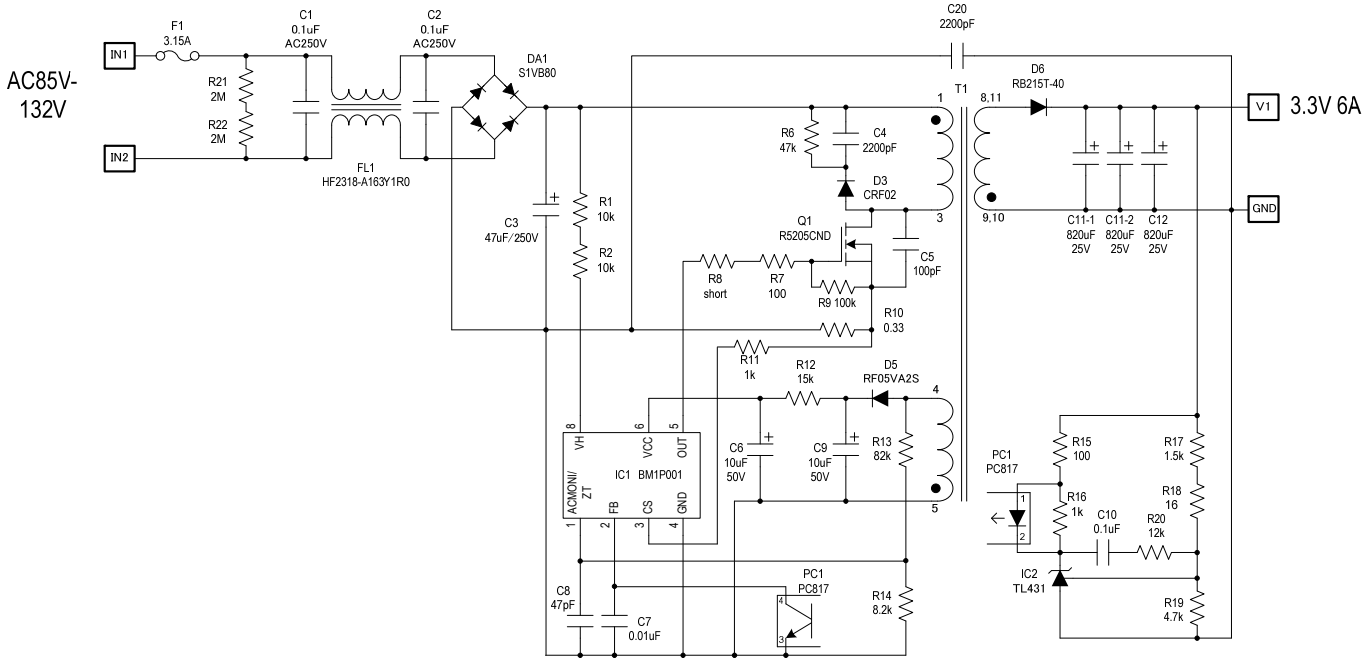
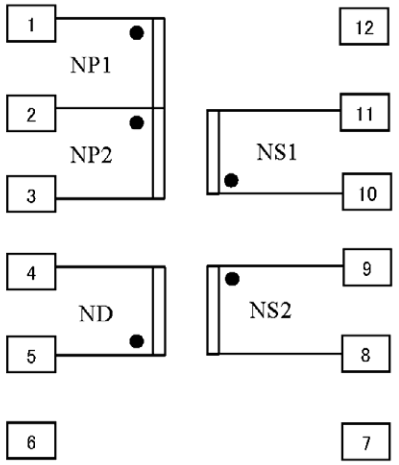
AC/DC Converter Controller Application Information

