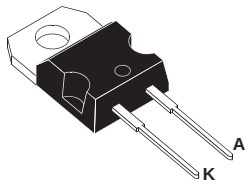
BYT08P-400
BYT08PI-400

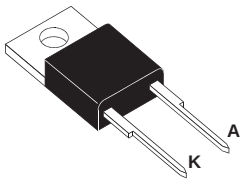
FAST RECOVERY RECTIFIER DIODES

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	8 A
V_{RRM}	400 V
V_F (max)	1.4 V
trr (max)	35 ns



T0-220AC
(Plastic)



Insulated
TO-220AC
(Plastic)

FEATURES AND BENEFITS

- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING
- INSULATED PACKAGE: TO-220AC
  Insulation voltage: 2500 V_{RMS}
  Capacitance = 7 pF

DESCRIPTION

This single 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)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			400	V
I_{FRM}	Repetitive peak forward current	tp=5 µs F=5kHz		200	A
$I_{F(RMS)}$	RMS forward current			16	A
$I_{F(AV)}$	Average forward current	TO-220AC	Tc = 120°C δ = 0.5	8	A
		Insulated TO-220AC	Tc = 105°C		
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	TO-220AC Ins. TO-220AC	2.5 3.5	°C/W

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 ® 0.05 µH Tj = 100°C (see fig. 13)			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} = 60V $I_F = I_{F(AV)}$ dI_F/dt = - 30A/µs L_p = 1µH			3.3		/

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

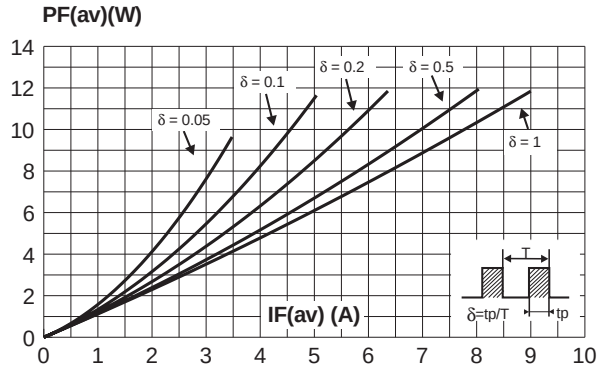


Fig. 2: Peak current versus form factor.

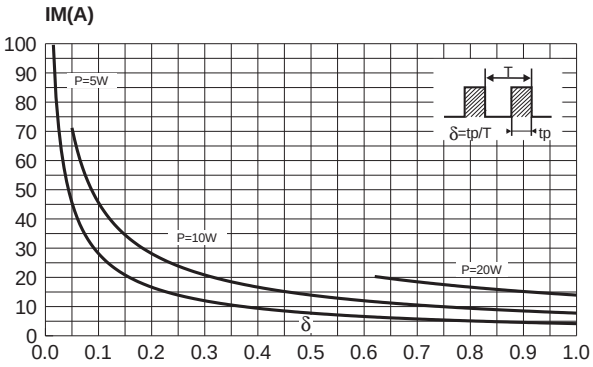


Fig. 3: Average forward current versus ambient temperature (δ=0.5).

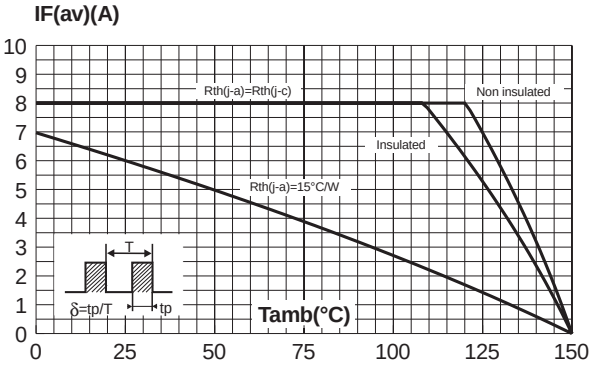


Fig. 4-1: Non repetitive surge peak forward current versus overload duration (TO-220AC).

