EVHFC0100HS-00A

Quasi Resonant Controller

The Future of Analog IC Technology

DESCRIPTION

The HFC0100 is a peak current mode controller with Green Mode Operation. Its high efficiency feature over the entire line and load range meets the stringent world-wide energy efficiency requirements.

The HFC0100 integrated with a high voltage current source, its valley detector ensures minimum Drain-Source voltage switching (Quasi-Resonant operation). When the output power falls below a given level, the controller enters the burst mode.

The HFC0100 provides various protections, such as Thermal Shutdown (TSD), Vcc Under Voltage Lockout (UVLO), Over Load Protection (OLP), Over Voltage Protection (OVP) and so on.

The HFC0100 is available in the 8-pin SOIC8 package.

ELECTRICAL SPECIFICATION

Parameter	Symbol	Value	Units
Supply Voltage	V_{IN}	85~265	VAC
Output Voltage	V_{OUT}	24	V
Output Current	I_{OUT}	1.5	A

FEATURES

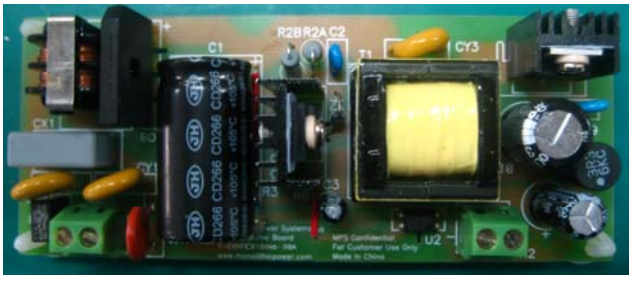
- Universal Main Input Voltage (85~265VAC)
- Quasi-Resonant Operation
- Valley Switching for high efficiency and EMI
- Burst Mode for low standby consumption
- Internal High Voltage Current Source
- High level of integration, allows a very low number external component count
- Maximum Frequency Limited
- Internal Soft Start
- Internal 250nS Leading Edge Blanking
- Thermal shutdown
- Vcc UVLO with Hysteresis
- Over Voltage Protection
- Over Load Protection.

APPLICATIONS

- Battery charger: cellular phone, digital camera, video camera, etc
- Standby power supply: TV, Desk top PC, Audio system, etc
- SMPS: Inc jet printer, DVD, VCR, CD player, STBs, Adapter for NB

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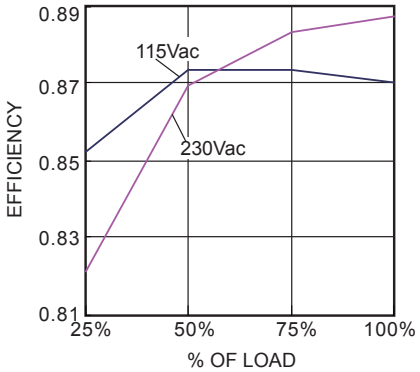
EVHFC0100HS-00A EVALUATION BOARD



