FEATURES

1. Continuous short-circuit protection
2. No-load input current as low as 8mA
3. Operating ambient temperature range: -40°C to +105°C
4. High efficiency up to 85%
5. Compact SMD package
6. I/O isolation test voltage: 1.5k VDC
7. Industry standard pin-out

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.		
B1203XT-W2R3	12 (10.8-13.2)	3.3	76/7	60/66	2400
B1203XT-1WR3		3.3	303/30	72/76	2400
B1205XT-1WR3		5	200/20	78/82	2400
B1209XT-1WR3		9	111/12	79/83	1000
B1212XT-1WR3		12	84/9	79/83	560
B1215XT-1WR3		15	67/7	79/83	560
B1224XT-1WR3		24	42/4	81/85	220
B1505XT-1WR3	15 (13.5-16.5)	5	200/20	78/82	2400
B1509XT-1WR3		9	111/12	78/82	1000
B1515XT-1WR3		15	67/7	79/83	560
B2403XT-1WR3	24 (21.6-26.4)	3.3	303/30	72/76	2400
B2405XT-1WR3		5	200/20	74/80	2400
B2409XT-1WR3		9	111/12	74/80	1000
B2412XT-1WR3		12	84/9	74/80	560
B2415XT-1WR3		15	67/7	74/80	560
B2424XT-1WR3		24	42/4	74/80	220

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Current (full load / no-load)	12VDC input	3.3V/5VDC output	–	102/8	107/–	mA
		9VDC/12VDC/15VDC output	–	101/8	106/–	
		24VDC output	–	99/8	103/–	
	15VDC input	5VDC/9VDC output	–	82/8	86/–	
		15VDC output	–	81/8	85/–	
	24VDC input	3.3V/5VDC output	–	53/8	57/–	
		9VDC/12VDC/15VDC output	–	51/8	55/–	
		24VDC output	–	53/8	57/–	
Reflected Ripple Current*			–	15	–	

Surge Voltage(1sec. max.)	12VDC input	-0.7	--	18	VDC
	15VDC input	-0.7	--	21	
	24VDC input	-0.7	--	30	
Input Filter		Capacitance filter			
Hot Plug		Unavailable			
Note: * Refer to DC-DC Converter Application Notes for detailed description of reflected ripple current test method.					

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Voltage Accuracy			See output regulation curves (Fig. 1)			
Linear Regulation	Input voltage change: ±1%	3.3VDC output	–	–	1.5	–
		Others	–	–	1.2	
Load Regulation	10%-100% load	3.3V/5VDC output	–	5	15	%
		9VDC output	–	3	10	
		12VDC output	–	3	10	
		15VDC output	–	3	10	
		24VDC output	–	2	10	
Ripple & Noise*	20MHz bandwidth	3.3V/5VDC/9VDC/12VDC /15VDC output	—	30	75	mVp-p
		24VDC output	—	50	100	
Temperature Coefficient	Full 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	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≥100°C, (see Fig. 2)	-40	--	105	°C
Storage Temperature		-55	--	125	
Case Temperature Rise	Ta=25°C	–	25	–	
Storage Humidity	Non-condensing	5	--	95	%RH
Reflow Soldering Temperature*		Peak temp.≤245°C, maximum duration time≤60s over 217°C			
Vibration		10-150Hz, 5G, 0.75mm. along X, Y and Z			
Switching Frequency	Full load, nominal input voltage	–	260	–	kHz
MTBF	MIL-HDBK-217F@25°C	3500	--	–	khours
Moisture Sensitivity Level (MSL)	IPC/JEDEC J-STD-020D.1	Level 1			
Note: *Please refer to IPC/JEDEC J-STD-020D.1.					

