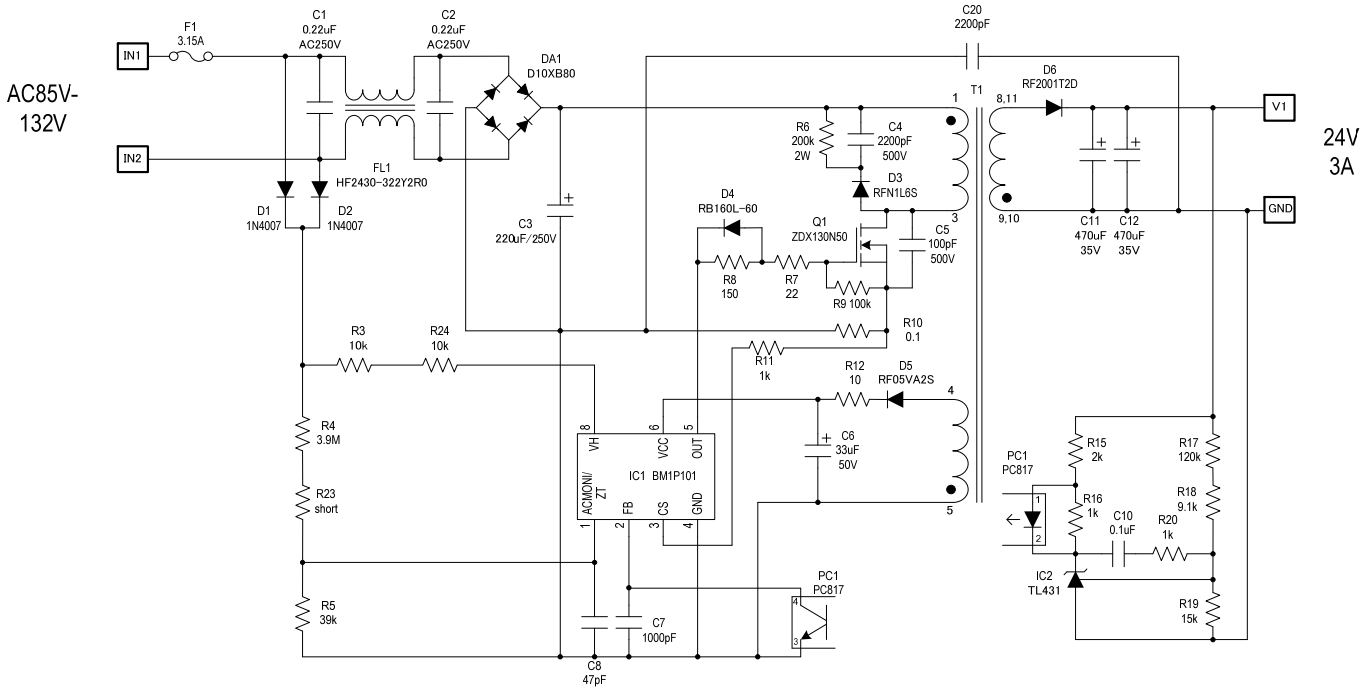
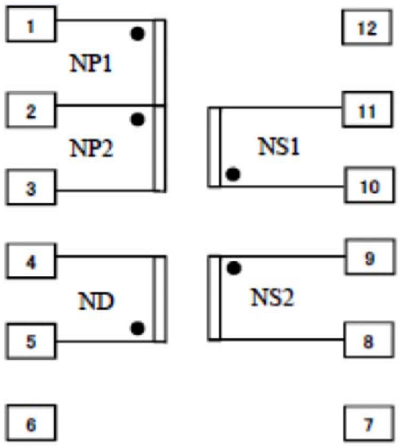
AC/DC Converter Controller Application Information

