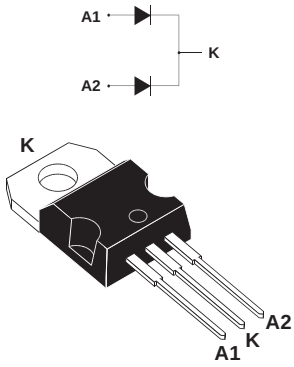
BYT16P-400

FAST RECOVERY RECTIFIER DIODES

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	16 A
V_{RRM}	400 V
V_F (max)	1.4 V
trr (max)	35 ns



TO-220AB
(Plastic)

FEATURES AND BENEFITS

- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING

DESCRIPTION

This double rectifier is suited for Switch Mode Power Supplies and other power converters.

This device is intended to free-wheeling function in converters and motor control circuits.

ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		400	V
I_{FRM}	Repetitive peak forward current	tp=5 µs F=1kHz	300	A
$I_{F(RMS)}$	RMS forward current		30	A
$I_{F(AV)}$	Average forward current	Tc = 100°C δ = 0.5	16	A
I_{FSM}	Surge non repetitive forward current	tp = 10 ms Sinusoidal	100	A
T_{stg}	Storage temperature range		- 40 to + 150	°C
Tj	Maximum operating junction temperature		150	°C

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode Total	3.75 2	°C/W
$R_{th(c)}$		Coupling	0.25	

When the diodes 1 and 2 are used simultaneously:
Δ Tj(diode 1) = P(diode) x $R_{th(j-c)}$ (Per diode) + P(diode 2) x $R_{th(c)}$

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
V_F *	Forward voltage drop	Tj = 25°C	I_F = 8 A			1.5	V
		Tj = 100°C				1.4	
I_R **	Reverse leakage current	Tj = 25°C	$V_R = V_{RRM}$			15	µA
		Tj = 100°C				2.5	mA

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

To evaluate the conduction losses use the following equation:
$P = 1.1 \times I_{F(AV)} + 0.024\ I_F{}^2{}_{(RMS)}$

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t_{rr}	Tj = 25°C	I_F = 1A V_R = 30V dI_F/dt = - 15A/µs			75	ns
		I_F = 0.5A I_R = 1A I_{rr} = 0.25A			35	

TURN-OFF SWITCHING CHARACTERISTICS

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
t_{IRM}	Maximum reverse recovery time	dI_F/dt = - 32 A/µs	V_{CC} = 200 V I_F = 8 A $L_p \leq$ 0.05 µH Tj = 100°C (see fig. 11)			75	ns
		dI_F/dt = - 64 A/µs			50		
I_{RM}	Maximum reverse recovery current	dI_F/dt = - 32 A/µs				2.2	A
		dI_F/dt = - 64 A/µs			2.8		
$C = \frac{V_{RP}}{V_{CC}}$	Turn-off overvoltage coefficient	Tj = 100°C V_{CC} = 120V $I_F = I_{F(AV)}$ dI_F/dt = - 8A/µs L_p = 9µH (see fig. 12)			3.3		/

Fig. 1: Low frequency power losses versus average current.

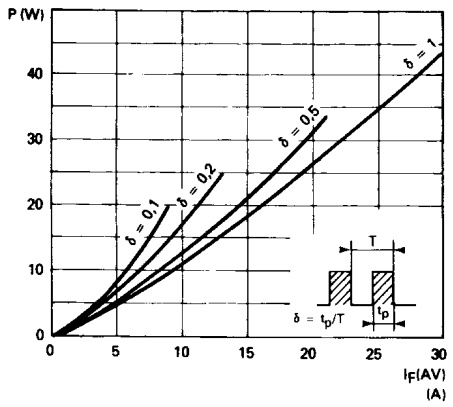


Fig. 2: Peak current versus form factor.

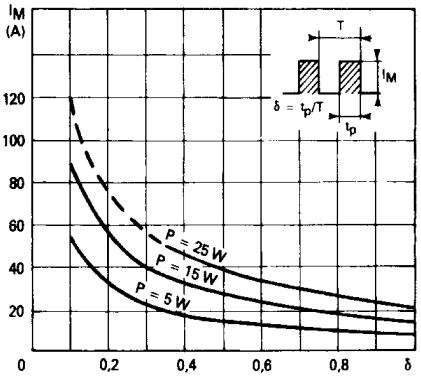


Fig. 3: Non repetitive peak surge current versus overload duration.

