

BYT230PIV-400 / BYT231PIV-400

THERMAL RESISTANCES

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

When the diodes 1 and 2 are used simultaneously :

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

STATIC ELECTRICAL CHARACTERISTICS (per diode)

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

Pulse test : * $t_p = 380\text{ }\mu\text{s}$, $\delta < 2\%$

** $t_p = 5\text{ ms}$, $\delta < 2\%$

To evaluate the conduction losses use the following equation:

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

RECOVERY CHARACTERISTICS

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t_{rr}	$T_j = 25^\circ\text{C}$	$I_F = 1\text{ A}$ $V_R = 30\text{ V}$ $di_F/dt = -15\text{ A}/\mu\text{s}$			100	ns
		$I_F = 0.5\text{ A}$ $I_R = 1\text{ A}$ $I_{rr} = 0.25\text{ A}$			50	

TURN-OFF SWITCHING CHARACTERISTICS

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
t_{IRM}	Maximum reverse recovery time	$di_F/dt = -120\text{ A}/\mu\text{s}$	$V_{CC} = 200\text{ V}$ $I_F = 30\text{ A}$ $L_p \text{ @ } 0.05\text{ }\mu\text{H}$ $T_j = 100^\circ\text{C}$ (see fig. 13)			75	ns
		$di_F/dt = -240\text{ A}/\mu\text{s}$			50		
I_{RM}	Maximum reverse recovery current	$di_F/dt = -120\text{ A}/\mu\text{s}$	(see fig. 13)			9	A
		$di_F/dt = -240\text{ A}/\mu\text{s}$			12		
$C = \frac{V_{RP}}{V_{CC}}$	Turn-off overvoltage coefficient	$T_j = 100^\circ\text{C}$ $V_{CC} = 60\text{ V}$ $I_F = I_{F(AV)}$ $di_F/dt = -30\text{ A}/\mu\text{s}$ $L_p = 1\text{ }\mu\text{H}$ (see fig. 14)			3.3		/

Fig. 1: Average forward power dissipation versus average forward current (per diode).

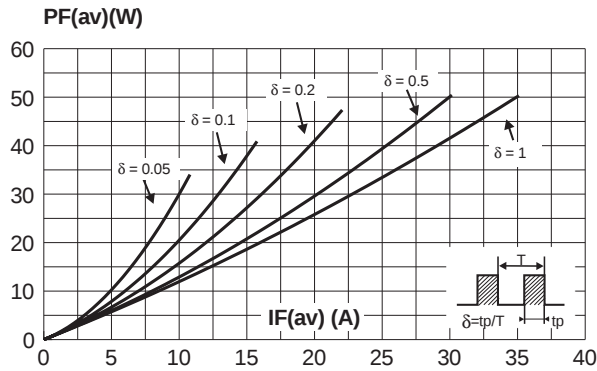


Fig. 2: Peak current versus form factor (per diode).

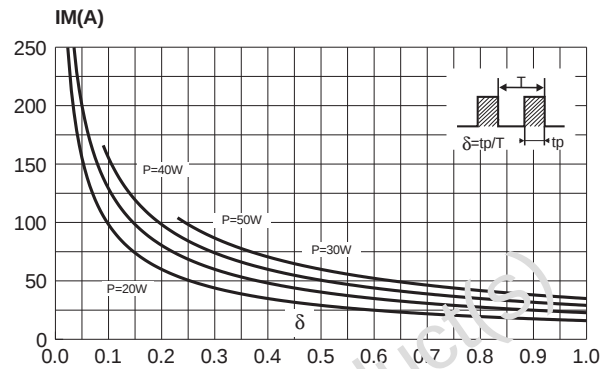


Fig. 3: Average forward current versus ambient temperature ($\delta=0.5$, per diode).

