



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.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: [info@chipsmall.com](mailto:info@chipsmall.com) Web: [www.chipsmall.com](http://www.chipsmall.com)

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



# ABH50-1012

## Isolated AC-DC Power Supply

The ABH50-1012 AC-DC open frame power supply features a wide universal AC input range of 85 V – 264 V for 12 V outputs, offering 50 W of output power in a compact footprint.

This high efficiency quasi-resonant flyback converter is based on Infineon ICE680 and meets DOE requirements for stand by power and Class B EMI with Margin.

These power supplies are ideal for medical, telecom, datacom, industrial equipment and other applications.



### Key Features & Benefits

- 12 V outputs
- Output Power 50 W
- High Efficiency
- Dimensions 2.5 x 5.0 x 1.35 in
- Synchronous rectified output using IR1161
- Saves over 3 W @ 40 W with break-even cost compared to diode and heatsink

### Applications

- Battery charging
- Driving LED strings
- Starting small electric motors



**bel**

**POWER  
SOLUTIONS &  
PROTECTION**

a bel group

[belfuse.com/power-solutions](http://belfuse.com/power-solutions)

## 1. MODEL SELECTION

MODEL NUMBER	OUTPUT VOLTAGE	INPUT VOLTAGE	MAX. OUTPUT CURRENT	MAX. OUTPUT POWER	TYPICAL EFFICIENCY
ABH50-1012	12 VDC	85~264 VAC	4.2 A	50.4 W	90%

## 2. INPUT SPECIFICATIONS

All specifications are typical at 25°C unless otherwise stated.

PARAMETER	DESCRIPTION	MIN	TYP	MAX	UNIT
Operating Input Voltage		85	100-240	264	V
Input Frequency Range		47	-	63	Hz
Input Current	Vin = 110 V, Full Load	-	-	1	A
	Vin = 230 V, Full Load	-	-	0.6	A
Inrush Current	Cold start at 25°C ambient, Vin = 230 VAC / 50 Hz	-	-	13	A
Standby Power		-	-	0.15	W
Leakage Current		-	-	5.0	mA
Turn-on Voltage Threshold	Io = 50% Iomax	75	83	89	VAC
Turn-off Voltage Threshold	Io = 50% Iomax	66	70	75	VAC

## 3. OUTPUT SPECIFICATIONS

All specifications are typical at nominal input, full load at 25°C unless otherwise stated.

PARAMETER	DESCRIPTION	MIN	TYP	MAX	UNIT
Output Voltage	Full load	11.6	12	12.2	V
	No Load	12	13	13.3	
Load Regulation		-	-	5	%
Line Regulation		-	-	1	%
Output Ripple and Noise (Pk-Pk)		-	-	100	mV
Output Ripple and Noise (RMS)		-	-	50	mV
Output Current Range		0	-	4.2	A
Output Current Limit		4.3	-	6	A
Start-up Time		-	-	1100	ms
Hold up Time	Vin = 115 VAC	5	-	-	ms
Overshoot at Turn on		-	0	5	ms
<b>Transient Response</b>					
ΔV 50%~100% of Max Load		-	150	250	mV
Settling Time		-	-	2000	μs
ΔV 100%~50% of Max Load		-	150	250	mV
Settling Time		-	-	2000	μs



#### 4. GENERAL SPECIFICATIONS

PARAMETER	DESCRIPTION	MIN	TYP	MAX	UNIT
Efficiency	Vin = 230 VAC, Io = 100% load at 25°C ambient.	88	90	-	%
Switching Frequency		50	60	90	kHz
Isolation Characteristics		-	-	-	-
Input to Output		-	-	3000	VAC
Input to Earth		-	-	1500	VAC
Output to Earth		-	-	500	VAC
Isolation Resistance		10M	-	-	Ohm
Isolation Capacitance	IEC60950-1, UL60950-1	-	-	2200	pF
Material and Parts	RoHS Directive 2011/65/EU Compliant	-	-	-	-
MTBF		4518862.8715			hours
Weight		-	136.5	-	g
E-Cap Life	Vin = 115 VAC / 60 Hz or 230 VAC / 50 Hz, Io = 100% load at 40°C ambient.	15	-	-	years

