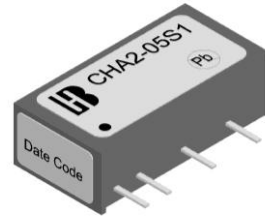




Features

- 7Pin SIL Package
- Input / Output Isolation Voltage: 1K Vdc
- High Efficiency
- Lead Free Design, RoHS Compliant
- Operating temperature: -40°C to +85°C



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) Full Load	Input Current (mA)		Eff. ⁽²⁾ (%)	Capacitive Load, max. ⁽³⁾ (µ F)
				No Load	Full Load		
CHA2-05S1	4.5~5.5 Nominal:5	5	400	45	506	79	330
CHA2-05S2		12	167	42	500	80	330
CHA2-05S3		15	134	35	494	81	330
CHA2-05D1		± 5	± 200	45	513	78	±220
CHA2-05D2		± 12	± 84	42	500	80	±100
CHA2-05D3		± 15	± 67	35	494	81	±100
CHA2-12S1	10.8~13.2 Nominal:12	5	400	26	211	79	330
CHA2-12S2		12	167	25	208	80	330
CHA2-12S3		15	134	24	206	81	330
CHA2-12D1		± 5	± 200	26	214	78	±220
CHA2-12D2		± 12	± 84	25	208	80	±100
CHA2-12D3		± 15	± 67	24	208	80	±100
CHA2-24S1	21.6~26.4 Nominal:24	5	400	8	105	79	330
CHA2-24S2		12	167	7	101	82	330
CHA2-24S3		15	134	7	102	82	330
CHA2-24D1		± 5	± 200	8	107	78	±220
CHA2-24D2		± 12	± 84	7	103	81	±100
CHA2-24D3		± 15	± 67	7	102	82	±100



Input Specifications

Input voltage	5V nominal input	4.5~5.5V
	12V nominal input	10.8~13.2V
	24V nominal input	21.6~26.4V
Input filter	Capacitor	

Environmental Specifications

Operating ambient temperature	-40°C to +85°C	
Maximum case temperature	+95°C	
Storage temperature range	-55°C to +125°C	
Relative humidity	95% RH max.	

Output Specifications

Output power	2 Watts max.	
Voltage accuracy	Nominal Vin and full load	±5% max.
Voltage balance	Dual output	±1% max.
Minimum load	0.013A	
Line regulation	For Vin change of 1%	±1.5% max.
Load Regulation	10% load to full load	10% max. 15% max. (3.3&5Vout models)
Ripple and Noise (20MHz Bandwidth)	150mVp-p max.	
Maximum capacitive load	See table	

General Specifications

Efficiency	Nominal input and full load	See table
Isolation voltage	Input to output	1000Vdc (1 second)
Isolation resistance	500VDC	1000 MΩ Min.
Isolation capacitance	50pF typ.	
Switching frequency	150kHz max.	
Reliability, calculated MTBF	2×10 ⁶ Hrs	

Physical Specifications

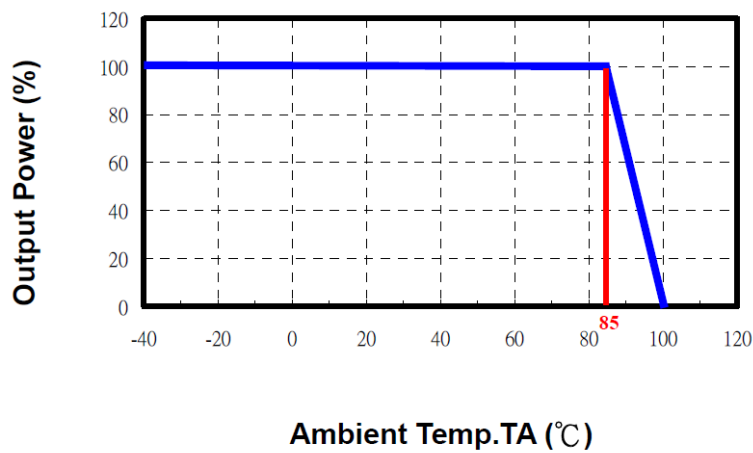
Case material Plastic	Plastic	
Potting material Epoxy	Epoxy (UL94 V-0)	
Dimensions	0.76 × 0.24 × 0.39 Inch (19.5 × 6.0 × 10.0 mm)	
Weight	2.2 g typ.	



