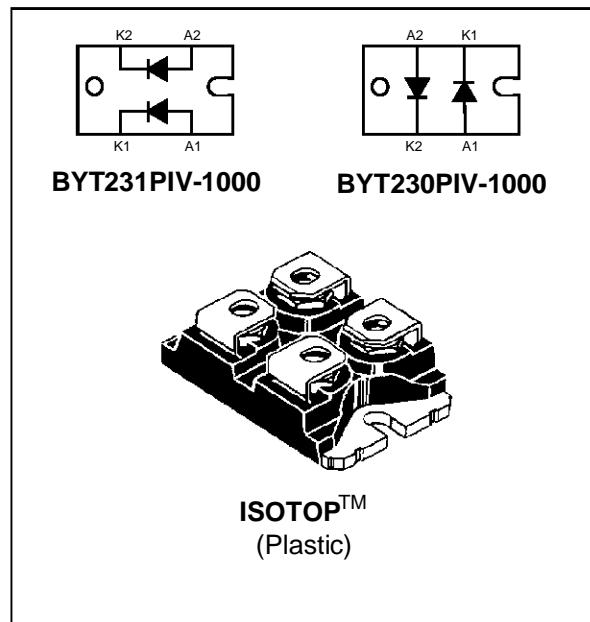


FAST RECOVERY RECTIFIER DIODES

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 $\delta=0.5$	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	°C
				- 40 to + 150	°C

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THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
R _{th} (j-c)	Junction to case	Per diode	1.5
		Total	0.8
R _{th} (c)	Coupling	0.1	°C/W

When the diodes 1 and 2 are used simultaneously :
 $\Delta T_j(\text{diode } 1) = P(\text{diode}) \times R_{th}(\text{Per diode}) + P(\text{diode } 2) \times R_{th}(c)$

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	

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 _R = 1A			70	ns
		I _F = 1A 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 L _p ≤ 0.05μH see fig. 11			200	ns
	dI _F /dt = -240A/μs				120	
I _{RM}	dI _F /dt = -120A/μs	I _F = 30A T _j = 100°C			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 dI _F /dt = -30A/μs	V _{CC} = 200V L _p = 5μH see fig.12			4.5	/

To evaluate the conduction losses use the following equation :

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

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

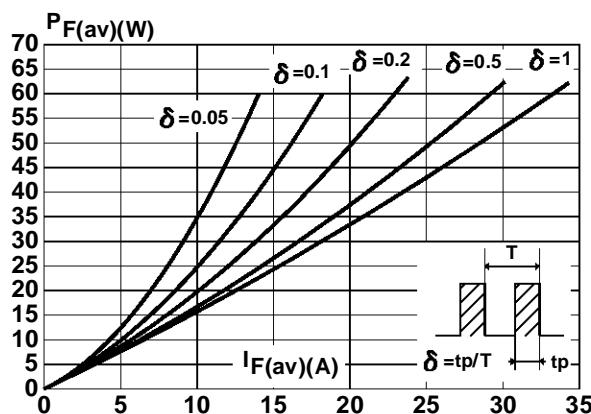


Fig.3 : Non repetitive peak surge current versus overload duration.

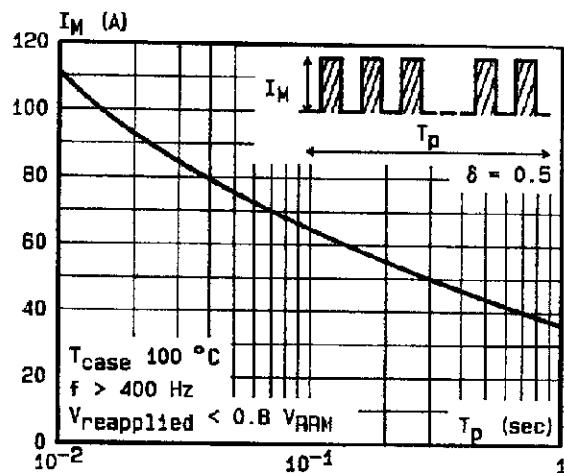


Fig.5 : Voltage drop versus forward current.

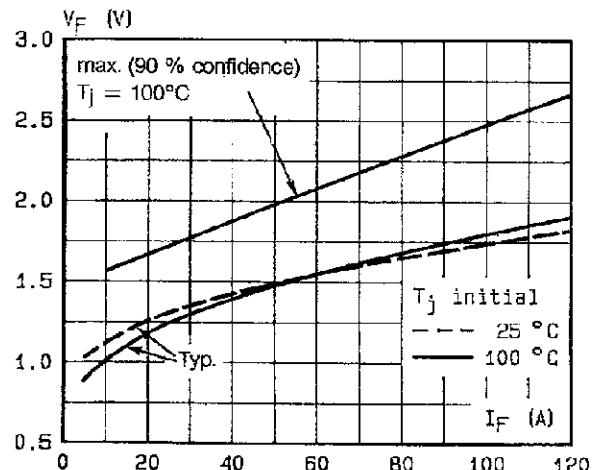


Fig.2 : Peak current versus form factor.

