



## HIGH EFFICIENCY FAST RECOVERY DIODES

### MAIN PRODUCT CHARACTERISTICS

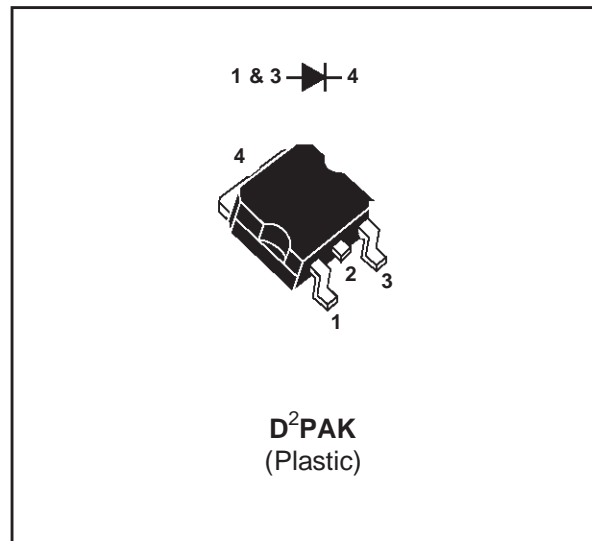
$I_{F(AV)}$	30 A
$V_{RRM}$	400 V
$t_{rr}$	50 ns
$V_F$	1.4 V

### 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<sup>2</sup>PAK, 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	$T_c=100^{\circ}\text{C}$ $\delta = 0.5$	A
$I_{FSM}$	Surge non repetitive forward current	$t_p=10\text{ms}$ sinusoidal	A
$I_{FRM}$	Repetitive peak forward current	$t_p = 5\mu\text{s}$ $f = 5\text{kHz}$	A
$T_{stg}$ $T_j$	Storage and junction temperature range	- 40 to + 150	$^{\circ}\text{C}$

## BYT30G-400

### 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 <sub>R</sub> *	Reverse leakage current	V <sub>R</sub> = V <sub>RRM</sub>	T <sub>j</sub> = 25°C		35	μA
			T <sub>j</sub> = 100°C		6	mA
V <sub>F</sub> **	Forward voltage drop	I <sub>F</sub> = 30 A	T <sub>j</sub> = 100°C		1.4	V
		I <sub>F</sub> = 30 A	T <sub>j</sub> = 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 :

$$P = 1.1 \times I_{F(AV)} + 0.0095 I_{F(RMS)}^2$$

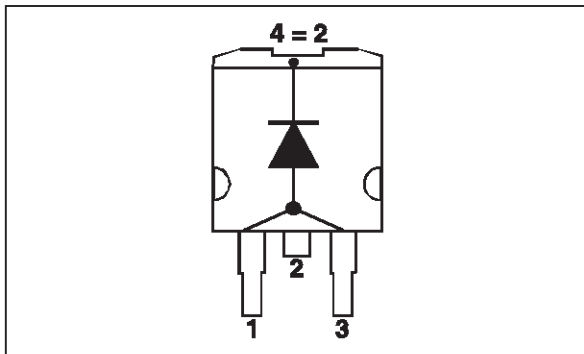
### RECOVERY CHARACTERISTICS

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
t <sub>rr</sub>	Reverse recovery time	T <sub>j</sub> = 25°C    I <sub>F</sub> = 0.5A I <sub>rr</sub> = 0.25 A    I <sub>R</sub> = 1A			50	ns
		T <sub>j</sub> = 25°C    I <sub>F</sub> = 1A dI <sub>F</sub> /dt = -15A/μs    V <sub>R</sub> = 30V			100	

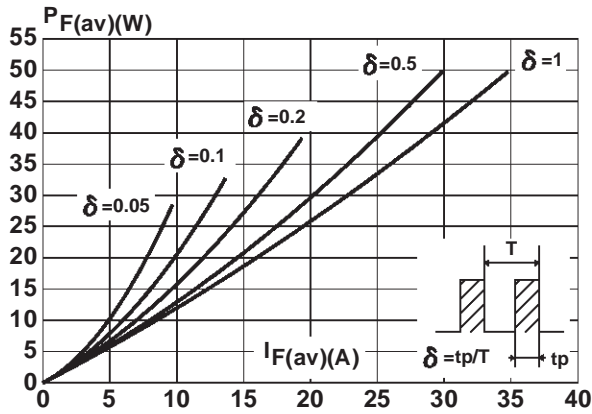
### TURN-OFF SWITCHING CHARACTERISTICS

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
t <sub>IRM</sub>	Maximum reverse recovery time	T <sub>j</sub> = 100°C	dI <sub>F</sub> /dt = -120A/μs		75	ns
		I <sub>F</sub> = 30 A	dI <sub>F</sub> /dt = -240A/μs	50		
I <sub>RM</sub>	Maximum reverse recovery current	V <sub>CC</sub> = 200 V	dI <sub>F</sub> /dt = -120A/μs		9	ns
		L <sub>p</sub> < 0.05 μH	dI <sub>F</sub> /dt = -240A/μs	12		
C factor	Turn-off overvoltage coefficient	T <sub>j</sub> = 100°C    I <sub>F</sub> = I <sub>F(AV)</sub> V <sub>CC</sub> = 60 V    L <sub>p</sub> = 1 μH dI <sub>F</sub> /dt = -30A/μs		3.3		/