Note

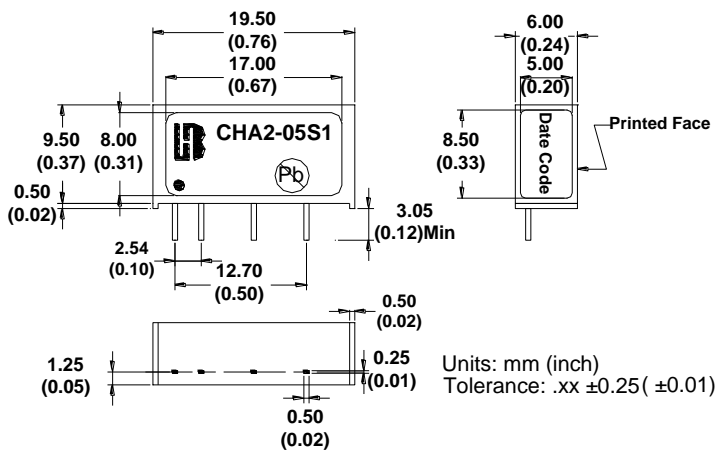
1. Io below this value will not damage these converters, however, they may not meet all listed specifications.
2. Typical value, tested at nominal input and full load.
3. For each output.
4. Specifications subject to change without notice.

Power Derating Curve



Mechanical Dimensions

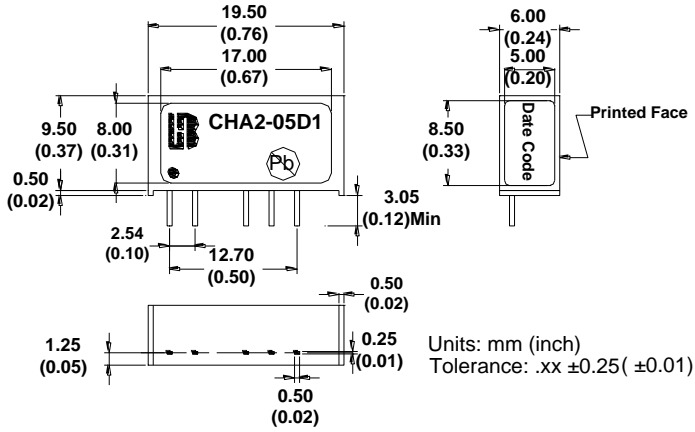
Single output



Pin	1 KVdc - Single
1	+Vin
2	-Vin
3	No Pin
4	-Vo
5	No Pin
6	+Vo
7	No Pin

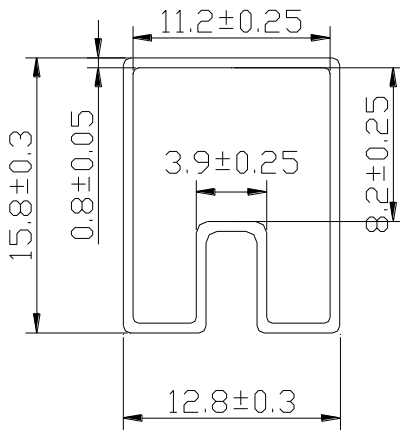


Dual output



Pin	1 KVdc - Dual
1	+Vin
2	-Vin
3	No Pin
4	-Vo
5	Common
6	+Vo
7	No Pin

Package Information



PS:

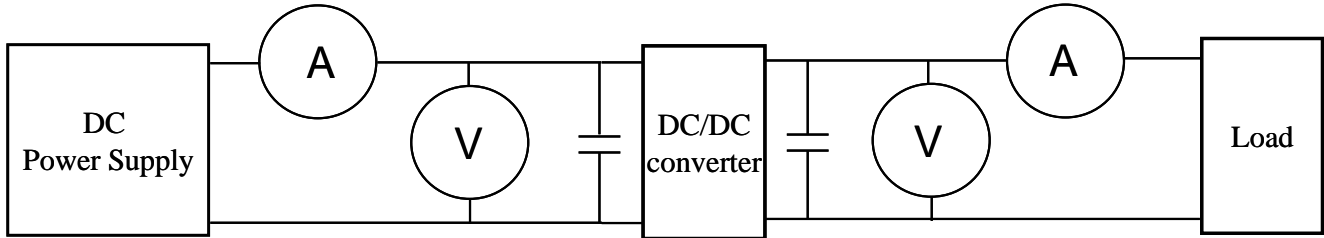
Unit: mm

L= 540 mm ; ONE TUBE = 25 PCS



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.

