

**Innovations
Embedded**

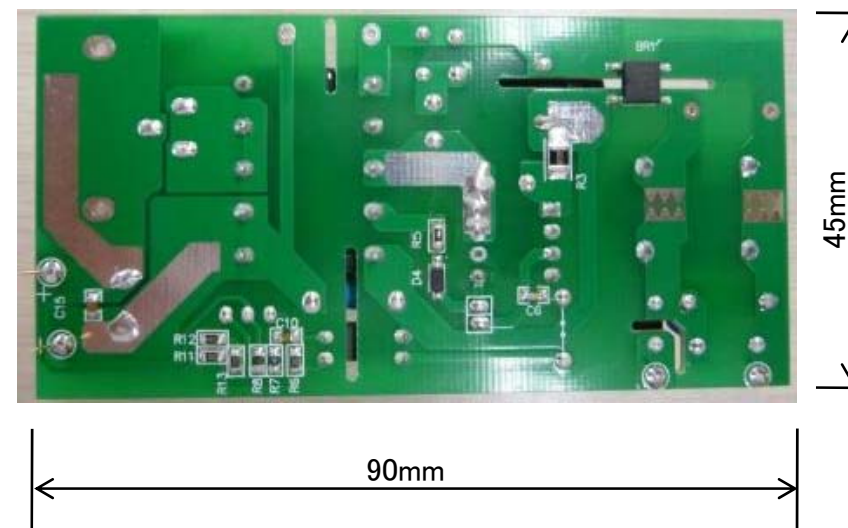
Board No:BM2P014EVK-001

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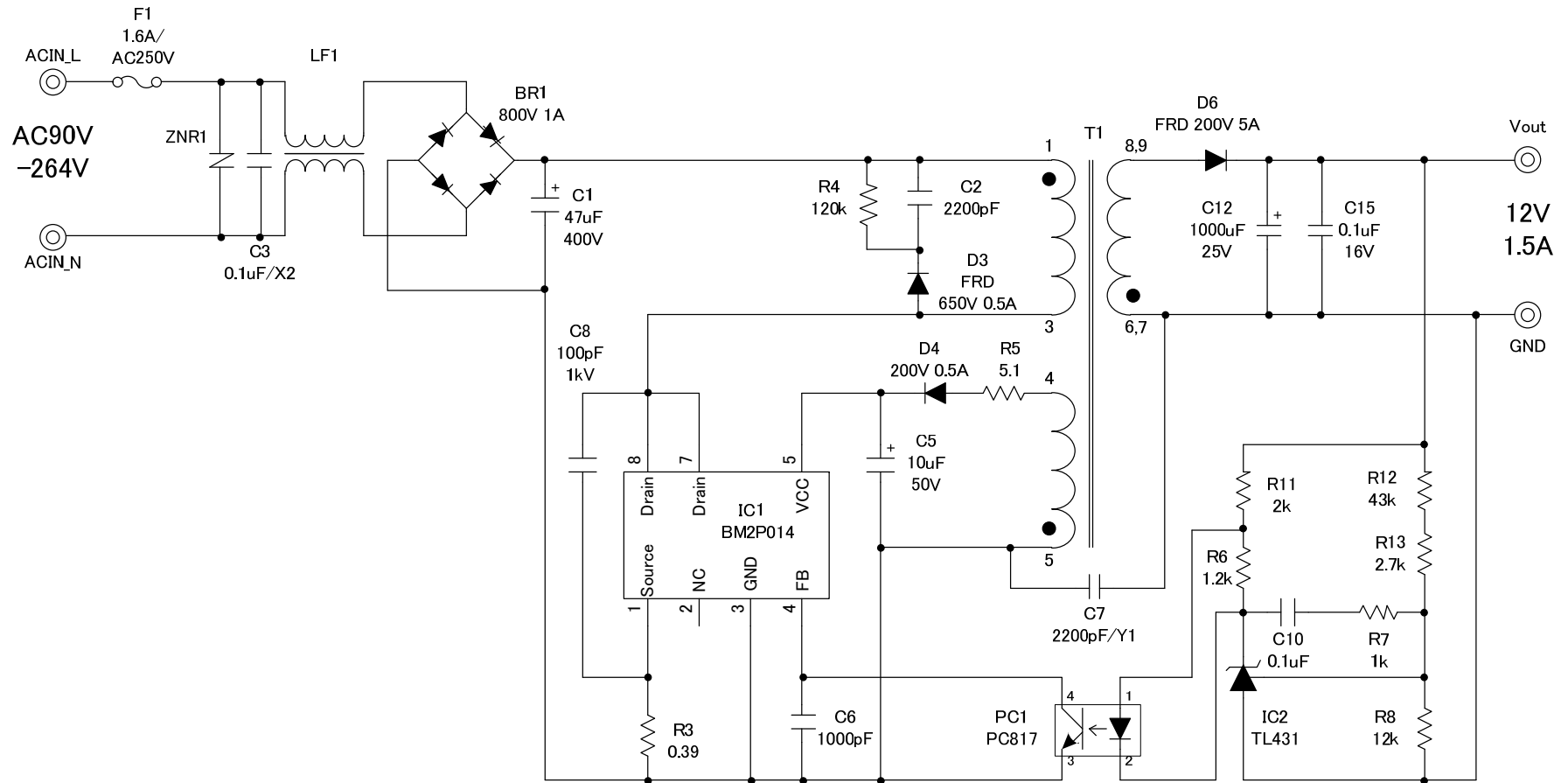
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Reference Board Specification