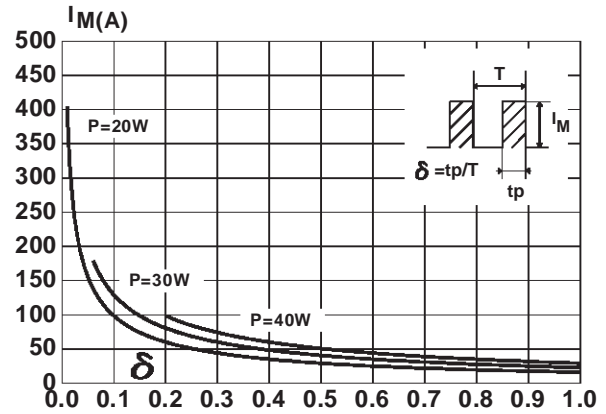
### PIN OUT configuration in D<sup>2</sup>PAK:



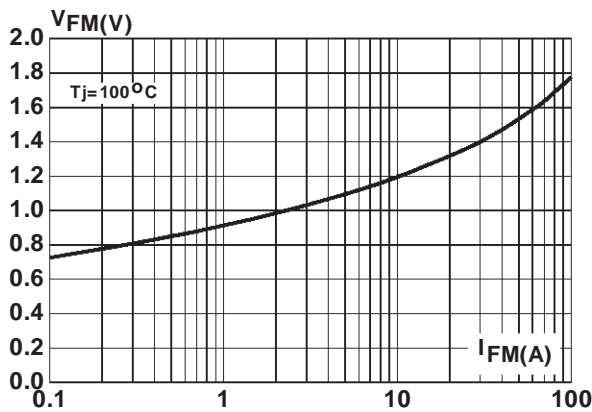
**Fig.1** : Average forward power dissipation versus average forward current.



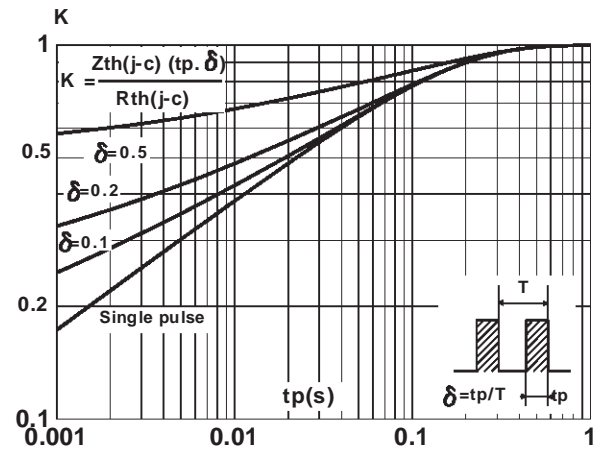
**Fig.2** : Peak current versus form factor.



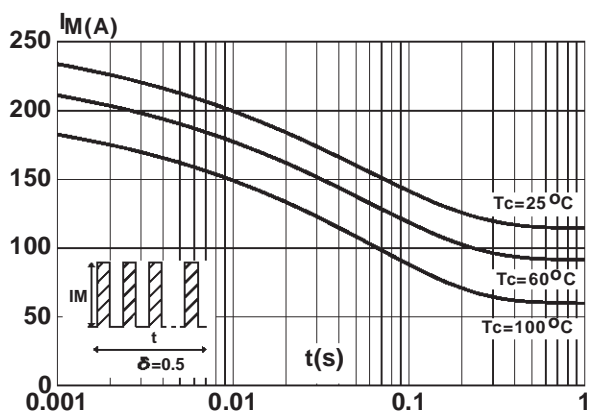
**Fig.3** : Forward voltage drop versus forward current (maximum values).