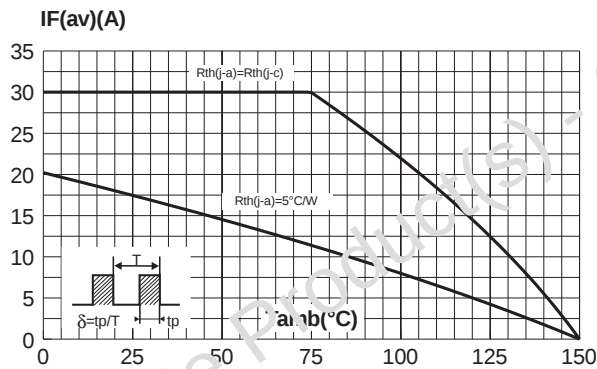


Fig. 4: Non repetitive surge peak forward current versus overload duration (per diode).

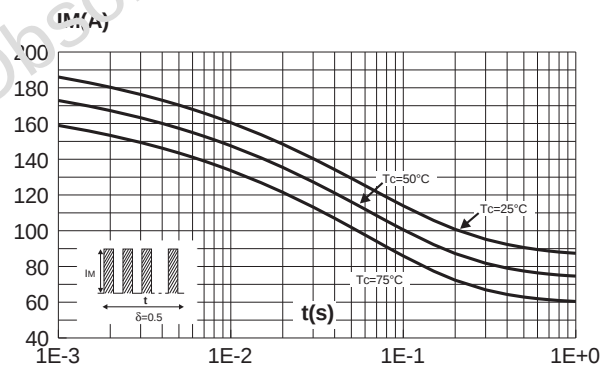


Fig. 5: Relative variation of thermal impedance junction to case versus pulse duration (per diode).

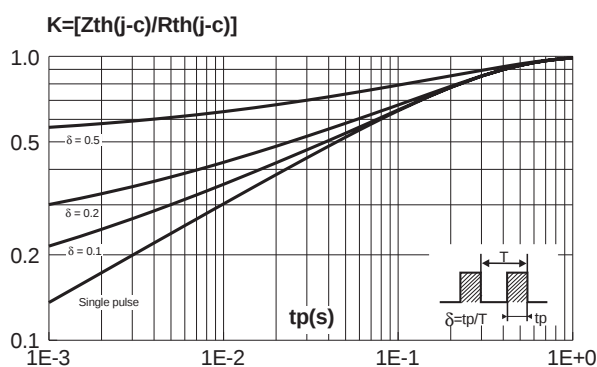


Fig. 6: Forward voltage drop versus forward current (maximum values, per diode).

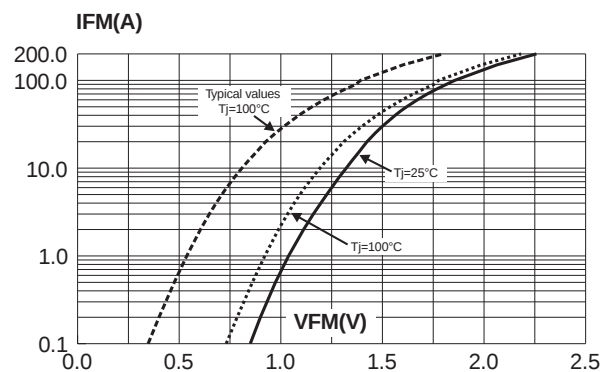


Fig. 7: Junction capacitance versus reverse voltage applied (typical values, per diode).

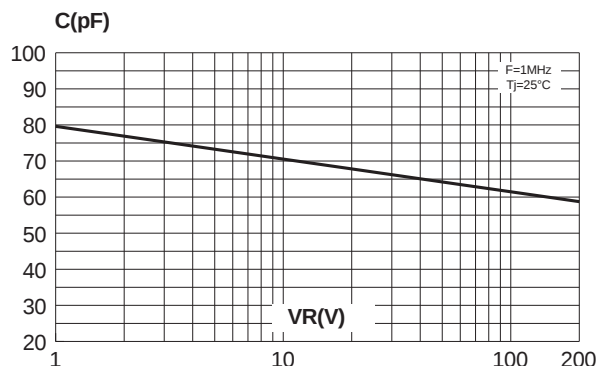


Fig. 8: Recovery charges versus dI_F/dt (per diode).