| Description | | Symbol | Min | Typ | Max | Unit | Condition |
|-------------|---------------------|---------|------|-------|------|------|------------------|
| Input | Voltage | Vin | 90 | | 264 | Vac | |
| | Frequency | fac | 47 | 50/60 | 63 | Hz | |
| | No Load Input Power | | | | 50 | mW | Vin: AC100V/230V |
| Output | Voltage | Vout | 11.4 | 12 | 12.6 | V | |
| | Current | Iout | 1.5 | | | A | |
| | Ripple Voltage | Vripple | | | 100 | mV | 20MHz Bandwidth |
| | Efficiency | | 80 | | | % | Output: 12V 1.5A |



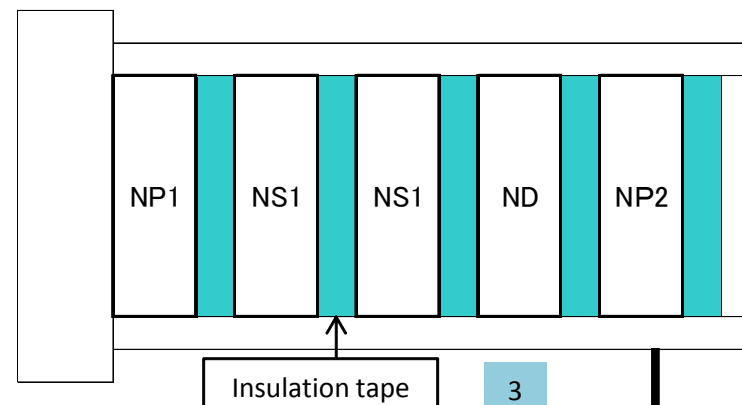
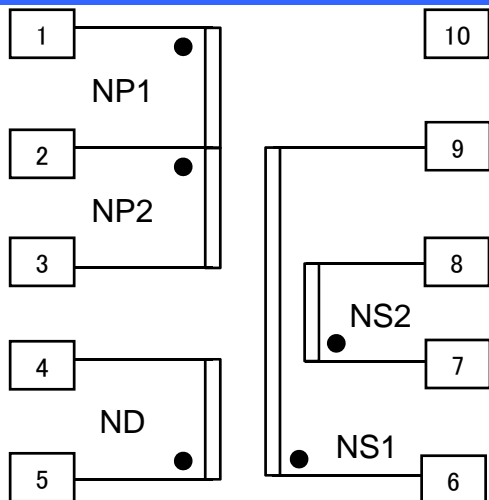
Application Schematic



