ABH50-1012

Isolated AC-DC Power Supply

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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.

RoHS Compliant

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

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Please read our datasheet & drawing disclaimer here.

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
Transient Response					
ΔV 50%~100% of Max Load		-	150	250	mV
Settling Time		-	-	2000	µs
ΔV100%~50% of Max Load		-	150	250	mV
Settling Time		-	-	2000	µs

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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

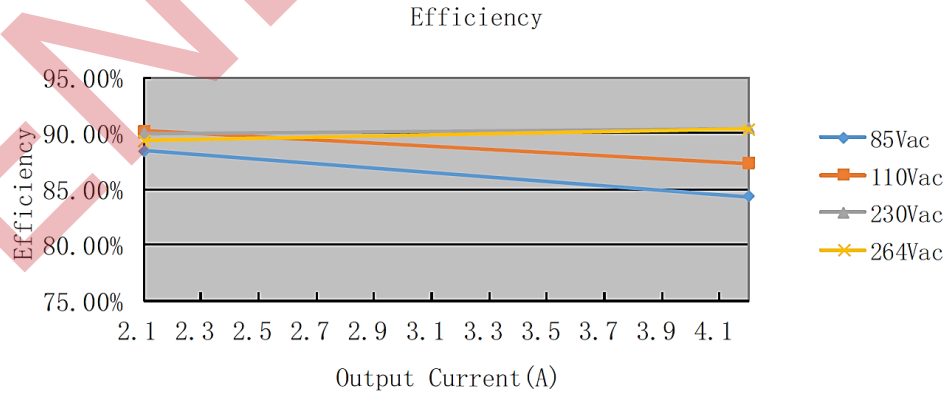

Figure 1. Efficiency vs Output Current

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7. POWER IN NO-LOAD MODE

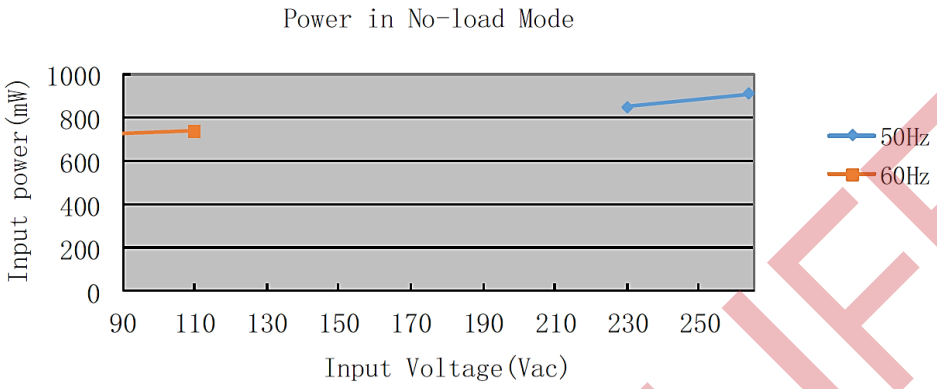

Figure 2. Power in No-Load Mode

8. THERMAL DERATING CURVES

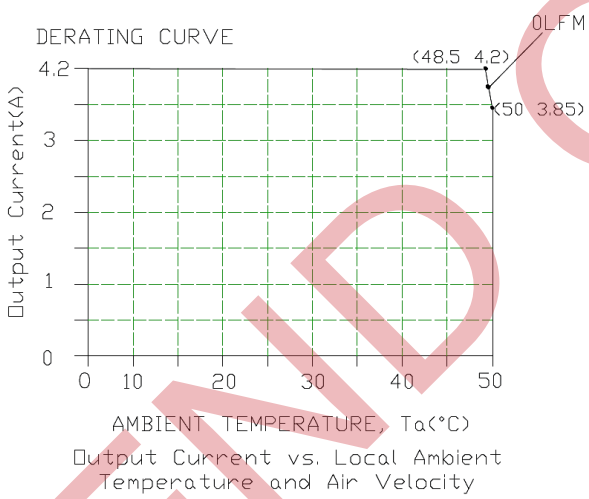

Figure 3. Vin = 110 VAC

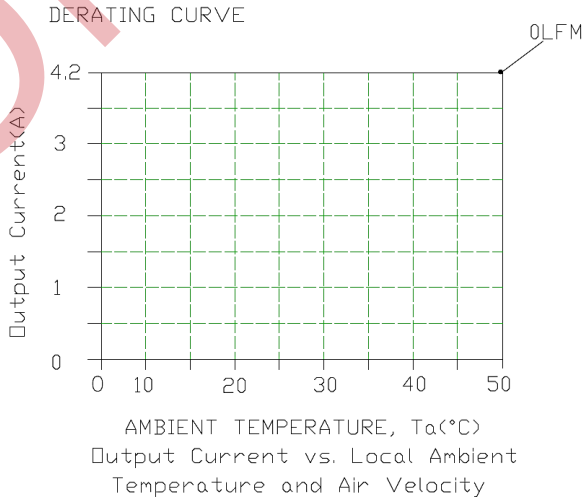

Figure 4. Vin = 230 VAC

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9. EMC

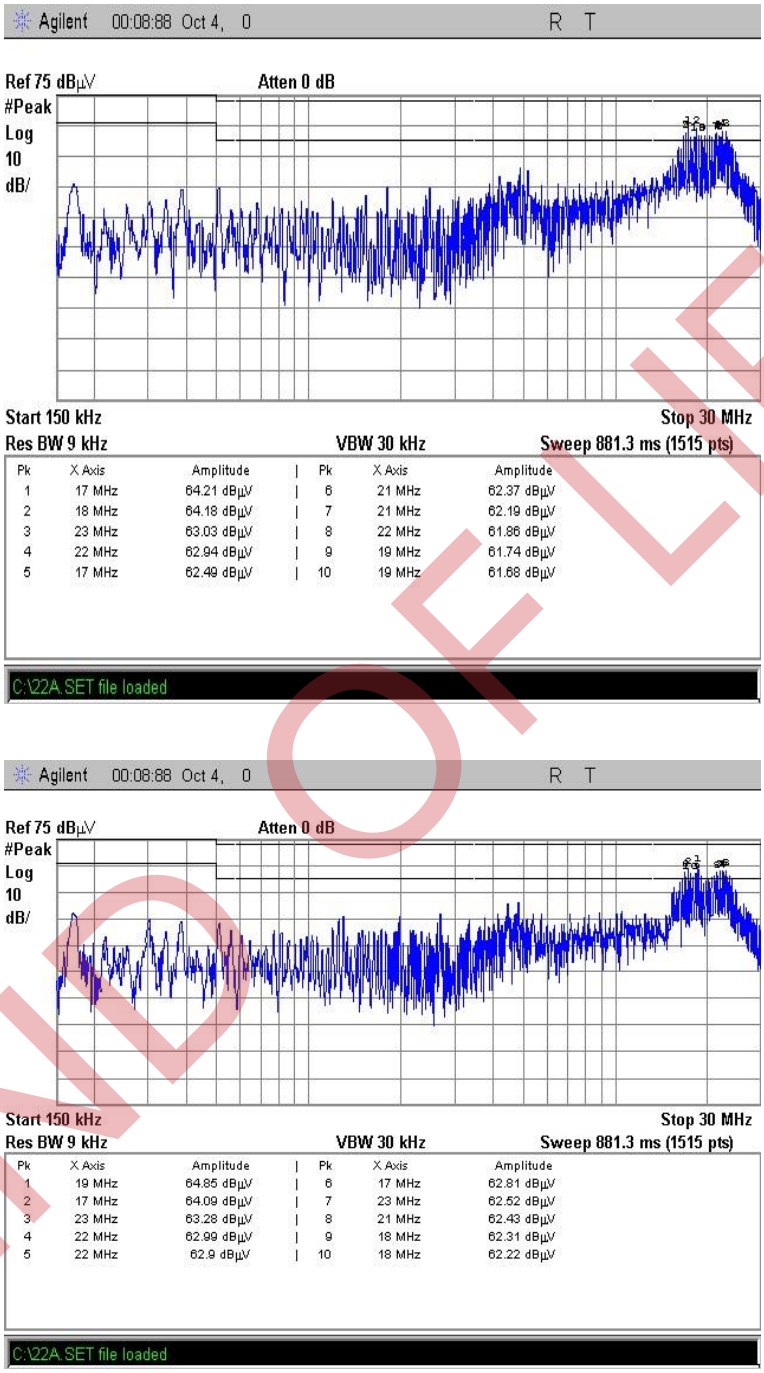

Figure 5.

