

# Innovations Embedded

**Board No:BM1P061FJ-EVK-001**

The information contained herein is subject to change without notice.

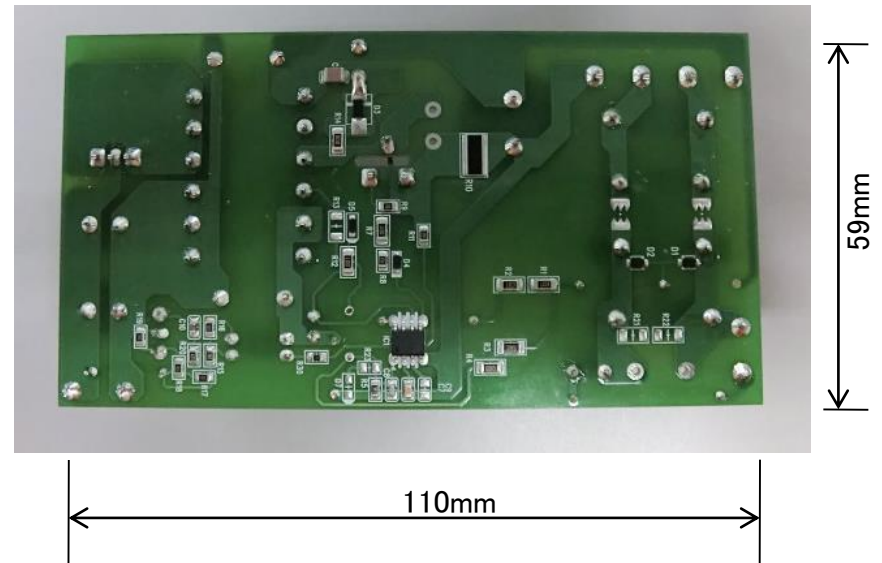
62UG056E Rev.002  
Dec. 2019

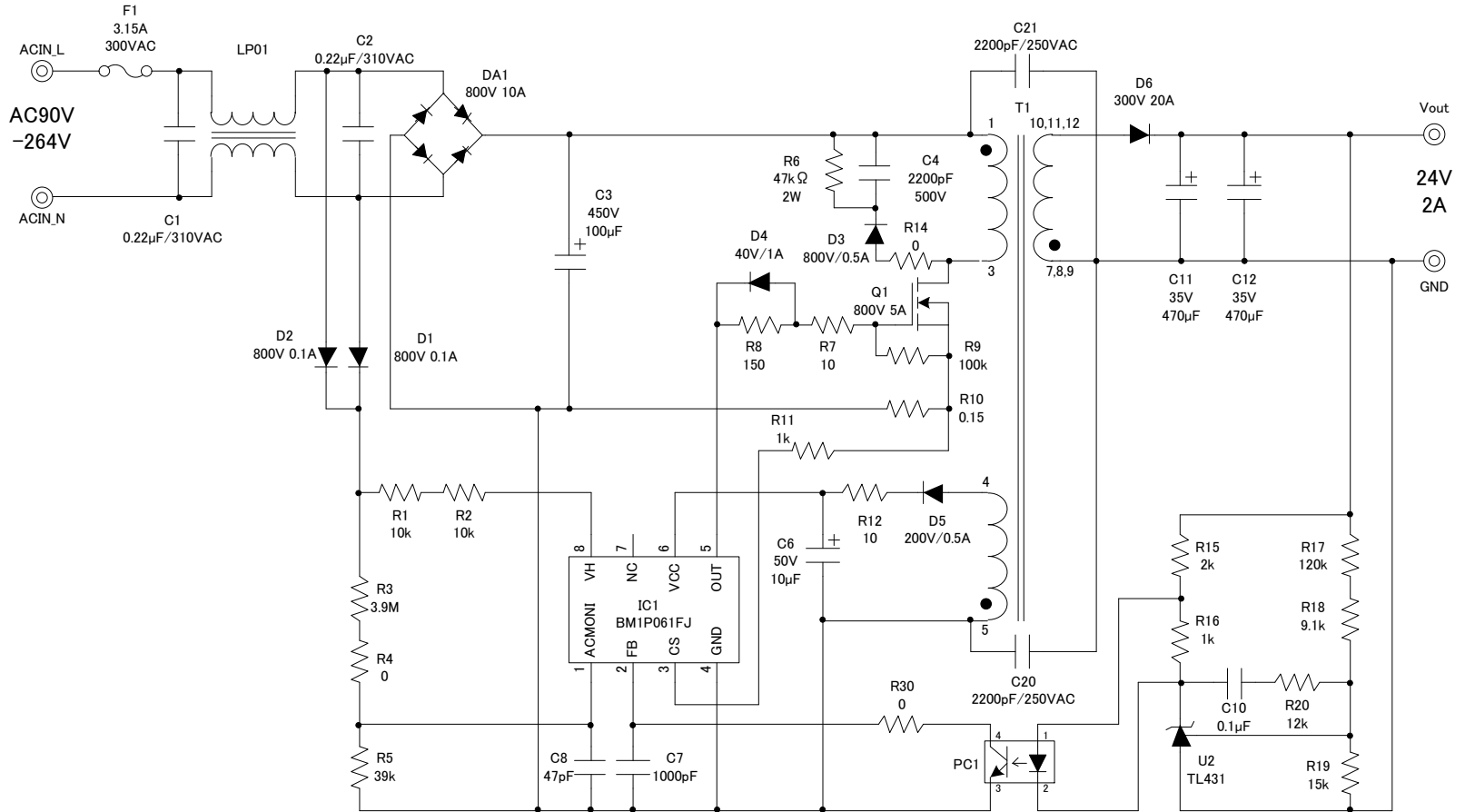
Confidential © 2013 ROHM Co.,Ltd. All Rights Reserved