Component List

| Item | Spec | Parts name | Maker |
|------|------------------|------------------|-----------|
| C1 | 47uF/400V | 47uF/400V | |
| C2 | 2200pF/500V | 2200pF/1kV | |
| C3 | 0.1uF/X2 | 0.1uF/X2 | |
| C5 | 10uF/50V | 10uF/50V | |
| C6 | 1000pF/16V | 1000pF/50V 1608 | |
| C7 | 2200pF/Y1 | 2200pF/Y1 | |
| C8 | 100pF/1kV | 100pF/1kV | |
| C10 | 0.1uF/25V | 0.1uF/50V 1608 | |
| C12 | Low-Z 1000uF/25V | Low-Z 1000uF/25V | |
| C15 | 0.1uF/25V | 0.1uF/50V 1608 | |
| BR1 | 800V/1A | UA80 | |
| D3 | FRD 650V 0.5A | UF4007 | |
| D4 | 200V 0.5A | RR264M-400 | Rohm |
| D6 | FRD 200V 5A | RF601T2D | Rohm |
| F1 | | 1.6A/AC250V | |
| IC1 | | BM2P014 | Rohm |
| LF1 | | SS11VL-10062 | NEC Tokin |
| ZNR1 | | 7D471K | |
| R3 | 0.39 Ω /0.5W | MCR25JZHFJR390 | Rohm |
| R4 | 120k Ω /1W | 120k Ω /1W | |
| R5 | 5.1 Ω | MCR10EZPJ5R1 | Rohm |
| R6 | 1.2k Ω | MCR10EZPJ122 | Rohm |
| R7 | 1k Ω | MCR10EZPJ102 | Rohm |
| R8 | 12k Ω | MCR10EZPJ123 | Rohm |
| R11 | 2k Ω | MCR10EZPJ202 | Rohm |
| R12 | 43k Ω | MCR10EZPJ433 | Rohm |
| R13 | 2.7k Ω | MCR10EZPJ272 | Rohm |
| T1 | E125 | YPP1183 | Tomita |
| IC2 | | TL431 | |
| PC1 | | PC817 | |

Transformer:YPP1183 (EI25)



Core: Tomita 2G8-EI25 or compatible

Bobbin: PIN SHINE INDUSTRIAL P-2513-1 Vertical/Terminal Pins 5-5(10pins) or compatible

AL-Value: 137.2 nH/N²

Inductance(1-3pin): 0.400 mH±15%

| Coil | Terminal | Turns | Wire | Winding Method |
|------|----------|-------|-----------|-------------------|
| NP1 | '1-2 | 27 | 2UEW 0.35 | 1 Layer FIT(密) |
| NS1 | '6-9 | 11 | TEX-E 0.5 | 1 Layer SPACE(均等) |
| ND | '5-4 | 13 | 2UEW 0.4 | 1 Layer SPACE(均等) |
| NS2 | '7-8 | 11 | TEX-E 0.5 | 1 Layer SPACE(均等) |
| NP2 | '2-3 | 27 | 2UEW 0.35 | 1 Layer FIT(密) |