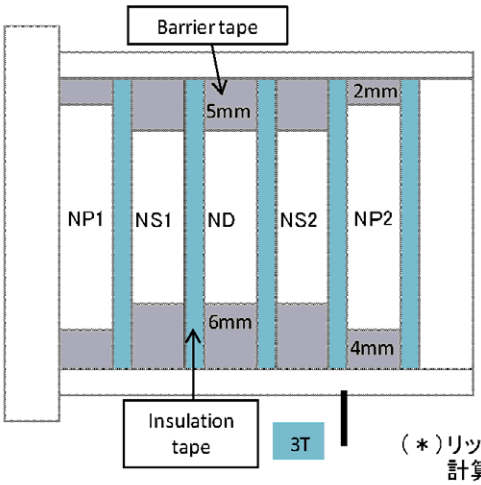
IC Product Name	BM1Q001FJ
Control Method	QR
Input	85 Vac to 132 Vac
Output	3.3V 6A
Type	Isolation
Document Number	1-I-0300600-0000-00
Revision	001

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: 208.7 nH/N^2
Inductance(1-3pin): 0.404 mH±15%

Coil	Terminal	Turns	Wire	Winding Method
NP1	‘1-2	22	2UEW 0.4	1 Layer FIT
NS1	‘10-11	3	リッツ線(2UEW 0.2×20)	1 Layer FIT
ND	‘5-4	13	2UEW 0.35	1 Layer FIT
NS2	‘9-8	3	リッツ線(2UEW 0.2×20)	1 Layer FIT
NP2	‘2-3	22	2UEW 0.4	1 Layer FIT

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

（＊）リッツ線の仕上がり外径は以下の計算式にて算出し、巻幅設定しております。

$$\Phi = \sqrt{n} \times 1.555 \times D$$
$$= \sqrt{20} \times 1.555 \times 0.231$$
$$= 1.606 \text{ mm}$$

Po=20W

Bill of Materials

Item	Spec	Parts name	Maker
C1	0.1uF/AC250V X-Cap	LE104	Okaya
C2	0.1uF/AC250V X-Cap	LE104	Okaya
C3	47uF/250V	AXW 47uF 250V	Rubycon
C4	2200pF/500V	CK45-B3AD222KY*N	TDK
C5	100pF/500V	CC45SL3AD101JY*N	TDK
C6	10uF/50V	PM 33uF 50V	Nichicon
C7	0.01uF/16V	GRM219B711H103K	Murata
C8	47pF/16V	GRM219B711H470K	Murata
C9	10uF/50V	PM 33uF 50V	Nichicon
C10	0.1uF/50V	GRM21BB11H104KA01B	Murata
C11-1	820uF/25V Low-Z	KZM 820uF 25V	Nippon Chemi-con
C11-2	820uF/25V Low-Z	KZM 820uF 25V	Nippon Chemi-con
C12	820uF/25V Low-Z	KZM 820uF 25V	Nippon Chemi-con
C20	2200pF/1kV	CS11-E2GA222MYNS	TDK
DA1	400V/1A	S1VB80	Shindengen
D3	FRD 600V/0.5A	RFN1L6S	Rohm
D5	FRD 200V/0.5A	RF05VA2S/RF05VAM2S	Rohm
D6	SBD 40V/20A	RB215T-40	Rohm
F1	3.15A		
FL1		HF2318-A163Y1R0	TDK
IC1		BM1Q001FJ	Rohm
IC2		TL431	
PC1		PC817	SHARP
Q1	500V/5A	R5205CND	Rohm
R1	10kΩ	MCR18EZPJ104	Rohm
R2	10kΩ	MCR18EZPJ104	Rohm
R6	47kΩ/2W	100kΩ//100kΩ 2 パラ	
R7	100Ω/0.25W	MCR18EZPJ101	Rohm
R8	short		
R9	100kΩ	MCR10EZPJ104	Rohm
R10	0.33Ω/1W	0.68Ω//0.68Ω 2 パラ	
R11	1kΩ	MCR10EZPJ102	Rohm
R12	15kΩ/0.25W	MCR18EZPJ154	Rohm
R13	82kΩ	MCR10EZPJ823	Rohm
R14	8.2kΩ	MCR10EZPJ822	Rohm
R15	100Ω	MCR10EZPJ101	Rohm
R16	1kΩ	MCR10EZPJ102	Rohm
R17	1.5kΩ	MCR10EZPF1501	Rohm
R18	16Ω	MCR10EZPF16R0	Rohm
R19	4.7kΩ	MCR10EZPF4701	Rohm
R20	12kΩ	MCR10EZPJ123	Rohm
R21	2MΩ/0.25W	MCR18EZPJ205	Rohm
R22	2MΩ/0.25W	MCR18EZPJ205	Rohm
T1	EER28		Tomita

