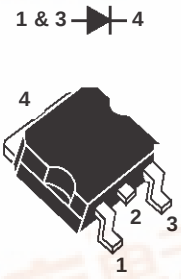
BYT30G-400

HIGH EFFICIENCY FAST RECOVERY DIODES

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	30 A
V_{RRM}	400 V
trr	50 ns
V_F	1.4 V



D^2PAK
(Plastic)

FEATURES AND BENEFITS

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

DESCRIPTION

Single rectifier suited for freewheeling in converters and motor control circuits.
Packaged in D^2PAK, this surface mount device is intended for use in high frequency inverters, free wheeling and polarity protection applications.

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter		Value	Unit
V_{RRM}	Repetitive peak reverse voltage		400	V
$I_{F(RMS)}$	RMS forward current		50	A
$I_{F(AV)}$	Average forward current	Tc=100°C δ = 0.5	30	A
I_{FSM}	Surge non repetitive forward current	tp=10ms sinusoidal	350	A
I_{FRM}	Repetitive peak forward current	tp = 5µs f = 5 kHz	280	A
Tstg Tj	Storage and junction temperature range		- 40 to + 150	°C

THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
Rth (j-c)	Junction to case	1	°C/W

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	$V_R = V_{RRM}$	$T_j = 25°C$			35	µA
			$T_j = 100°C$			6	mA
V_F **	Forward voltage drop	$I_F = 30$ A	$T_j = 100°C$			1.4	V
		$I_F = 30$ A	$T_j = 25°C$			1.5	

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

To evaluate the conduction losses use the following equation :
$P = 1.1 \times I_{F(AV)} + 0.0095\, I_{F^2(RMS)}$

RECOVERY CHARACTERISTICS

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
t_{rr}	Reverse recovery time	$T_j = 25°C$ $Irr = 0.25$ A	$I_F = 0.5$A $I_R = 1$A			50	ns
		$T_j = 25°C$ $dI_F/dt = -15A/µs$	$I_F = 1$A $V_R = 30$V			100	

TURN-OFF SWITCHING CHARACTERISTICS

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
t_{IRM}	Maximum reverse recovery time	$T_j = 100°C$ $I_F = 30$ A $V_{CC} = 200$ V Lp < 0.05 µH	$dI_F/dt = -120A/µs$			75	ns
			$dI_F/dt = -240A/µs$		50		
I_{RM}	Maximum reverse recovery current		$dI_F/dt = -120A/µs$			9	ns
			$dI_F/dt = -240A/µs$		12		
C factor	Turn-off overvoltage coefficient	$T_j = 100°C$ $V_{CC} = 60$ V $dI_F/dt = -30A/µs$	$I_F = I_{F(AV)}$ Lp = 1 µH		3.3		/

PIN OUT configuration in D^2PAK:

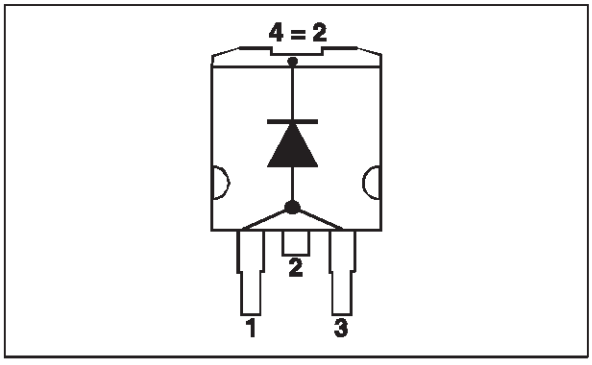


Fig.1 : Average forward power dissipation versus average forward current.