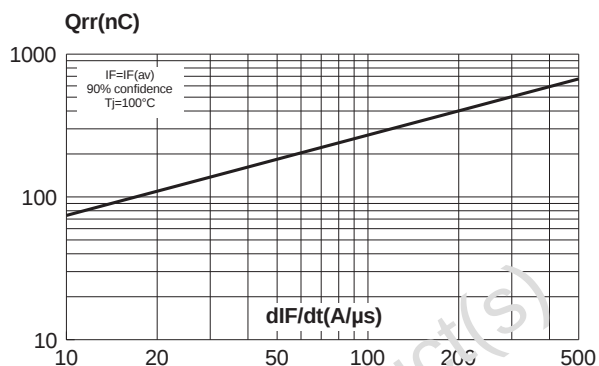


Fig. 9: Recovery current versus dI_F/dt (per diode).

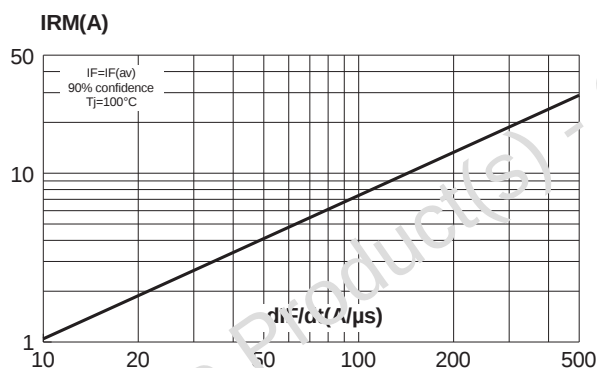


Fig. 10: Transient peak forward voltage versus dI_F/dt (per diode).

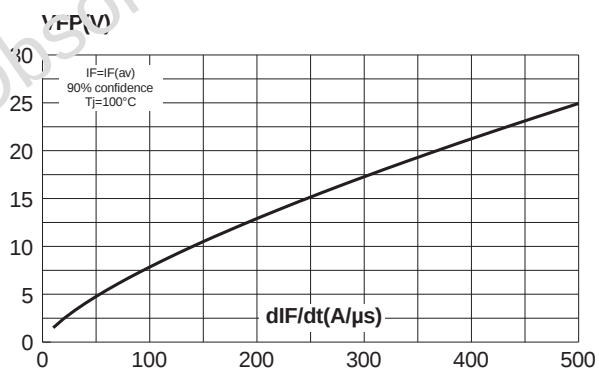


Fig. 11: Forward recovery time versus dI_F/dt (per diode).

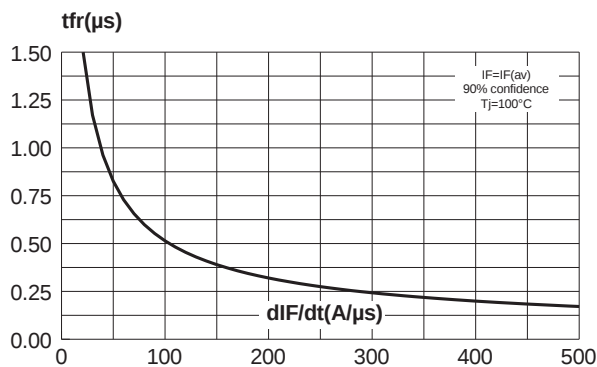


Fig. 12: Dynamic parameters versus junction temperature.