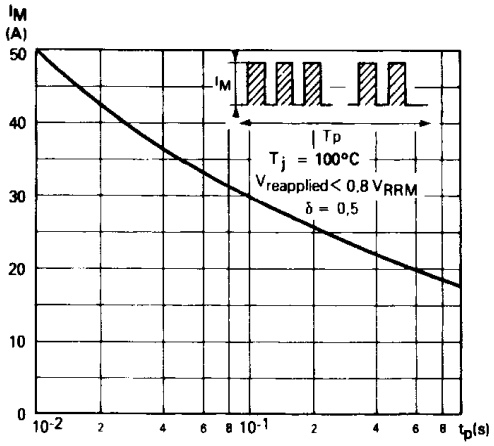


Fig. 4: Thermal impedance versus pulse width.

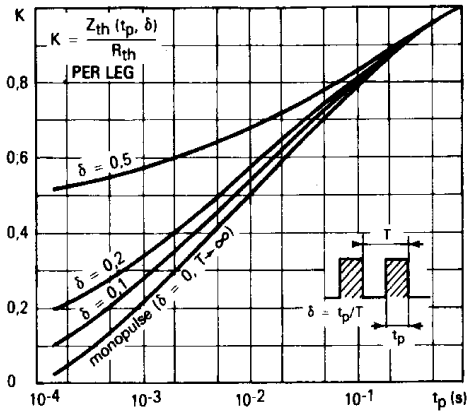


Fig. 5: Voltage drop versus forward current.

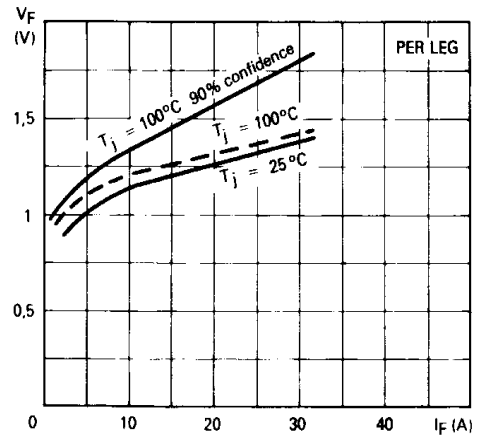


Fig. 6: Recovery charge versus dI_F/dt.

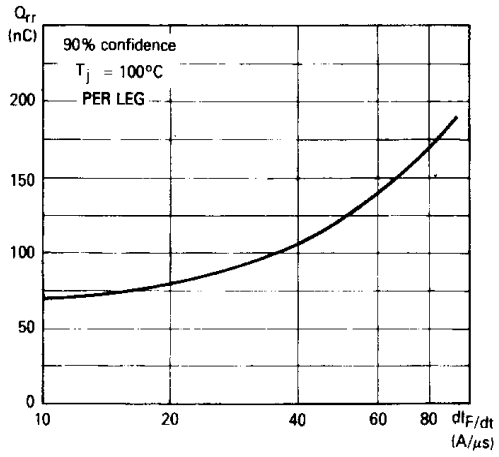


Fig. 7: Recovery time versus dI_F/dt.

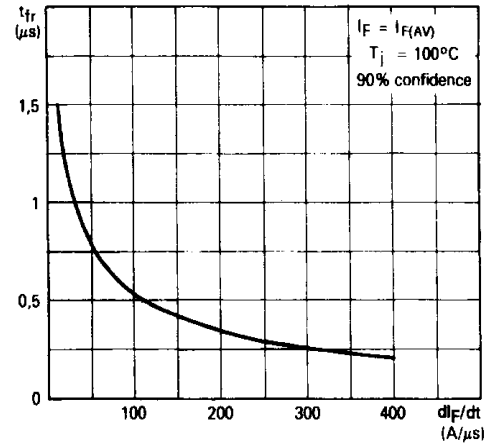


Fig. 8: Peak reverse current versus dI_F/dt.

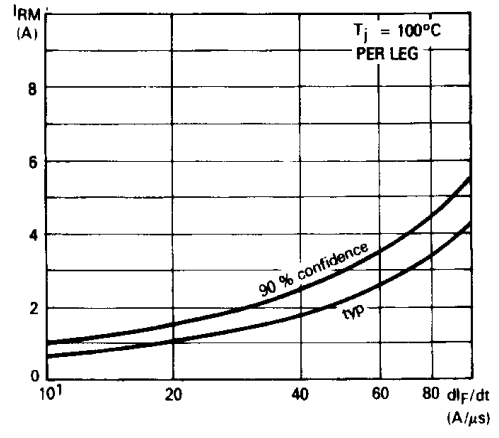


Fig. 9: Peak forward voltage versus dI_F/dt.