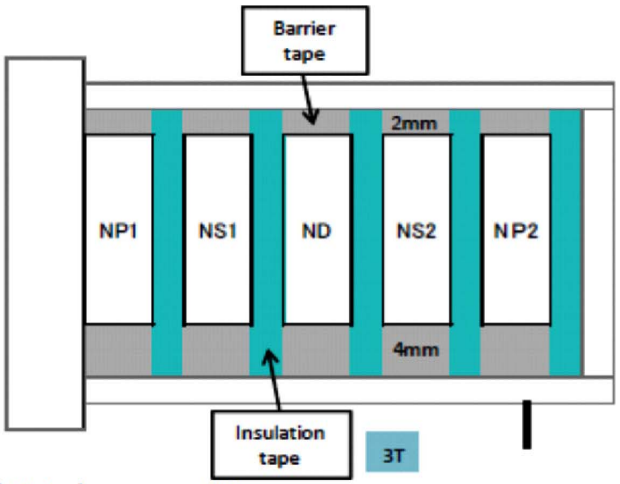
IC Product Name	BM1P101FJ
Control Method	PWM
Input	85 Vac to 132 Vac
Output	24V 3A
Type	Isolation
Document Number	1-I-2400300-0001-00
Revision	001

Reference Circuit



Transformer Specification





Core: JFE MB3 EER-28.5A or compatible
Bobbin: JFE BER28.5SP12 Vertical/Terminal Pins 6-6(12pins) or compatible
AL-Value: 166.7 nH/N^2
Inductance(1-3pin): 0.096 mH±15%

Coil	Terminal	Turns	Wire	Winding Method
NP1	'1-2	12	2UEW 0.4×2	1 Layer FIT
NS1	'10-11	12	2UEW 0.4×2	1 Layer FIT
ND	'5-4	8	2UEW 0.4×3	1 Layer FIT
NS2	'9-8	12	2UEW 0.4×2	1 Layer FIT
NP2	'2-3	12	2UEW 0.4×2	1 Layer FIT

Po=72W

耐圧 P-S :AC3.0KVrms 1MIN. 2mA or AC3.6kVrms 1s 2mA
PS-CORE:AC1.5KVrms 1MIN. 2mA or AC1.8kVrms 1s 2mA
IR : P-S,PS-CORE 100 MΩ MIN. at DC 500V

巻始め：バリアテープ固定
巻終り：直角引き出し挟み込み処理
巻方向 ： 統一

Bill of Materials

Item	Spec	Parts name	Maker
C1	0.22uF/AC250V X-Cap	LE224	Okaya
C2	0.22uF/AC250V X-Cap	LE224	Okaya
C3	220uF/250V	KXJ 220uF 250V	Nippon Chemi-con
C4	2200pF/500V	CK45-B3AD222KY*N	TDK
C5	100pF/500V	CC45SL3AD101JY*N	TDK
C6	33uF/50V	PJ 33uF 50V	Nichicon
C7	1000pF/16V	GRM219B711H102K	Murata
C8	47pF/16V	GRM219B711H470K	Murata
C10	0.1uF/50V	GRM21BB11H104KA01B	Murata
C11	470uF/35V Low-Z	HD 470uF 35V	Nichicon
C12	470uF/35V Low-Z	HD 470uF 35V	Nichicon
C20	2200pF/1kV	CS11-E2GA222MYNS	TDK
DA1	400V/10A	D10XB80	Shindengen
D1	400V/1A	1N4007	
D2	400V/1A	1N4007	
D3	FRD 600V/0.5A	RFN1L6S	Rohm
D4	60V/1A	RB160L-60	Rohm
D5	FRD 200V/0.5A	RF05VA2S/RF05VAM2S	Rohm
D6	FRD 200V/20A	RF2001T2D/RFN20T2D	Rohm
F1	3.15A		
FL1		HF2430-322Y2R0	TDK
IC1		BM1P101FJ	Rohm
IC2		TL431	
PC1		PC817	SHARP
Q1	500V/13A	ZDX130N50/R5011ANX	Rohm
R3	10kΩ	MCR18EZPJ104	Rohm
R4	3.9MΩ/0.25W	MCR18EZPJ395	Rohm
R5	39kΩ	MCR10EZPJ393	Rohm
R6	200kΩ/2W		
R7	22Ω/0.25W	MCR18EZPJ220	Rohm
R8	150Ω	MCR10EZPJ151	Rohm
R9	100kΩ	MCR10EZPJ104	Rohm
R10	0.1Ω/1W		
R11	1kΩ	MCR10EZPJ102	Rohm
R12	10Ω/0.25W	MCR18EZPJ100	Rohm
R15	2kΩ	MCR10EZPJ202	Rohm
R16	1kΩ	MCR10EZPJ102	Rohm
R17	120kΩ	MCR10EZPF1203	Rohm
R18	9.1kΩ	MCR10EZPF9101	Rohm
R19	15kΩ	MCR10EZPF1502	Rohm
R20	1kΩ	MCR10EZPJ102	Rohm
R23	short		
R24	10kΩ	MCR18EZPJ104	Rohm
T1	EER28		Tomita