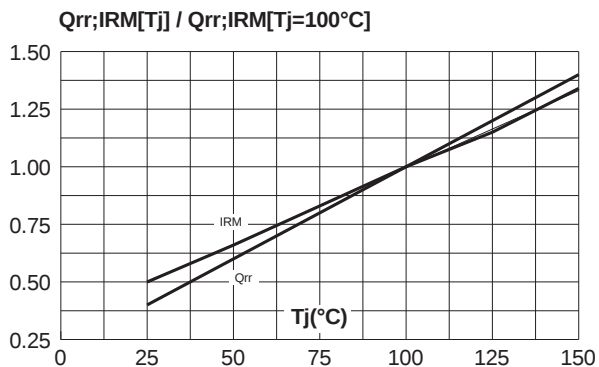


Fig. 13: Turn-off switching characteristics (without series inductance).

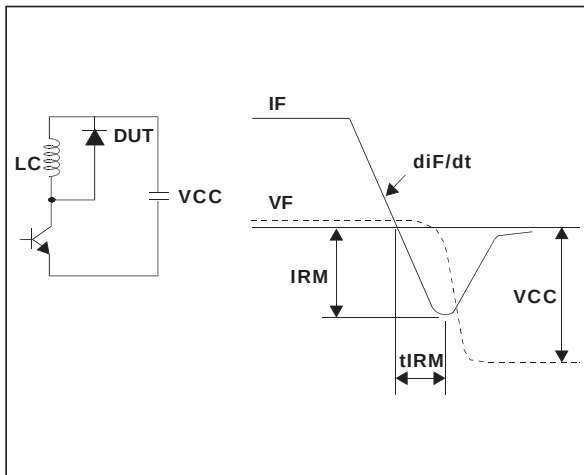
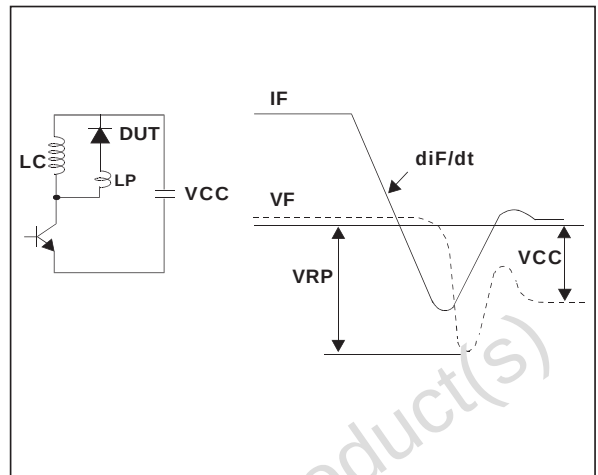


Fig. 14: Turn-off switching characteristics (with series inductance).



PACKAGE MECHANICAL DATA
ISOTOP

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	11.80	12.20	0.465	0.480
A1	8.90	9.10	0.350	0.358
B	7.8	8.20	0.307	0.323
C	0.75	0.85	0.030	0.033
C2	1.95	2.05	0.077	0.081
D	37.80	38.20	1.488	1.504
D1	31.50	31.70	1.240	1.248
E	25.15	25.50	0.990	1.004
E1	23.85	24.15	0.939	0.951
E2	24.80 typ.		0.976 typ.	
G	14.90	15.10	0.587	0.594
G1	12.60	12.80	0.496	0.504
G2	3.50	4.30	0.138	0.169
F	4.10	4.30	0.161	0.169
F1	4.00	5.00	0.181	0.197
P	4.00	4.30	0.157	0.69
P1	4.00	4.40	0.157	0.173
S	30.10	30.30	1.185	1.193

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
BYT230PIV-400	BYT230PIV-400	ISOTOP	28 g. (without screws)	10	Tube
BYT231PIV-400	BYT231PIV-400	ISOTOP	28 g. (without screws)	10	Tube

- Cooling method: by conduction (C)
- 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.
- Epoxy meets UL94,V0

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