#### 5. ENVIRONMENT

PARAMETER	DESCRIPTION	MIN	TYP	MAX	UNIT
Ambient Temperature		-5	-	50	°C
Storage Temperature		-40	-	85	°C
Operating Humidity		10	-	95	%
Storage Humidity		10	-	95	%
Operating Altitude		-	-	4000	m
Shock Test (Non-Operating)	50 G, 11 ms, 3 shocks for each direction	-	-	-	-
Vibration (Operating)	5-500 Hz, 2.09 Grms, 20 mins for each three axis	-	-	-	-

#### 6. EFFICIENCY DATA

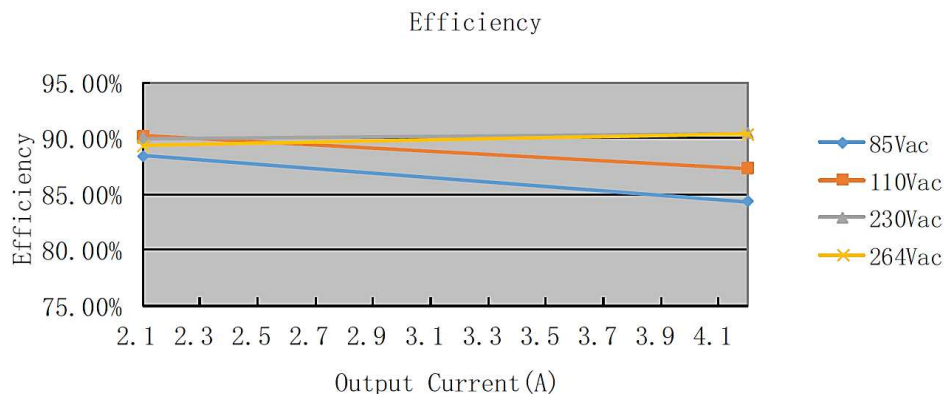


