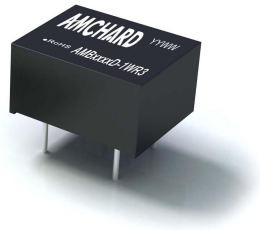
Product Feature



1. Continuous short-circuit protection
2. Operating ambient temperature range: -40 to +105
3. I/O isolation test voltage 1.5k VDC
4. High efficiency up to 85%
5. Industry standard pin-out
6. Single output
7. Package: SMD

RoHS CE 3 years Warranty

Selection Guide

Part No.	Input Voltage (VDC)	Output		Full Load Efficiency (%) Min./Typ.	Capacitive Load(μF) Max.
	Nominal (Range)	Voltage (VDC)	Current(mA) Max./Min.		
AMB0503D-1WR3	5 (4.5-5.5)	3.3	303/30	70/74	2400
AMB0505D-1WR3		5	200/20	78/82	2400
AMB0507D-1WR3		7.2	139/13	76/80	1000
AMB0509D-1WR3		9	111/12	79/83	1000
AMB0512D-1WR3		12	84/9	79/83	560
AMB0515D-1WR3		15	67/7	79/83	560
AMB0524D-1WR3		24	42/4	81/85	220

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load / no-load)	3.3VDC/5VDC output	--	270/5	286/--	mA
	7.2VDC/9VDC/12VDC output	--	241/12	254/--	
	15VDC/24VDC output	--	241/18	254/--	
Reflected Ripple Current*		--	15	--	
Surge Voltage (1sec. max.)	5VDC input	-0.7	--	9	VDC
Input Filter		Capacitance filter			
Hot Plug		Unavailable			
Note: * Please refer to DC-DC Converter Application Note for detailed description of reflected ripple current testing method.					

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Voltage Accuracy			See output regulation curve (Fig. 1)			
Linear Regulation	Input voltage change: ±1%	3.3VDC output	--	--	1.5	--
		other output	--	--	1.2	
Load Regulation	10%-100% load	3.3VDC output	--	15	20	%
		5VDC/7.2VDC output	--	10	15	
		9VDC output	--	8	10	
		12VDC output	--	7	10	
		15VDC output	--	6	10	
		24VDC output	--	5	10	
Ripple & Noise*	20MHz bandwidth	24VDC output	--	50	100	mVp-p
		other output	--	30	75	

Temperature Coefficient	100% load	--	±0.02	--	%/°C
Short-circuit Protection		Continuous, self-recovery			
Note: * The "parallel cable" method is used for Ripple and Noise test, please refer to DC-DC Converter Application Notes for specific information.					

General Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Isolation Voltage	Input-output Electric strength test for 1 minute with a leakage current of 1mA max.		1500	--	--	VDC
Insulation Resistance	Input-output resistance at 500VDC		1000	--	--	MΩ
Isolation Capacitance	Input-output capacitance at 100kHz/0.1V		--	20	--	pF
Operating Temperature	Derating when operating temperature≥ 85°C, (see Fig. 2)		-40	--	105	°C
Storage Temperature			-55	--	125	
Case Temperature Rise	Ta=25°C	3.3VDC output	--	25	--	
		other output	--	15	--	
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds		--	--	300	
Storage Humidity	Non-condensing		5	--	95	%RH
Vibration			10-150Hz, 5G, 0.75mm, along X, Y and Z			
Switching Frequency	100% load, nominal input voltage		--	300	--	kHz
MTBF	MIL-HDBK-217F@25°C		3500	--	--	k hours

