Product Feature

1. Package Type：1"X 1"

2. Operating temperature range: -40℃ - +105℃

3. Isolation voltage：1500VDC

4. High efficiency up to 90%

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

RoHS   CE   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-30WR3	24 (9-36)	40	3.3	6000/0	84	8000
ATB2405YMD-30WR3			5	6000/0	88	6000
ATB2412YMD-30WR3			12	2500/0	89	5000
ATB2415YMD-30WR3			15	2000/0	89	3000
ATB2424YMD-30WR3			24	1250/0	90	1000
ATB4803YMD-30WR3	48 (18-75)	80	3.3	6000/0	83	8000
ATB4805YMD-30WR3			5	6000/0	87	6000
ATB4812YMD-30WR3			12	2500/0	88	5000
ATB4815YMD-30WR3			15	2000/0	88	3000
ATB4824YMD-30WR3			24	1250/0	89	1000

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Current(full load/no-load)	24VDCnominal input series	3.3VDC	--	1545/6	1580/50	mA
		5VDC output	--	1454/6	1488/50	
		Other	--	1388/6	1458/16	
	48VDCnominal input series		--	710/8	735/15	
Reflected Ripple Current	nominal input		--	60	--	
Impulse Voltage	24VDCnominal input series		-0.7	--	50	VDC
	48VDCnominal input series		-0.7	--	100	
Starting Voltage	24VDCnominal input series		--	--	9	
	48VDCnominal input series		--	--	18	
Input undervoltage protection	24VDCnominal input series		5.5	7.5	--	
	48VDCnominal 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		--	5	8	mA
Input Filter			PI filter			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	5%-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,5%-100% load	--	100	200	mVp-p
Transient Recovery Time	25% Load Step Change, nominal input	--	250	500	µs
Transient Response Deviation	voltage	--	±3	±8	%
Temperature Coefficient	Full Load	--	±0.01	±0.02	%/°C
Trim		--	±10.0	--	%
Over Voltage Protection	input voltage range	110	140	--	%
Over Current Protection		110	140	--	%
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,Fig 2	-40	--	+105	°C
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	--	330	--	kHz
MTBF	MIL-HDBK-217F@25°C	1000	--	--	K Hours

Mechanical Specifications

Case Material	Aluminum alloy
Package Dimensions	25.4mm * 25.40mm * 12.00 mm
Weight	21.00g(Typ.)
Cooling Method	Free air convection

EMC Specifications

EMI	CE	EN55032, FCC part 15	CLASS B
	RE		
EMS	ESD	EN61000-4-2 Air ± 8kV , Contact ± 6kV	perf. Criteria B
	RS	EN61000-4-3 10V/m	perf. Criteria A
	EFT	EN61000-4-4 ±2kV	perf. Criteria B
	Surge	EN61000-4-5 ±1kV	perf. Criteria B
	CS	EN61000-4-6 3Vrms	perf. Criteria A

Typical Characteristic Curves

Temperature Derating（ATB2403/05YMD-30WR3）
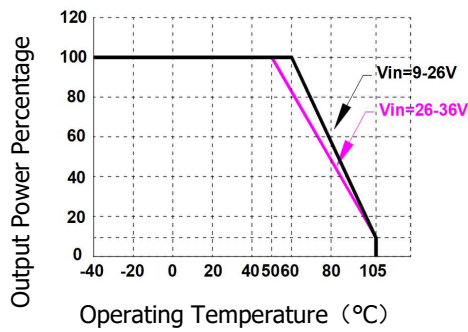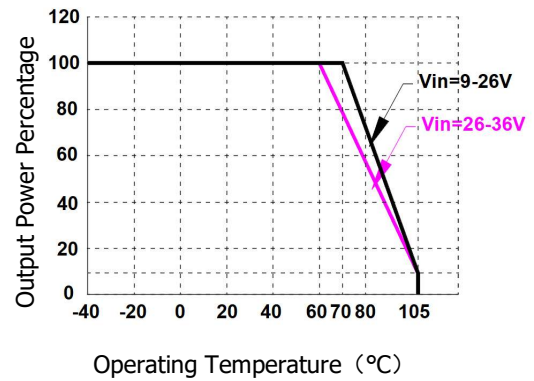

