

DC-DC High Power

50-200 Watts DCH Series



THE XPERTS IN POWER

- Upto 89% Efficiency
- 40 °C Operation
- High Reliability
- Industry Standard Package
- Overcurrent Protection
- 40% to +10% Adjustment
- 2:1 Input Voltage Range

Specification

Input

- Input Voltage • 18-36 VDC, 36-76 VDC

Output

- Output Voltage • See Tables
- Output Voltage Adjustment • 60-110% (60-105% for input of 36-40 VDC & 18-20 VDC)
- Minimum Load • No minimum load required
- Start Up Delay • 200 ms max (nom Vin & 100% load)
- Initial Set Accuracy • -3/+5% typically
- Drift • ±0.9% max
- Line Regulation • See Table
- Load Regulation • See Table
- Ripple & Noise • 200-250 mV pk-pk depending on model 20 MHz bandwidth
- Overvoltage Protection • See Table recycle input to reset
- Overcurrent Protection • Operates at >105% of rated current auto recovery
- Overtemperature Protection • Baseplate >+100 °C thermal protection is activated & output voltage is shutdown, after cooling recycle input to reset
- Temperature Coefficient • ±0.03%/°C max
- Remote Sense • Compensates for 0.3 V line drop max, when not used the remote sense terminals must be connected locally
- Remote ON/OFF • Negative logic L: (or short) ON, H: (or open) OFF (for positive logic add suffix '-R' to model number)

General

- Efficiency • 79-89% (See Tables)
- Isolation • 1500 VDC Input to Output
1500 VDC Input to Ground
500 VDC Output to Ground
- Switching Frequency • 370 kHz (310 kHz DCH50)
- Heatsinks • Contact Sales

Environmental

- Operating Temperature • -40 °C to +100 °C baseplate
- Storage Temperature • -40 °C to +100 °C
- Humidity • 20-95% RH non-condensing
- Operating Altitude • 9000 m
- Shock • 20 G, 11 ms once each along X, Y & Z axis
- Vibration • 5 G 10-55 Hz
3 mins period for 60 mins each along X, Y & Z axis

EMC & Safety

- Emissions • EN55022 Level B conducted
EN55022 Level B radiated
External components required
Contact Sales for Application Note
- ESD Susceptibility • EN61000-4-4 Level 2
- Radiated Susceptibility • EN61000-4-3 Level 3
- EFT/Burst • EN61000-4-4 Level 3
- Surge • EN61000-4-5 Level 3
- Safety Approvals • UL1950, c-UL, EN60950