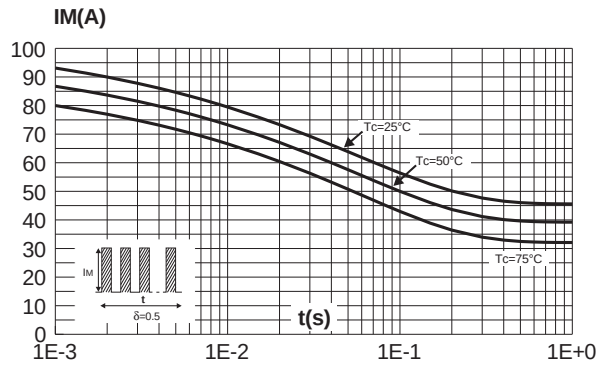


Fig. 4-2: Non repetitive surge peak forward current versus overload duration (insulated TO-220AC).

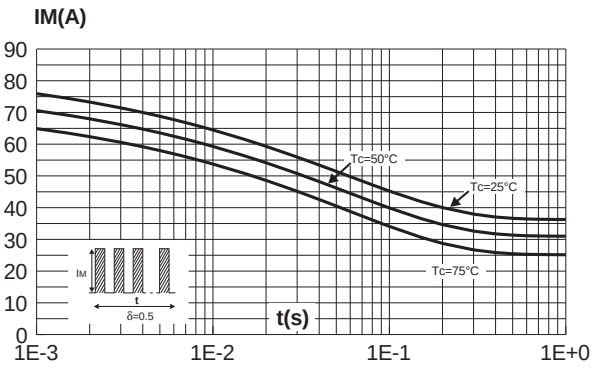


Fig. 5: Relative variation of thermal impedance junction to case versus pulse duration.

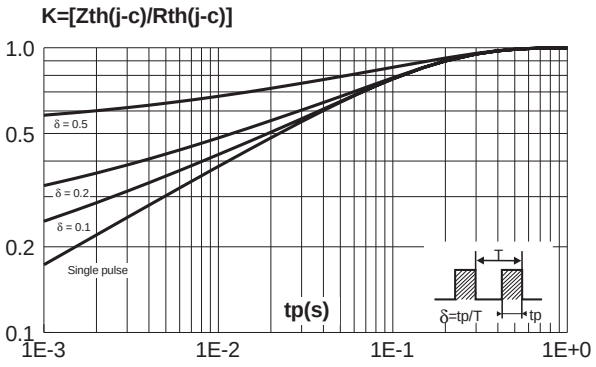


Fig. 6: Forward voltage drop versus forward current (maximum values, per diode)**.**

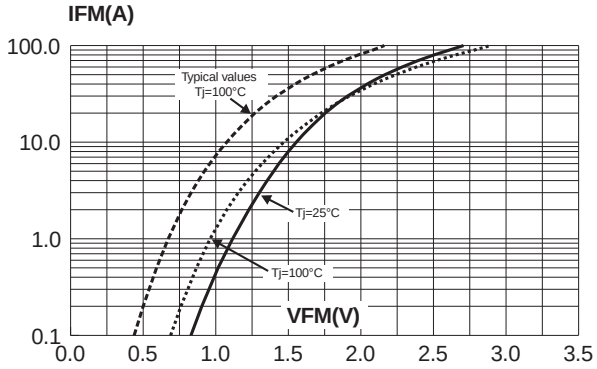


Fig. 7: Junction capacitance versus reverse voltage applied (typical values, per diode).

