

BXXXXXT-1WR3



Medical
electric
equipment



Power
Factor
Correction



World wide



Safety
Approvals



EMI



Inrush
current
limiting



OCP



OVP



Remote
ON/OFF



Parallel
Operation



1U

B-series



Feature

DC-DC converters
Ideal for semiconductor,
analytical, medical,
and detector applications
Accuracy, reliability and stability
are critical for high voltage DC-DC
applications. manufacturers, with
over 20 years of experience providing
accurate and reliable compact solutions.
applications – allowing us to maximize
functionality in a compact environment

Safety agency approval

ENI 55032:2015/A1:2020
EN IEC 62368-1:2020+A11:2020
IEC 62321-1:2013 IEC 62321-2:2021 IEC 62321-3-1:2013,

Up to 5-year warranty (Refer to Instruction Manual)

CE FCC marking

Low Voltage Directive
RoHS Directive

ROHS REACH marking

Electrical Equipment Safety Regulations
RoHS Regulations

EMI

- PCA300F, PCA600F
Complies with FCC-B, CISPR32-B, EN55011-B, EN55032-B, VCCI-B
- PCA1000F, PCA1500F
Complies with FCC-A, CISPR32-A, EN55011-A, EN55032-A, VCCI-A

EMS Compliance : EN61204-3, EN61000-6-2

IEC60601-1-2 (2014), EN60601-1-2 (2015)

EN61000-4-2
EN61000-4-3
EN61000-4-4
EN61000-4-5
EN61000-4-6
EN61000-4-8
EN61000-4-11

Features

Compact SMD package
 Input / Output Isolation Voltage: 1.5K Vdc or 3K Vdc
 High Efficiency
 Lead Free Design, RoHS Compliant
 Operating temperature: -40°C to +105°C
 Continuous Short -Circuit Protection
 Meet Safety Standard / Approval: IEC / EN60950-1

Applications

These converters are well suitable for battery operated equipment, measurement equipment, telecom, wireless network, Industry control system, everywhere where isolated, tightly regulated voltages and compact size are required.

Technical Specification All specifications are typical at nominal input, full load and 25°C unless otherwise stated.

Model Number	Input Voltage Range(V)	Output Voltage (V)	Output Current (mA) ⁽¹⁾	Input Current (mA) Typ.		Eff .(%) ⁽²⁾ Typ.	Capacitive Load, max. ⁽³⁾ (uF)
			Full Load	No Load	Full Load		
Single Output Series (1.5 KVdc)							
B0303XT-1WR3	2.97-3.63 Nominal:3.3	3.3	200	35	405	74	220
B0305XT-1WR3		5	300		404	75	
B0503XT-1WR3	4.5-5.5 Nominal:5	3.3	300	28	264	75	
B0505XT-1WR3		5	200		260	80	
B0509XT-1WR3		9	110		248	80	
B0512XT-1WR3		12	83		247	81	
B0515XT-1WR3		15	67		247	81	
B1203XT-1WR3	10.8-13.2 Nominal:12	3.3	300	17	109	76	
B1205XT-1WR3		5	200		107	78	
B1209XT-1WR3		9	110		107	78	
B1212XT-1WR3		12	83		104	80	
B1215XT-1WR3		15	67		104	80	
B1503XT-1WR3	13.5-16.5 Nominal:15	3.3	300	15	86	75	
B1505XT-1WR3		5	200		85	77	
B1509XT-1WR3		9	110		84	80	
B1512XT-1WR3		12	83		84	81	
B1515XT-1WR3		15	67		84	81	
B2403XT-1WR3	21.6-26.4 Nominal:24	3.3	300	12	58	76	
B2405XT-1WR3		5	200		57	78	
B2409XT-1WR3		9	110		55	78	
B2412XT-1WR3		12	83		55	80	
Dual Output Series (1.5 KVdc)							
A0303XT-1WR3	2.97-3.63 Nominal:3.3	±3.3	±150	35	405	74	100/100
A0305XT-1WR3		±5	±100		404	75	
A0503XT-1WR3	4.5-5.5 Nominal:5	±3.3	±150	28	264	75	
A0505XT-1WR3		±5	±100		260	77	
A0509XT-1WR3		±9	±55		248	80	
A0512XT-1WR3		±12	±42		247	81	
A0515XT-1WR3		±15	±34		247	81	
A1203XT-1WR3	10.8-13.2 Nominal:12	±3.3	±150	17	109	76	
A1205XT-1WR3		±5	±100		107	78	
A1209XT-1WR3		±9	±55		107	78	
A12012XT-1WR3		±12	±42		104	80	
Dual Output Series (3KVdc)							
E1203XT-1WR3	4.5-5.5 Nominal:5	±12	±42	28	248	80	100/100

Input Specifications

3.3V nominal input	2.97-3.63V
5V nominal input	4.5-5.5V
12V nominal input	10.8-13.2V
15V nominal input	13.5-16.5V

Input filter	Capacitor
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Environmental Specifications

Operating ambient temperature	-40°C to +105°C
Maximum case temperature	+125°C
Storage temperature range	-55°C to +125°C
Relative humidity	95% RH max.

