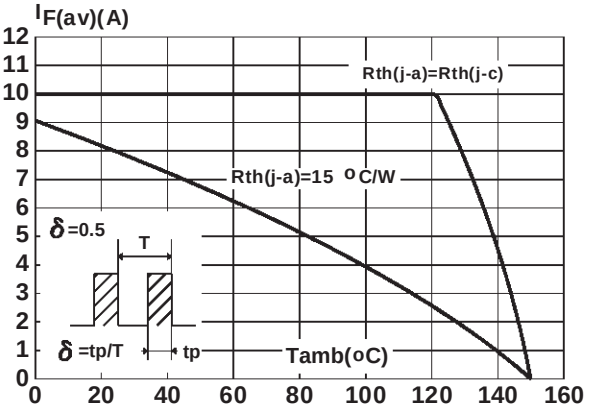


Fig.9 : Average current versus ambient temperature.
(duty cycle : 0.5) (ISOWATT220AB)

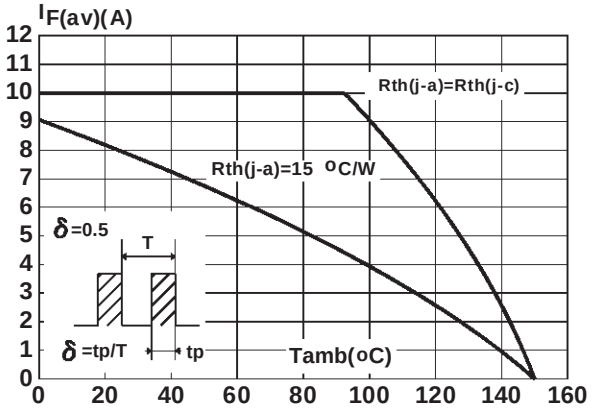


Fig.10 : Junction capacitance versus reverse voltage applied (Typical values).

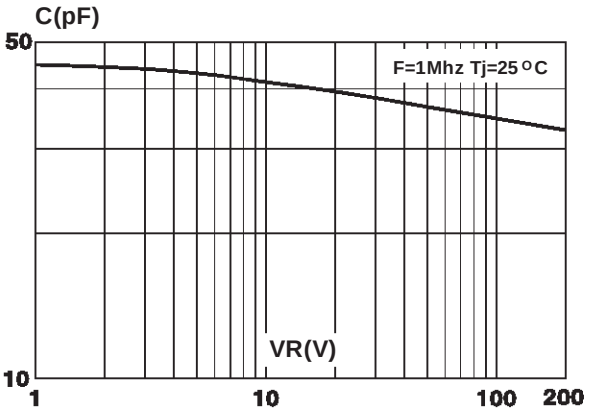


Fig.11 : Recovery charges versus dI_F/dt.

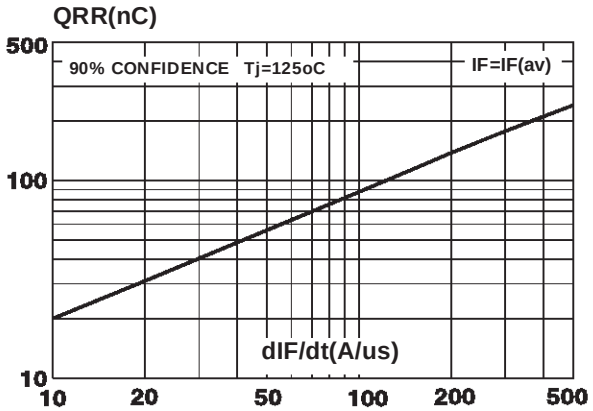


Fig.12 : Peak reverse current versus dIF/dt.