**ROHM Co.,Ltd.**

# 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				100	mW	Vin: AC100V/230V
Output	Voltage	Vout	22.8	24	25.2	V	
	Current	Iout	2			A	
	Ripple Voltage	Vripple			100	mV	20MHz Bandwidth
	Efficiency		80			%	Output: 24V 2A



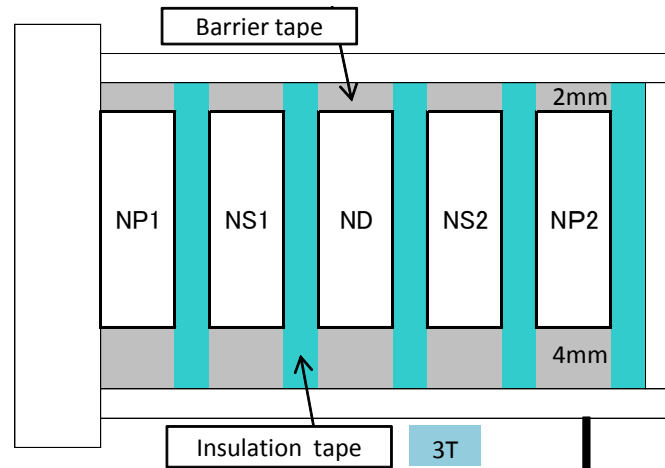
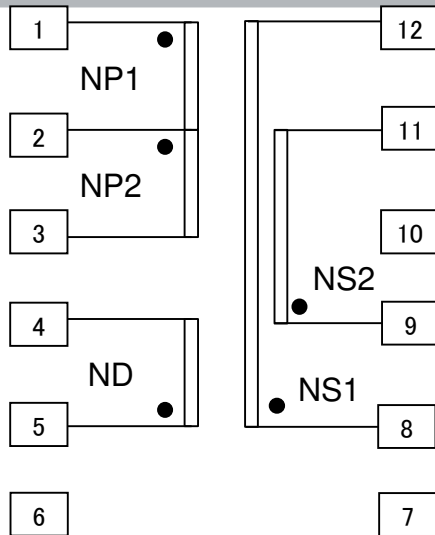