Typical Characteristics

＜レギュレーション/効率＞

Vin:AC85V 50Hz

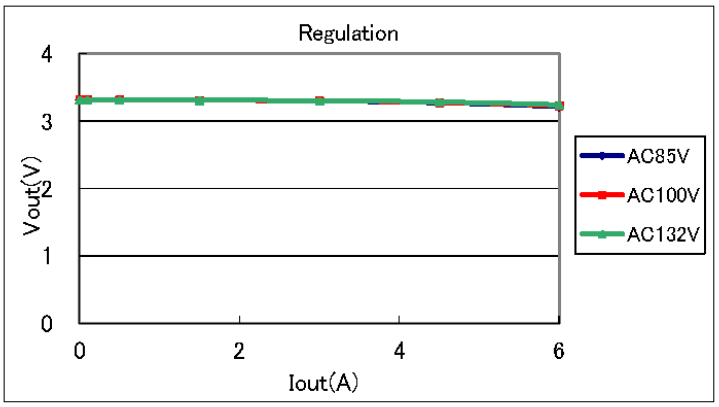
Iout(A)	Vout(V)	Pout(W)	Pin(W)	η(%)
0	3.313	0	0.021	-
0.1	3.313	0.331	0.478	69.3
0.5	3.312	1.656	2.183	75.9
1.5	3.308	4.961	6.388	77.7
3	3.300	9.899	12.76	77.6
4.5	3.271	14.72	19.30	76.2
6	3.211	19.27	26.07	73.9

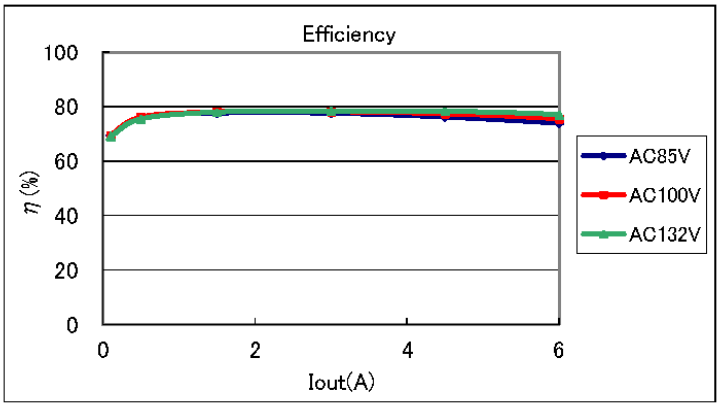
Vin:AC100V 50Hz

Iout(A)	Vout(V)	Pout(W)	Pin(W)	η(%)
0	3.313	0	0.022	-
0.1	3.313	0.331	0.477	69.5
0.5	3.312	1.656	2.175	76.1
1.5	3.308	4.962	6.357	78.0
3	3.299	9.898	12.67	78.1
4.5	3.276	14.74	19.04	77.4
6	3.227	19.36	25.64	75.5

Vin:AC132V 50Hz

Iout(A)	Vout(V)	Pout(W)	Pin(W)	η(%)
0	3.313	0	0.029	-
0.1	3.313	0.331	0.480	69.1
0.5	3.312	1.656	2.194	75.5
1.5	3.308	4.962	6.362	78.0
3	3.299	9.898	12.63	78.4
4.5	3.283	14.77	18.86	78.3
6	3.240	19.44	25.22	77.1





＜待機時電力＞　抵抗負荷にて測定

Vin:AC100V/50Hz時

RL(Ω)	Vout(V)	Iout(mA)	Pout(W)	Pin(W)	η(%)
660	3.313	5.019	0.017	0.045	36.9
36	3.312	92.00	0.305	0.443	68.8

Revision History

Date	Revision	Changes
7.Mar.2014	001	New Release

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JAPAN	USA	EU	CHINA
CLASSⅢ	CLASSⅢ	CLASSⅡb	CLASSⅢ
CLASSⅣ		CLASSⅢ	

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