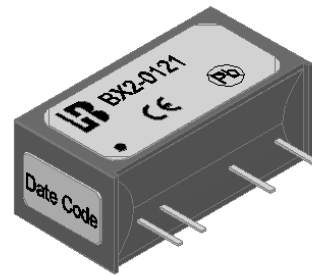


1. Features :

- 1.1. 7 Pin SIL Package
- 1.2. 100 % Burn-In
- 1.3. Low Ripple and Noise
- 1.4. Input / Output Isolation : 4000 Vdc
- 1.5. Net Weight : 3.7 g Typical
- 1.6. RoHS Converter Certified By SGS



2. Input Specification :

- | | | |
|---------------------------|----------------------|--|
| 2.1. Input Voltage | : 4.5 ~ 5.25 Vdc | 5Vdc \pm 10 % |
| 2.2. Max. Input Current | : 440 mA Max. | @ Vin = 5Vdc and Output at Full Load. |
| 2.3. Quiescent Current | : 23 mA Typ. | @ Vin = 5Vdc and No Load. |
| 2.4. Input Ripple & Noise | : 150 mV Typical | @ Vin = 5 Vdc, Output at Full Load, No Input Electrolytic Capacitor and 20 MHz BW. |
| 2.5. Input Filter | : Internal Capacitor | |
| 2.6. Switching Frequency | : 50 KHz Typ. | @ Vin = 5Vdc and Output at Full Load. |
| 2.7. Input Efficiency | : 75 % Min. | @ Vin = 5Vdc and 100 % Load. (79 % Typical) |

3. Output Specification :

- | | | |
|------------------------------|------------------------------|--|
| 3.1. Output Voltage (1) | : 5 Vdc \pm 3% | @ Vin = 4.5 Vdc and Output at Full Load. |
| 3.2. Output Voltage (2) | : 5.5 Vdc \pm 3% | @ Vin = 5 Vdc and Output at Full Load. |
| 3.3. Max. Output Current | : 300 mA | |
| 3.4. Min. Output Current | : 30mA | |
| 3.5. Ripple & Noise | : 60 mVp-p Max. | @ 20 MHz BW |
| 3.6. Line Regulation | : 1.2 %/ 1.0% Max. | See Note (1). |
| 3.7. Load Regulation | : 12 % Max. | See Note (2). |
| 3.8. Max. Capacitive Load | : 330 μ F | |
| 3.9. Temperature Coefficient | : \pm 0.02 %/ $^{\circ}$ C | |

Note :

- (1). Line Regulation : Set output load to full load, Then adjust input voltage from 4.5Vdc to 5.25Vdc , The output voltage difference must be within 12 % of the output at full load and nominal input.
- (2). Load Regulation : Set input voltage at 5V, Then changing Output load from 10 % to 100 % rated Load , The output voltage difference must be within 12 % of the output at full load and nominal input.
- (3). All specification are typical at 25 $^{\circ}$ C unless otherwise state.
- (4). Safety Standard / Approval : IEC/ EN 60950-1

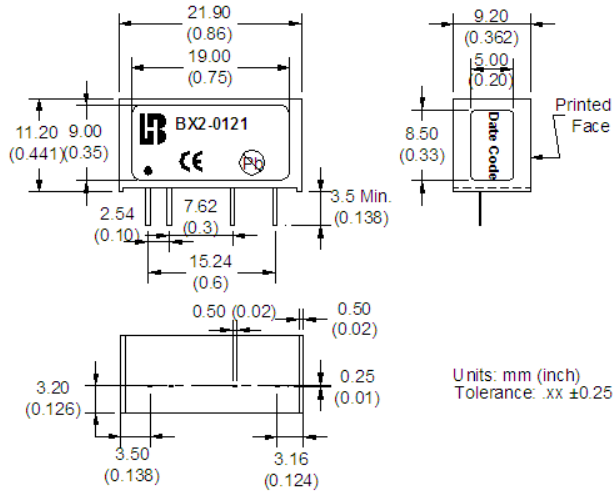
4. General Specification :

- | | | |
|--------------------------------|--|---|
| 4.1. Isolation Voltage | : 4000 Vdc | Test duration 60 Seconds / 0.5mA |
| 4.2. Isolation Resistance | : 1000 M Ω Min. | @ 500 Vdc |
| 4.3. Operating Temperature (1) | : -40 $^{\circ}$ C ~ +85 $^{\circ}$ C | @ Ambient Temperature with Natural convention |
| 4.4. Operating Temperature (2) | : -40 $^{\circ}$ C ~ +95 $^{\circ}$ C | @ Case Surface Temperature |
| 4.5. Storage Temperature | : -55 $^{\circ}$ C ~ +105 $^{\circ}$ C | |
| 4.6. Humidity | : Up to 90 % | |
| 4.7. Cooling | : Free air convection | |