# Component List

Item	Spec	Parts name	Maker
C1	0.22 $\mu$ F/310VAC	890334025027CS	WURTH ELEKTRONIK
C2	0.22 $\mu$ F/310VAC	890334025027CS	WURTH ELEKTRONIK
C3	100 $\mu$ F/450V	450BXW100MEFR19 $\times$ 30	Rubycon
C4	2200pF/500V	CGJ5H4C0G2H222J115AA	TDK
C6	10 $\mu$ F/50V	UPM1H100MDD1TD	Nichicon
C7	1000pF/16V	0805B102K500NT	FH
C8	47pF/100V	GCM1882C2A470JA01D	Murata
C10	0.1 $\mu$ F/100V	HMK107B7104MA-T	TaiyoYuden
C11	470 $\mu$ F/35V	UHD1V471MFD	Nichicon
C12	470 $\mu$ F/35V	UHD1V471MFD	Nichicon
C20	2200pF/250VAC	CS11-E2GA222MYNS	TDK
C21	2200pF/250VAC	CS11-E2GA222MYNS	TDK
DA1	800V/10A	D10XB80-7000	Shindengen
D1	800V/0.1A	RFU02VSM8S	Rohm
D2	800V/0.1A	RFU02VSM8S	Rohm
D3	800V/0.5A	CRF02	TOSHIBA
D4	40V/1A	RB160VAM-40	Rohm
D5	200V/0.5A	RF05VAM2S	Rohm
D6	300V/20A	RF2001T3DNZ	Rohm
F1	3.15A/300V	36913150000	Littelfuse
IC1		BM1P061FJ	Rohm
LP01	25mH/1A	SS26V-100250	TOKIN
Q1	800V/5A	R8005ANX	Rohm
R1	10k $\Omega$	MCR18EZPJ103	Rohm
R2	10k $\Omega$	MCR18EZPJ103	Rohm
R3	3.9M $\Omega$	KTR18EZPJ395	Rohm
R4	0 $\Omega$	MCR18EZPJ000	Rohm
R5	39k $\Omega$	MCR10EZPJ393	Rohm
R6	47k $\Omega$ /2W	ERG2SJ473E	Panasonic
R7	10 $\Omega$	MCR18EZPJ100	Rohm
R8	150 $\Omega$	MCR10EZPJ151	Rohm
R9	100k $\Omega$	MCR10EZPJ104	Rohm
R10	0.15 $\Omega$	LTR100JZPFLR150	Rohm

Item	Spec	Parts name	Maker
R11	1k $\Omega$	MCR10EZPJ102	Rohm
R12	10 $\Omega$	MCR18EZPJ100	Rohm
R14	0 $\Omega$	MCR18EZPJ000	Rohm
R15	2k $\Omega$	MCR10EZPJ202	Rohm
R16	1k $\Omega$	MCR10EZPJ102	Rohm
R17	120k $\Omega$	MCR10EZPF1203	Rohm
R18	9.1k $\Omega$	MCR10EZPF9101	Rohm
R19	15k $\Omega$	MCR10EZPF1502	Rohm
R20	12k $\Omega$	MCR10EZPJ123	Rohm
R30	0 $\Omega$	MCR03EZPJ000	Rohm
T1	EER28	YPP1178	Alpha Trans
U2		TL431	TI
PC1	5kV	LTV-817-B	LiteOn

# Trans Specification YPP1178 (EER28)



Core: JFE MB3 EER-28.5A or compatible

Bobbin: JFE BER28.5SP12 Vertical/Terminal Pins 6-6(12pins) or compatible

AL-Value: 137.5 nH/N<sup>2</sup>

Inductance(1-3pin): 0.220 mH±15%

Coil	Terminal	Turns	Wire	Winding Method
NP1	'1-2	20	2UEW 0.45	1 Layer FIT
NS1	'8-12	16	2UEW 0.5	1 Layer FIT
ND	'5-4	10	2UEW 0.45	1 Layer SPACE
NS2	'9-11	16	2UEW 0.5	1 Layer FIT
NP2	'2-3	20	2UEW 0.45	1 Layer FIT