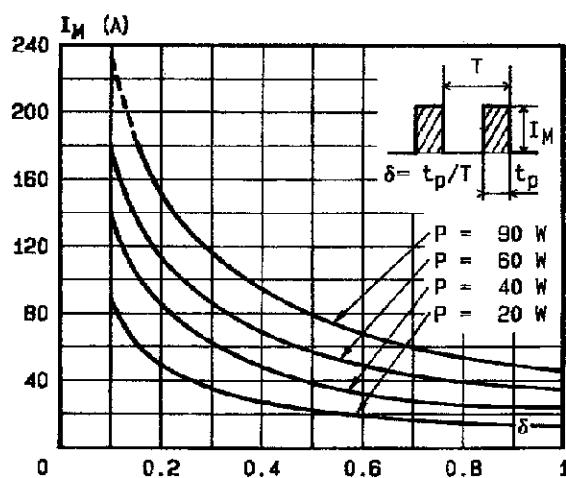


Fig.4 : Relative variation of thermal impedance junction to case versus pulse duration.

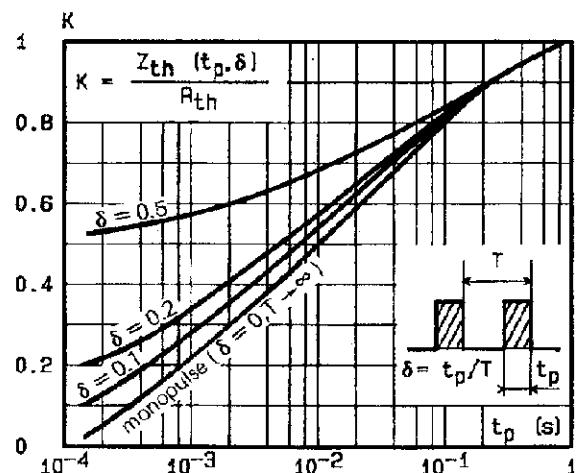
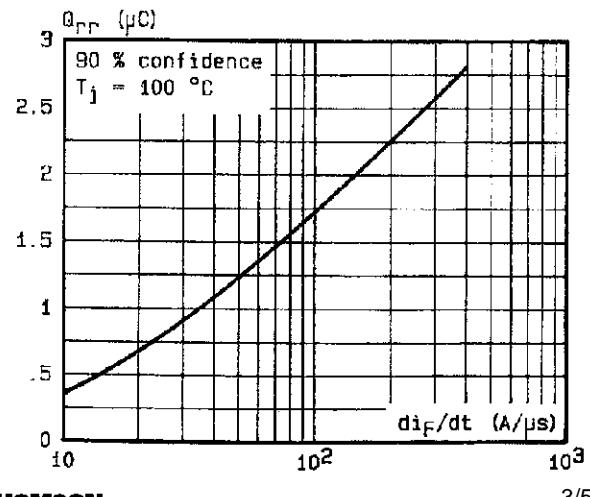


Fig.6 : Recovery charge versus diF/dt.



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Fig.7 : Recovery time versus dI_F/dt .

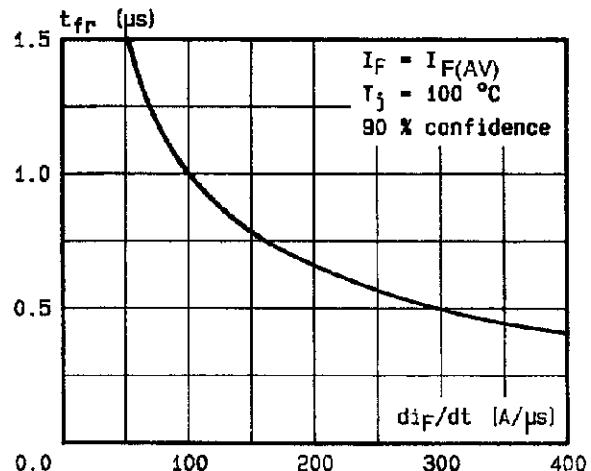


Fig.9 : Peak forward voltage versus dI_F/dt .

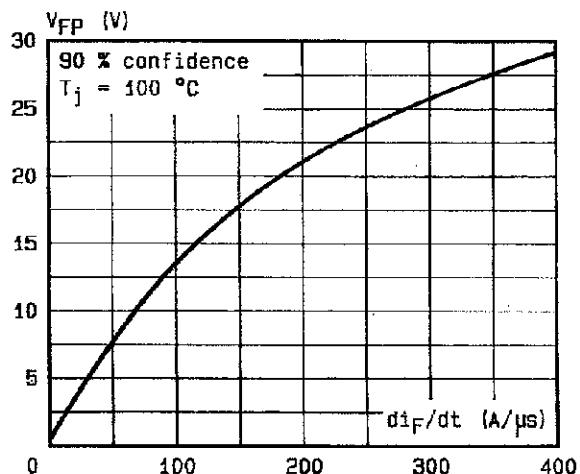


Fig.11 : TURN-OFF SWITCHING CHARACTERISTICS (Without serie inductance)