4.8. Case Type : Non-Conductive Plastic

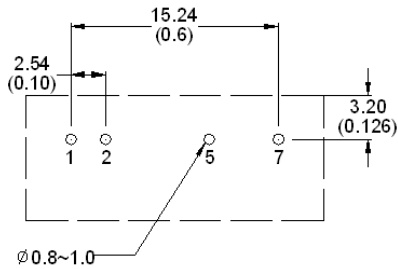
5. Mechanical Dimension :



Pin	4K Vdc - Single
1	+Vin
2	-Vin
3	---
4	---
5	Vo (-)
6	---
7	Vo (+)

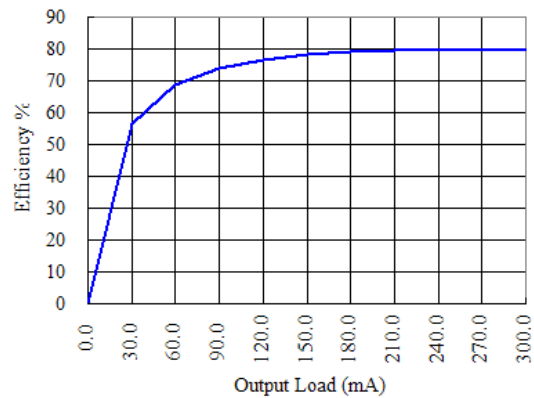
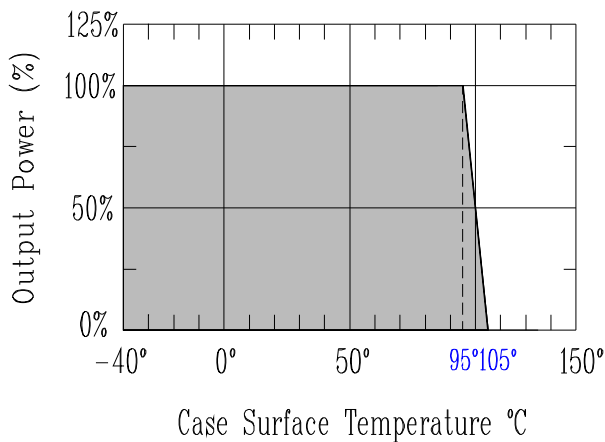
Note : "----" means Omitted

6. Recommended footprint details :



7. Power Derating Curve :

8. Efficiency & Output Load Chart :

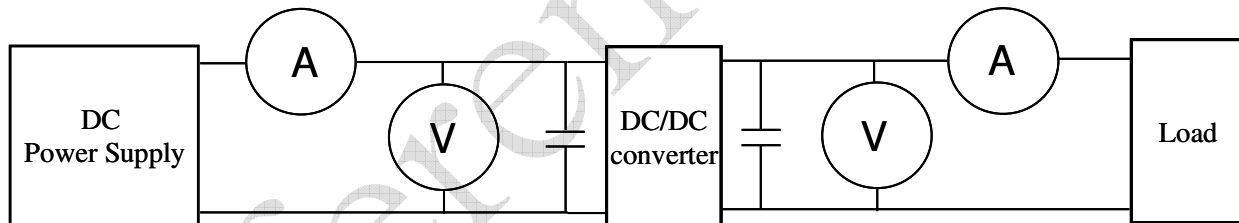


BOTHHAND ENTERPRISE INC.

Application note

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 ±(0.2% rdg + 2 digits)
2000mA ~ 20A 2 ranges ±(0.3% rdg + 2 digits).
- ◎Voltage meter (V): Accuracy → ±(0.03% rdg + 4 digits).
- ◎Load: At full load.
- ◎Wires: The resistance of the wires must be small.