Figure 1. Efficiency vs Output Current

## 7. POWER IN NO-LOAD MODE

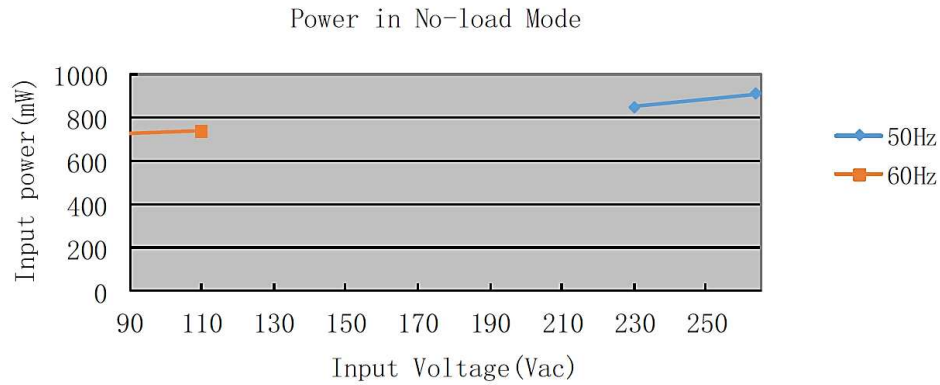


Figure 2. Power in No-Load Mode

## 8. THERMAL DERATING CURVES

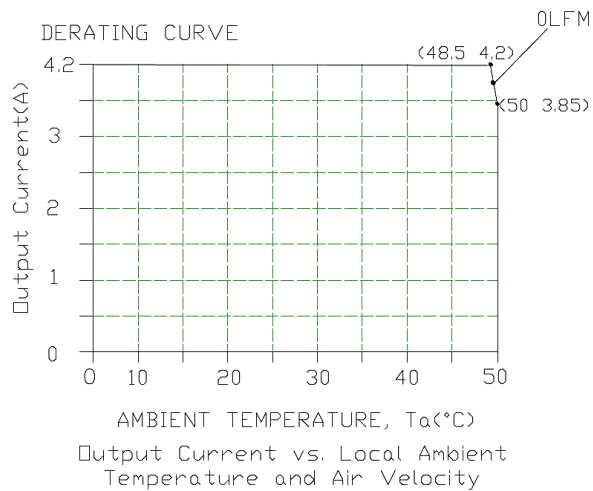


Figure 3.  $V_{in} = 110 \text{ VAC}$

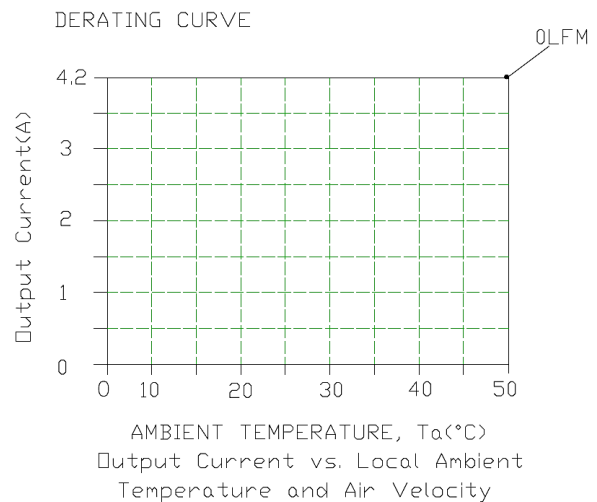


Figure 4.  $V_{in} = 230 \text{ VAC}$

## 9. EMC

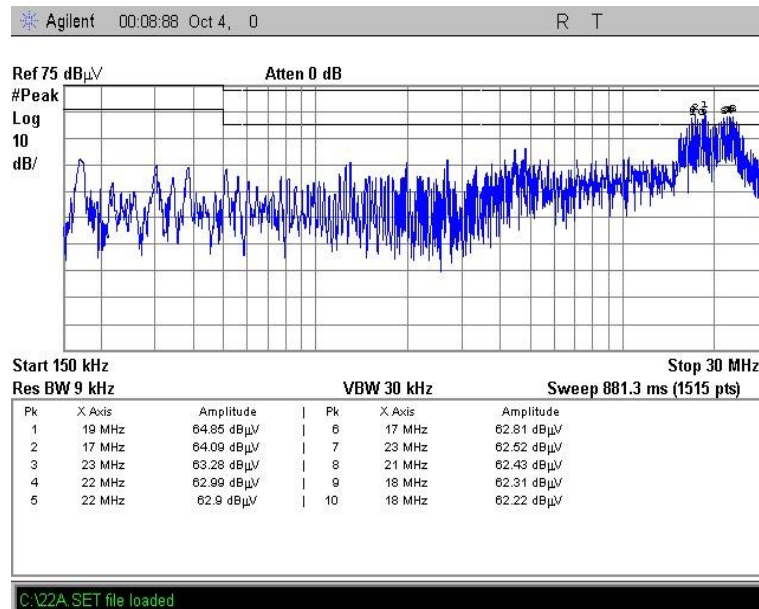
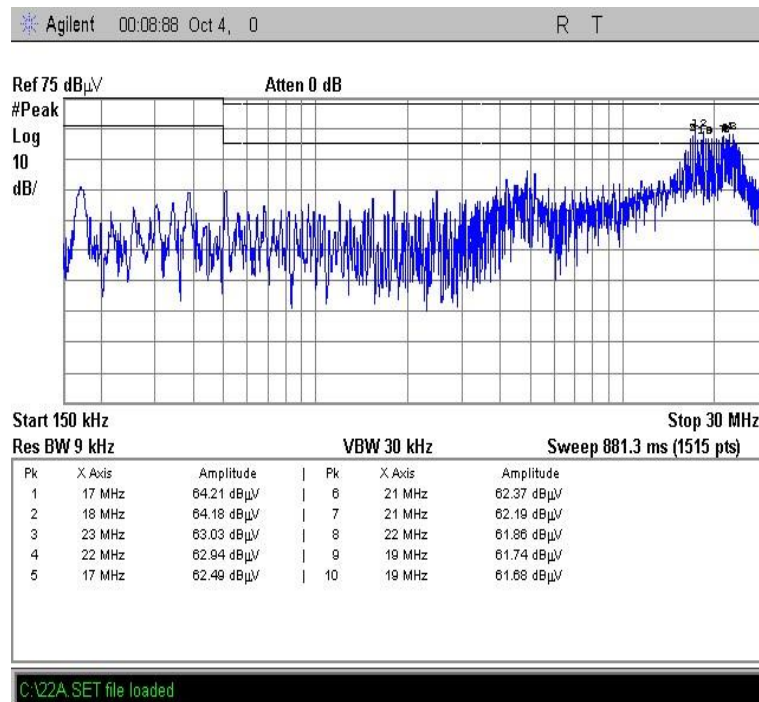


Figure 5.

