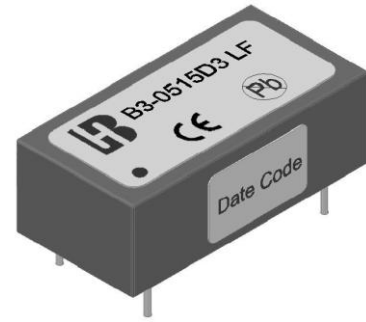


1. Features :

- 1.1. 14 Pin DIL Package
- 1.2. Low Ripple and Noise
- 1.3. Input / Output Isolation : 1000Vdc
- 1.4. Net Weight : 2.7 g Typical
- 1.5. RoHS Converter Certified By SGS

**2. Input Specifications :**

- | | | |
|--------------------------|----------------------|--|
| 2.1. Input Voltage | : 4.5 ~ 5.5 Vdc | 5V ± 10 % |
| 2.2. Max. Input Current | : 720mA Max. | @ Vin = 5 V and Output at Full Load. |
| 2.3. Quiescent Current | : 35 mA Typical | @ Vin = 5 V and No Load. |
| 2.4. Input Ripple | : 100 mV Typical | @ Vin = 5 V ,Output at Full Load ,No Input Electrolytic Capacitor and 20 MHz BW. |
| 2.5. Input Filter | : Internal Capacitor | |
| 2.6. Switching Frequency | : 90 KHz Typ. | |
| 2.7. Input Efficiency | : 83 % Min. | @ Vin = 5V and 100 % Load. (87% Typical) |

3. Output Specification :

- | | | |
|------------------------------|----------------------|--------------------------------------|
| 3.1. Output Voltage | : ±15 Vdc | @ Vin = 5 V and Output at Full Load. |
| 3.2. Output Voltage Accuracy | : ± 3 % | Vo = 14.55 ~ 15.45 Vdc |
| 3.3. Max. Output Current | : ± 100 mA | |
| 3.4. Min. Output Current | : ± 20 mA | |
| 3.5. Ripple | : ±120 mVp-p Max. | @ 20 MHz BW |
| 3.6. Line Regulation | : ±1.3 %/ 1.0 % Max. | See Note (1). |
| 3.7. Load Regulation | : ±8 % Max. | See Note (2). |
| 3.8. Max. Capacitive Load | : ±330 uF | |
| 3.9. Temperature Coefficient | : ± 0.02 % / °C | |

Note :

- (1). Line Regulation : Set output load to full load, Then adjust input voltage from 4. 5V to 5. 5V (10% change), The output voltage difference must be within 13% of the output at full load and nominal input.
- (2). Load Regulation : Set input voltage at 5V, Then changing Output load from 20% to 100% rated Load. The output voltage difference must be within 8% of the output at full load and nominal input.
- (3). All specification are typical at 25°C unless otherwise state.

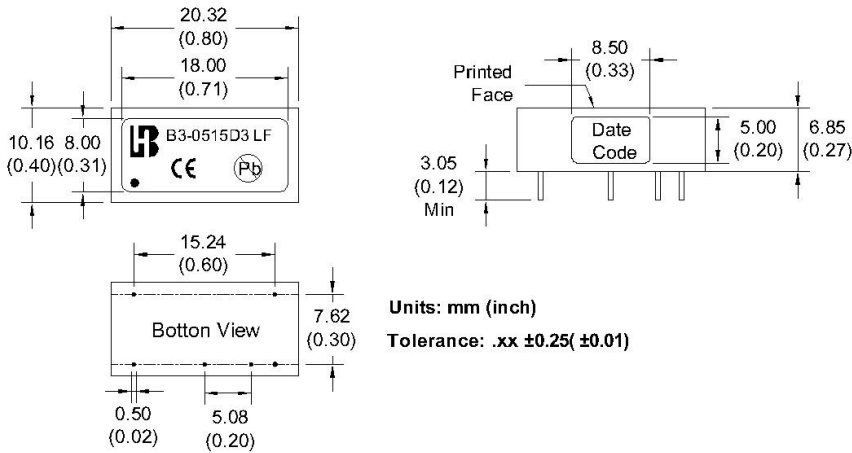
4. General Specification :

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



4.8. Case Type : Non-Conductive Plastic

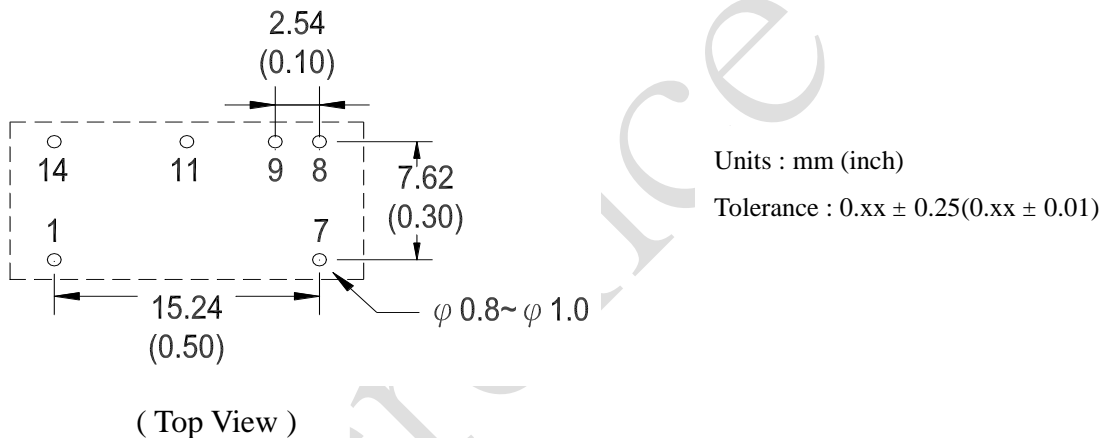
5. Mechanical Dimension :