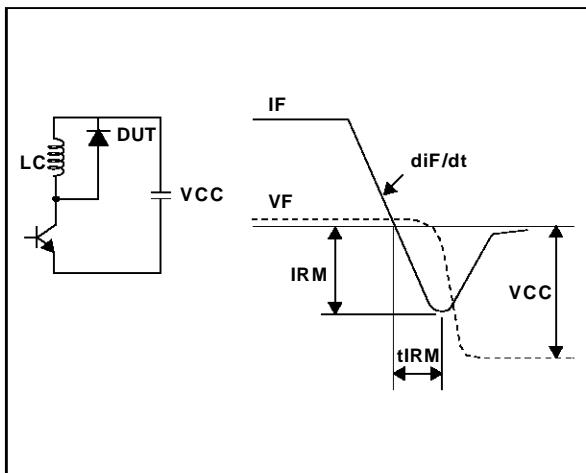


Fig.8 : Peak reverse current versus dI_F/dt .

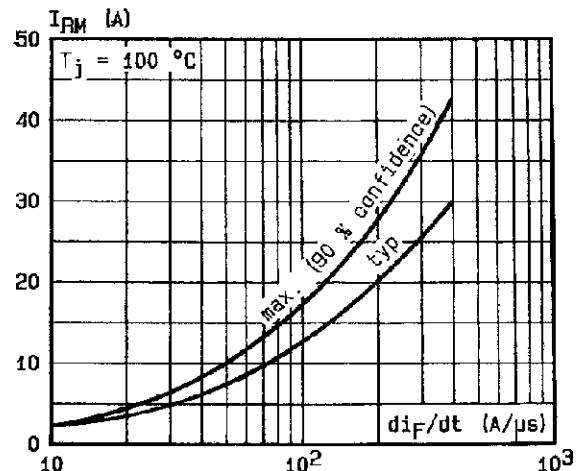


Fig.10 : Dynamic parameters versus junction temperature.

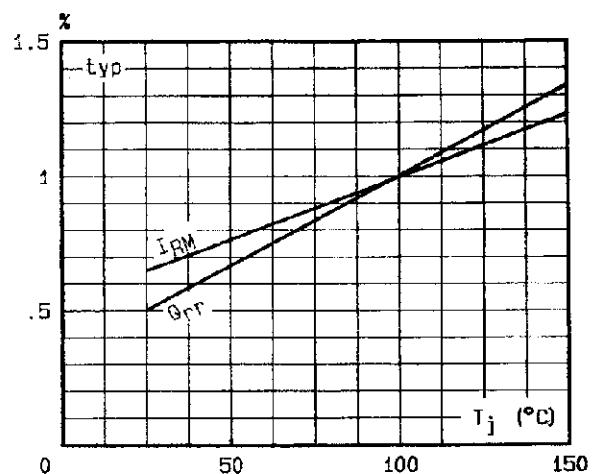
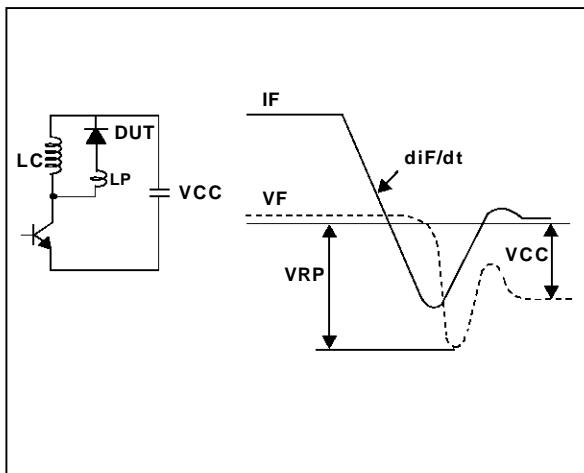


Fig.12 : TURN-OFF SWITCHING CHARACTERISTICS (With serie inductance)



PACKAGE MECHANICAL DATA

ISOTOP Screw version

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	11.80	12.20	0.465	0.480
B	8.90	9.10	0.350	0.358
C	1.95	2.05	0.077	0.081
D	0.75	0.85	0.029	0.034
E	12.60	12.80	0.496	0.504
F	25.10	25.50	0.988	1.004
G	31.50	31.70	1.240	1.248
H	4.00		0.157	
I	4.10	4.30	0.161	0.169
J	4.10	4.30	0.161	0.169
K	14.90	15.10	0.586	0.595
L	30.10	30.30	1.185	1.193
M	37.80	38.20	1.488	1.504
O	7.80	8.20	0.307	0.323
P	5.50		0.216	

Cooling method : C

Marking : Type number

Weight : 28 g (without screws)

Electrical isolation : 2500V_(RMS)

Capitance : < 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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