Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

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Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

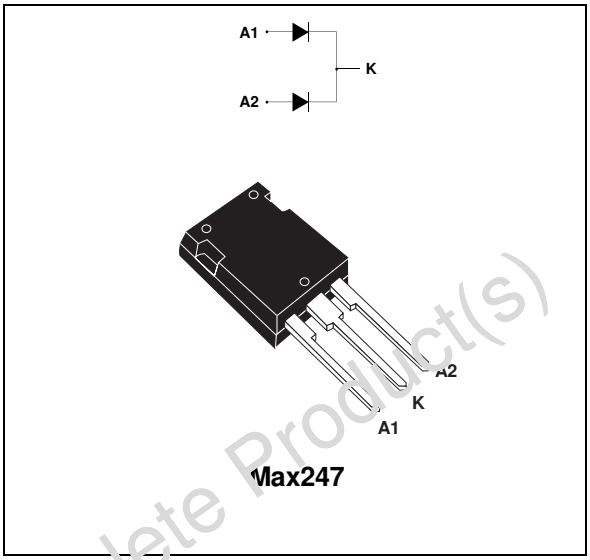
BYT230Y-400

FAST RECOVERY RECTIFIER DIODES

PRELIMINARY DATASHHET

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2 x 30 A
V_{RRM}	400 V
Tj (max)	150°C
V_F (max)	1.3 V



Max247

FEATURES AND BENEFITS

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

DESCRIPTION

Dual 400V rectifiers suited for Switch Mode Power Supplies and other converters.

Packaged in Max247, this device is also intended for use in welding equipment and telecom power supplies.

ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			400	V
I_{FRM}	Repetitive peak forward current	tp=5 µs F=5kHz		380	A
$I_{F(RMS)}$	RMS forward current			50	A
$I_{F(AV)}$	Average forward current	Tc = 105°C δ = 0.5	Per diode	30	A
			Per device	60	
I_{FSM}	Surge non repetitive forward current	tp = 10 ms Sinusoidal		300	A
T_{stg}	Storage temperature range			- 55 to + 150	°C
Tj	Maximum operating junction temperature			150	°C

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th\ (j-c)}$	Junction to case	Per diode Total	0.95 0.55	°C/W
$R_{th(c)}$		Coupling	0.15	°C/W

When the diodes 1 and 2 are used simultaneously :
Δ Tj(diode 1) = P(diode1) x $R_{th(j-c)}$(Per diode) + P(diode 2) x $R_{th(c)}$

STATIC ELECTRICAL CHARACTERISTICS (per diode)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R *	Reverse leakage current	Tj = 25°C	$V_R = V_{RRM}$			35	µA
		Tj = 125°C			3	12	mA
V_F **	Forward voltage drop	Tj = 25°C	I_F = 30 A			1.5	V
		Tj = 125°C	I_F = 30 A		0.9	1.3	
		Tj = 25°C	I_F = 60 A			1.7	
		Tj = 125°C	I_F = 60 A		1.1	1.6	

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

To evaluate the conduction losses use the following equation:
$P = 1.0 \times I_{F(AV)} + 0.01\ I_F{}^2{}_{(RMS)}$

RECOVERY CHARACTERISTICS

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

TURN-OFF SWITCHING CHARACTERISTICS (without serie inductance)

Symbol	Test Conditions		Min.	Typ.	Max.	Unit
t_{IRM}	dI_F/dt = - 120A/µs	V_{CC} = 200 V I_F = 30A L_p = 0.05µH T_j = 100°C			75	ns
	dI_F/dt = - 240A/µs			50		
I_{RM}	dI_F/dt = - 120A/µs				9	A
	dI_F/dt = - 240A/µs			12		

TURN-OFF OVERVOLTAGE CORFFICIENT (with serie inductance)