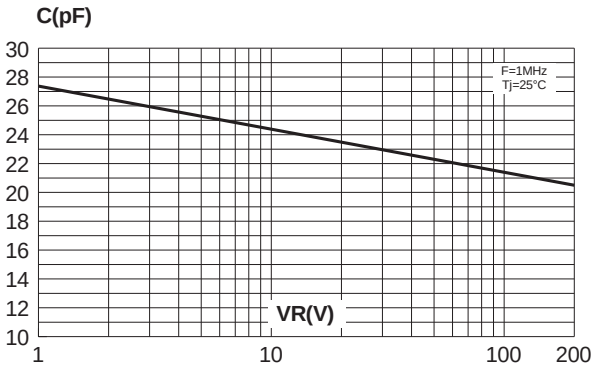


Fig. 8: Recovery charges versus dI_F/dt (per diode).

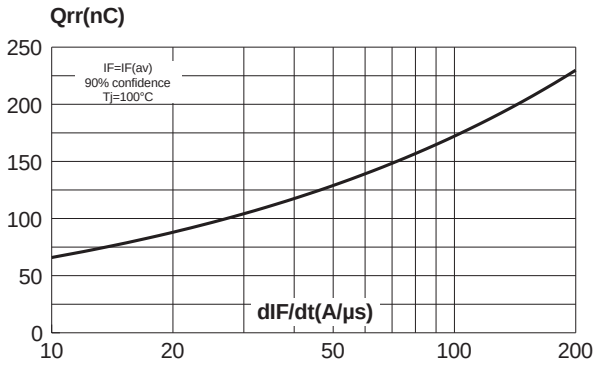


Fig. 9: Recovery current versus dI_F/dt (per diode).

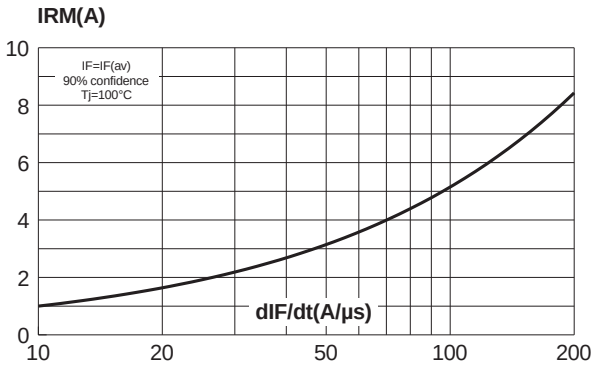


Fig. 10: Transient peak forward voltage versus dI_F/dt (per diode)

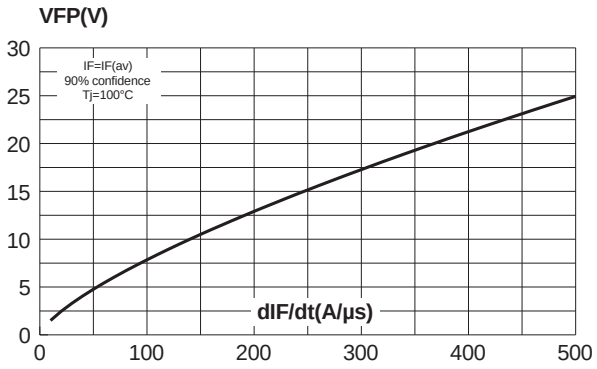


Fig. 11: Forward recovery time versus dI_F/dt (per diode)

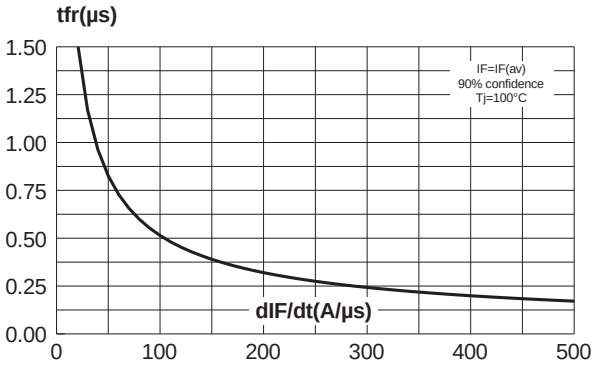


Fig. 12: Dynamic parameters versus junction temperature.