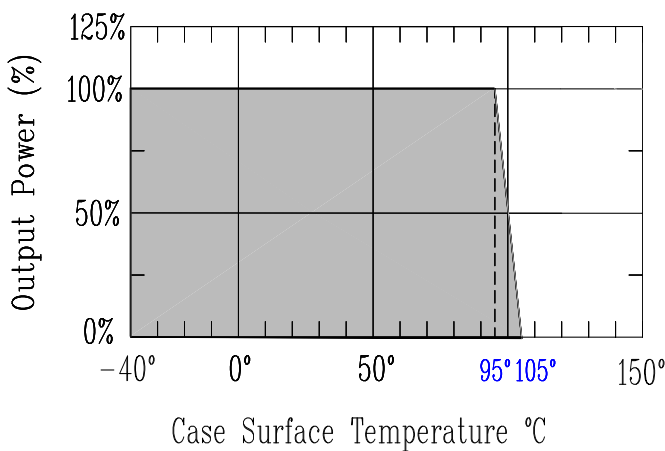
| Pin | 1K Vdc – Dual | | Pin |
|-----|---------------|--------|-----|
| 1 | -Vin | +Vin | 14 |
| 2 | | | 13 |
| 3 | | --- | 12 |
| 4 | --- | -Vo | 11 |
| 5 | | --- | 10 |
| 6 | | +Vo | 9 |
| 7 | NC | Common | 8 |

Note : “---” means Omitted

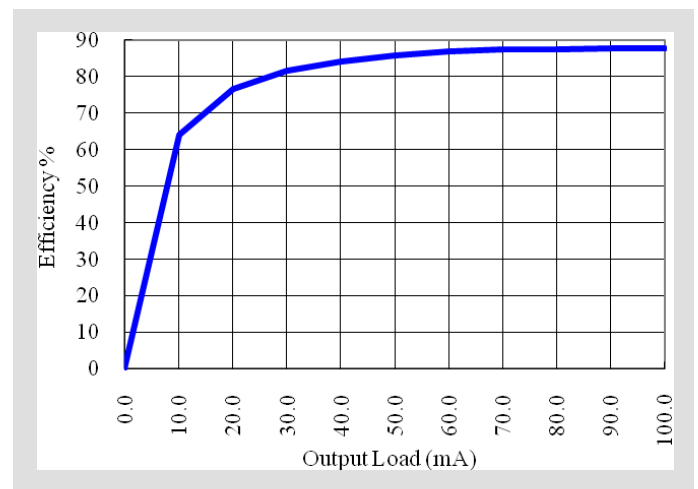
6. Recommended Footprint Details :



7. Power Derating Curve :



8. Efficiency & Output Load Chart :



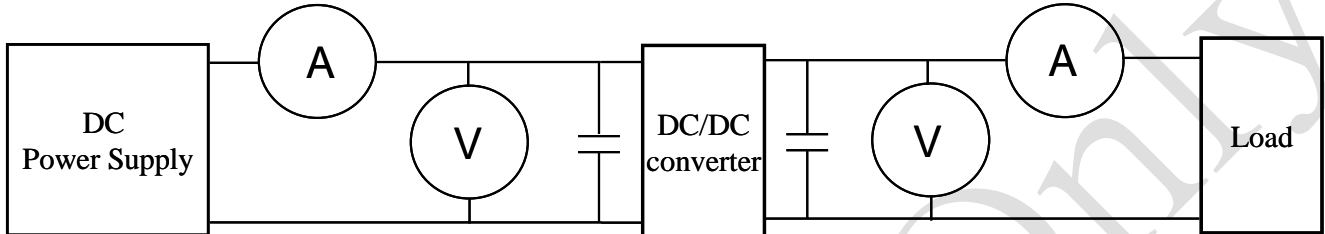


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Application note

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 $\pm(0.2\% \text{ rdg} + 2 \text{ digits})$
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 ($\pm 10\%$)

| | | |
|---------------------|---|--------------|
| 5VDC nominal input | → | 4.5~5.5VDC |
| 5VDC nominal input | → | 10.8~13.2VDC |
| 24VDC nominal input | → | 21.6~26.4VDC |

Wide input voltage range 2:1

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

Wide input voltage range 4:1 (W)

| | | |
|---------------------|---|-----------|
| 24VDC nominal input | → | 4.5~36VDC |
| 48VDC nominal input | → | 9~75VDC |