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10. RIPPLE AND NOISE WAVEFORMS

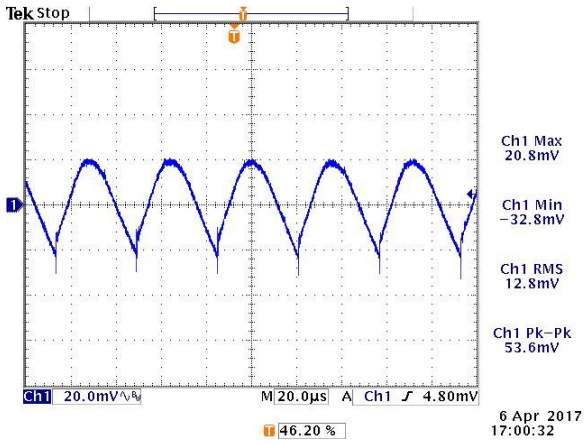

Figure 6. Ripple & Noise at full load, 115 VAC input, Ta = 25°C

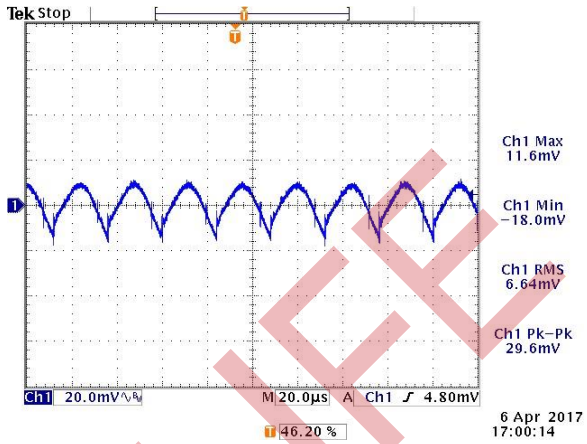

Figure 7. Ripple & Noise at full load, 230 VAC input, Ta = 25°C

11. TRANSIENT RESPONSE WAVEFORMS

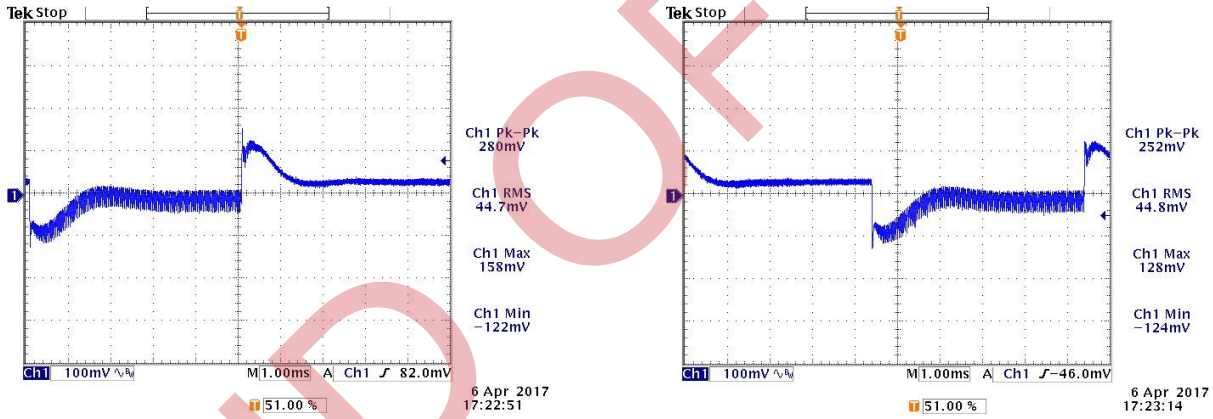

Figure 8. Vin = 115 VAC, 50%~100% and 0.1A/us Load Transients

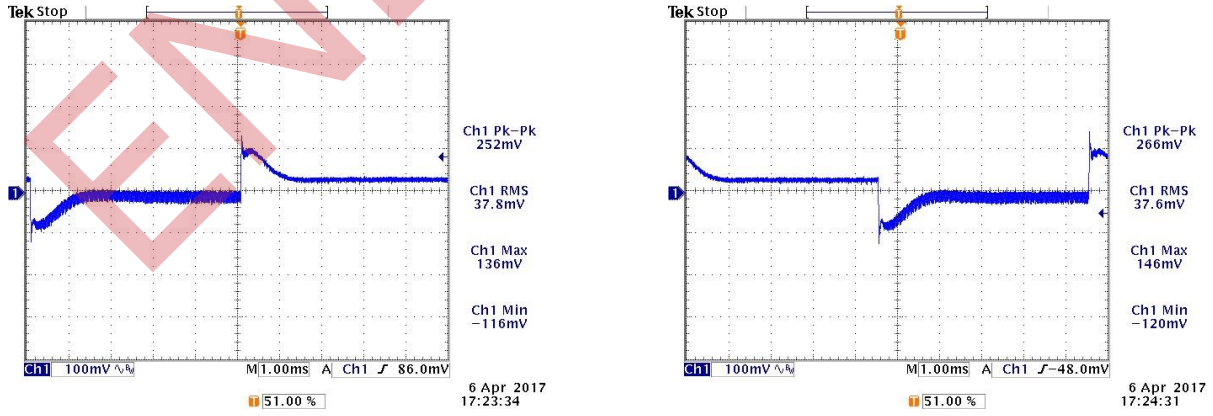

Figure 9. Vin = 230 VAC, 50%~100% and 0.1A/us Load Transients