**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. (delta: 0.5)

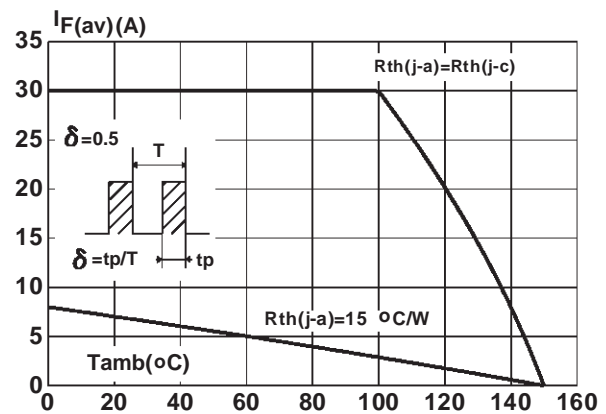


Fig.7 : Reverse recovery charge versus  $di_F/dt$ .

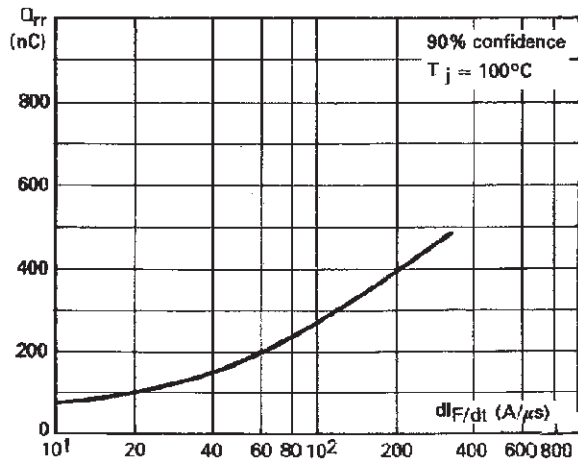


Fig.8 : Forward recovery times versus  $di_F/dt$ .

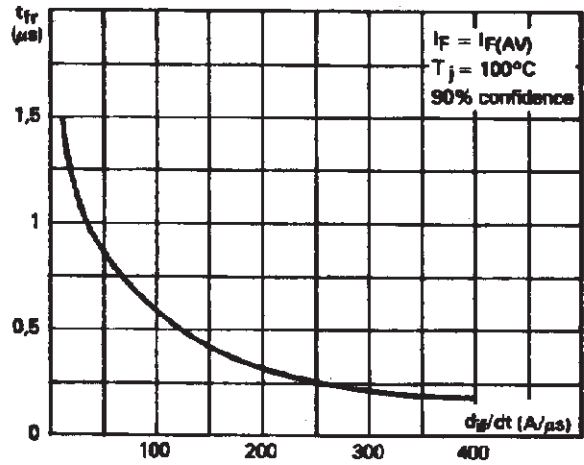


Fig.9 : Peak reverse current versus  $di_F/dt$ .

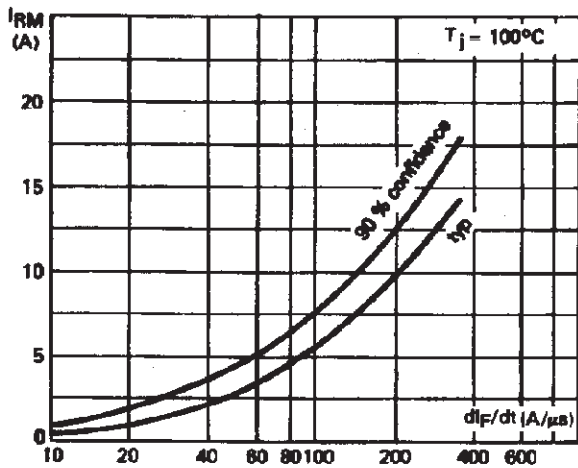


Fig.10 : Peak forward voltage versus  $di_F/dt$ .