Fig 1-1

Temperature Derating（ATB2412/15YMD-30WR3）
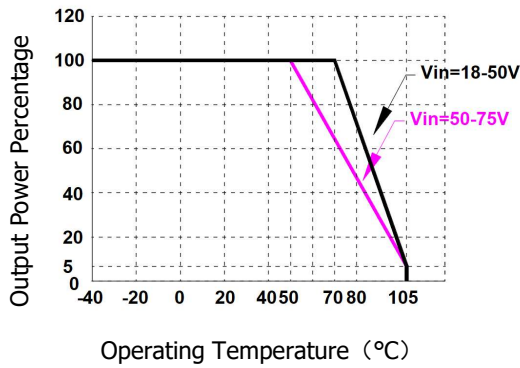

Fig 1-2

Temperature Derating（ATB4803/05YMD-30WR3）
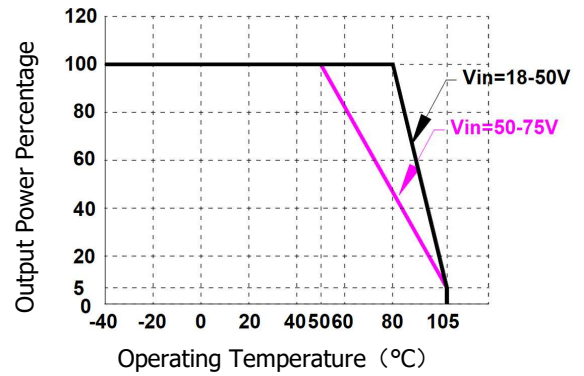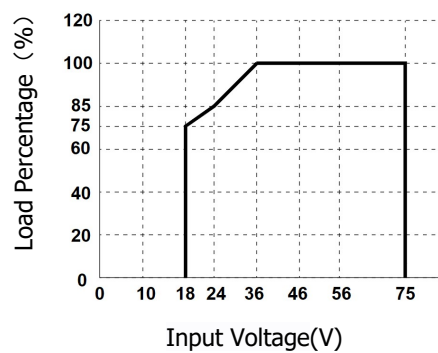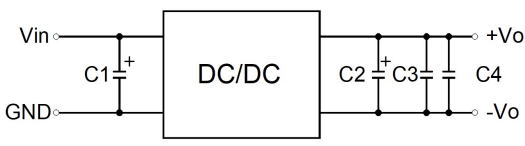

Fig 2-1

Temperature Derating（ATB4812/15YMD-30WR3）

Fig 2-2

Load VS Vin（24V）
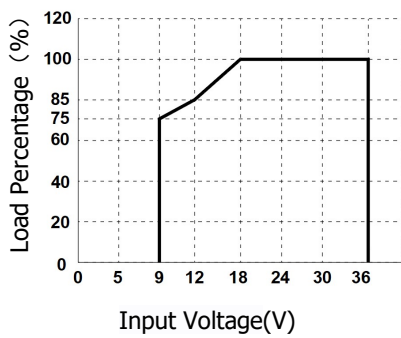
Load VS Vin（48V）

Typical Circuit Design And Application

Fig 3

Recommended component parameters				
Vin(VDC)	C1(uF)	C2(uF)	C3(uF)	C4(uF)
24	100	470	10	0.1
48			22	10

Fig 4

Vin (VDC)	FUSE	CEC1 (uF)	EC2 (uF)	C1,C2,C3, C4,C5,C6,	LCM 1	LDM1 (uH)	C8,C9 (uF)	CY2	CY1,C Y3	EC3 (uF)	C10 (uF)	C11 C12
				EMI recommended component parameters								
24V	Choose according to	1000	220	4.7	0.32	2.2	-	222	2200	470	10	1uF
48V	actual input current	680	100	4.7	10	6.8	4.7	102	2200	470	22	10uF

