

Product Feature

1. Package Type: 1"X 1"
2. Operating temperature range: -40°C - +105°C
3. Isolation voltage: 1500VDC
4. High efficiency up to 91%
5. The mechanism has input undervoltage protection, output short circuit protection and over current protection
6. 4:1 Ultra-wide input voltage range
7. Fields of application: Power, industrial control, communications, Internet of Things, automotive, etc



3 years
Warranty

Selection Guide

Part No.	Input Voltage (VDC)		Output		Full Load Efficiency% (Typ.)	Capacitive Load(μF) Max.
	Nominal (Range)	Maximum	Voltage (VDC)	Current (mA)		
ATB2403YMD-15WR3	24 (9-36)	40	3.3	4000/0	88	4700
ATB2405YMD-15WR3			5	3000/0	90	4700
ATB2412YMD-15WR3			12	1250/0	90	1000
ATB2415YMD-15WR3			15	1000/0	91	820
ATB2418YMD-15WR3			18	833/0	90	470
ATB2424YMD-15WR3			24	625/0	91	270
ATA2405YMD-15WR3			±5	±1500/0	87	#1500
ATA2410YMD-15WR3			±10	±750/0	87	#1000
ATA2412YMD-15WR3			±12	±625/0	90	#470
ATA2415YMD-15WR3			±15	±500/0	90	#330
ATA2424YMD-15WR3			±24	±312/0	89	#200
ATB4803YMD-15WR3	48 (18-75)	80	3.3	4000/0	86/88	4700
ATB4805YMD-15WR3			5	3000/0	88/90	4700
ATB4812YMD-15WR3			12	1250/0	89/91	1000
ATB4815YMD-15WR3			15	1000/0	89/91	820
ATB4824YMD-15WR3			24	625/0	89/91	270
ATA4805YMD-15WR3			±5	±1500/0	84/86	#1500
ATA4812YMD-15WR3			±12	±625/0	87/89	#470
ATA4815YMD-15WR3			±15	±500/0	87/89	#330
ATA4824YMD-15WR3			±24	±312/0	88/90	#200

#each output

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Current(full load/no-load)	24VDC nominal input series	3.3VDC	--	625/30	640/50	mA
		5VDC	--	694/30	710/50	
		12VDC	--	694/6	710/15	
		15VDC	--	687/6	703/15	
		24VDC	--	687/10	703/20	
	48VDC nominal input series	3.3VDC	--	313/15	320/30	
		5VDC	--	348/15	356/30	
		12VDC	--	344/3	352/11	
		15VDC	--	344/3	352/11	
		24VDC	--	344/4	352/11	
Reflected Ripple Current	nominal input series		--	30	--	
Impulse Voltage	24VDC nominal input series		-0.7	--	50	VDC
	48VDC nominal input series		-0.7	--	100	
Starting Voltage	24VDC nominal input series		--	--	9	
	48VDC nominal input series		--	--	18	
Input undervoltage protection	24VDC nominal input series		5.5	6.5	--	
	48VDC nominal input series		12.0	15.5	--	
Ctrl	turn off module		connected GND or (0-1.2V)			
	turn on module		No connected or (3.5-12V)			
	Input current when off		--	2	7	mA
Input Filter			PI filter			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	0%-100% load	--	±1.0	±3.0	%
Linear Regulation	Vin=Min. to Max. @Full Load	--	±0.2	±0.5	
Load Regulation	5%-100% load	--	±0.5	±1.0	
Ripple & Noise	20MHz bandwidth,100% load	--	50	100	mVp-p
Transient Recovery Time	25% Load Step Change,nominal input voltage	--	300	500	μs
Transient Response		--	±3	±8	%
Temperature Coefficient	Full Load	--	±0.01	±0.02	%/°C
Trim	input voltage range	90	--	110	%
Over Voltage Protection		110	--	160	%
Over Current Protection		110	150	190	%
Short-Circuit Protection		Continuous, Self-Recovery			

General Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Isolation Voltage	Input-output, test time 1 minute, leakage current less than 1mA		1500	--	--	VDC
Insulation Resistance	Input-output, insulated voltage 500VDC		1000	--	--	MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V		--	2000	--	pF
Operating Temperature	See Fig 1	3.3V、5VDC	-40	--	+95	°C
		Others	-40	--	+105	
Storage Temperature			-50	--	+125	
Storage Humidity	Non-condensing		--	--	95	%RH
Soldering Profile	1.5mm from case for 10 sec		--	--	300	°C
Switching Frequency	Full load, nominal input voltage		--	300	--	kHz
MTBF	MIL-HDBK-217F@25°C		1000			K Hours

Mechanical Specifications

Case Material	Aluminum alloy
Package Dimensions	25.4mm * 25.40mm * 11.70 mm
Weight	15.65g(Typ.)
Cooling Method	Free air convection