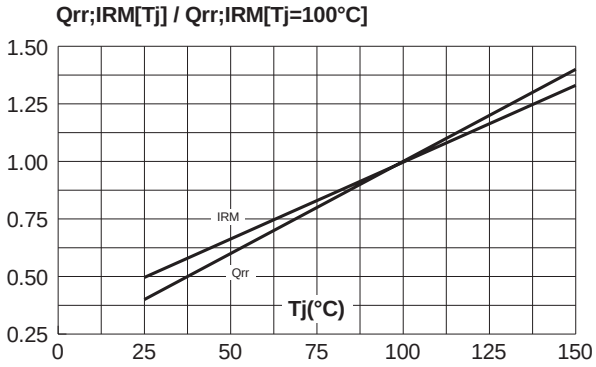


Fig. 13: Turn-off switching characteristics (without series inductance).

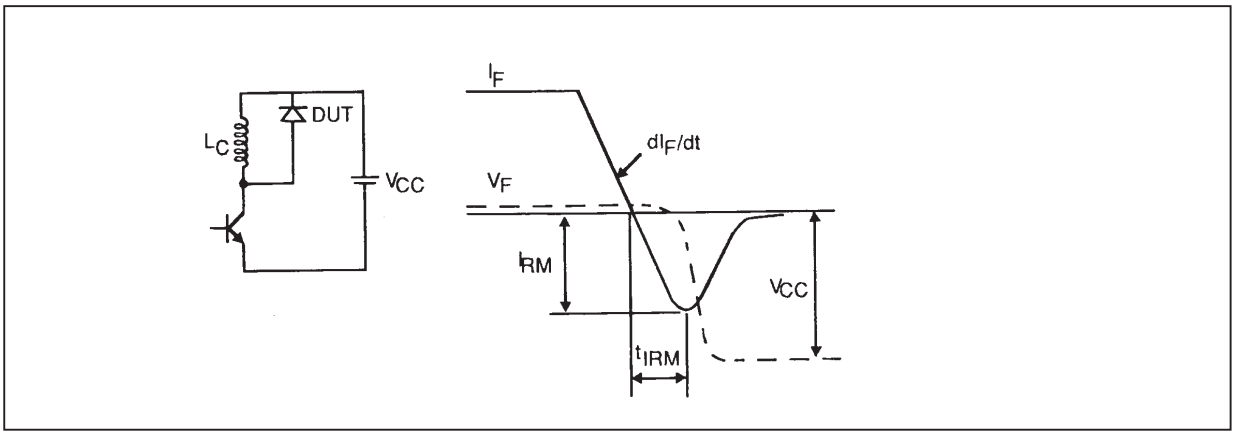
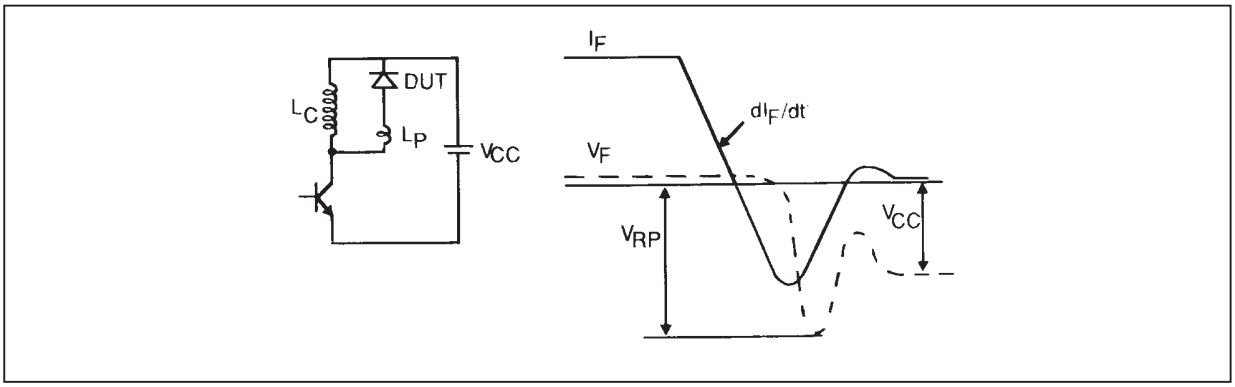
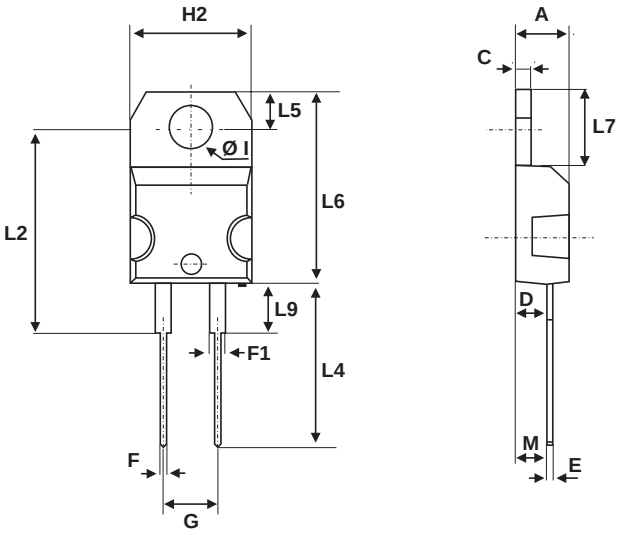