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12. MECHANICAL DIMENSIONS

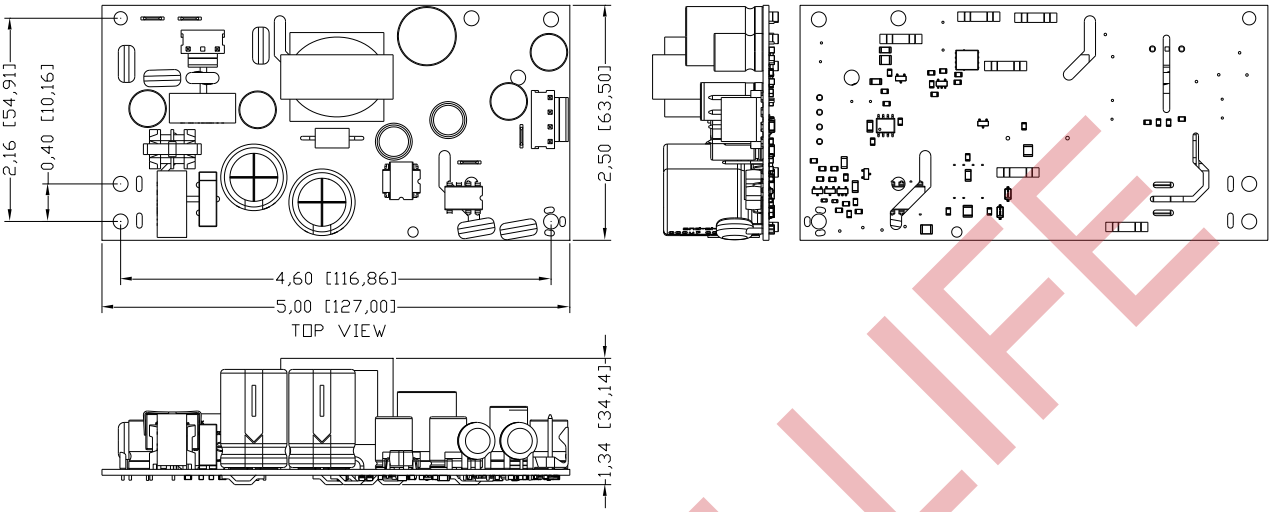

Figure 10. Mechanical Drawing

NOTE: All dimensions in inches (mm); Tolerances: XX ±0.04.

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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

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For more information on these products consult: tech.support@psbel.com

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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.