Typical Characteristics

Vin:AC85V 50Hz

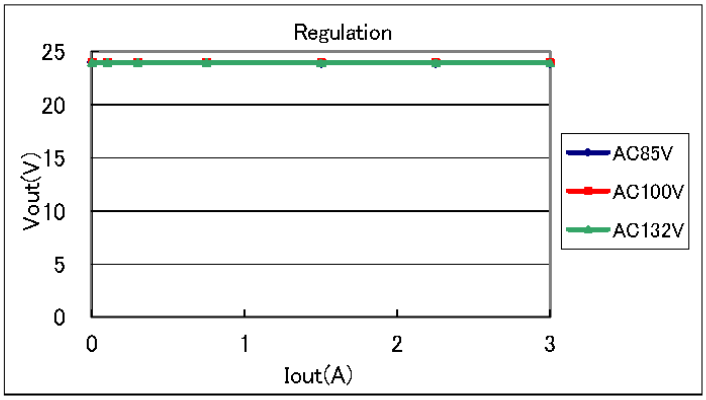
Iout(A)	Vout(V)	Pout(W)	Pin(W)	η(%)
0	24.00	0	0.059	-
0.1	24.00	2.400	2.727	88.0
0.3	24.00	7.199	8.045	89.5
0.75	24.00	18.00	20.21	89.0
1.5	23.99	35.99	40.72	88.4
2.25	23.99	53.98	61.50	87.8
3	23.98	71.94	82.98	86.7

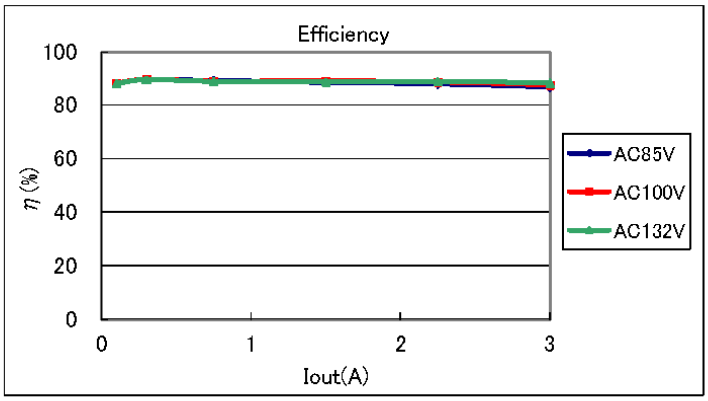
Vin:AC100V 50Hz

Iout(A)	Vout(V)	Pout(W)	Pin(W)	η(%)
0	24.00	0	0.061	-
0.1	24.00	2.400	2.726	88.0
0.3	24.00	7.199	8.043	89.5
0.75	24.00	18.00	20.26	88.8
1.5	23.99	35.99	40.46	88.9
2.25	23.99	53.98	61.00	88.5
3	23.98	71.94	82.30	87.4

Vin:AC132V 50Hz

Iout(A)	Vout(V)	Pout(W)	Pin(W)	η(%)
0	24.00	0	0.070	-
0.1	24.00	2.400	2.729	87.9
0.3	24.00	7.199	8.055	89.4
0.75	24.00	18.00	20.27	88.8
1.5	23.99	35.99	40.65	88.5
2.25	23.99	53.98	60.79	88.8
3	23.98	71.95	81.60	88.2





＜待機時電力＞　抵抗負荷にて測定

Vin:AC100V/50Hz時

RL(kΩ)	Vout(V)	Iout(mA)	Pout(W)	Pin(W)	η(%)
47	24.00	0.511	0.012	0.072	17.0
1.8	24.00	13.33	0.320	0.422	75.8

Revision History

Date	Revision	Changes
7.Mar.2014	001	New Release

AC/DC Design Library Disclaimer

1. ROHM's site terms and conditions of use on our website shall apply to you and your utilization of this "AC/DC Design Library" ("Tools").