Mechanical Specifications

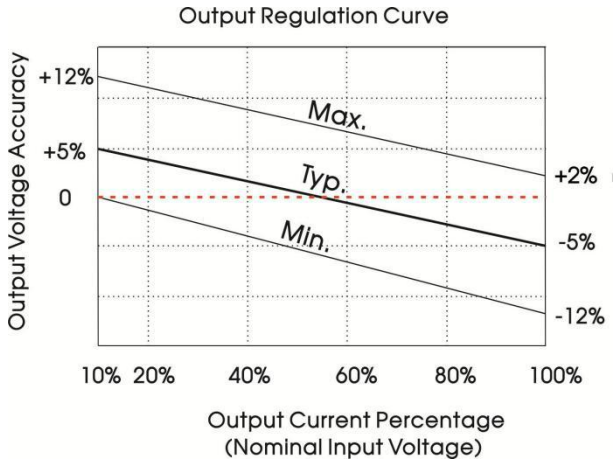
Case Material	Black plastic; flame-retardant and heat-resistant (UL94V-0)
Dimensions	12.70 x 10.10 x 7.00 mm
Weight	1.8g(Typ.)
Cooling Method	Free air convection

EMC Specifications

Emissions	CE	CISPR32/EN55032	CLASS B (see Fig. 4 for recommended circuit)	
	RE	CISPR32/EN55032	CLASS B (see Fig. 4 for recommended circuit)	
Immunity	ESD	IEC/EN61000-4-2	Air ±8kV , Contact ±6kV	perf. Criteria B

Typical Characteristic Curves

3.3 VDC output



other output

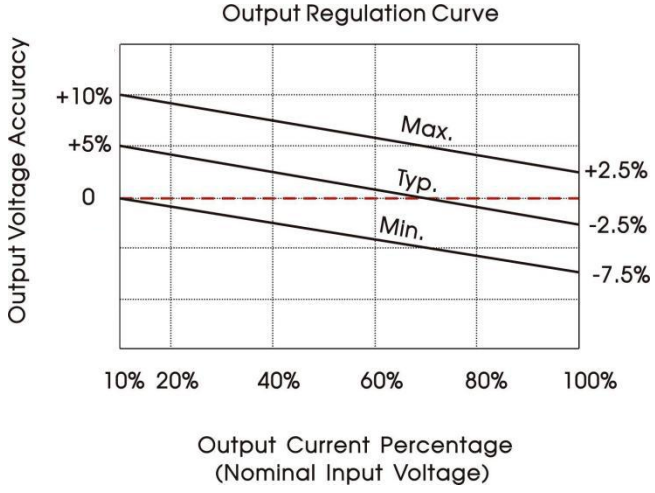


Fig. 1

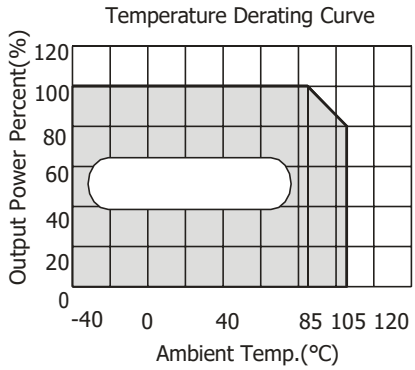
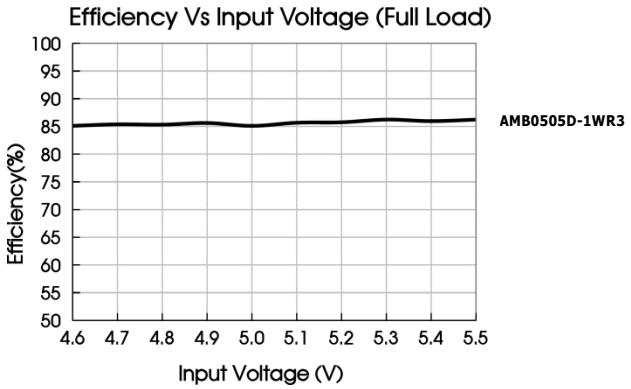
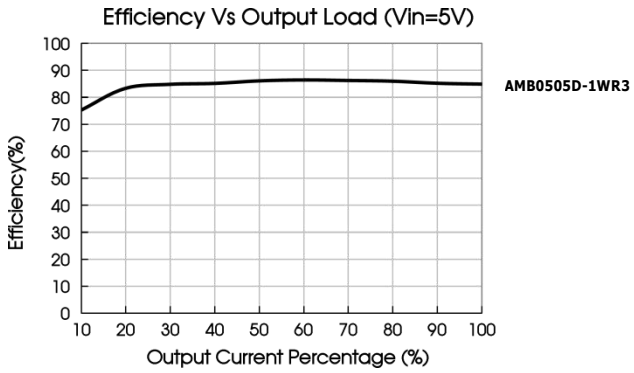