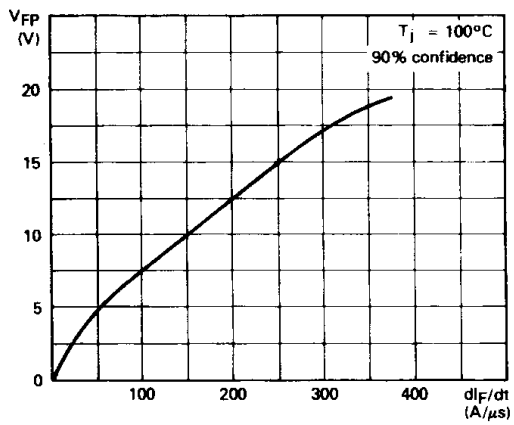


Fig. 10: Dynamic parameters versus junction temperature.

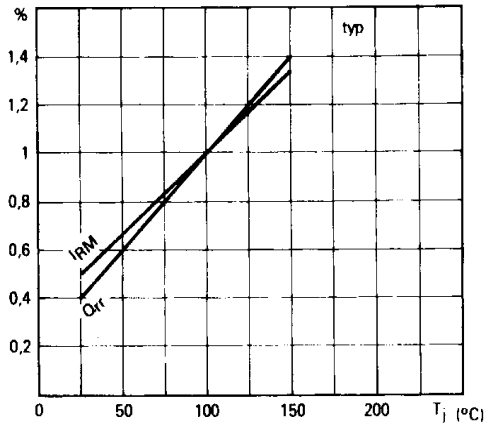


Fig. 11: Turn-off switching characteristics (without series inductance).

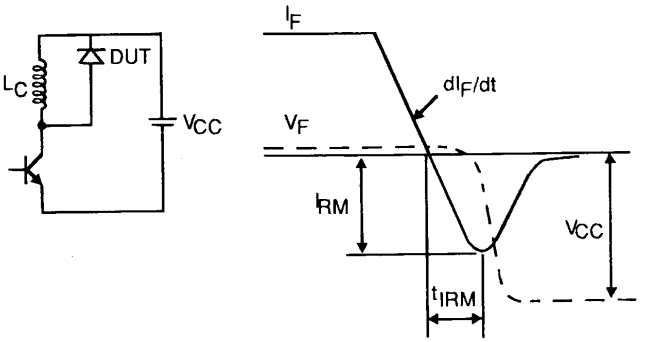
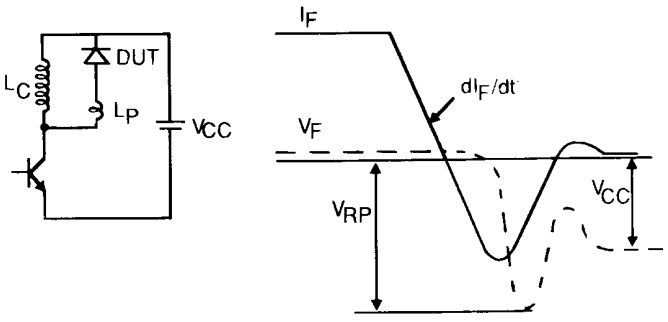
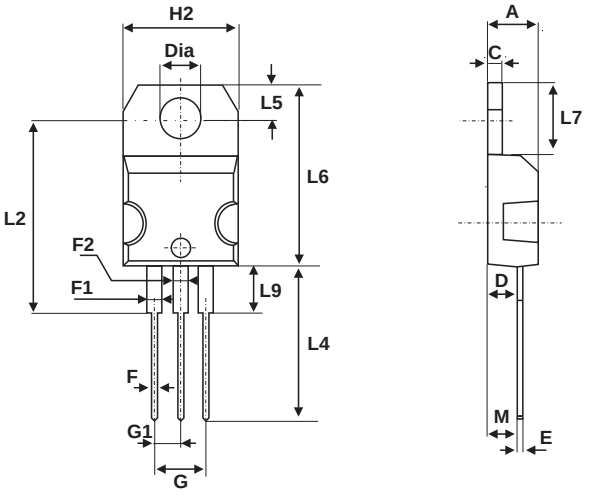


Fig. 12: Turn-off switching characteristics (with series inductance).



PACKAGE MECHANICAL DATA

TO-220AB



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

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
BYT16P-400	BYT16P-400	TO-220AB	2.03 g.	30	Tube

- Cooling method: by conduction (C)
- Recommended torque value: 0.08 N.m.
- Maximum torque value: 0.10 N.m.
- Epoxy meets UL94,V0