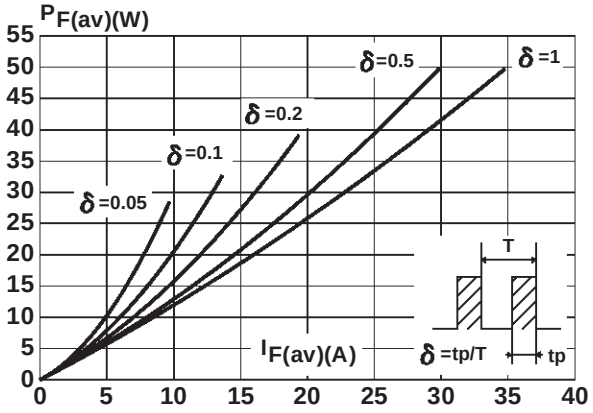


Fig.2 : Peak current versus form factor.

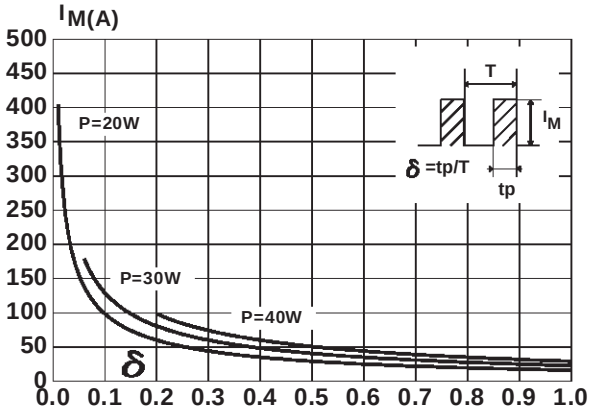


Fig.3 : Forward voltage drop versus forward current (maximum values).

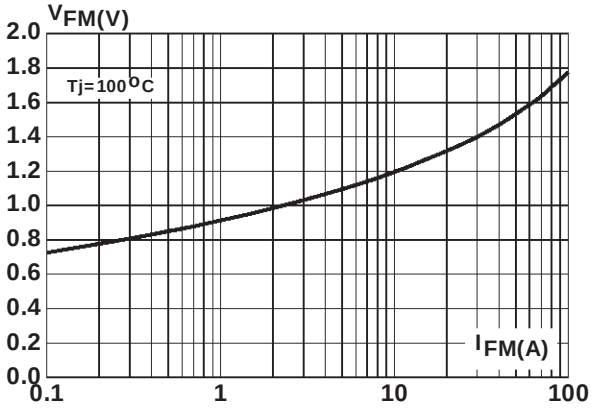


Fig.4 : Relative variation of thermal impedance junction to case versus pulse duration.

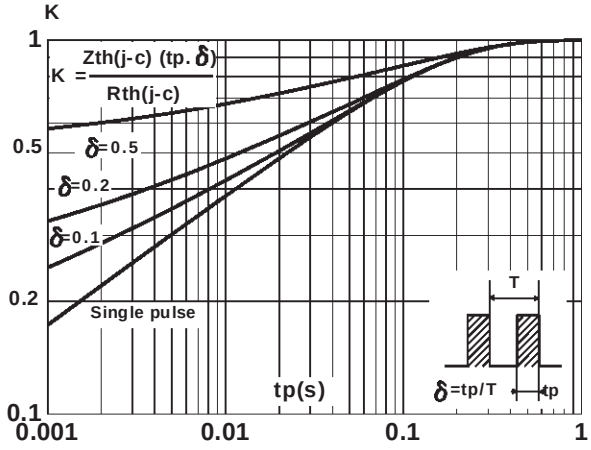


Fig.5 : Non repetitive surge peak forward current versus overload duration.

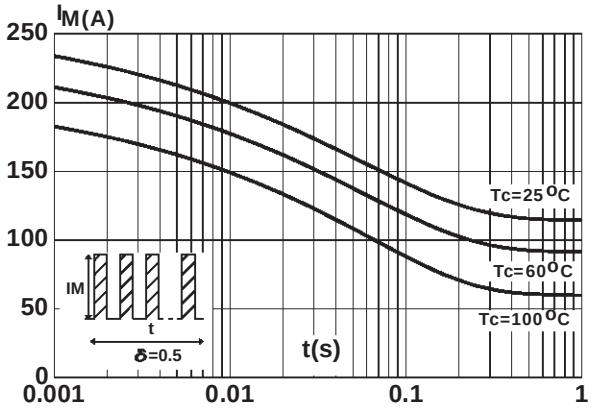


Fig.6 : Average current versus ambient temperature. (δ: 0.5)

