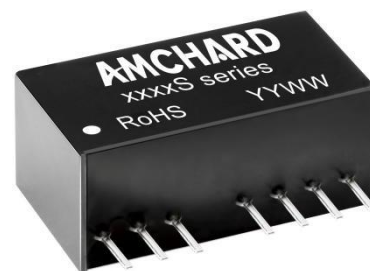


Product Feature

1. Universal Input: 4:1
2. Package Type: SIP8
3. Operating temperature range: -40°C - +85°C
4. Isolation voltage: 1500VDC
5. High efficiency up to: 81% (Type)
6. Input undervoltage protection, output short-circuit protection, overcurrent protection



3 years
Warranty

Selection Guide

Part No.	Input Voltage (VDC)		Output		Full Load Efficiency % (Typ.)	Capacitive Load Max. (μF)
	Nominal (Range)	Max.	Voltage (VDC)	Current (mA) Max.		
ATB1203S-3WR3	12 (4.5-18)	20	3.3	700	74	1760
ATB1205S-3WR3	12 (4.5-18)	20	5	600	78	1000
ATB1212S-3WR3	12 (4.5-18)	20	12	250	80	170
ATB1215S-3WR3	12 (4.5-18)	20	15	200	80	110
ATB1224S-3WR3	12 (4.5-18)	20	24	125	81	68
ATA1205S-3WR3	12 (4.5-18)	20	±5	±300	80	#470
ATA1212S-3WR3	12 (4.5-18)	20	±12	±125	80	#100
ATA1215S-3WR3	12 (4.5-18)	20	±15	±100	80	#47
ATB2403S-3WR3	24 (9-36)	40	3.3	700	75	1760
ATB2405S-3WR3	24 (9-36)	40	5	600	80	1000
ATB2409S-3WR3	24 (9-36)	40	9	333	81	1000
ATB2412S-3WR3	24 (9-36)	40	12	250	81	170
ATB2415S-3WR3	24 (9-36)	40	15	200	81	110
ATB2424S-3WR3	24 (9-36)	40	24	125	81	330
ATA2405S-3WR3	24 (9-36)	40	±5	±300	79	#470
ATA2412S-3WR3	24 (9-36)	40	±12	±125	80	#100
ATA2415S-3WR3	24 (9-36)	40	±15	±100	81	#47
ATB4803S-3WR3	48 (18-75)	80	3.3	700	74	1760
ATB4805S-3WR3	48 (18-75)	80	5	600	79	1000
ATB4812S-3WR3	48 (18-75)	80	12	250	79	170
ATB4815S-3WR3	48 (18-75)	80	15	200	79	110
ATB4824S-3WR3	48 (18-75)	80	24	125	80	68
ATA4805S-3WR3	48 (18-75)	80	±5	±300	79	#470
ATA4812S-3WR3	48 (18-75)	80	±12	±125	79	#100
ATA4815S-3WR3	48 (18-75)	80	±15	±100	80	#47

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load/no load)	12VDC Input	--	306/60	--	mA
	24VDC Input	--	140/25	--	
	48VDC Input	--	82/15	--	
Reflected Ripple Current		--	15	--	mA
Impulse Voltage	12VDC Input	-0.7	--	25	VDC
	24VDC Input	-0.7	--	50	
	48VDC Input	-0.7	--	100	
Starting Voltage	12VDC Input	--	--	4.5	VDC
	24VDC Input	--	--	9	
	48VDC Input	--	--	18	
Undervoltage Protection	12VDC Input	4	4.5	--	VDC
	24VDC Input	5.5	6.5	--	
	48VDC Input	12	15.5	--	
CTRL	turn off module	0-0.7V turn off			
	turn on module	No connect or 3.5-12V on			
Input Filter		Capacitance Filter			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	5% - 100% Load	--	±2.0	--	%
Linear Regulation	Full load, Input voltage from low limit to high limit	--	±0.3	±0.5	%
Load Regulation	10% - 100% Load	--	±0.5	±1.0	%
Ripple & Noise	20MHZ Bandwidth	--	50	150	mV
Transient Recovery Time	25% load step change	--	0.3	3	ms
Transient Response Deviation		--	±3	±5	%
Temperature Coefficient	Full Load	--	±0.02	±0.03	%/°C
Over Current Protection		110	140	--	%
Short-circuit Protection		Continuous, Self-Recovery			

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Insulation Voltage	Input-output, test time 1 minute, leakage current less than 1mA	1500	--	--	VDC
Insulation Resistance	Input-output, insulated voltage 500VDC	100	--	--	MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V	--	1000	--	pF
Operating Temperature	Derating when operating temperature ≥ 85°C (See Figure 1)	-40	--	85	°C
Storage Temperature		-55	--	105	°C
Storage Humidity	Non-condensing	--	--	95	%RH
Pin welding can withstand the highest temperature	Soldering spot is 1.5mm away from case for 10 seconds	--	--	300	°C
Switching Frequency	Full Load, Nominal Input Voltage	--	330	--	KHz
MTBF	MIL-HDBK-217F@25°C	>3500Kh			