(L x W x H) 12.7cm x 5.4cm x 3.5cm

Board Number	MPS IC Number
EVHFC0100HS-00A	HFC0100HS

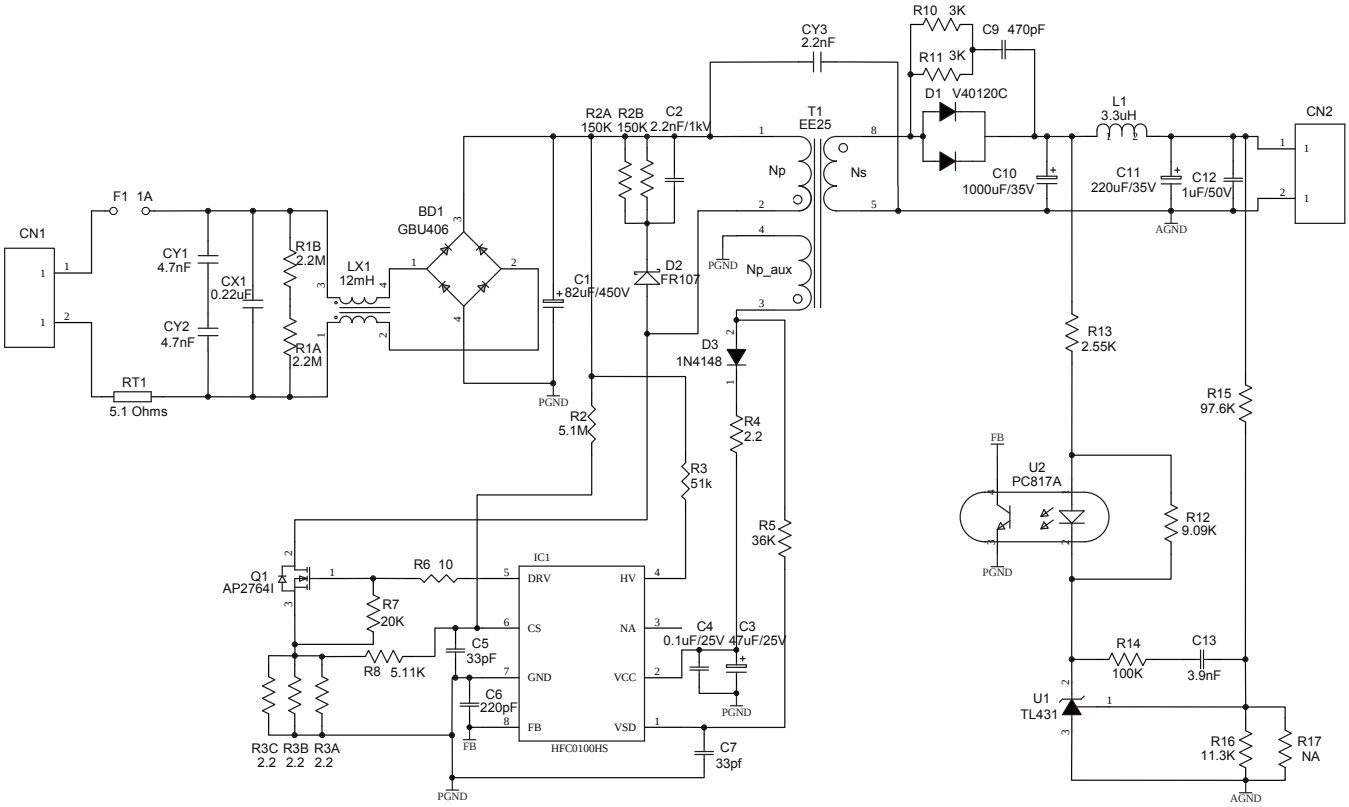
Efficiency



No Load Consumption:<140mW@265Vac

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EVALUATION BOARD SCHEMATIC



EVHFC0100HS-00A BILL OF MATERIALS

Qty	Ref	Value	Description	Package	Manufacturer	Part Number
1	BD1	GBU406	Bridge Rectifier, 4A/600V	Through Hole	Diodes	GBU406
1	C1	82µF	Electrolytic Capacitor, 450V	DIP	JiangHai	CD266-450V82
1	C10	1000µF	Electrolytic Capacitor, 35V	DIP	Panasonic	1000uF/35V
1	C11	220µF	Electrolytic Capacitor, 35V	DIP	JiangHai	CD287-35V220
1	C12	1µF	Ceramic Cap, 50V, X7R	1206	Murata	GRM21BR71H105KA12L
1	C13	3.9nF	Ceramic Cap, 50V, X7R	0603	Murata	GRM188R71H392KA01D
1	C2	2.2nF	Film Cap, 1000V	DIP		
1	C3	47µF	Electrolytic Capacitor, 25V	DIP	JiangHai	CD28L-25V47
1	C4	0.1µF	Ceramic Cap, 50V, X7R	0603	Murata	GRM188R71H104KA93D
2	C5,C7	33pF	Ceramic Cap, 50V, C0G	0603	Murata	GRM1885C1H330JA01
1	C6	220pF	Ceramic Cap, 50V, X7R	0603	Murata	GRM188R71H221KA01D