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

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

$V_{out}(+10\%)$: 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



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

Vin(+10%) : Input voltage = 1.1xVin(nominal)

Vin(-10%) : Input voltage = 0.9xVin(nominal)

Vin(nominal) : Nominal Input voltage

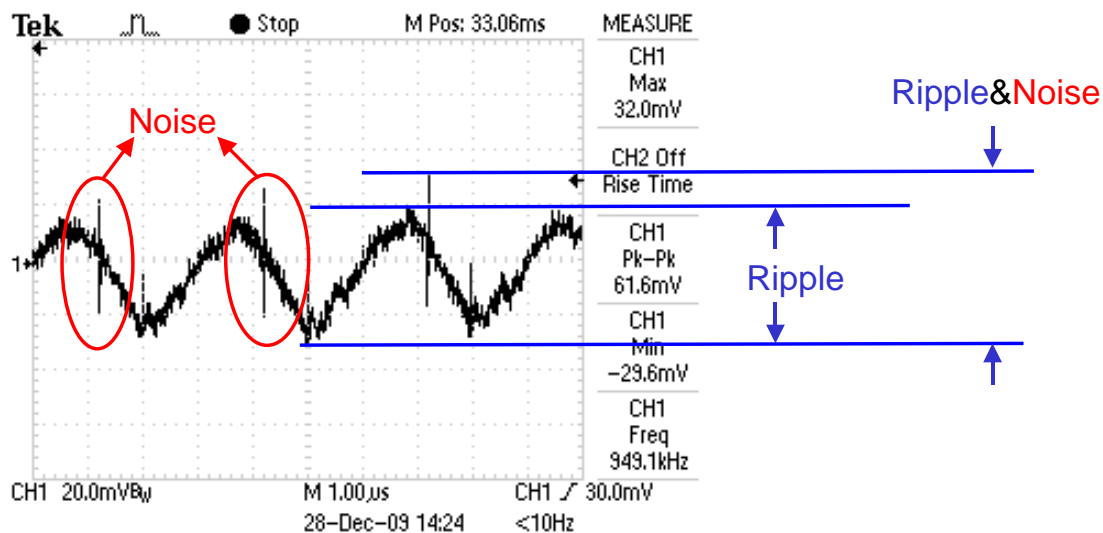
7. Load regulation :

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

Vout(FL): Output voltage at full load

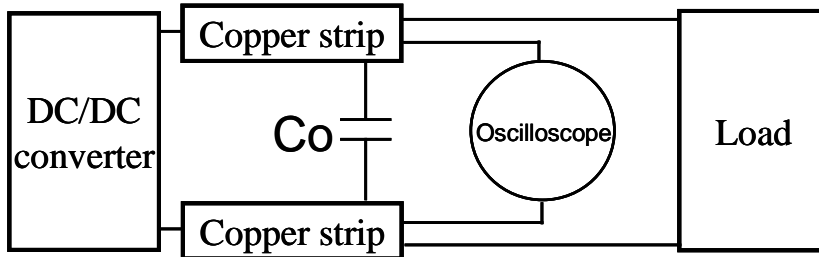
Vout(NL): Output voltage at 25% full load or 10% full load

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



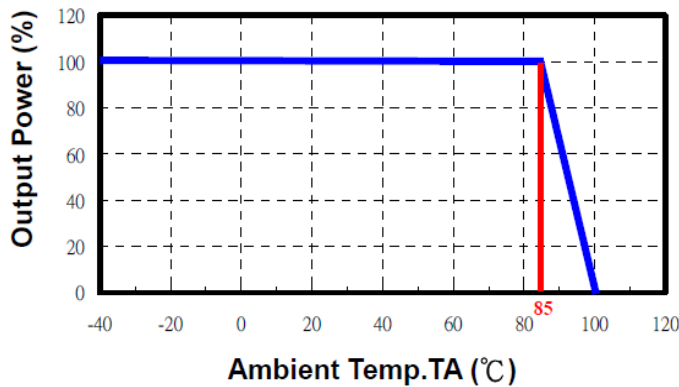


Output Ripple&Noise measurement test circuit: as shown below.



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.