Rated Voltage: 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

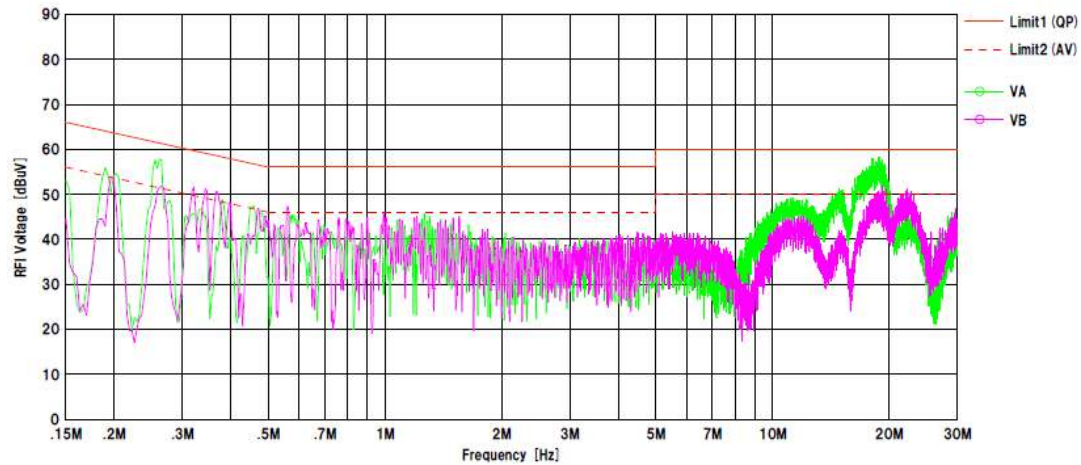
Winding end : Interpose the line drawn in a right angle

Winding direction : Unification

Vin(V)	Pin(W)	Vout(V)	Iout(A)	Pout(W)	$\eta$ (%)
90	0.054	23.88	0	0	–
	0.434	23.88	0.01	0.239	55.0
	13.70	23.87	0.5	11.93	87.1
	27.69	23.86	1	23.86	86.2
	42.11	23.86	1.5	35.79	85.0
	56.92	23.86	2	47.72	83.8
100	0.055	23.88	0	0	–
	0.433	23.88	0.01	0.239	55.1
	13.52	23.89	0.5	11.94	88.4
	27.51	23.86	1	23.86	86.7
	41.70	23.86	1.5	35.79	85.8
	56.22	23.86	2	47.72	84.9
230	0.081	23.88	0	0	–
	0.457	23.88	0.01	0.239	52.3
	13.61	23.86	0.5	11.93	87.7
	26.94	23.85	1	23.85	88.5
	40.45	23.84	1.5	35.76	88.4
	54.10	23.84	2	47.68	88.1
264	0.094	23.88	0	0	–
	0.469	23.88	0.01	0.239	50.9
	13.48	23.86	0.5	11.93	88.5
	26.80	23.84	1	23.84	89.0
	40.31	23.84	1.5	35.76	88.7
	53.96	23.83	2	47.67	88.3