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EVHFC0100HS-00A BILL OF MATERIALS *(continued)*

Qty	Ref	Value	Description	Package	Manufacturer	Part Number
1	C9	470pF	Film Cap, 1000V	DIP		
2	CN1, CN2		CONNECTOR-2PINS	Through Hole		
1	CX1	0.22μF	Film CAP, 275V, X2	DIP	Vishay	BFC33920224
2	CY1, CY2	4.7nF	Film CAP, 300V, Y2	DIP	Vishay	VY2472M49Y5US63V7
1	CY3	2.2nF	Film CAP, 500V, Y1	DIP	Vishay	VY1222M47Y5UQ63V0
1	D1	V40120C	Schottky Diode, 40A/120V	TO220AB		
1	D2	FR107	Diode, 1A/1000V	DO-41		FR107
1	D3	1N4148	Diode, 0.15A/75V	SOD-123	Diodes	1N4148
1	F1	1A	Fuse, 250V	AXIAL	Cooper Bussmann	SS-5-1A
1	IC1	HFC0100HS	QR controller	SOIC8	MPS	HFC0100HS
1	L1	3.3μH	Inductor, 3A	DIP		
1	LX1	12mH	Common filter	DIP		
1	Q1	AP2764I-A	MOSFET, 650V	TO220	APEC	AP2764I-A
2	R10, R11	3kΩ	Film Res., 1%	1206	Yageo	RC1206FR-073KL
1	R12	9.09kΩ	Film Res., 1%	0603	Yageo	RC0603FR-073K09L
1	R13	2.55kΩ	Film Res., 1%	0603	Yageo	RC0603FR-072K55L
1	R14	100kΩ	Film Res., 1%	0603	Yageo	RC0603FR-07100KL
1	R15	97.6kΩ	Film Res., 1%	0603	Yageo	RC0603FR-0797K6L
1	R16	11.3kΩ	Film Res., 1%	0603	Yageo	RC0603FR-0711K3L
1	R17		Don't Stuff	0603		
2	R1A, R1B	2.2MΩ	Film Res., 1%	1206	Royalohm	1206J0225T5E
2	R2A, R2B	150kΩ	Res. 1W	AXIAL		
1	R3	51kΩ	Res.0.25W	AXIAL		
4	R3A, R3B, R3C, R4	2.2Ω	Film Res., 1%	1206	Royalohm	1206F220KT5E
1	R5	36kΩ	Film Res., 1%	1206		1206F3602T5E
1	R6	10Ω	Film Res., 5%	AXIAL		
1	R7	20kΩ	Film Res., 1%	0603	Yageo	RC0603FR-0720KL
1	R8	5.11kΩ	Film Res., 1%	0603	Yageo	RC0603FR-075K11L
1	R2	5.1MΩ	Film Res., 5%	1206	Yageo	RI1206L515JT
1	RT1	5.1Ω	NTC	Through Hole	Murata	NTPAA5R1LDNB0
1	T1	84:14:8	Transformer, EF25	Through Hole		EF25
1	U1	TL431K	Shunt Regulator	SOT-23	UNISONIC	TL431K
1	U2	PC817A	Photocouple	DIP	YiGuang	PC817A

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PRINTED CIRCUIT BOARD LAYOUT