Symbol	Test Conditions	Min.	Typ.	Max.	Unit
$C = \frac{V_{RP}}{V_{CC}}$	T_j = 100°C V_{CC} = 60V $I_F = I_{F\ (AV)}$ dI_F/dt = - 30A/µs L_p = 1µH		3.3		/

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

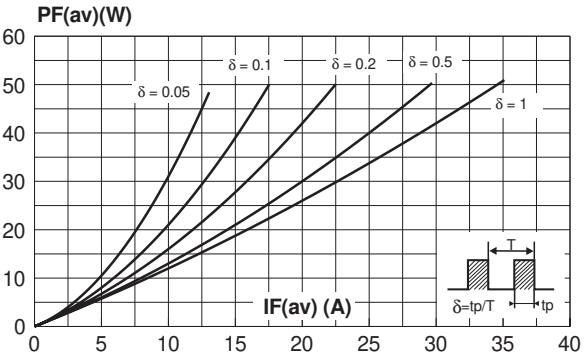


Fig. 2: Peak current versus form factor (per diode).

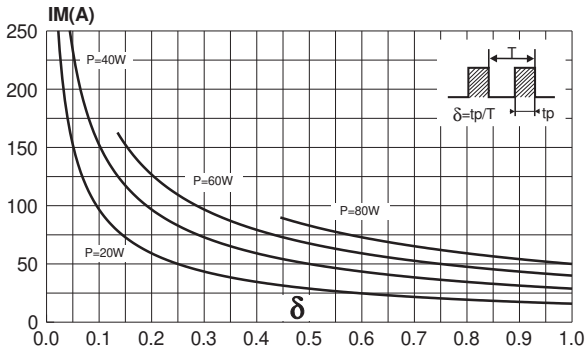


Fig. 3: Average forward current versus ambient temperature (δ=0.5, per diode).

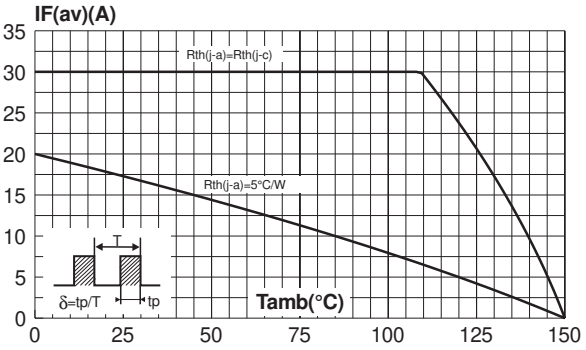


Fig. 4: Non repetitive surge peak forward current versus overload duration (per diode).

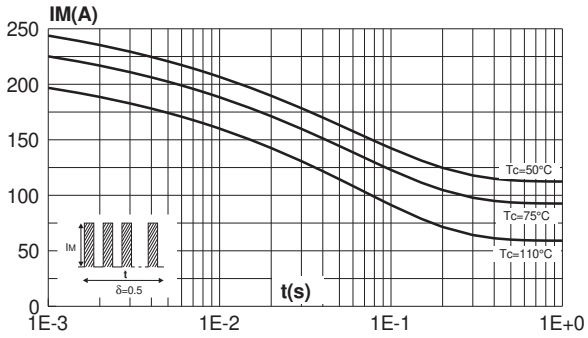


Fig. 5: Relative variation of thermal impedance junction to case versus pulse duration (per diode).

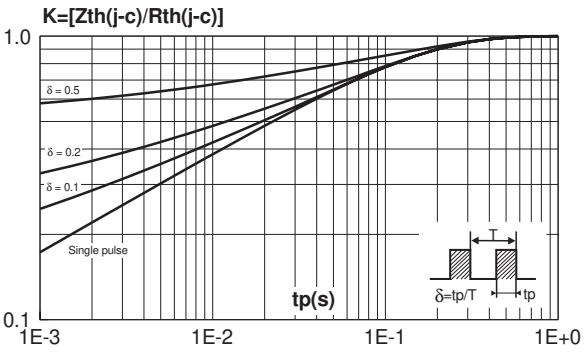


Fig. 6: Forward voltage drop versus forward current (maximum values, per diode).