OUTPUT VOLTAGE & CURRENT RATINGS

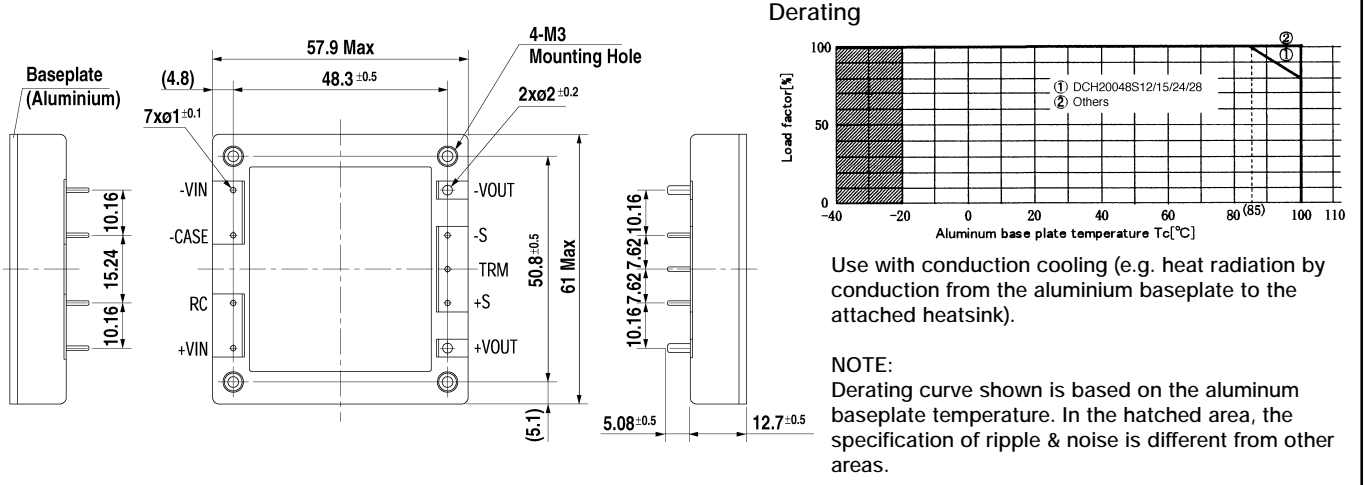
DCH

| Output Voltage | Output Current | OVP Set Point | Regulation | | Ripple & Noise Pk-Pk | 18-36 VDC IN | | 36-76 VDC IN | |
|----------------|----------------|-----------------|------------|-------|----------------------|-----------------|--------------|-----------------|--------------|
| | | | Line | Load | | Efficiency Typ. | Model Number | Efficiency Typ. | Model Number |
| 1.8 V | 11.7 A | 2.16-2.88 V | 10 mV | 10 mV | 120 mV | 71% | DCH5024S1V8 | 71% | DCH5048S1V8 |
| 2.5 V | 11.7 A | 3.00-4.00 V | 10 mV | 10 mV | 120 mV | 77% | DCH5024S2V5 | 77% | DCH5048S2V5 |
| 3.3 V | 11.7 A | 4.00 - 5.50 V | 10 mV | 10 mV | 200 mV | 79% | DCH5024S03 | 80% | DCH5048S03 |
| 5.0 V | 10.0 A | 5.70 - 7.00 V | 10 mV | 10 mV | 200 mV | 84% | DCH5024S05 | 85% | DCH5048S05 |
| 12.0 V | 4.2 A | 13.80 - 16.80 V | 24 mV | 24 mV | 200 mV | 88% | DCH5024S12 | 89% | DCH5048S12 |
| 15.0 V | 3.4 A | 17.25 - 21.00 V | 30 mV | 30 mV | 200 mV | 87% | DCH5024S15 | 88% | DCH5048S15 |
| 24.0 V | 2.1 A | 27.60 - 33.60 V | 48 mV | 48 mV | 250 mV | 87% | DCH5024S24 | 88% | DCH5048S24 |
| 28.0 V | 1.8 A | 32.20 - 39.20 V | 56 mV | 56 mV | 250 mV | 87% | DCH5024S28 | 88% | DCH5048S28 |
| 1.8 V | 23.4 A | 2.16 - 2.88 V | 10 mV | 10 mV | 120 mV | 71% | DCH10024S1V8 | 71% | DCH10048S1V8 |
| 2.5 V | 23.4 A | 3.00 - 4.00 V | 10 mV | 10 mV | 120 mV | 77% | DCH10024S2V5 | 77% | DCH10048S2V5 |
| 3.3 V | 23.4 A | 4.00 - 5.50 V | 10 mV | 10 mV | 200 mV | 79% | DCH10024S03 | 80% | DCH10048S03 |
| 5.0 V | 20.0 A | 5.70 - 7.00 V | 10 mV | 10 mV | 200 mV | 83% | DCH10024S05 | 84% | DCH10048S05 |
| 12.0 V | 8.4 A | 13.80 - 16.80 V | 24 mV | 24 mV | 200 mV | 88% | DCH10024S12 | 89% | DCH10048S12 |
| 15.0 V | 6.7 A | 17.25 - 21.00 V | 30 mV | 30 mV | 200 mV | 87% | DCH10024S15 | 88% | DCH10048S15 |
| 24.0 V | 4.2 A | 27.60 - 33.60 V | 48 mV | 48 mV | 250 mV | 87% | DCH10024S24 | 88% | DCH10048S24 |
| 28.0 V | 3.6 A | 32.20 - 39.20 V | 56 mV | 56 mV | 250 mV | 87% | DCH10024S28 | 88% | DCH10048S28 |
| 1.8 V | 35.0 A | 2.16-2.88 V | 10 mV | 10 mV | 120 mV | 70% | DCH20024S1V8 | 70% | DCH20048S1V8 |
| 2.5 V | 35.0 A | 3.00 - 4.00 V | 10 mV | 10 mV | 120 mV | 76% | DCH20024S2V5 | 76% | DCH20048S2V5 |
| 3.3 V | 35.0 A | 4.00 - 5.50 V | 10 mV | 10 mV | 200 mV | 79% | DCH20024S03 | 80% | DCH20048S03 |
| 5.0 V | 30.0 A | 5.70 - 7.00 V | 10 mV | 10 mV | 200 mV | 82% | DCH20024S05 | 83% | DCH20048S05 |
| 12.0 V | 16.7 A | 13.80 - 16.80 V | 24 mV | 24 mV | 200 mV | 87% | DCH20024S12 | 88% | DCH20048S12 |
| 15.0 V | 13.4 A | 17.25 - 21.00 V | 30 mV | 30 mV | 200 mV | 87% | DCH20024S15 | 88% | DCH20048S15 |
| 24.0 V | 8.4 A | 27.60 - 33.60 V | 48 mV | 48 mV | 250 mV | 87% | DCH20024S24 | 88% | DCH20048S24 |
| 28.0 V | 7.2 A | 32.20 - 39.20 V | 56 mV | 56 mV | 250 mV | 87% | DCH20024S28 | 88% | DCH20048S28 |