Trim up   Trim down

Trim resistor connections (dashed line shows internal resistor network)

Fig5

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

$$Up: \quad Rt = \frac{nR2}{R2-n} - R3 \qquad n = \frac{Vref}{Vo-Vref} * R1$$

$$Down: Rt = \frac{nR1}{R1-n} - R3 \quad n = \frac{Vo-Vref}{Vref} * R2$$
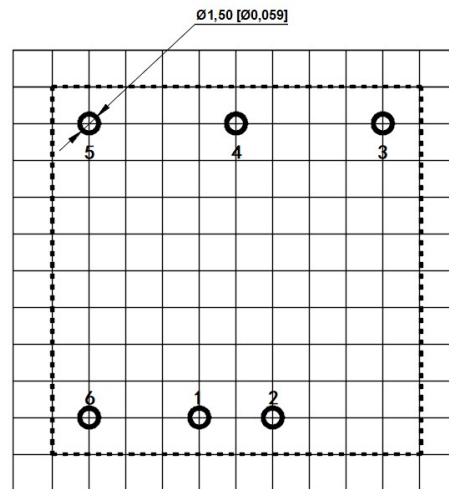
All DC-DC converters of this series are tested before delivery using the recommended circuit shown in Fig. 2. Input and/or output ripple can be further reduced by appropriately increasing the input & output capacitor values Cin and Cout and/or by selecting capacitors with a low ESR (equivalent series resistance). Also make sure that the capacitance is not exceeding the specified max. capacitive load value of the product.

Dimensions and Recommended Layout
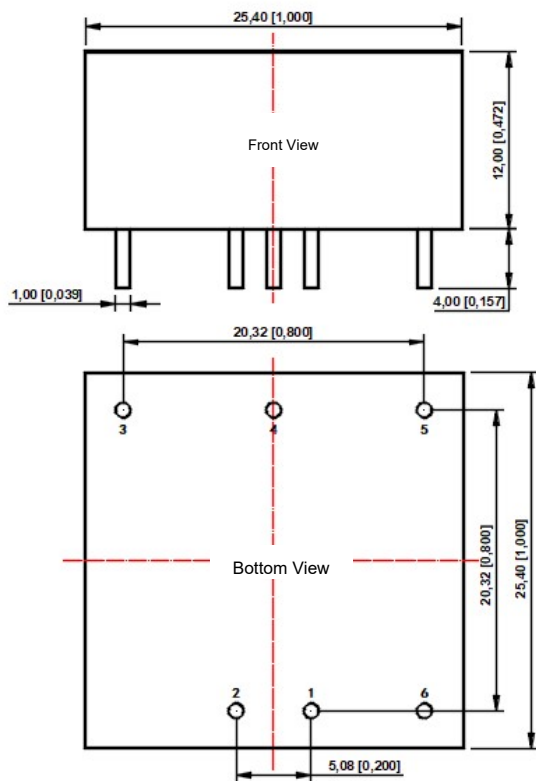
Dimensions	PCB Printing Layout & Pin Definition Table

Front View

25,40 [1,000]
12,00 [0,472]
1,00 [0,039]
4,00 [0,157]

Bottom View

20,32 [0,800]
20,32 [0,800]
25,40 [1,000]
5,08 [0,200]

Ø1,50 [Ø0,059]

Note：The grid distance is 2.54*2.54mm

Pin	Function
1	GND
2	Vin
3	+Vo
4	Trim
5	-Vo
6	Ctrl

Note:
Unit: mm[inch]
Pin section tolerances:±0.10[±0.004]
General tolerances:±0.50[±0.020]

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 Ta=25℃, humidity <75%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;