2. The Tools attempt to support users who develop products and/or components incorporating ROHM's products, but any information contained in this Tools, including, but not limited to, reference circuit, simulation result and bill of materials ("Information") is solely for the purpose of reference, not for the purpose of exemplification or recommendation.
   ROHM does not warrant that any Information will meet your input-output specifications, will be suitable for your application, or will operate as shown in the simulation in a real equipment used for particular purposes.
   ROHM ASSUMES NO LIABILITY FOR ANY DAMAGES WHATSOEVER ARIGING OUT OF THE TOOLS OR INFORMATION CONTAINED IN THE TOOLS.
   You are solely responsible for all respects of design, development and production for your own products, including but not limited to: designing a final products or components; verifying and testing such final products or components under actual operating conditions and applicable circumstances; determining the appropriateness of the use of Information in such final products or components; evaluating and determining the applicability of any Information.

3. The Tools and Information are provided for use AS-IS basis.
   ROHM SHALL NOT, EXPRESSLY OR IMPLIEDLY, MAKE ANY WARANNTY OF ANY KIND INCLUDING BUT NOT LIMITED TO WARRANTIES OF AVAILABILITY, FUNCTIONALITY, CORRECTNESS, MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE.

4. While this Tools run a simulation or carry out an operation through public information and specifications, the Information may not be current at the time of simulation.
   ROHM does not warrant the nowness, accuracy and completeness of the Information.

5. All Information is for reference only. ROHM does not warrant that the Information will not infringe any intellectual property rights or any other rights of any third party.
   ROHM SHALL NOT BE IN ANY WAY RESPONSIBLE OR LIABLE FOR INFRINGEMENT OF ANT INTELLECTUAL PROPERTY RIGHTS OR OTHER DAMAGES ARISING FROM USE OF SUCH INFORMATION.
   No license, expressly or implied, is granted hereby under any intellectual property rights or other rights of ROHM or any third parties with respect to the Information.

6. Except for specific applications as expressly stated in ROHM's data sheet, ROHM's products described in Tools are designed and manufactured for application in ordinary electronic equipments (such as AV equipment, OA equipment, telecommunication equipment, home electronic appliances, amusement equipment, etc.).
   If you intend to use ROHM's products in devices requiring extremely high reliability (such as medical equipment(Note 1), transport equipment, traffic equipment, aircraft/spacecraft, nuclear power controllers, fuel controllers, car equipment including car accessories, safety devices, etc.) and whose malfunction or failure may cause loss of human life, bodily injury or serious damage to property ("Specific Applications"), please consult with ROHM sales representative in advance.
   UNLESS OTHERWISE AGREED IN WRITING BY ROHM IN ADVANCE, ROHM SHALL NOT BE IN ANY WAY RESPONSIBLE OR LIABLE FOR ANY DAMAGES, EXPENSES OR LOSSES INCURRED BY YOU OR THIRD PARTIES ARISING FROM THE USE OF ANY ROHM'S PRODUCTS OR INFORMATION FOR SPECIFIC APPLICATIONS.

(Note1) Medical Equipment Classification of the Specific Applications

JAPAN	USA	EU	CHINA
CLASSⅢ	CLASSⅢ	CLASSⅡb	CLASSⅢ
CLASSⅣ		CLASSⅢ	

7. Any system embedding electronic devices can fail or malfunction at a certain rate.
   Please be sure to implement, at your own responsibilities, adequate safety measures including but not limited to fail-safe design against the physical injury, damage to any property, to or for your products, components and applications.

8. In no event shall you use in any way whatsoever the products described in the Tools and the Information for any military purposes, including but not limited to, the development of mass-destruction weapons.

9. ROHM reserves the right to modify, improve or otherwise change its products and/or Information in Tools, or to cease or terminate this web simulation services without prior written notice.
   Before purchasing or using ROHM's products, you must refer to and comply with the latest version of all related technical information for products.