Mechanical Specifications

Case Material	Black plastic; flame-retardant and heat-resistant (UL94V-0)
Dimensions	13.20 x 11.40 x 7.25 mm
Weight	1.4g(Typ.)
Cooling Method	Free air convection

EMC Specifications

Emissions	CE	CISPR32/EN55032 CLASS B
	RE	CISPR32/EN55032 CLASS B
Immunity	ESD	IEC/EN61000-4-2 Air ±8kV, Contact ±6kV perf. Criteria B
Note: Refer to Fig. 4 for recommended circuit test.		

Typical Characteristic Curves

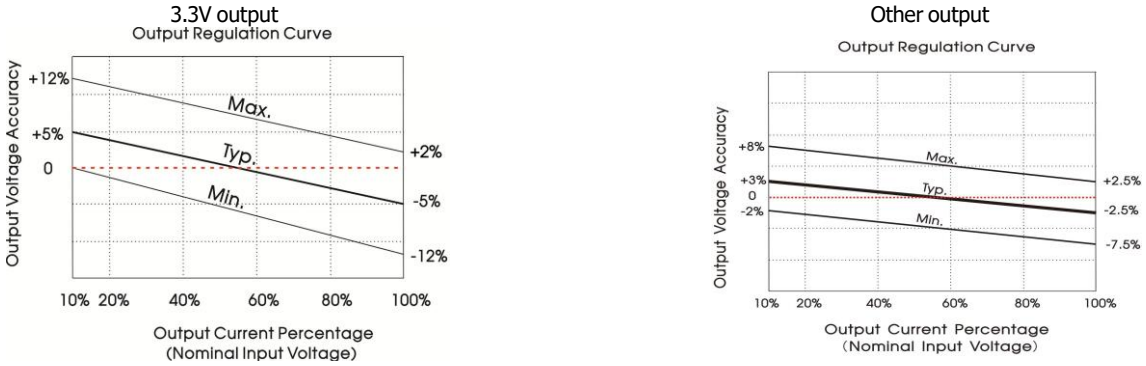


Fig. 1

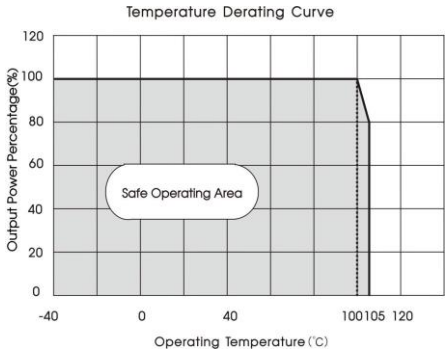
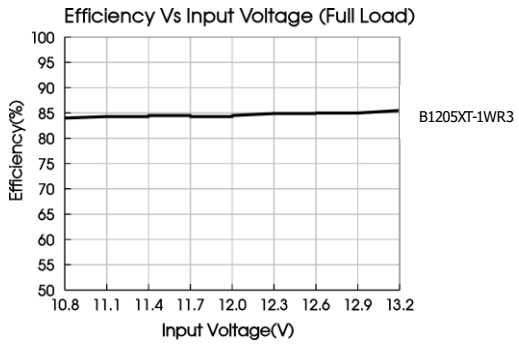
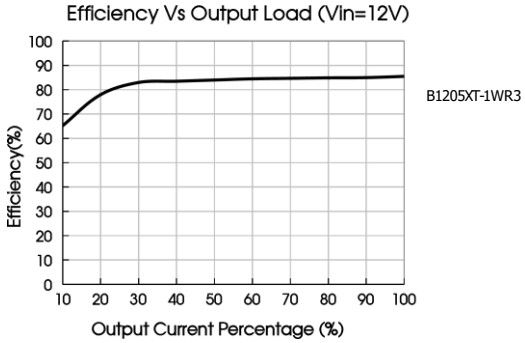
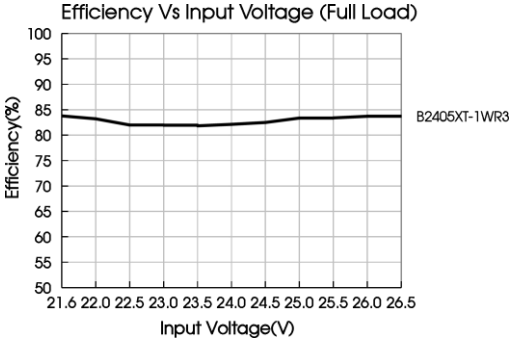
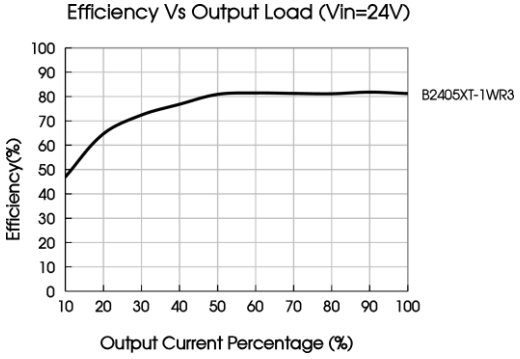