## 10. RIPPLE AND NOISE WAVEFORMS

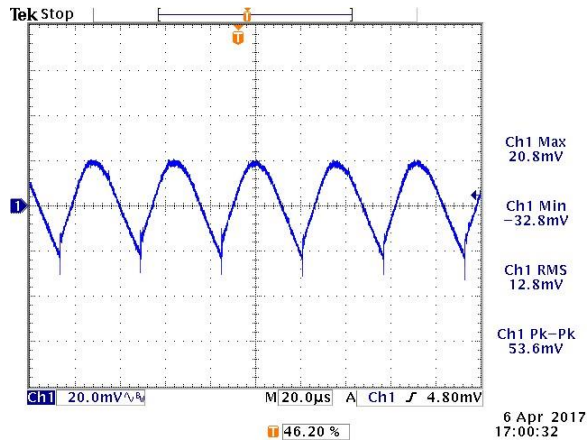


Figure 6. Ripple & Noise at full load, 115 VAC input,  $T_a = 25^\circ\text{C}$

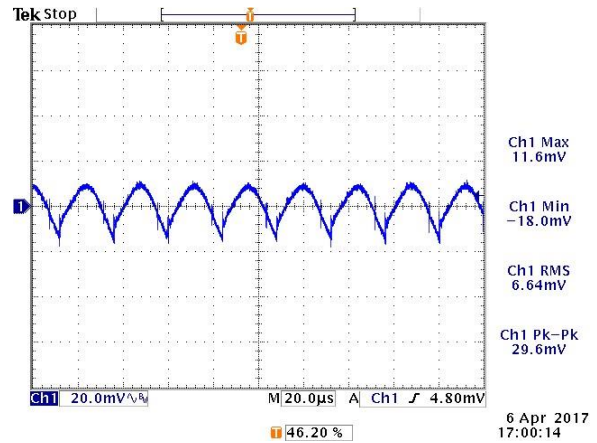


Figure 7. Ripple & Noise at full load, 230 VAC input,  $T_a = 25^\circ\text{C}$

## 11. TRANSIENT RESPONSE WAVEFORMS

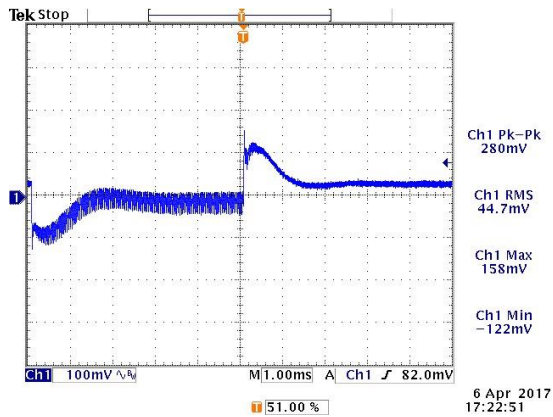


Figure 8.  $V_{in} = 115\text{ VAC}$ , 50%-100% and 0.1A/us Load Transients

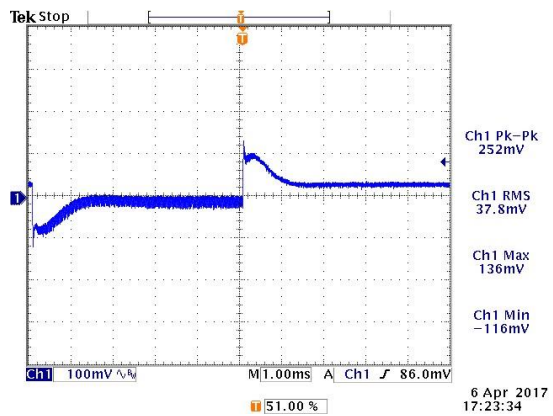
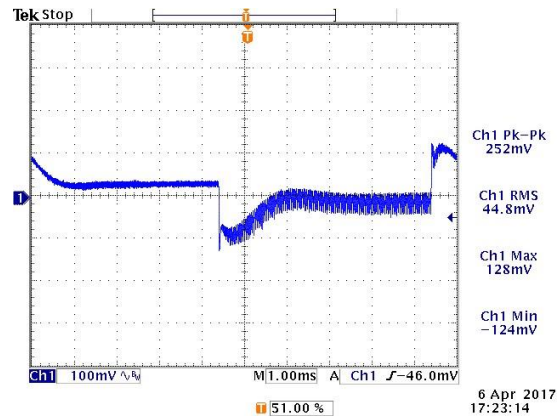
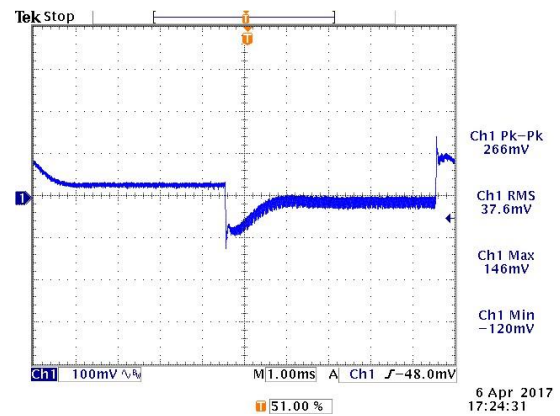


