

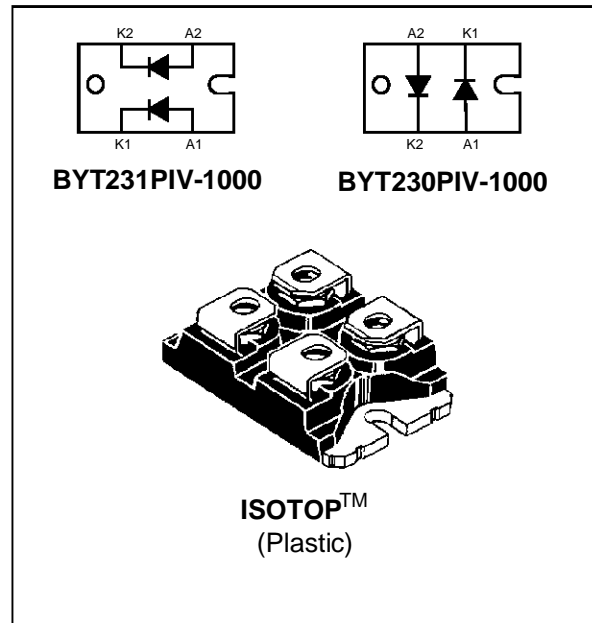
FAST RECOVERY RECTIFIER DIODES

FEATURES

- VERY LOW REVERSE RECOVERY TIME
- VERY LOW SWITCHING LOSSES
- LOW NOISE TURN-OFF SWITCHING
- INSULATED PACKAGE :
Insulating voltage = 2500 V_{RMS}
Capacitance = 45 pF

DESCRIPTION

Dual high voltage rectifiers suited for Switch Mode Power Supplies and other power converters. The devices are packaged in ISOTOP.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter			Value	Unit
V _{RRM}	Repetitive peak reverse voltage			1000	V
I _{FRM}	Repetitive peak forward current	tp ≤ 10µs		375	A
I _{F(RMS)}	RMS forward current		Per diode	70	A
I _{F(AV)}	Average forward current	T _C =55°C δ = 0.5	Per diode	30	A
I _{FSM}	Surge non repetitive forward current	tp=10ms sinusoidal	Per diode	200	A
T _{stg} T _J	Storage and junction temperature range			- 40 to + 150 - 40 to + 150	°C °C

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BYT230PIV-1000 / BYT231PIV-1000

THERMAL RESISTANCE

Symbol	Parameter		Value	Unit
Rth (j-c)	Junction to case	Per diode	1.5	°C/W
		Total	0.8	
Rth (c)	Coupling		0.1	°C/W

When the diodes 1 and 2 are used simultaneously :

$$\Delta T_j(\text{diode 1}) = P(\text{diode 1}) \times R_{th}(\text{Per diode}) + P(\text{diode 2}) \times R_{th}(c)$$

ELECTRICAL CHARACTERISTICS (Per diode) STATIC CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
V _F *	T _j = 25°C	I _F = 30 A			1.9	V
	T _j = 100°C				1.8	
I _R **	T _j = 25°C	V _R = V _{RRM}			100	μA
	T _j = 100°C				5	mA

Pulse test : * tp = 380 μs, duty cycle < 2 %

** tp = 5 ms, duty cycle < 2 %

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
trr	T _j = 25°C	I _F = 0.5A I _{rr} = 0.25A I _R = 1A			70	ns
		I _F = 1A dI _F /dt = -15A/μs V _R = 30V			165	

TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t _{IRM}	dI _F /dt = -120A/μs	V _{CC} = 200V I _F = 30A L _p ≤ 0.05μH T _j = 100°C see fig. 11			200	ns
	dI _F /dt = -240A/μs			120		
I _{RM}	dI _F /dt = -120A/μs				19.5	A
	dI _F /dt = -240A/μs			22		