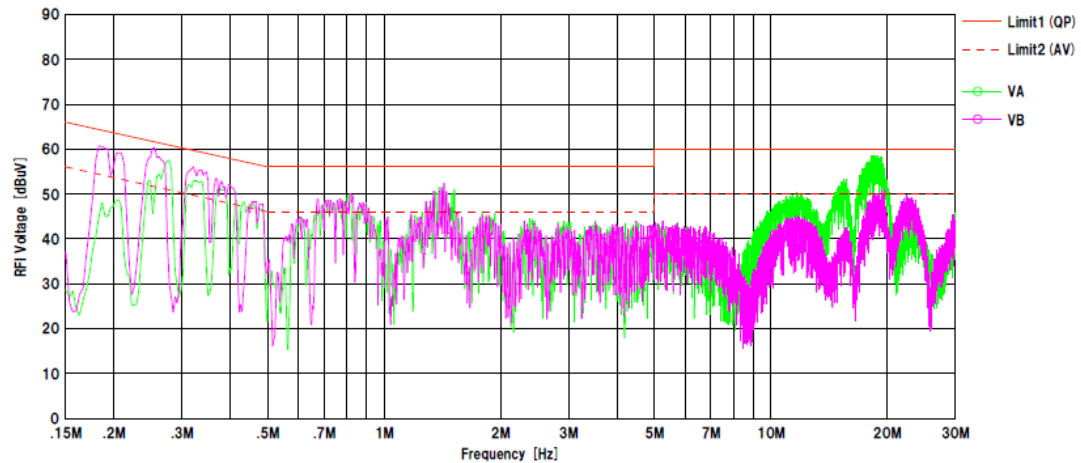
Vin: AC100V/50Hz  
Vout: 24V 2A

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



Vin: AC230V/50Hz  
Vout: 24V 2A

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



62UG056E Rev.002  
Dec. 2019

### Notes

- 1) The information contained herein is subject to change without notice.
- 2) Before you use our Products, please contact our sales representative and verify the latest specifications :
- 3) Although ROHM is continuously working to improve product reliability and quality, semiconductors can break down and malfunction due to various factors. Therefore, in order to prevent personal injury or fire arising from failure, please take safety measures such as complying with the derating characteristics, implementing redundant and fire prevention designs, and utilizing backups and fail-safe procedures. ROHM shall have no responsibility for any damages arising out of the use of our Products beyond the rating specified by ROHM.
- 4) Examples of application circuits, circuit constants and any other information contained herein are provided only to illustrate the standard usage and operations of the Products. The peripheral conditions must be taken into account when designing circuits for mass production.
- 5) The technical information specified herein is intended only to show the typical functions of and examples of application circuits for the Products. ROHM does not grant you, explicitly or implicitly, any license to use or exercise intellectual property or other rights held by ROHM or any other parties. ROHM shall have no responsibility whatsoever for any dispute arising out of the use of such technical information.
- 6) The Products specified in this document are not designed to be radiation tolerant.
- 7) For use of our Products in applications requiring a high degree of reliability (as exemplified below), please contact and consult with a ROHM representative : transportation equipment (i.e. cars, ships, trains), primary communication equipment, traffic lights, fire/crime prevention, safety equipment, medical systems, servers, solar cells, and power transmission systems.
- 8) Do not use our Products in applications requiring extremely high reliability, such as aerospace equipment, nuclear power control systems, and submarine repeaters.
- 9) ROHM shall have no responsibility for any damages or injury arising from non-compliance with the recommended usage conditions and specifications contained herein.
- 10) ROHM has used reasonable care to ensure the accuracy of the information contained in this document. However, ROHM does not warrants that such information is error-free, and ROHM shall have no responsibility for any damages arising from any inaccuracy or misprint of such information.
- 11) Please use the Products in accordance with any applicable environmental laws and regulations, such as the RoHS Directive. For more details, including RoHS compatibility, please contact a ROHM sales office. ROHM shall have no responsibility for any damages or losses resulting non-compliance with any applicable laws or regulations.
- 12) When providing our Products and technologies contained in this document to other countries, you must abide by the procedures and provisions stipulated in all applicable export laws and regulations, including without limitation the US Export Administration Regulations and the Foreign Exchange and Foreign Trade Act.
- 13) This document, in part or in whole, may not be reprinted or reproduced without prior consent of ROHM.



Thank you for your accessing to ROHM product informations.  
More detail product informations and catalogs are available, please contact us.

ROHM Customer Support System

<http://www.rohm.com/contact/>