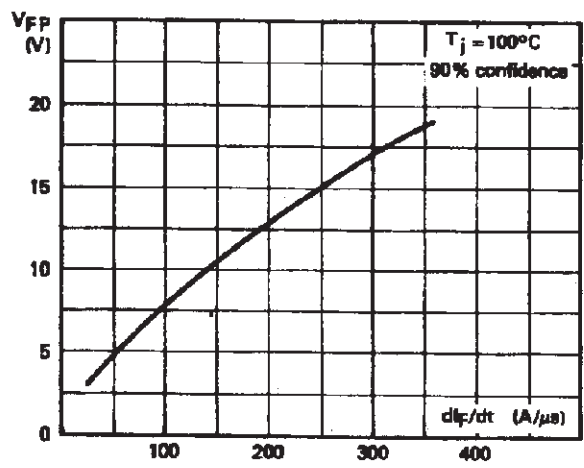
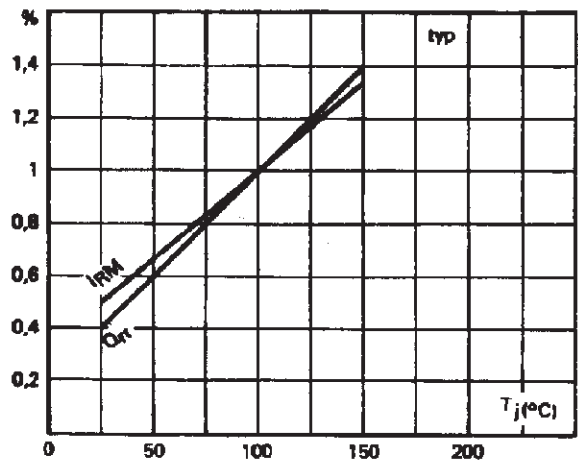
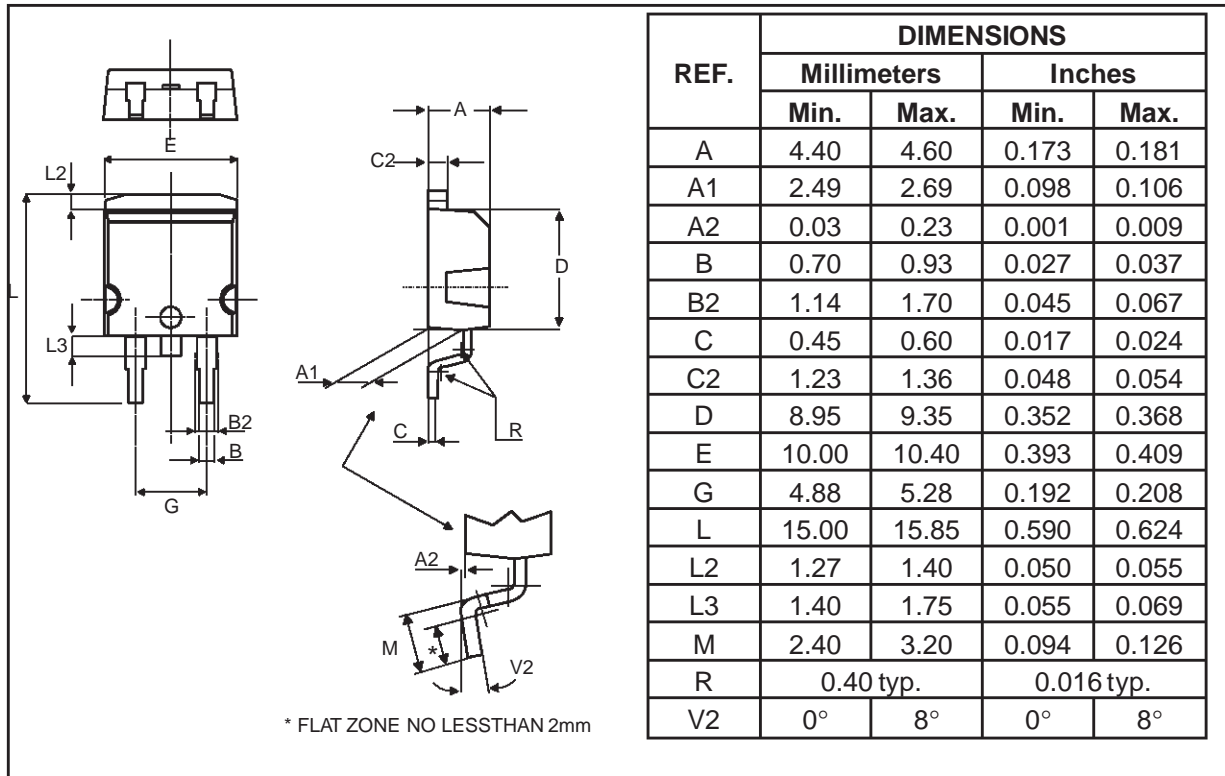


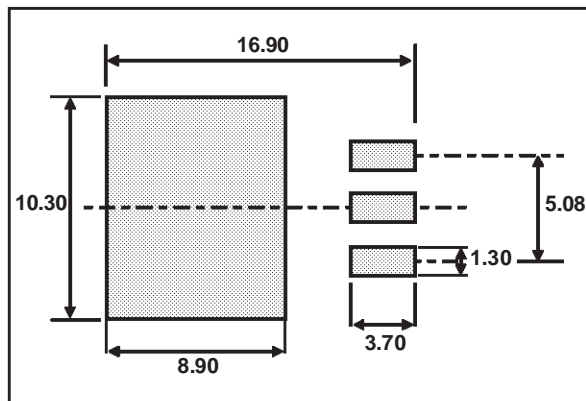
Fig.11: Dynamic parameters versus junction temperature.



**PACKAGE MECHANICAL DATA**  
D<sup>2</sup>PAK (Plastic)



**FOOT PRINT (in millimeters)**



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