TURN-OFF OVERVOLTAGE COEFFICIENT (With serie inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
$C = \frac{V_{RP}}{V_{CC}}$	T _j = 100°C V _{CC} = 200V I _F = I _{F(AV)} dI _F /dt = -30A/μs L _p = 5μH see fig.12				4.5	/

To evaluate the conduction losses use the following equation :

$$P = 1.47 \times I_{F(AV)} + 0.010 \times I_{F(RMS)}^2$$

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

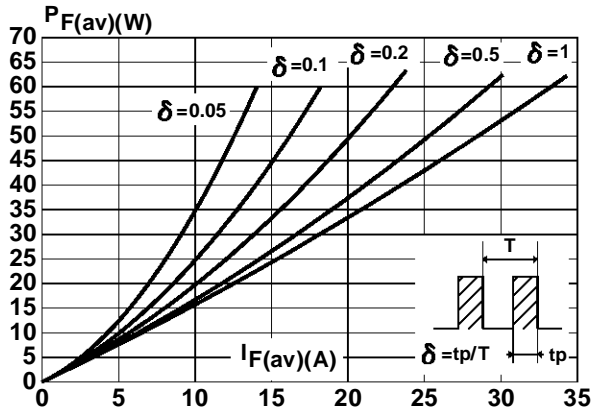


Fig.2 : Peak current versus form factor.

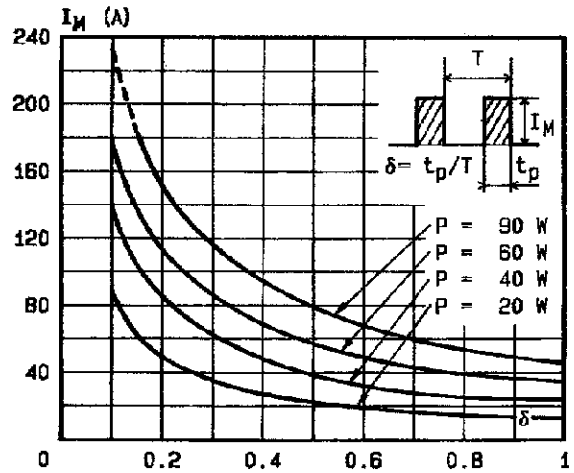


Fig.3 : Non repetitive peak surge current versus overload duration.

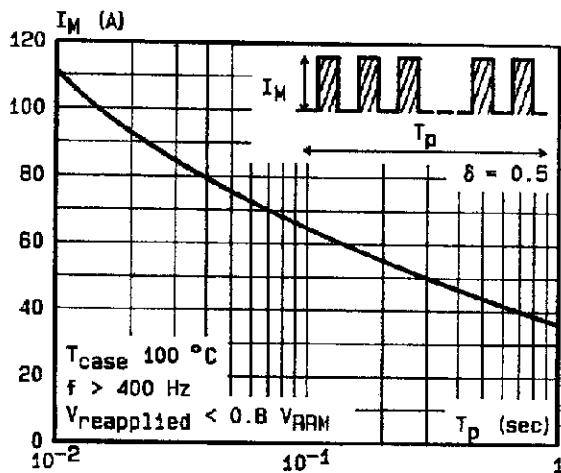


Fig.4 : Relative variation of thermal impedance junction to case versus pulse duration.

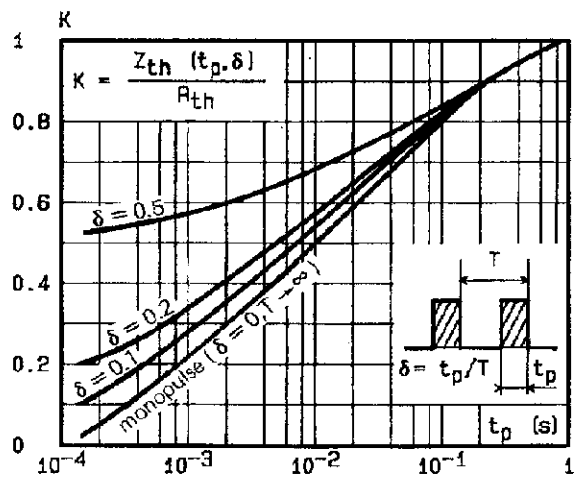


Fig.5 : Voltage drop versus forward current.

