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 86%
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.		
B0503XT-2WR3	5 (4.5-5.5)	3.3	400/40	74/78	2400
B0505XT-2WR3		5	400/40	80/84	2400
B05X7XT-2WR3		7	286/29	80/84	1000
B0509XT-2WR3		9	222/22	81/85	1000
B0512XT-2WR3		12	167/17	81/85	560
B0515XT-2WR3		15	133/13	82/86	560
B0524XT-2WR3		24	83/8	82/86	220

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Current (full load / no-load)	5VDC input	3.3VDC output	–	339/8	357/--	mA
		5VDC/7VDC output	–	477/8	500/--	
		9VDC/12VDC output	–	471/8	494/--	
		15VDC/24VDC output	–	466/8	488/--	
Reflected Ripple Current*			–	15	–	
Surge Voltage (1sec. max.)			-0.7	–	9	VDC
Input Filter			Capacitance filter			
Hot Plug			Unavailable			
Note: *Reflected ripple current testing method please refer to DC-DC Converter Application Note for specific operation.						

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	–
		5VDC/7VDC/9VDC/12V DC/15VDC/24VDC output	–	–	±1.2	
Load Regulation	10%-100% load	3.3VDC output	–	10	20	%
		5VDC/7VDC output	–	9	15	
		9VDC output	–	8	10	
		12VDC/15VDC output	–	7	10	
		24VDC output	–	6	10	
Ripple & Noise*	20MHz bandwidth		–	75	200	mVp-p
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≥85°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. Tc≤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	–	220	–	kHz
MTBF	MIL-HDBK-217F@25°C	3500	–	–	k hours
Moisture Sensitivity Level (MSL)	IPC/JEDEC J-STD-020D.1	Level 1			
Note: * See also IPC/JEDEC J-STD-020D.1.					

Mechanical Specifications

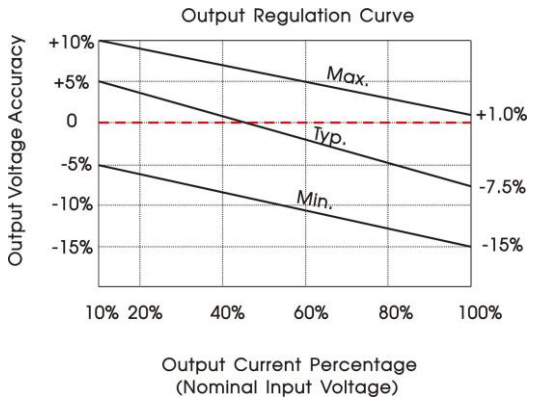
Case Material	Black plastic; flame-retardant and heat-resistant (UL94V-0)
Dimensions	13.20 x 11.40 x 7.25 mm
Weight	1.4g(Typ.)
Cooling Method	Free air convection

EMC Specifications

Emissions	CE	CISPR32/EN55032	CLASS B (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