EMC Specifications

EMI	CE	CISPR32/EN55032 CLASS A (without external components)/CLASS B (see Fig.3-② for recommended circuit)			
	RE	CISPR32/EN55032 CLASS A (without external components)/CLASS B (see Fig.3-② for recommended circuit)			
EMS	ESD	IEC/EN61000-4-2	Contact±6KV/Air ±8KV		perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m		perf. Criteria A
	EFT	IEC/EN61000-4-4	±2KV(see Fig.3-① for recommended circuit)		perf. Criteria B
	Surge	IEC/EN61000-4-5	line to line±2KV(see Fig.3-① for recommended circuit)		perf. Criteria B
	CS	IEC/EN61000-4-6	3 Vr.m.s		perf. Criteria A

Typical Characteristic Curves

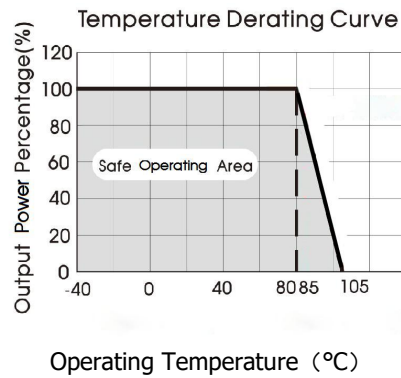
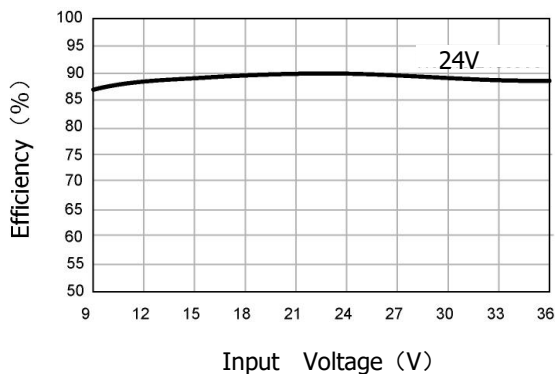
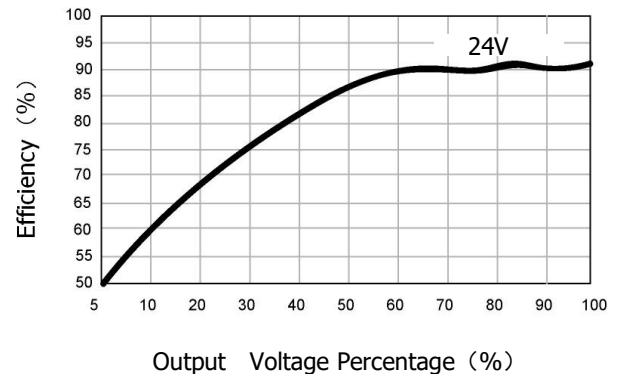


Fig 1

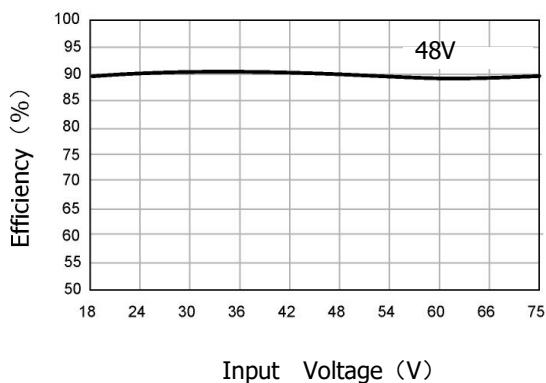
Efficiency Vs Input Voltage (Full Load)



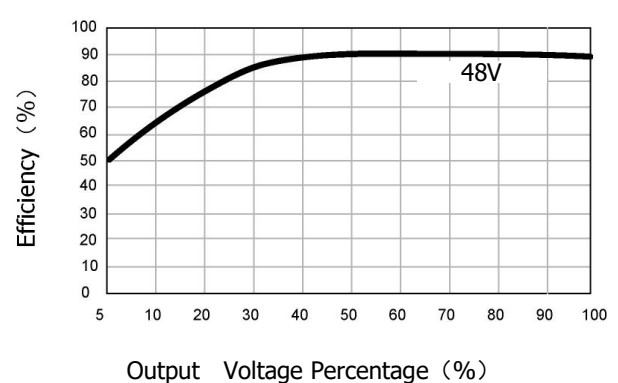
Efficiency Vs Output Voltage (Vin=24V)



Efficiency Vs Input Voltage (Full Load)



Efficiency Vs Output Voltage (Vin=48V)



Typical Circuit Design And Application

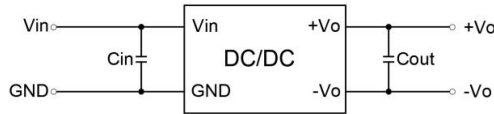


Fig 2

recommended component parameters

Vout(VDC)	Cin(uF)	Cout(uF)
3.3/5/12/15	100uF	100uF
24		47uF

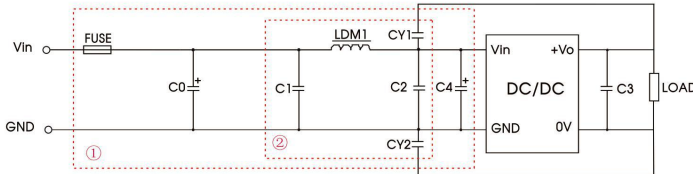
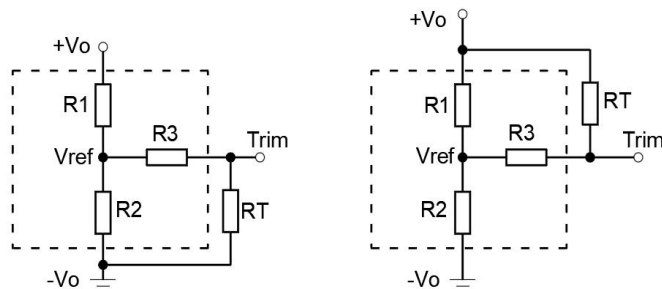