Output Specifications

Output power	1Watts max.
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Voltage accuracy	Nominal Vin and full load	
	3.3Vdc	3.135-3.399V
	5Vdc	4.75-5.15V
	9Vdc	8.73-9.18V
	12Vdc	11.64-12.24V
	15Vdc	14.55-15.30V

Minimum load	10% load of full load
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Line regulation	For Vin change of 1%	±1.2% Typ.
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Load regulation	Nominal Vin and 10%-100% load	
	3.3Vdc	15% Typ.
	5Vdc	13% Typ.
	9Vdc	9% Typ.
	12Vdc	8% Typ.
	15Vdc	7% Typ.

Ripple and Noise (20MHz Bandwidth)	50mVp-p Typ. 100mVp-p Max.
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Maximum capacitive load	See table
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Output short circuit protection	SR1-03SXP	3S Max.
	Other models	Continuous, Automatic recovery

Temperature coefficient	±0.03%/°C Typ.
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General Specifications

Efficiency	Nominal input and full load	See table
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Isolation voltage	Input to output	1500VDC/3000VDC (60 second)
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Isolation resistance	500VDC	1000MΩ min.
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Isolation capacitance		30pF typ.
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Switching frequency		150kHz typ.
		300kHz max.

Reliability, calculated MTBF		2×10 ⁶ Hrs
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Physical Specifications

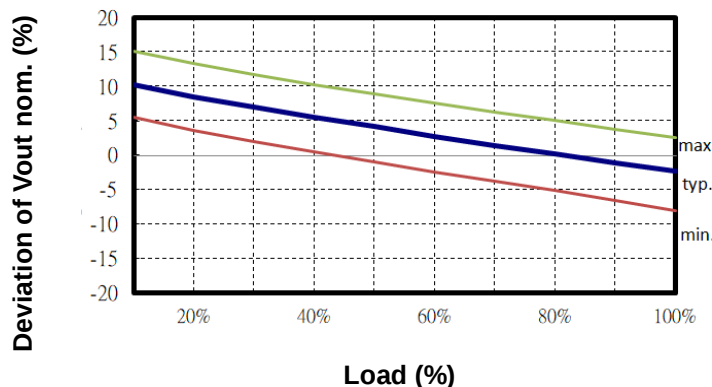
Case material	Plastic (UL94 V-0)
Potting material	PU (UL94 V-0)
Dimensions (Single output)	13.6× 8.8× 7.85 mm
Dimensions (Dual output)	15.2× 8.4× 7.6 mm
Weight	2g Typ.

Note

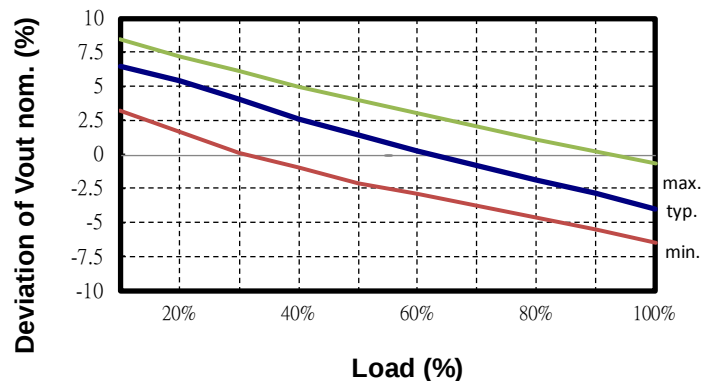
1. Below this value will not damage these converters, however, they may not meet all listed specifications.
2. Typical value, tested at nominal input and full load.
3. In case of long input lines or hot plug-in requirements, we recommended to use an external low ESR capacitor (22uF) near to the converter's input pins.
4. Specifications subject to change without notice.