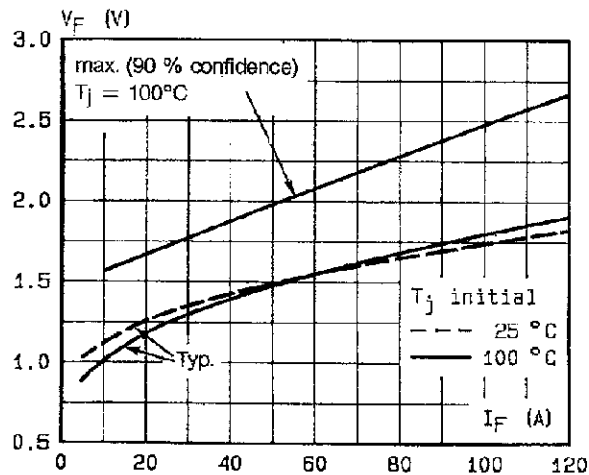


Fig.6 : Recovery charge versus di_F/dt.

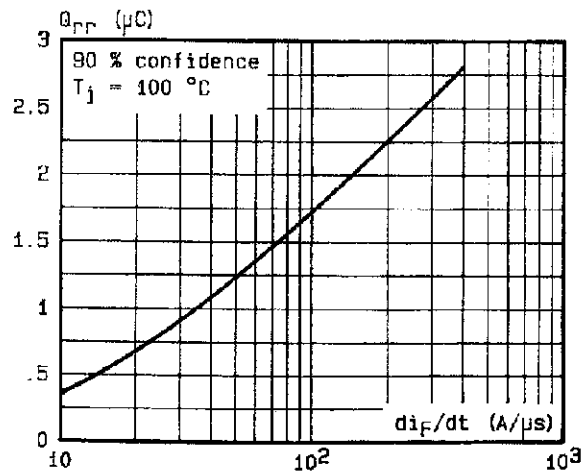


Fig.7 : Recovery time versus di_F/dt .

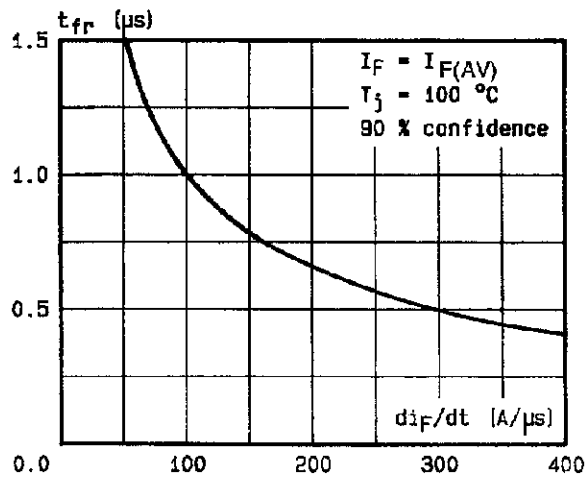


Fig.9 : Peak forward voltage versus di_F/dt .