Fig 3

EMI recommended component parameters

Model	Vin:24V	Vin:48V
FUSE	Choose according to actual input current	
C0、C4	330μF/50V	330μF/100V
C1、C2	4.7μF/50V	4.7μF/100V
C3	Refer to the Cout in Fig.2	
LDM1	2.2uH/4A	2.2uH/2A
CY1、CY2	1nF/2KV	



Trim up

Trim down

Trim resistor connections (dashed line shows internal resistor network)

Trim

Vout(V)	R1(KΩ)	R2(KΩ)	R3(KΩ)	Vref(V)
3.3	10	6.064	13.622	1.24
5	2.4	2.344	13.622	2.5
12	8.2	2.153	17.346	2.5
15	12	2.388	21.016	2.5
24	10	1.158	10.714	2.5

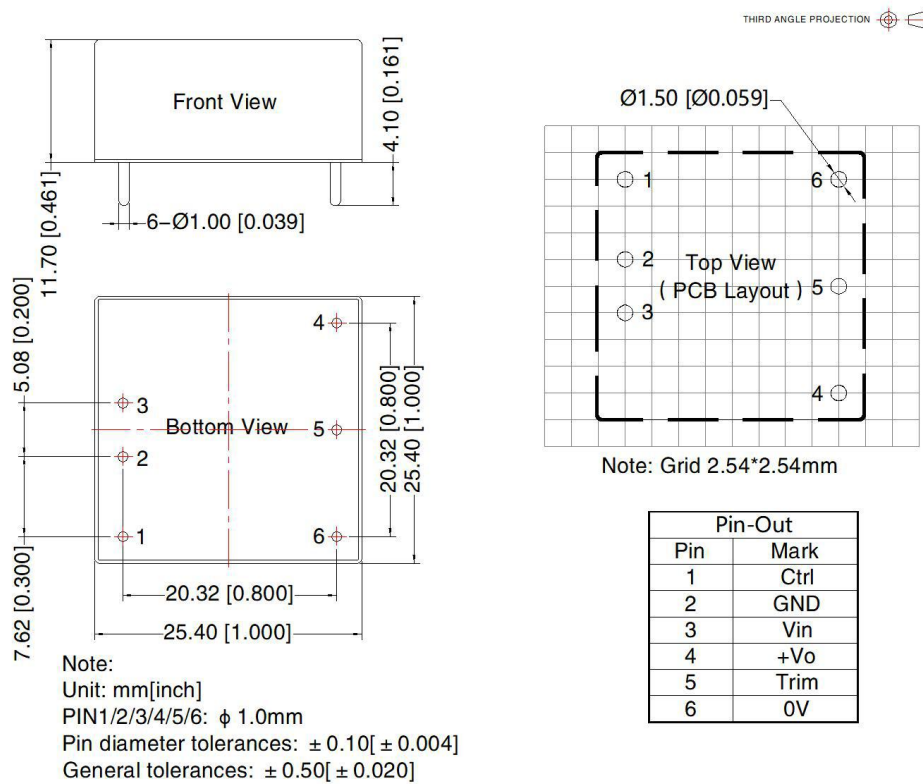
$$\text{Up: } R_t = \frac{nR_2}{R_2 - n} - R_3 \quad n = \frac{V_{ref}}{V_o - V_{ref}} * R_1$$

$$\text{Down: } R_t = \frac{nR_1}{R_1 - n} - R_3 \quad n = \frac{V_o - V_{ref}}{V_{ref}} * R_2$$

All DC-DC converters of this series are tested before delivery using the recommended circuit shown in Fig. 2. Input and/or output ripple can be further reduced by appropriately increasing the input & output capacitor values Cin and Cout and/or by selecting capacitors with a low ESR (equivalent series resistance). Also make sure that the capacitance is not exceeding the specified max. capacitive load value of the product.

Dimensions and Recommended Layout

Horizontal Package Dimensions



Note:

1. If the product works under the minimum required load, it cannot guarantee that the performance of the product complies with all the performance indicators in this manual;
2. The maximum capacitive load is tested under the input voltage range and full load condition;
3. Unless otherwise stated, all indexes in this manual are measured at $T_a=25^{\circ}\text{C}$, humidity $<75\%\text{RH}$, nominal input voltage and rated output load;
4. All index testing methods in this manual are based on the enterprise standards of the company;
5. Our company can provide product customization, specific needs can directly contact our technical staff;

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