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

EX: Narrow input voltage range (±10%)

5VDC nominal input → 4.5~5.5VDC

12VDC nominal input → 10.8~13.2VDC



24VDC nominal input → 21.6~26.4VDC

Wide input voltage range 2:1

- 5VDC nominal input → 4.5~9VDC
- 12VDC nominal input → 9~18VDC
- 24VDC nominal input → 18~36VDC
- 48VDC nominal input → 36~75VDC

Wide input voltage range 4:1 (W)

- 24VDC nominal input → 9~36VDC
- 48VDC nominal input → 18~75VDC

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:

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

V_{out} : Output voltage

$V_{out}(\text{nominal})$: Nominal output voltage

6. Line regulation: (1) Wide input voltage range and regulated output voltage series.

$$\frac{|V_{out}(\text{LL}) - V_{out}(\text{HL})|}{V_{out}(\text{LL})} \times 100\%$$

LL: Low Line input voltage

HL: High Line input voltage

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

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



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

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

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

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

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

V_{in(+10%)} : Input voltage = 1.1xV_{in(nominal)}

V_{in(-10%)} : Input voltage = 0.9xV_{in(nominal)}

V_{in(nominal)} : Nominal Input voltage

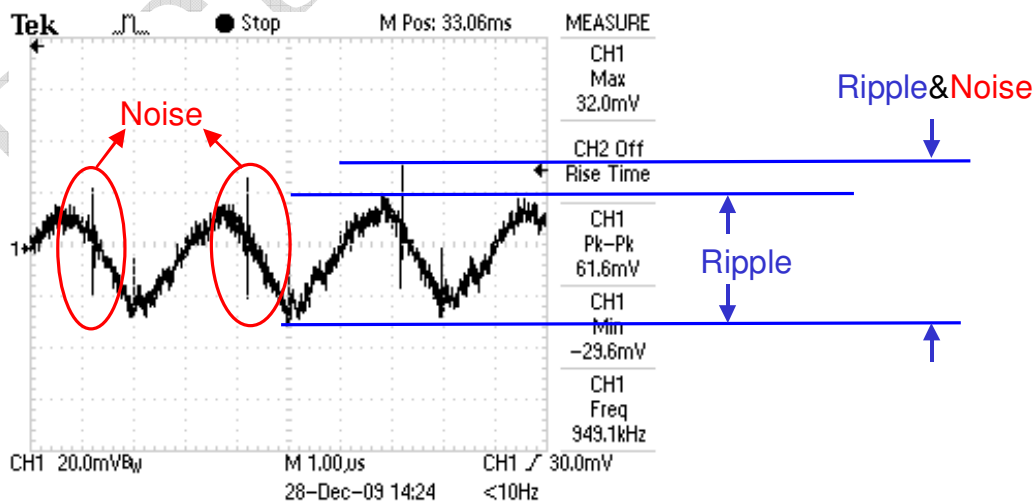
7. Load regulation :

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

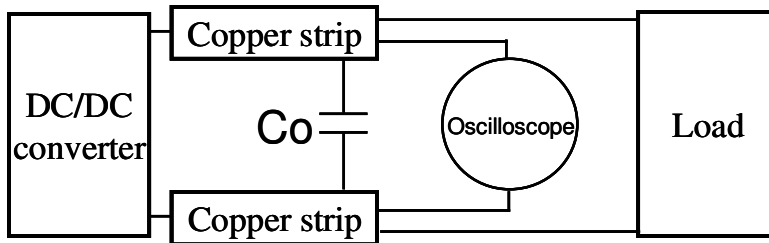
V_{out(FL)}: Output voltage at full load

V_{out(NL)}: Output voltage at 25% full load or 10% full load

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

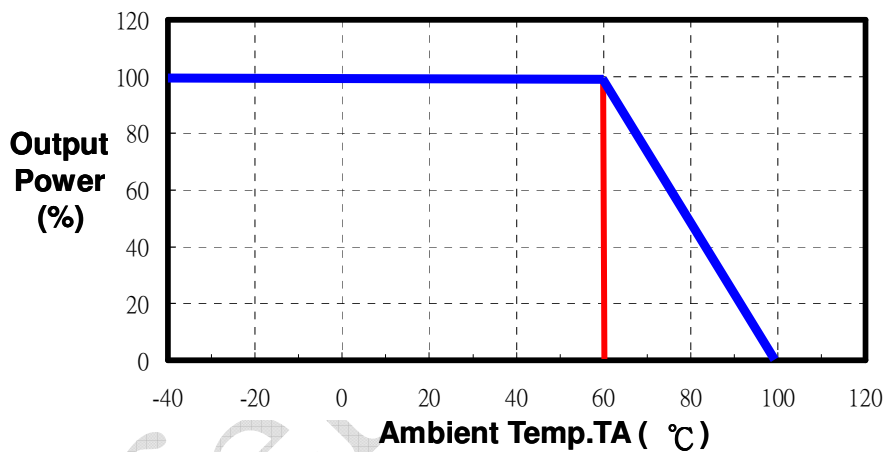


Output Ripple&Noise measurement test circuit: as shown below.



Co: usually 0.47uF.

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.