Mechanical Specification

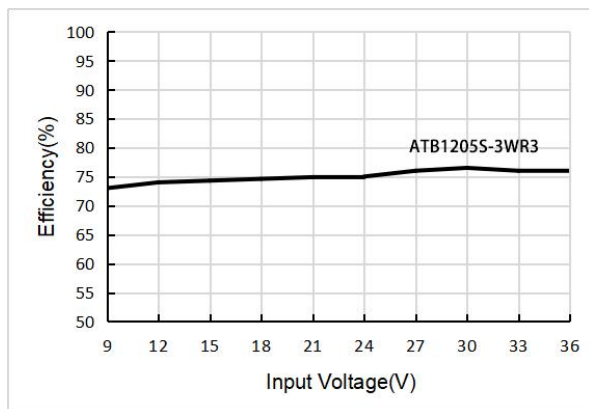
Case Material	Black plastic; flame-retardant and heat-resistant (UL 94V-0 rated)
Package Dimensions	22.00 x 9.50 x 12.00mm
Weight	4.8g (Typ.)
Cooling Method	Free air convection

EMC Specifications

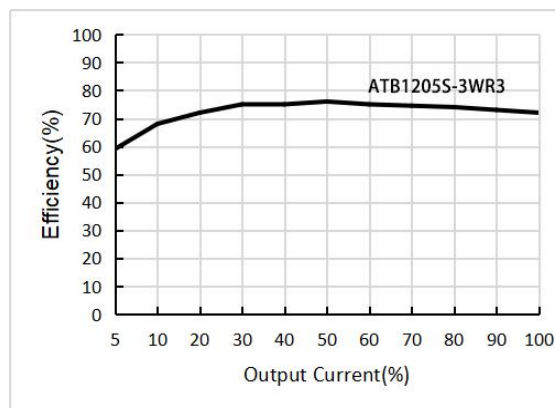
EMI	CE	CISPR32/EN55032 CLASS B (Application circuit 3)			
	RE	CISPR32/EN55032 CLASS B (Application circuit 3)			
EMS	ESD	IEC/EN61000-4-2	Contact ±6KV, Air ±8kV	perf. Criteria B	

Typical Characteristic Curves

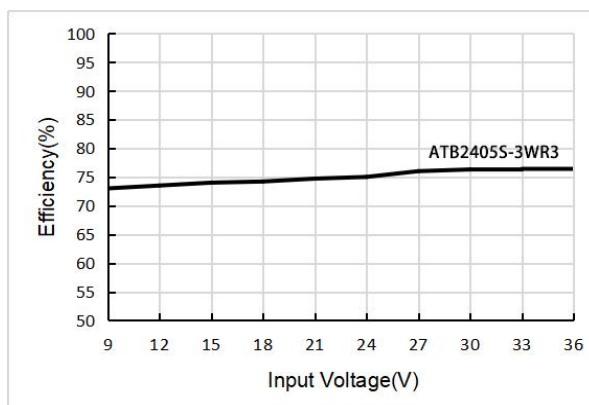
Efficiency VS Input Voltage (full load)



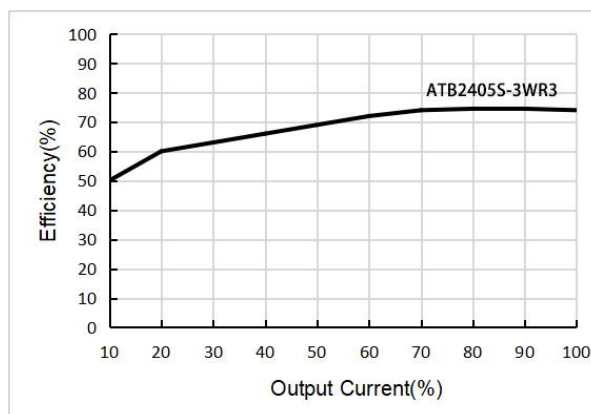
Efficiency VS Output Load (Vin=12V)



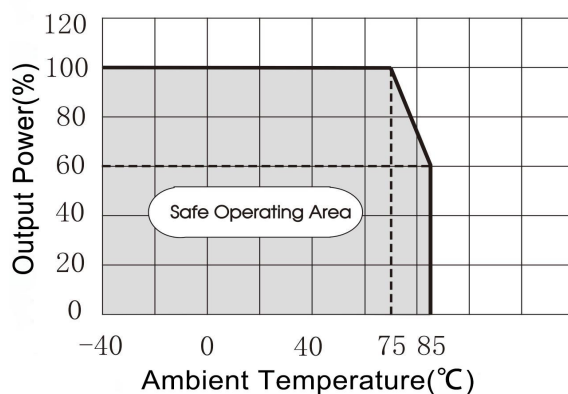
Efficiency VS Input Voltage (full load)