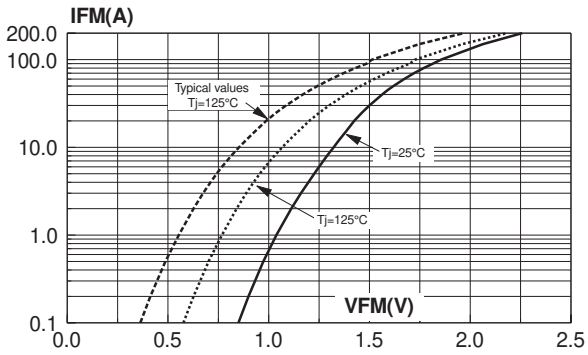


Fig. 7: Junction capacitance versus reverse voltage applied (typical values, per diode).

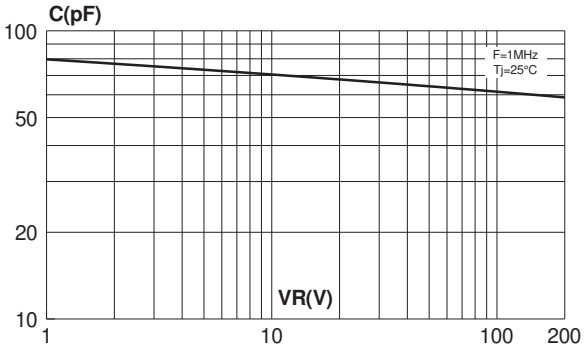


Fig. 8: Recovery charges versus dI_F/dt (per diode).

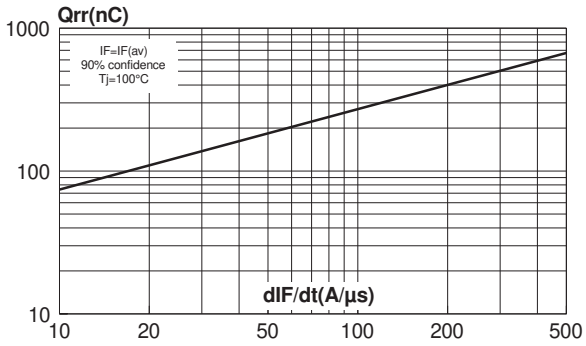


Fig. 9: Recovery current versus dI_F/dt (per diode).

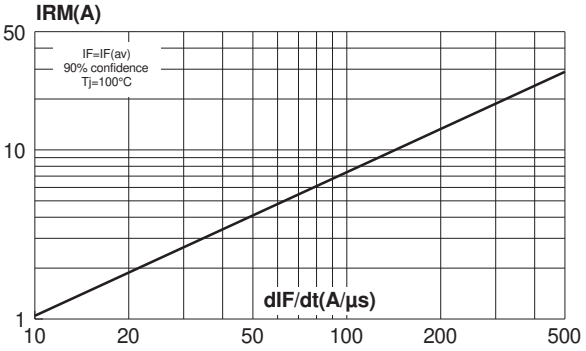


Fig. 10: Transient peak forward versus dI_F/dt (per diode).

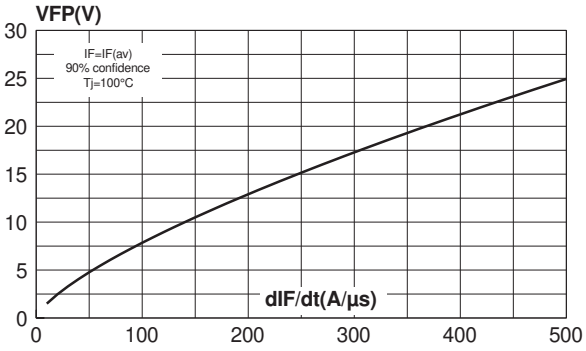


Fig. 11: Forward recovery time versus dI_F/dt (per diode).