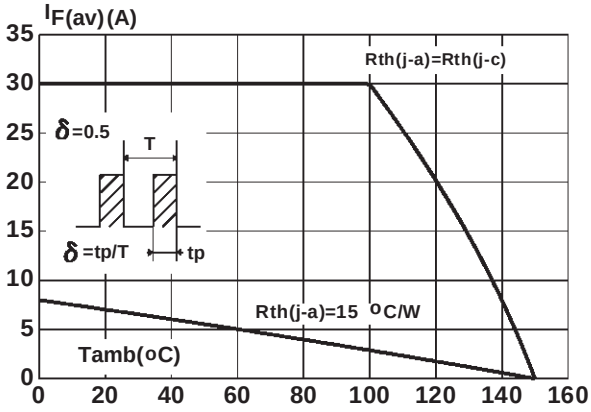


Fig.7 : Reverse recovery charge versus dI_F/dt.

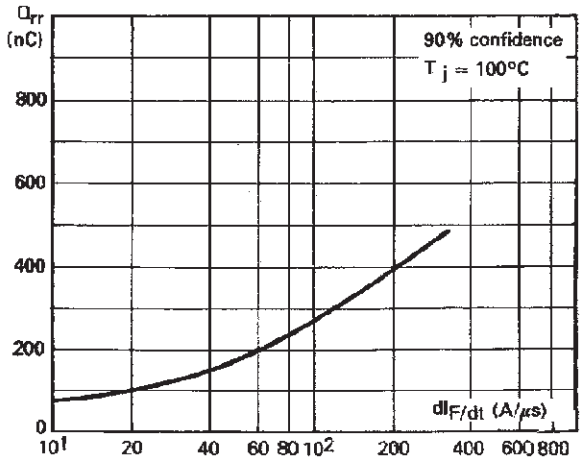


Fig.8 : Forward recovery times versus dI_F/dt.

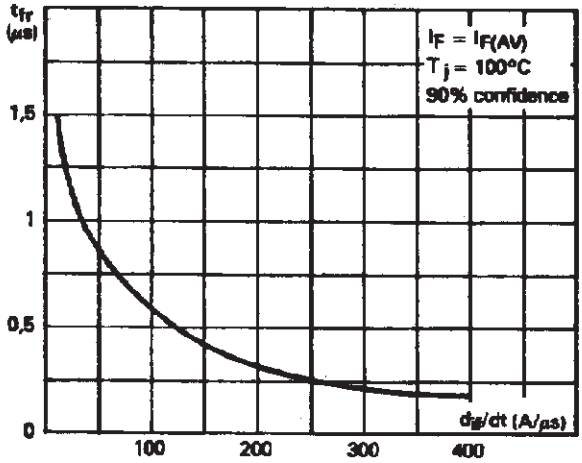


Fig.9 : Peak reverse current versus dI_F/dt.

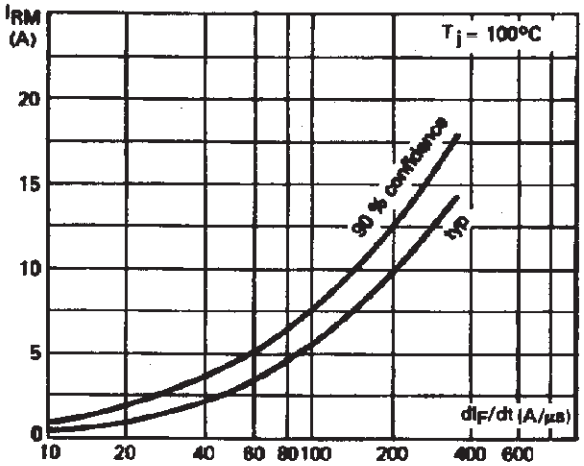


Fig.10 : Peak forward voltage versus dI_F/dt.