耐压 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

Winding beginning: Fix by barrier tape

**Winding end: Interpose the line drawn
in a right angle**

Winding direction: Unification

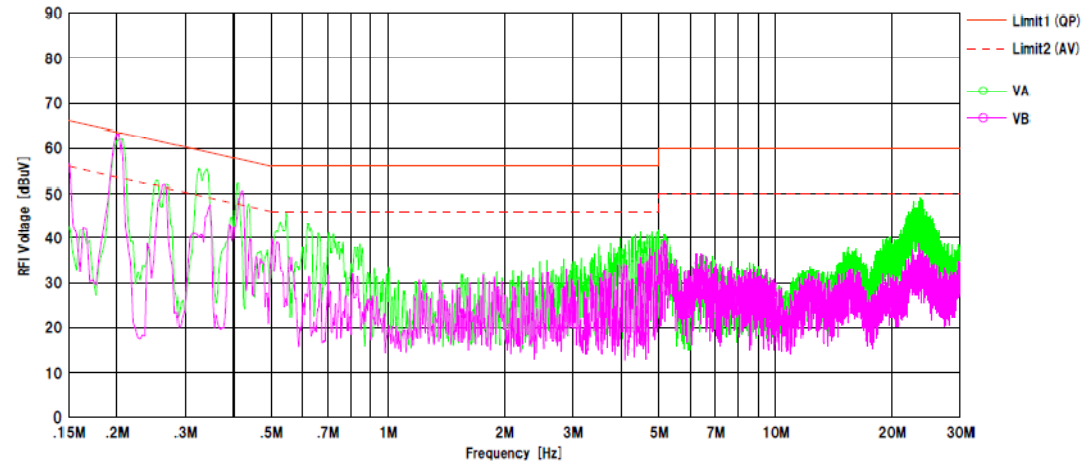
Measurement Data

| Vin(V) | Pin(W) | Vout(V) | Iout(A) | Pout(W) | η (%) |
|--------|--------|---------|---------|---------|------------|
| 90 | 0.033 | 12.09 | 0 | 0 | - |
| | 0.179 | 12.09 | 0.01 | 0.121 | 67.5 |
| | 1.479 | 12.09 | 0.1 | 1.209 | 81.7 |
| | 7.174 | 12.09 | 0.5 | 6.043 | 84.2 |
| | 14.33 | 12.09 | 1 | 12.09 | 84.3 |
| | 21.64 | 12.08 | 1.5 | 18.13 | 83.8 |
| 100 | 0.032 | 12.09 | 0 | 0 | - |
| | 0.179 | 12.09 | 0.01 | 0.121 | 67.7 |
| | 1.478 | 12.09 | 0.1 | 1.209 | 81.8 |
| | 7.165 | 12.09 | 0.5 | 6.043 | 84.3 |
| | 14.30 | 12.09 | 1 | 12.09 | 84.5 |
| | 21.51 | 12.09 | 1.5 | 18.13 | 84.3 |
| 230 | 0.036 | 12.09 | 0 | 0 | - |
| | 0.183 | 12.09 | 0.01 | 0.121 | 66.1 |
| | 1.497 | 12.09 | 0.1 | 1.209 | 80.7 |
| | 7.272 | 12.09 | 0.5 | 6.044 | 83.1 |
| | 14.34 | 12.09 | 1 | 12.09 | 84.3 |
| | 21.49 | 12.09 | 1.5 | 18.13 | 84.4 |
| 264 | 0.045 | 12.09 | 0 | 0 | - |
| | 0.190 | 12.09 | 0.01 | 0.121 | 63.6 |
| | 1.481 | 12.09 | 0.1 | 1.209 | 81.6 |
| | 7.240 | 12.09 | 0.5 | 6.044 | 83.5 |
| | 14.39 | 12.09 | 1 | 12.09 | 84.0 |
| | 21.57 | 12.09 | 1.5 | 18.13 | 84.1 |

Conduction EMI

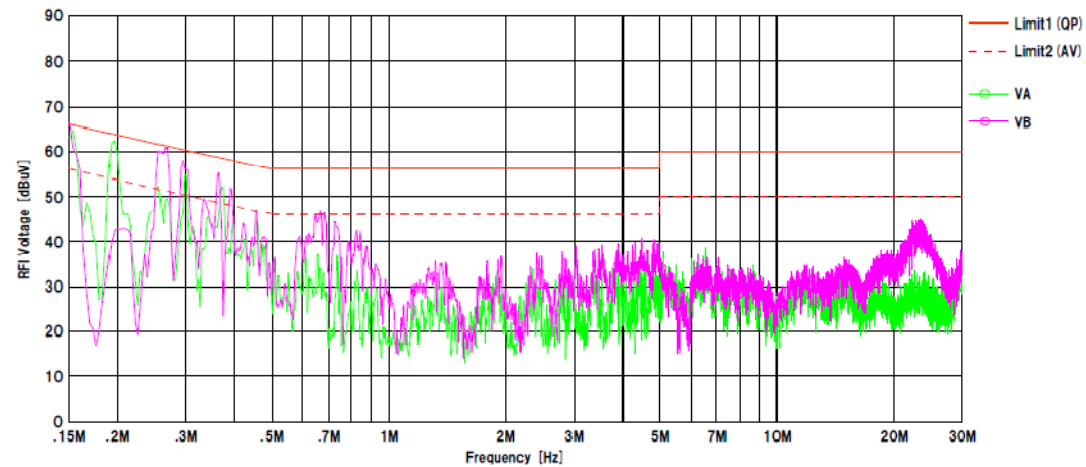
Vin: AC100V/50Hz
Vout: 12V 1.5A

Limit1 : CISPR Pub 22 Class B
Limit2 : CISPR Pub 22 Class B (AV)



Vin: AC230V/50Hz
Vout: 12V 1.5A

Limit1 : CISPR Pub 22 Class B
Limit2 : CISPR Pub 22 Class B (AV)



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