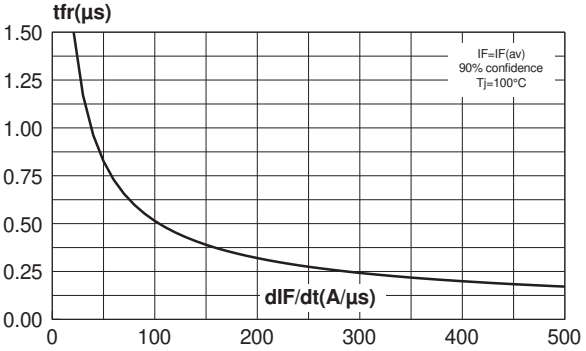
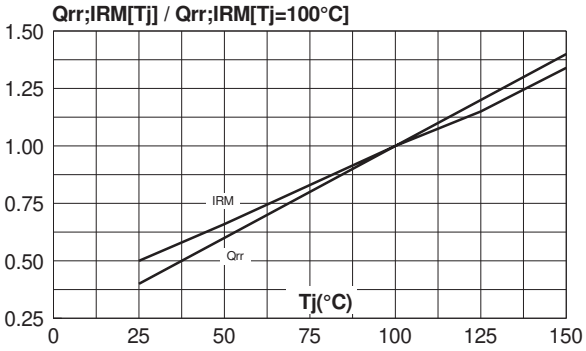
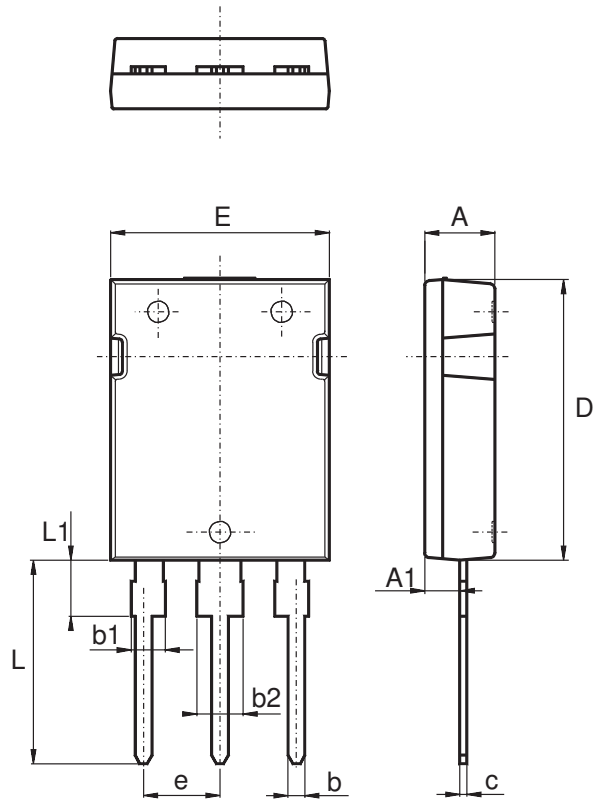


Fig. 12: Dynamic parameters versus junction temperature.



PACKAGE MECHANICAL DATA

Max247



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.70	5.30	0.185	0.209
A1	2.20	2.60	0.087	0.102
b	1.00	1.40	0.038	0.055
b1	2.00	2.40	0.079	0.094
b2	3.00	3.40	0.118	0.133
c	0.40	0.80	0.016	0.031
D	19.70	10.30	0.776	0.799
e	5.35	5.55	0.211	0.219
E	15.30	15.90	0.602	0.626
L	14.20	15.20	0.559	0.598
L1	3.70	4.30	0.146	0.169

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
BYT230Y-400	BYT230Y-400	Max247	5 g.	30	Tube

- Epoxy meets UL94,V0