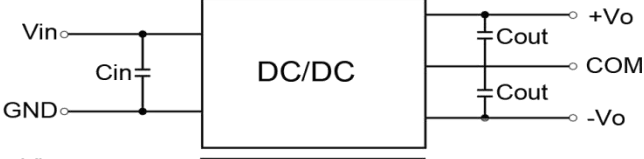
Efficiency VS Input Voltage (Vin=24V)



Temperature Derating Curve (Figure 1)



Typical Circuit Design and Application

Application circuit (Figure 2)		Recommended Capacitive Load Value Table			
Dual		Vin	12V	24V	48V
		Cin	330uF	220uF	10-47uF
Single		Cout	10uF	10uF	10uF

EMC Solutions - Recommended Circuits

EMC Recommended Circuit (Figure 3)

Note: Part 1 in Figure 3 is for EMC testing; The second part is used for EMI filtering, which can be selected according to the demand.

EMI Recommended Parameter Table

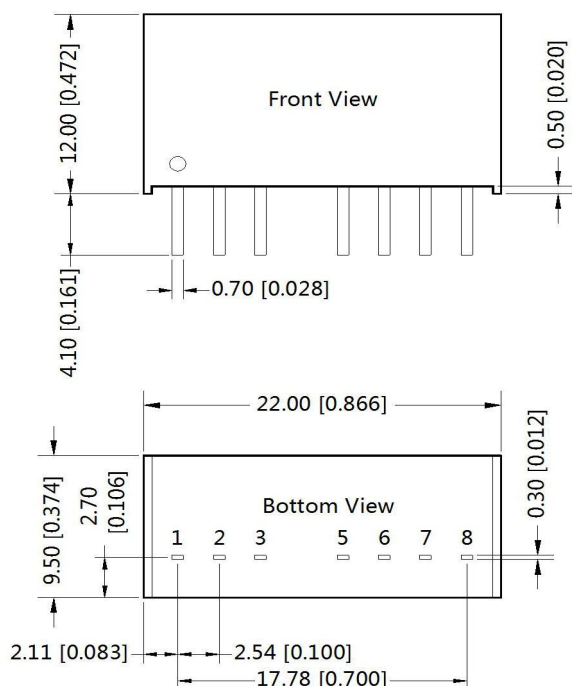
Mode	Vin:12V	Vin:24V	Vin:48V
FUSE	Select according to the actual input current of the customer		
C0、C4	470uF/25V	330uF/50V	100uF/100V
C1、C2	10μF/50V		
LCM	1.4-1.7mH		
C3	22μF/50V		
CY1、CY2	1nF/400VAC		

Application circuit description:

1. All DC/DC converters in this series are tested according to the recommended testing circuit (Figure 2) before leaving the factory.
2. If further reduction of input and output ripple is required, the input and output external capacitors C0, C1, C2, C3, C4 can be increased or a capacitor with a small series equivalent impedance value can be selected.

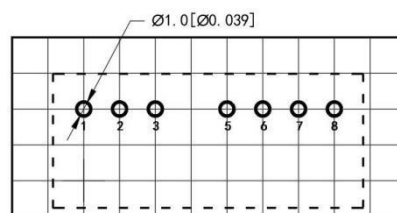
Dimensions and Recommended Layout

Dimensions



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

PCB Printing Layout



The grid distance is 2.54mm x2.54mm

Pin Definition Table

Pin	Single	Dual
1	GND	GND
2	Vin	Vin
3	CTRL	CTRL
5	NC	NC
6	+Vo	+Vo
7	-Vo	COM
8	NC	-Vo

NC: Pin to be isolated from circuitry

Note:

1. The input voltage should not exceed the specified range value, otherwise it may cause permanent and irreparable damage;
2. It is recommended to use at a load of over 5%. If the load is below 5%, the ripple index of the product may exceed the specifications, but it does not affect the reliability of the product;
3. Suggested dual output module load imbalance: $\leq \pm 5\%$. If it exceeds $\pm 5\%$, it cannot be guaranteed that the product performance meets all performance indicators in this manual;
4. The maximum capacitive load is tested within the input voltage range and under full load conditions;
5. Unless otherwise specified, all indicators in this manual are measured at $T_a=25^\circ\text{C}$, humidity $<75\%$ RH, nominal input voltage, and output rated load;
6. All indicator testing methods in this manual are based on our company's corporate standards;
7. Our company can provide product customization, and specific requirements can be directly contacted by our technical personnel;
8. Product specifications are subject to change without prior notice.