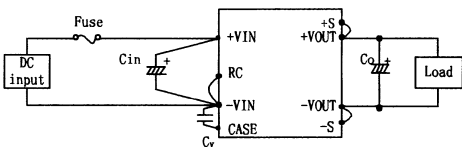
Notes

1. Install an external capacitor C_{in} , with more than $33 \mu F$, between +Vin and -Vin input pins for low line noise and for stable operation $T_c = -20^\circ C$ to $+100^\circ C$ electrolytic or, $T_c = -40^\circ C$ to $+100^\circ C$ ceramic capacitor. When the line impedance is high or the input voltage rises quickly at start-up ($< 10 \mu s$), install a capacitor C_{in} between +Vin and -Vin input pins (within 50 mm from pins).
2. Full application notes available at www.xpplc.com, alternatively contact Technical Sales.

Mechanical Details



Connection For Standard Use



In order to use the converters, it is necessary to wire as shown. Short the following pins to turn the power supply on.

-V in \longleftrightarrow RC, +V out \longleftrightarrow Sense, -V out \longleftrightarrow Sense

C_{in} : External capacitor on the input side $> 33 \mu F$

C_o : External capacitor on the output side - See Table

C_Y : Primary decoupling capacitor - $> 4700 pF$

| Baseplate Temperature : $T_c = -20^\circ C$ to $+100^\circ C$ | | | | | | |
|---|----------|-----|----------|------|---------|------|
| VOUT | 3.3 V | 5 V | 12 V | 15 V | 24 V | 28 V |
| DCH50 | 2200 | | 470 | | 220 | |
| DCH100 | 2200 | | 470 | | 220 | |
| DCH200 | 2200 | | 1000 | | 470 | |
| Baseplate Temperature : $T_c = -40^\circ C$ to $+100^\circ C$ | | | | | | |
| VOUT | 3.3 V | 5 V | 12 V | 15 V | 24 V | 28 V |
| DCH50 | 2200 x 2 | | 470 x 2 | | 220 x 2 | |
| DCH100 | 2200 x 2 | | 470 x 2 | | 220 x 2 | |
| DCH200 | 2200 x 2 | | 1000 x 2 | | 470 x 2 | |