Fig. 2





Typical Circuit Design And Application

1. Typical application

Input and/or output ripple can be further reduced, by connecting a filter capacitor from the input and/or output terminals to ground as shown in Fig. 3.

Choosing suitable filter capacitor values is very important for a smooth operation of the modules, particularly to avoid start-up problems caused by capacitor values that are too high. For recommended input and output capacitor values refer to Table 1.

Fig. 3

Table 1: Recommended input and output capacitor values

Vin	Cin	Vo	Cout
5VDC	4.7μF/16V	3.3/5/7.2VDC	10μF/16V
		9/12VDC	2.2μF/25V
		15/24VDC	1μF/50V

2. EMC compliance circuit

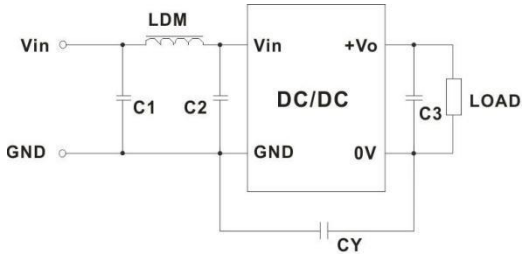


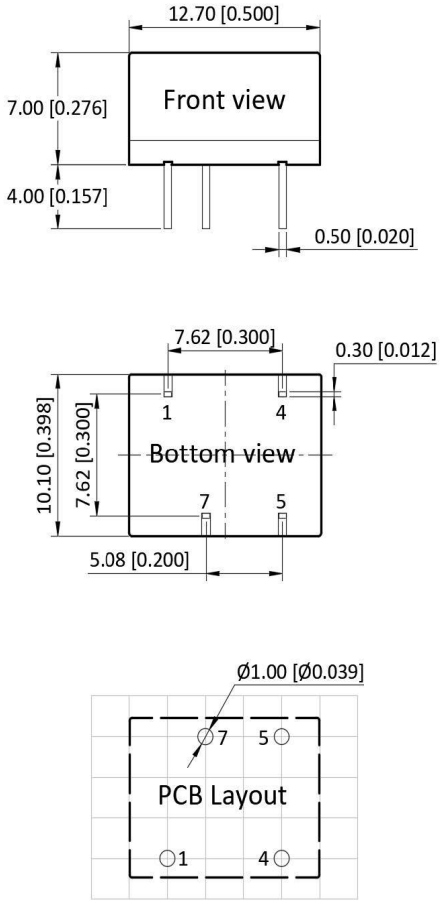
Fig. 4

Table 2: Recommended EMC filter values

Input voltage 5VDC	Output voltage		3.3/5/7.2/9VDC	12/15/24VDC
	Emissions	C1/C2	4.7μF /25V	4.7μF /25V
		CY	100pF /2kVDC	1nF /2kVDC
		C3	Refer to the Cout in table 1	
		LDM	6.8μH	6.8μH

Note: In the case of actual use, the requirements for emissions are high, it is subject to CY .

Dimensions and Recommended Layout



Pin Definition

Pin	Single Out
1	-VIN
4	+VIN
5	+VOUT
7	-VOUT

* Unless otherwise specified unit: mm [inch]

* General tolerance: ±0.50 [±0.020]

* Pin thickness: ±0.10 [±0.004]

* Footprint grid 2.54 x 2.54 mm

Notes:

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;