Output voltage variation dependent on load (at nominal input voltage)

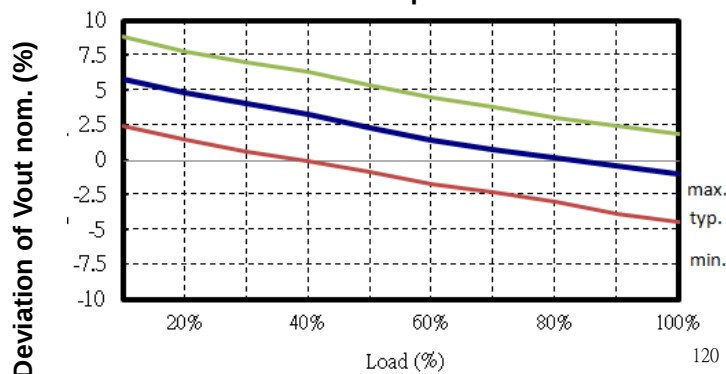
3.3VDC Output



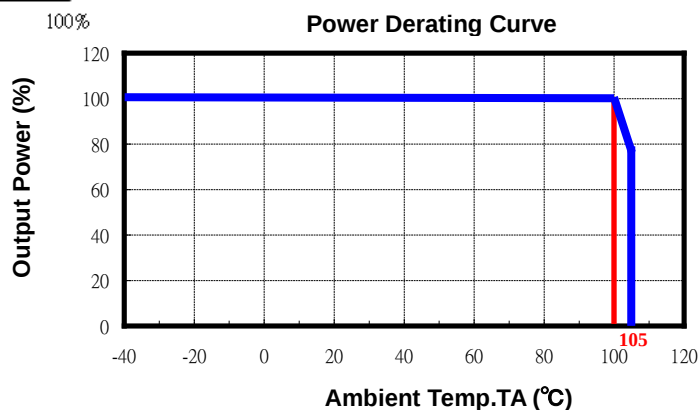
5VDC Output

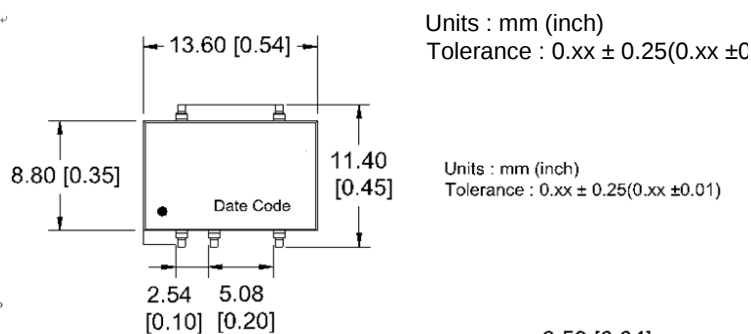


Other Output



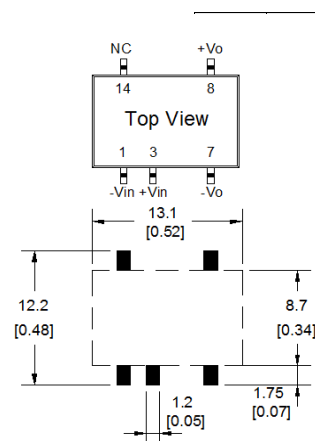
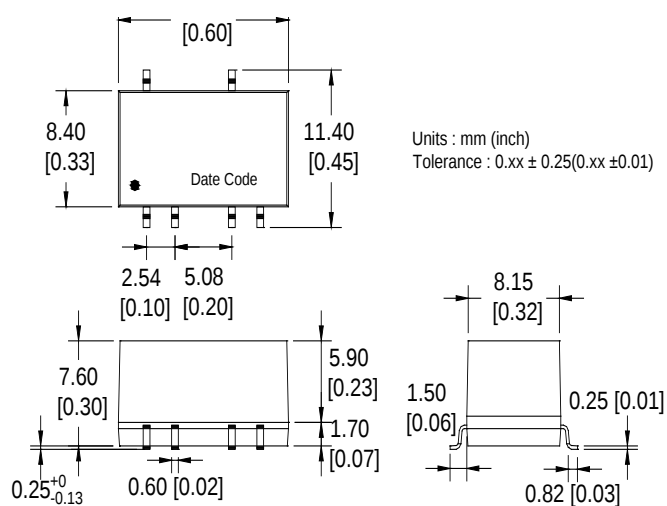
Power Derating Curve