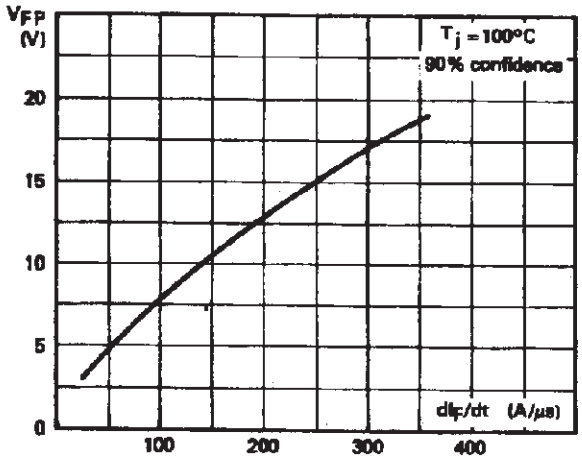
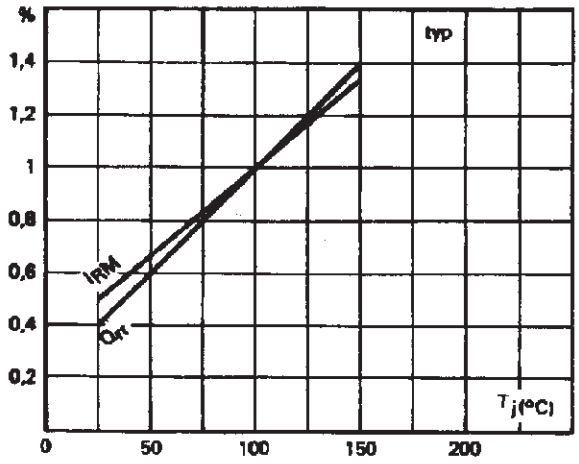
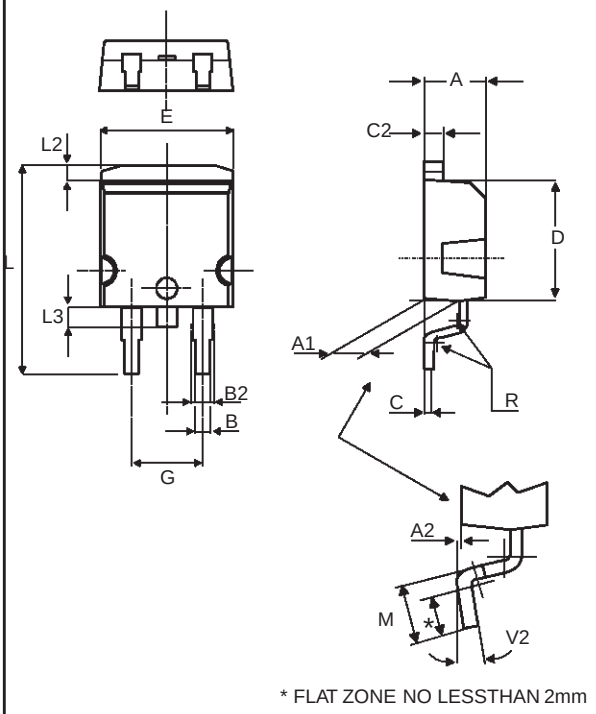


Fig.11: Dynamic parameters versus junction temperature.



PACKAGE MECHANICAL DATA

D^2PAK (Plastic)



* FLAT ZONE NO LESSTHAN 2mm

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
A1	2.49	2.69	0.098	0.106
A2	0.03	0.23	0.001	0.009
B	0.70	0.93	0.027	0.037
B2	1.14	1.70	0.045	0.067
C	0.45	0.60	0.017	0.024
C2	1.23	1.36	0.048	0.054
D	8.95	9.35	0.352	0.368
E	10.00	10.40	0.393	0.409
G	4.88	5.28	0.192	0.208
L	15.00	15.85	0.590	0.624
L2	1.27	1.40	0.050	0.055
L3	1.40	1.75	0.055	0.069
M	2.40	3.20	0.094	0.126
R	0.40 typ.		0.016 typ.	
V2	0°	8°	0°	8°

FOOT PRINT (in millimeters)