Figure 9.  $V_{in} = 230\text{ VAC}$ , 50%-100% and 0.1A/us Load Transients



## 12. MECHANICAL DIMENSIONS

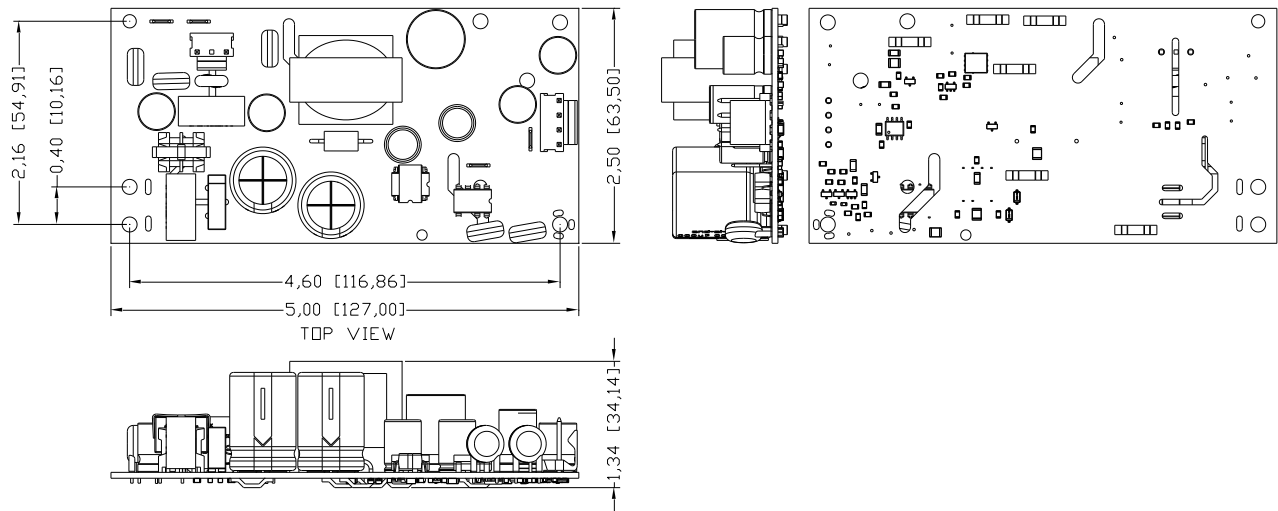


Figure 10. Mechanical Drawing

**NOTE:** All dimensions in inches (mm); Tolerances: XX  $\pm 0.04$ .



### 13. REVISION HISTORY

DATE	REVISION	CHANGE DESCRIPTION	APPROVAL
2017-04-26	AA	First release	XF Jiang
2017-11-13	AB	Update Input specifications, Output specifications and TD.	J Yao
2018-01-17	AC	Update General Specifications and Power in no-load mode.	J Yao

For more information on these products consult: [tech.support@psbel.com](mailto:tech.support@psbel.com)

**NUCLEAR AND MEDICAL APPLICATIONS** - Products are not designed or intended for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems.

**TECHNICAL REVISIONS** - The appearance of products, including safety agency certifications pictured on labels, may change depending on the date manufactured. Specifications are subject to change without notice.