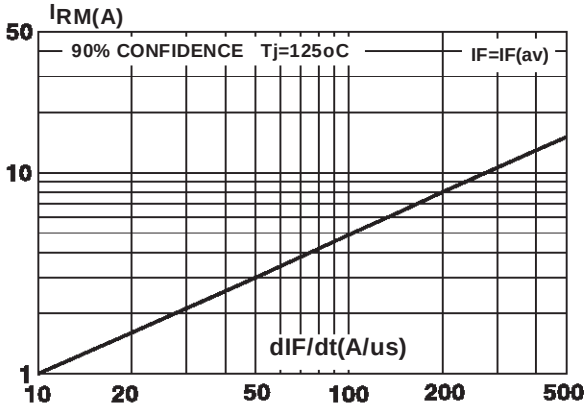
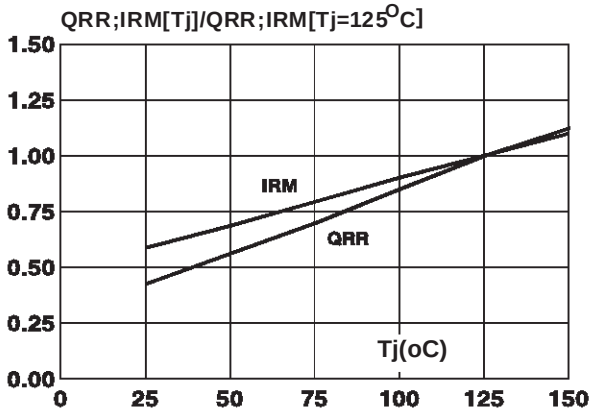
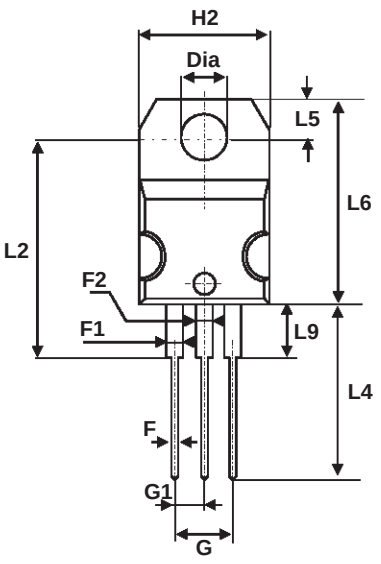


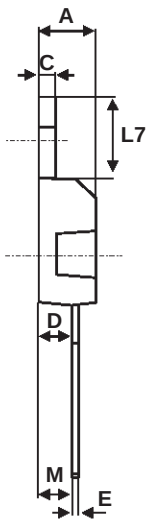
Fig.13 : Dynamic parameters versus junction temperature.



PACKAGE MECHANICAL DATA

TO220AB (JEDEC outline)





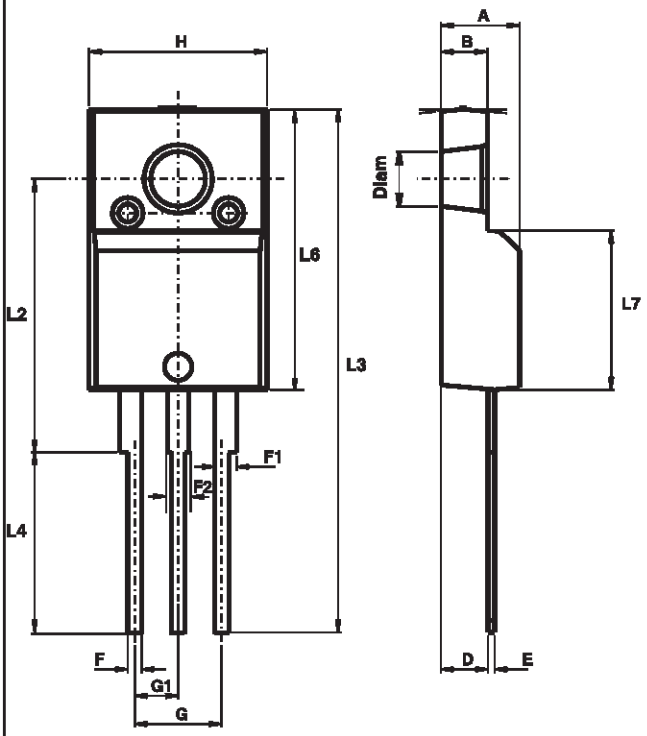
REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
C	1.23	1.32	0.048	0.051
D	2.40	2.72	0.094	0.107
E	0.49	0.70	0.019	0.027
F	0.61	0.88	0.024	0.034
F1	1.14	1.70	0.044	0.066
F2	1.14	1.70	0.044	0.066
G	4.95	5.15	0.194	0.202
G1	2.40	2.70	0.094	0.106
H2	10	10.40	0.393	0.409
L2	16.4 typ.		0.645 typ.	
L4	13	14	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.	3.75	3.85	0.147	0.151

Cooling method : C
Marking : Type number
Weight : 2.23 g

Recommended torque value : 0.8m.N
Maximum torque value : 1.0m.N

PACKAGE MECHANICAL DATA

ISOWATT220AB (JEDEC outline)



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
B	2.50	2.70	0.098	0.106
D	2.50	2.75	0.098	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
F2	1.15	1.70	0.045	0.067
G	4.95	5.20	0.195	0.205
G1	2.40	2.70	0.094	0.106
H	10.00	10.40	0.394	0.409
L2	16.00 Typ.		0.630 Typ.	
L3	28.60	30.60	1.125	1.205
L4	9.80	10.60	0.386	0.417
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 : 2.08 g

Recommended torque value : 0.55m.N
Maximum torque value : 0.70m.N