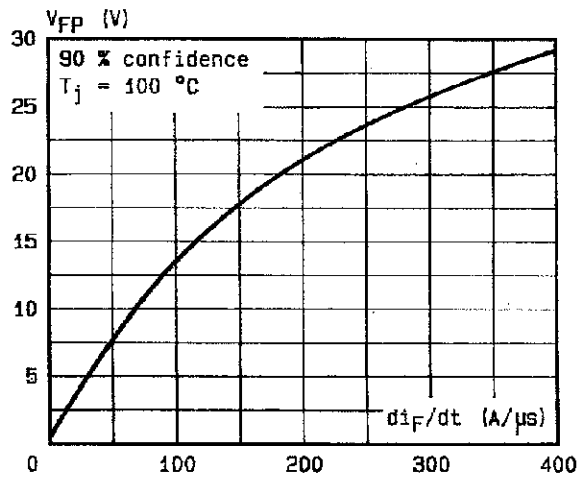


Fig.11 : TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

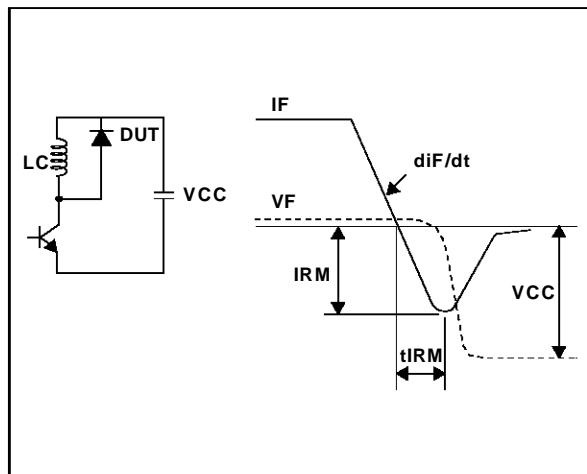


Fig.8 : Peak reverse current versus di_F/dt .

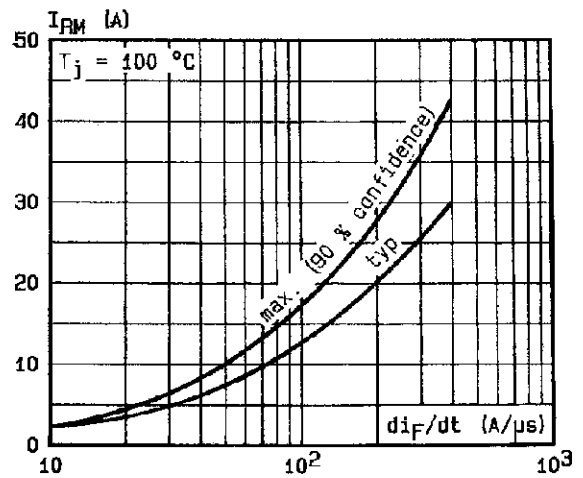


Fig.10 : Dynamic parameters versus junction temperature.