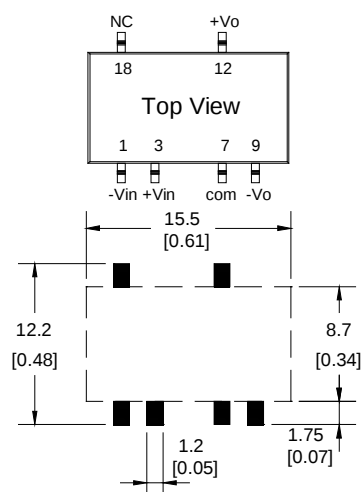
BXXXXXT-1WR3**Mechanical Dimensions****Single output**

Unit: mm (inch)
Tolerance: 0.XX ±0.25 (0.XX±0.01)

Units : mm (inch)
Tolerance : 0.xx ± 0.25 (0.xx ± 0.01)



Pin	1.5KVdc - Single		Pin
1	-Vin	NC	14
3	+Vin	---	12
5	---	---	10
7	Vo (-)	Vo (+)	8

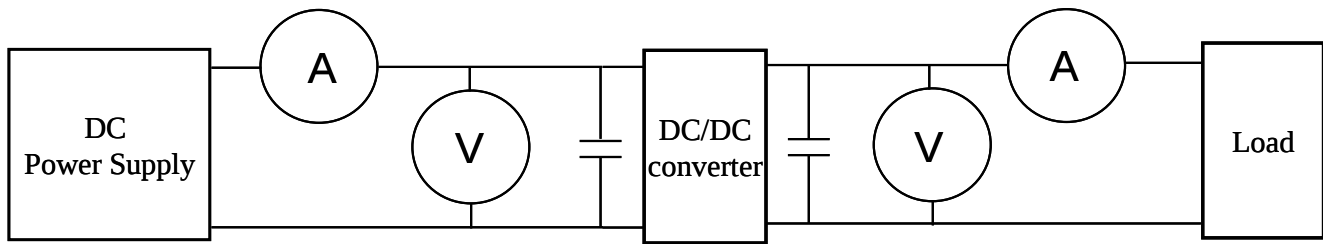


(SR1-xxDxxP)

Pin	1.5 KVdc /3KVdc - Dual		Pin
1	-Vin	N.C.	18
3	+Vin	---	16
5	---	---	14
7	Com	Vo (+)	12
9	Vo (-)	---	10

Test Configurations

All specifications are typical at nominal input, full load and 25°C unless otherwise stated.



◎DC Power Supply: It offers a wide voltage and current range precisely.

◎Current meter (A): Accuracy → 200μA ~ 200mA 4 ranges $\pm(0.2\% \text{ rdg} + 2 \text{ digits})$

2000mA ~ 20A 2 ranges $\pm(0.3\% \text{ rdg} + 2 \text{ digits})$.

◎Voltage meter (V): Accuracy → $\pm(0.03\% \text{ rdg} + 4 \text{ digits})$.

◎Load: At full load.

◎Wires: The resistance of the wires must be small.

1. Input voltage range: Narrow input voltage range ($\pm 10\%$)、wide input voltage range (2:1 and 4:1)。

EX: Narrow input voltage range ($\pm 10\%$)

5V nominal input → 4.5~5.5V

12V nominal input → 10.8~13.2V

24V nominal input → 21.6~26.4V

Wide input voltage range 2:1

5V nominal input → 4.5~9V

12V nominal input → 9~18V

24V nominal input → 18~36V

48V nominal input → 36~75V

Wide input voltage range 4:1 (W)

24V nominal input → 9~36V

48V nominal input → 18~75V

2. Input power :

$$P_{in} = V_{in} \times I_{in}$$

V_{in} : Input voltage

I_{in} : Input current

3. Output power :

$$P_{out} = V_{out} \times I_{out}$$

V_{out} : Output voltage

I_{out} : Output current

4. Efficiency :

$$\text{Efficiency} = \frac{P_{out}}{P_{in}} \times 100\%$$

P_{out} : Output power

P_{in} : Input power

5. Voltage accuracy:

$$\left| \frac{V_{out} - V_{out}(\text{nominal})}{V_{out}} \right| \times 100\%$$

V_{out} : Output voltage

6. Line regulation:

Narrow input voltage range ($\pm 10\%$) and unregulated output voltage series.

$$\text{Line regulation} = \frac{\Delta V_{out}}{\Delta V_{in}}$$

$$\Delta V_{out} = \frac{V_{out}(+10\%) - V_{out}(-10\%)}{V_{out}} \times 100\%$$

$V_{out}(+10\%)$: Output voltage at $V_{in} = 1.1 \times V_{in}(\text{nominal})$ & full load