3.3VDC output



5VDC/7VDC/9VDC/12VDC/15VDC/24VDC output

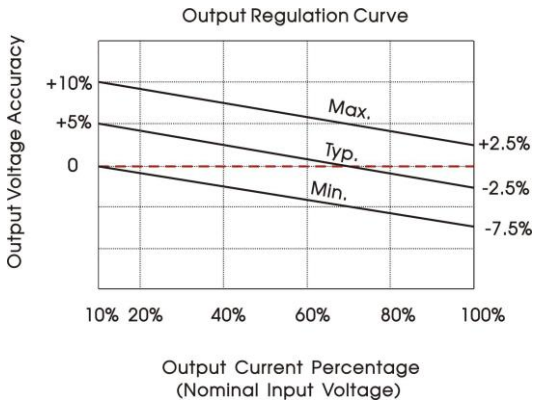


Fig. 1

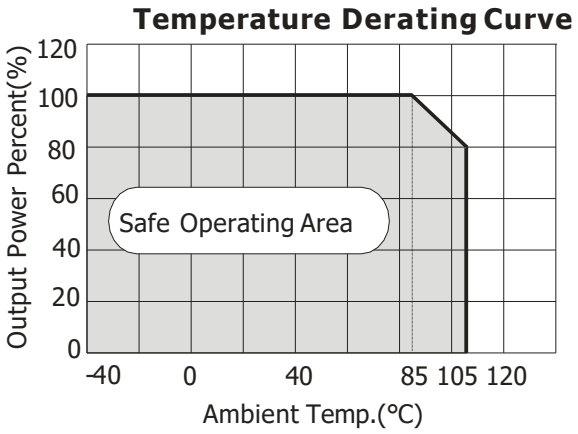
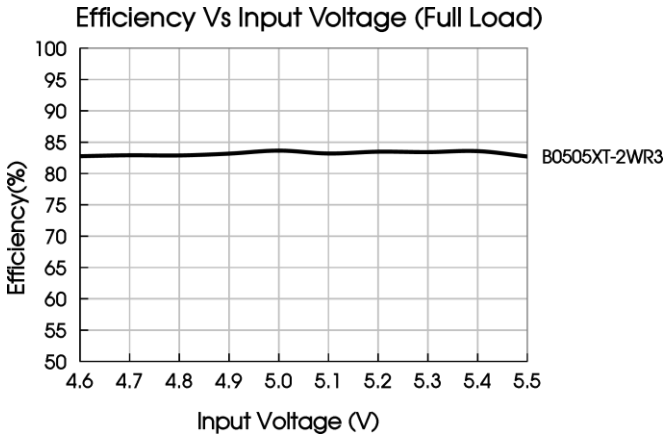
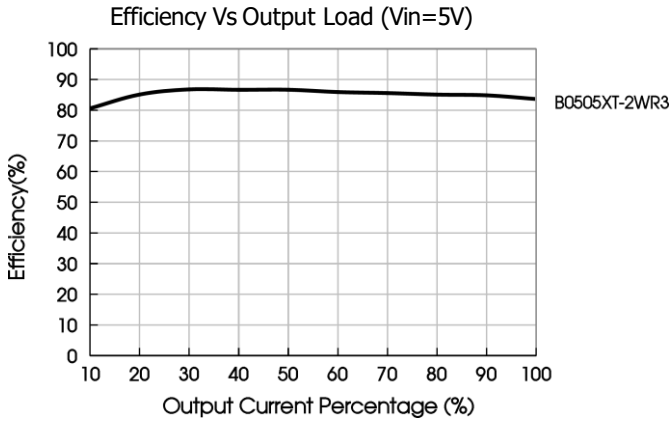


Fig. 2





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.

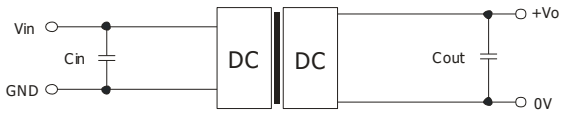


Fig. 3

Table 1: Recommended input and output capacitor values

Vin	Cin	Vo	Cout
5VDC	4.7μF/16V	3.3VDC/5VDC	10μF/16V
–	–	7VDC/9VDC	4.7μF/16V
–	–	12VDC	2.2μF/25V
–	–	15VDC	1μF/25V
–	–	24VDC	0.47μF/50V

2. EMC compliance circuit

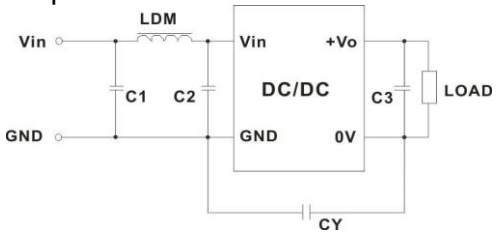
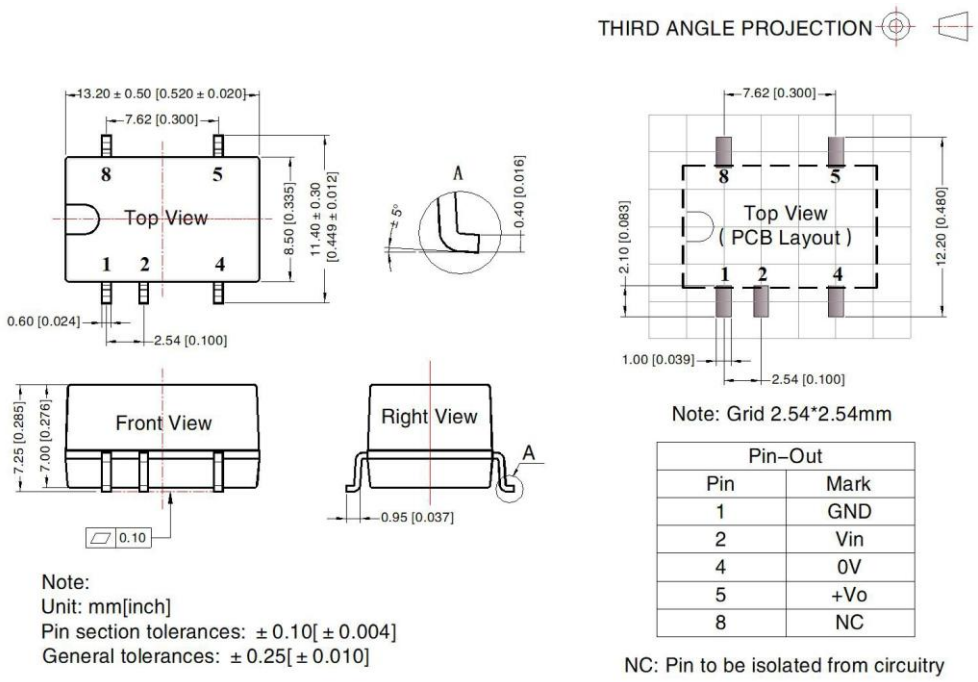


Fig. 4

Emissions	C1, C2	4.7μF /16V
	C3	Refer to the Cout in Fig. 3
	CY	270pF/2kV
	LDM	6.8μH

Dimensions and Recommended Layout



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;