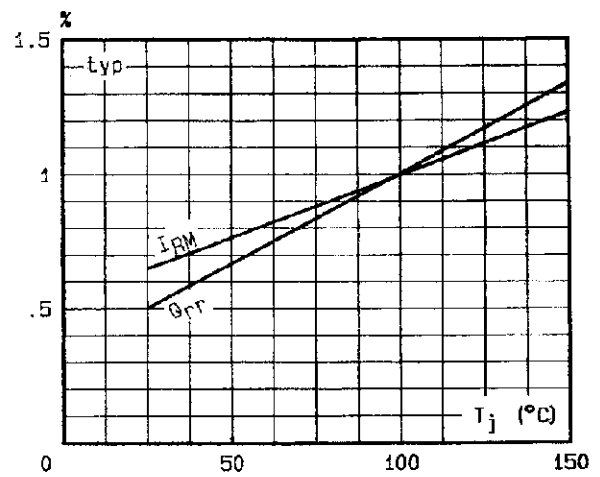
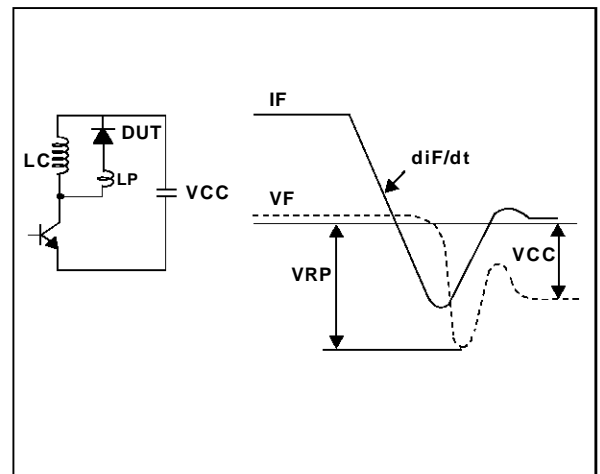
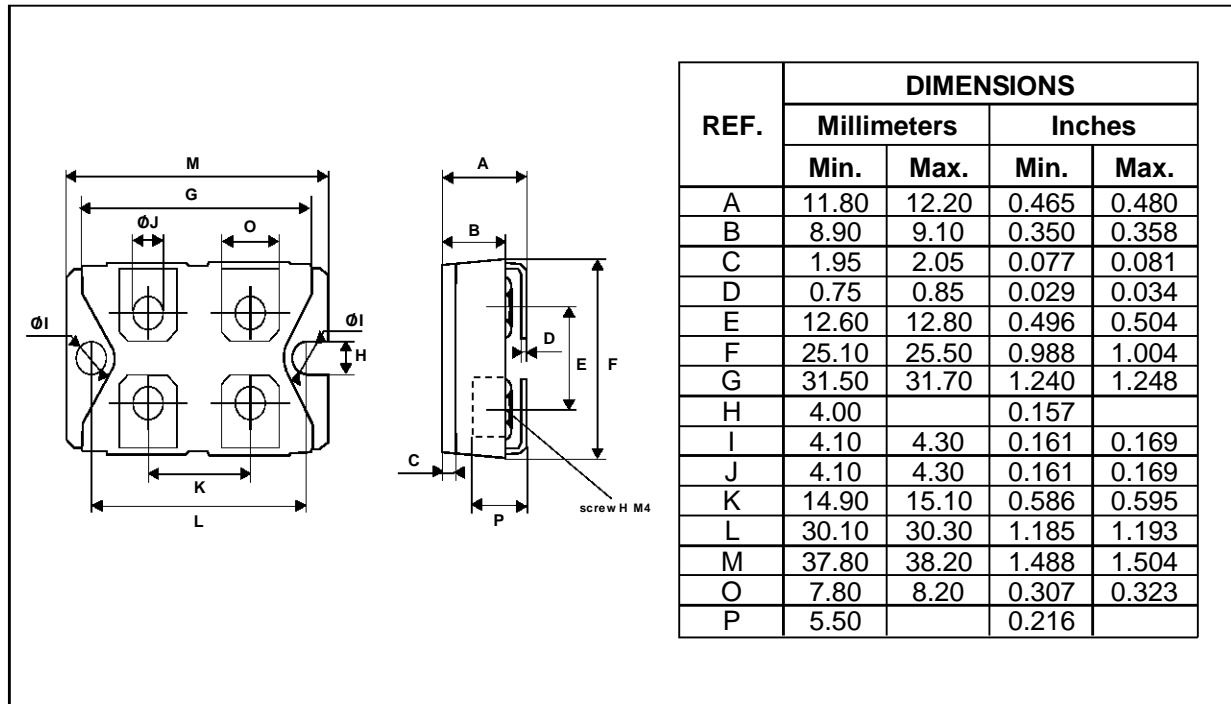


Fig.12 : TURN-OFF SWITCHING CHARACTERISTICS (With serie inductance)



PACKAGE MECHANICAL DATA
ISOTOP Screw version



Cooling method : C
 Marking : Type number
 Weight : 28 g (without screws)
 Electrical isolation : 2500V_(RMS)
 Capacitance : < 45 pF
 Inductance : < 5 nH

- Recommended torque value : 1.3 N.m (MAX 1.5 N.m) for the 6 x M4 screws. (2 x M4 screws recommended for mounting the package on the heatsink and the 4 screws given with the screw version).
- The screws supplied with the package are adapted for mounting on a board (or other types of terminals) with a thickness of 0.6 mm min and 2.2 mm max.

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