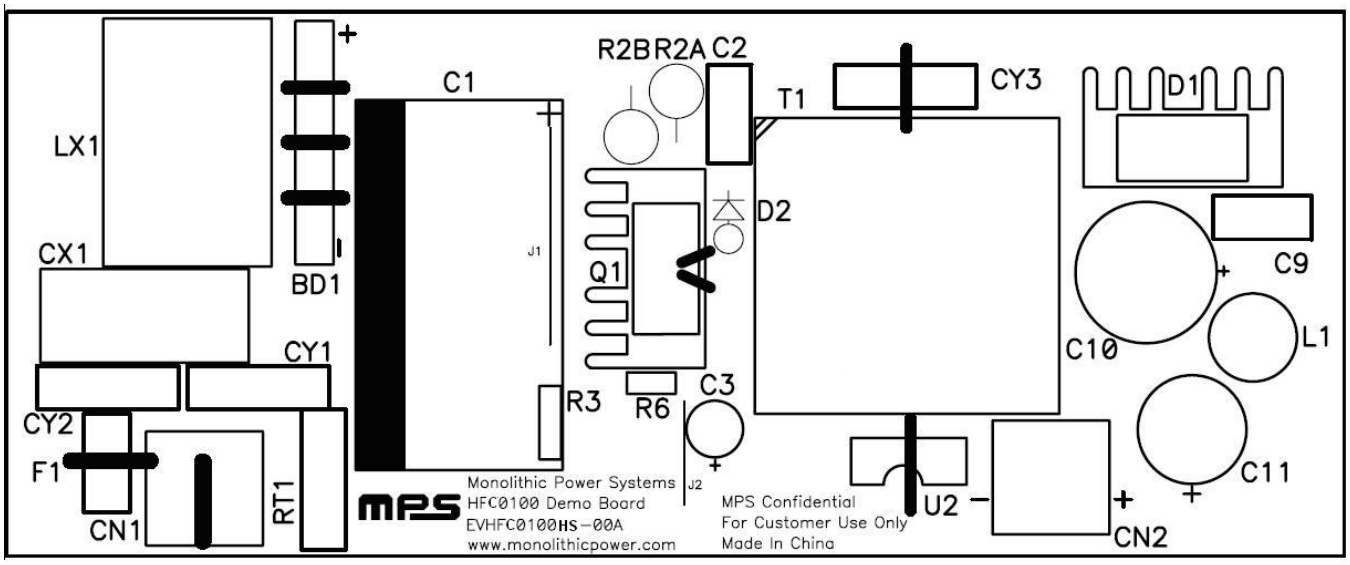


Figure 1 — Top Silk Layer

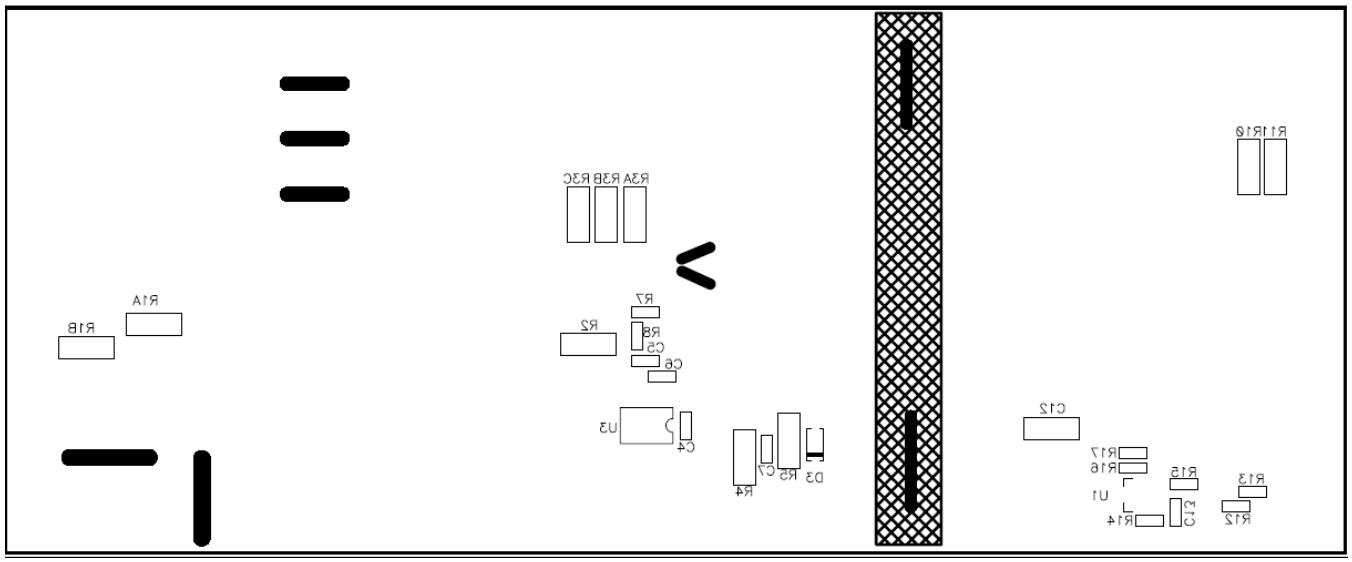


Figure 2 — Bottom Silk Layer

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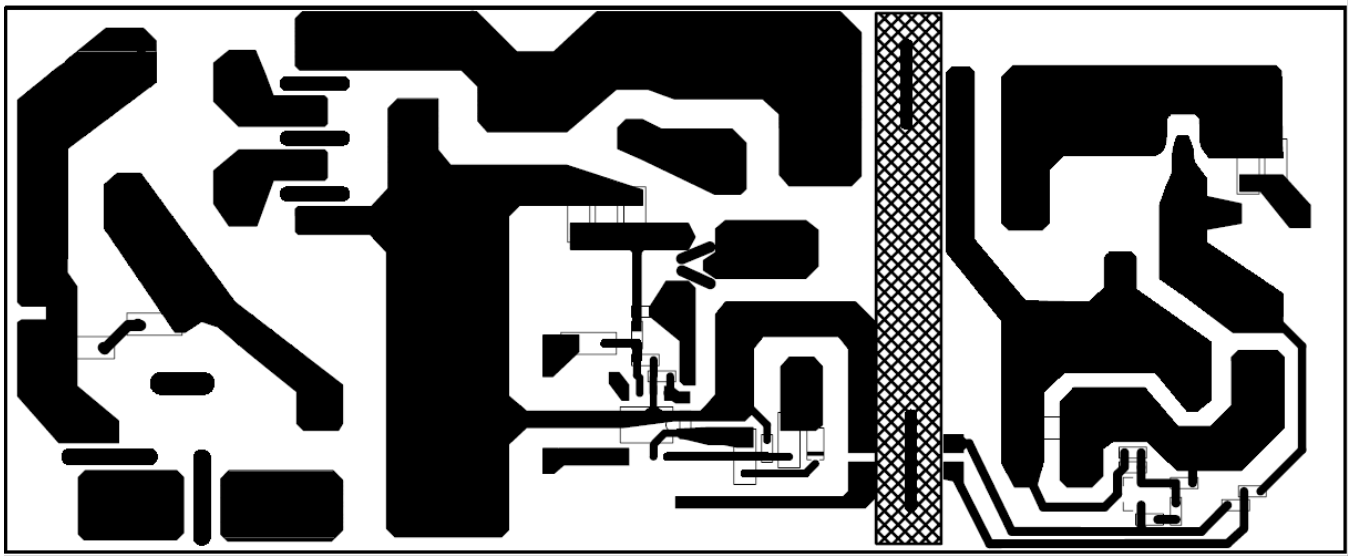


Figure 3 — Bottom Layer

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QUICK START GUIDE

1. Connect the positive and negative terminals of the load to CN2 port,
2. Connect the Line and Neutral terminals of the power supply output to CN1 port.
3. Turn the power supply on, the board automatically starts up.

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