$V_{out}(-10\%)$: Output voltage at $V_{in} = 0.9 \times V_{in}(\text{nominal})$ & full load

V_{out} : Output voltage at $V_{in} = V_{in}(\text{nominal})$ & full load

$$\Delta V_{in} = \frac{V_{in}(+10\%) - V_{in}(-10\%)}{V_{in}(\text{nominal})} \times 100\%$$

$V_{in}(+10\%)$: Input voltage = $1.1 \times V_{in}(\text{nominal})$

$V_{in}(-10\%)$: Input voltage = $0.9 \times V_{in}(\text{nominal})$

$V_{in}(\text{nominal})$: Nominal Input voltage

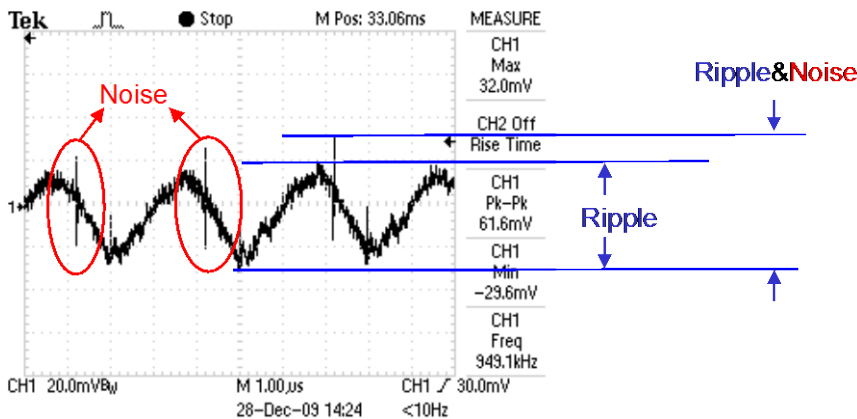
7. Load regulation :

$$\left| \frac{V_{out}(\text{FL}) - V_{out}(\text{NL})}{V_{out}(\text{FL})} \right| \times 100\%$$

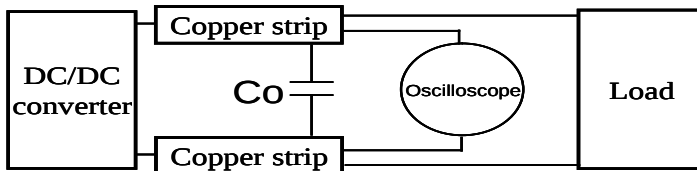
$V_{out}(\text{FL})$: Output voltage at full load

$V_{out}(\text{NL})$: Output voltage at 10% full load

8. Ripple and Noise: as shown below. The bandwidth is 0-20MHz.

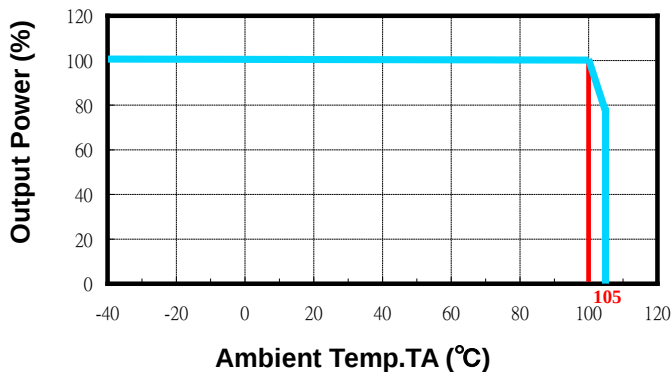


Output Ripple&Noise measurement test circuit: as shown below.



Co: usually 0.47µF.

9. Temperature derating curve: The DC-DC converter will operate over a wider temperature range if less power is drawn from the output and the device is already running. The temperature derating curve shows the operating power-temperature range. As shown below.



10. Switching frequency: The nominal operating frequency of the DC-DC converters.

11. Input to output isolation: The dielectric breakdown strength test between input and output circuits. This is the isolation voltage the device is capable of withstanding for a specified time, usually 1 second or 1 minute.

12. Input source impedance: The power module should be connected to low ac-impedance input source. Highly inductive source impedances can affect the stability of the power module. In applications where power is supplied over long lines and output loading is high, it may be necessary to use a capacitor at the input to ensure startup. Capacitor mounted close to the power module helps ensure stability of the unit, it is recommended to use a good quality low Equivalent Series Resistance (ESR < 0.1Ω at 100KHz) capacitor of a 22µF for the power module.