Fig. 2









Design Reference

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.

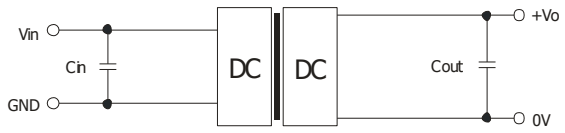


Fig. 3

Table 1: Recommended input and output capacitor values

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

2. EMC compliance circuit

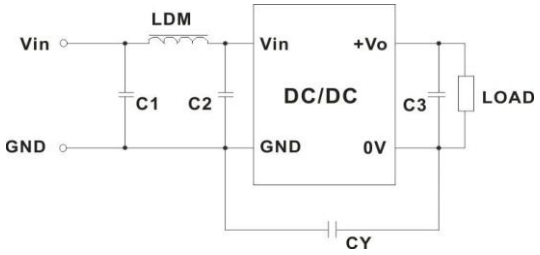


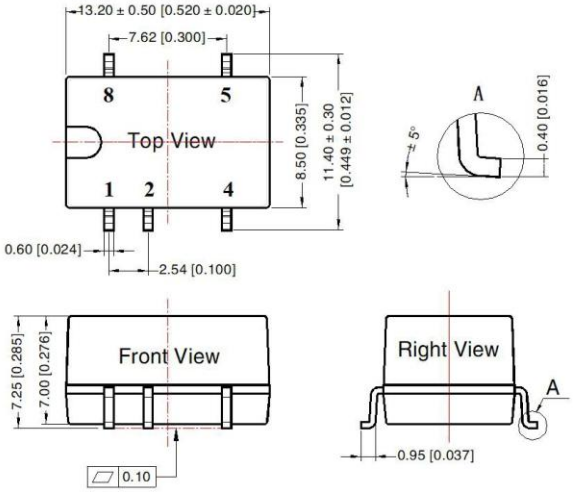
Fig. 4

Table 2: EMC recommended circuit value table

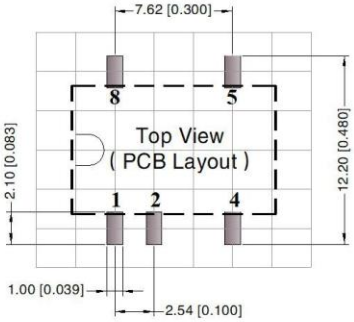
Emissions	C1/C2	4.7μF /50V
	CY	270pF /2kV
	C3	Refer to the Cout in table 1
	LDM	6.8μH

Dimensions and Recommended Layout

THIRD ANGLE PROJECTION



Note:
Unit: mm[inch]
Pin section tolerances: ± 0.10[± 0.004]
General tolerances: ± 0.25[± 0.010]



Note: Grid 2.54*2.54mm

Pin–Out	
Pin	Mark
1	GND
2	Vin
4	0V
5	+Vo
8	NC

NC: Pin to be isolated from circuitry

Notes & Instructions

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;