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:

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

V_{out} : Output voltage

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

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

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

LL: Low Line input voltage

HL: High Line input voltage

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

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

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

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

$V_{out(-10\%)}$: Output voltage at $V_{in} = 0.9 \times V_{in(nominal)}$ & 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 = $1.1 \times V_{in(nominal)}$

Vin(-10%) : Input voltage = 0.4.5xVin(nominal)

Vin(nominal) : Nominal Input voltage

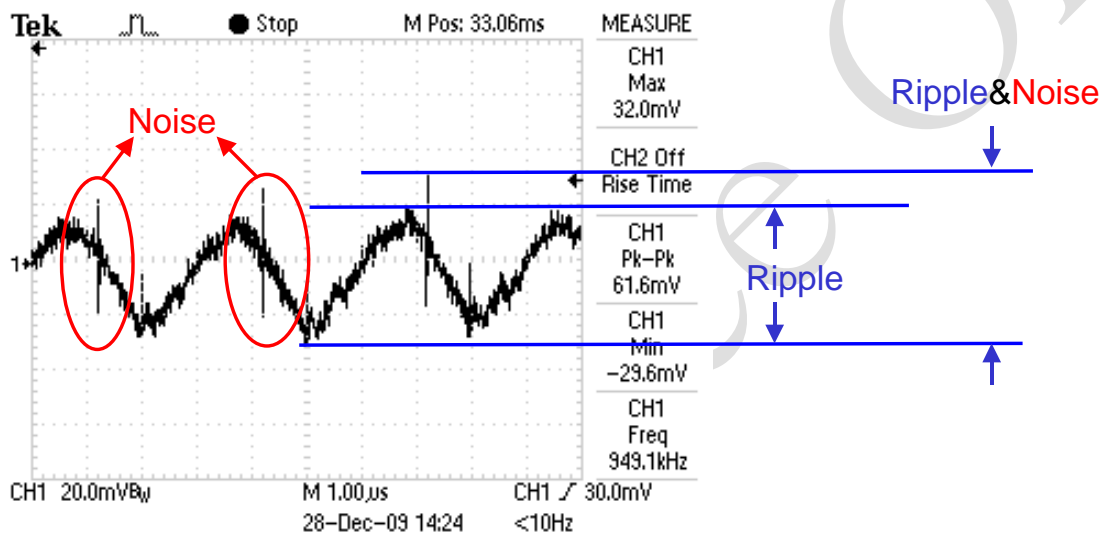
7. Load regulation :

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

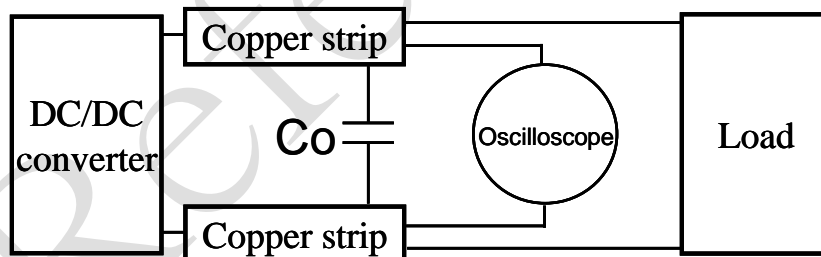
Vout(FL): Output voltage at full load

Vout(NL): Output voltage at 25% full load or 10% full load

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

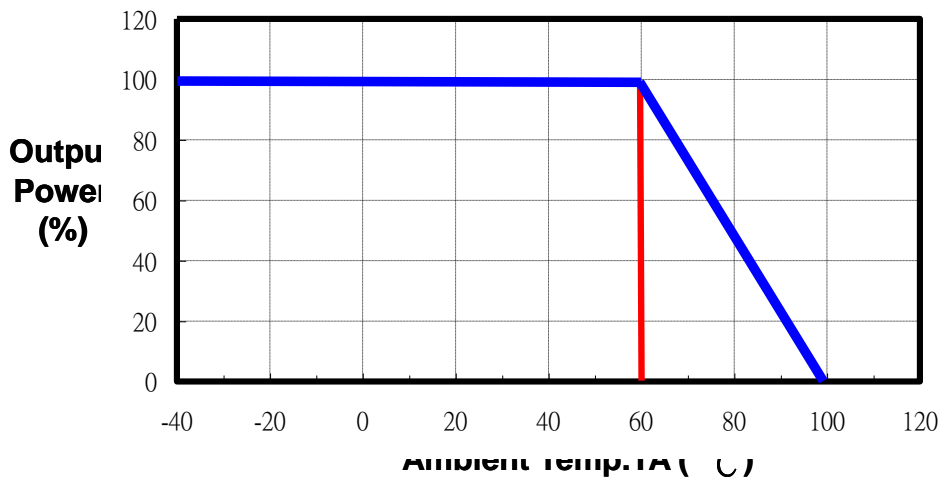


Output Ripple&Noise measurement test circuit: as shown below.



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.