Fig. 14: Turn-off switching characteristics (with series inductance).



PACKAGE MECHANICAL DATA

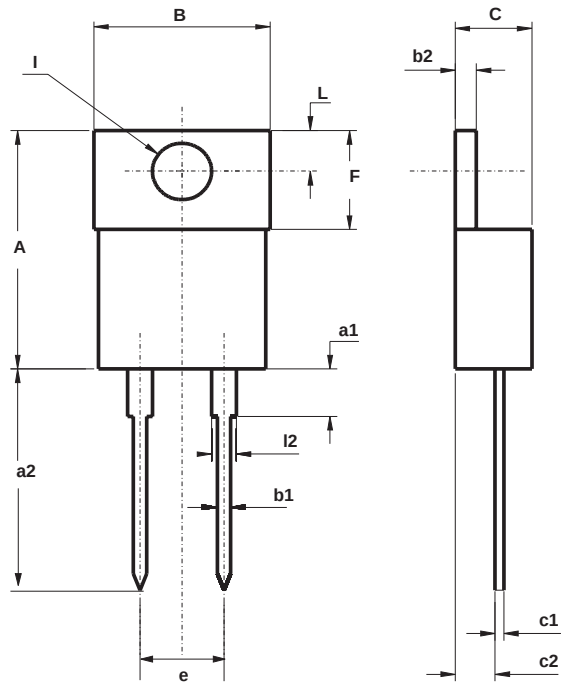
TO-220AC



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

PACKAGE MECHANICAL DATA

TO-220AC Insulated



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	14.23	15.87	0.560	0.625
a1		4.50		0.177
a2	12.70	14.70	0.500	0.579
B	10.20	10.45	0.402	0.411
b1	0.64	0.96	0.025	0.038
b2	1.15	1.39	0.045	0.055
C	4.48	4.82	0.176	0.190
c1	0.35	0.65	0.020	0.026
c2	2.10	2.70	0.083	0.106
e	4.58	5.58	0.180	0.220
F	5.85	6.85	0.230	0.270
I	3.55	4.00	0.140	0.157
L	2.54	3.00	0.100	0.118
l2	1.45	1.75	0.057	0.069

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
BYT08P-400	BYT08P-400	TO-220AC	1.86 g.	50	Tube
BYT08PI-400	BYT08PI-400	Insulated TO-220AC	1.86 g.	250	Bulk

- Cooling method: by conduction (C)
- Recommended torque value: 0.8 N.m.
- Maximum torque value: 1.0 N.m.
- Epoxy meets UL94,V0