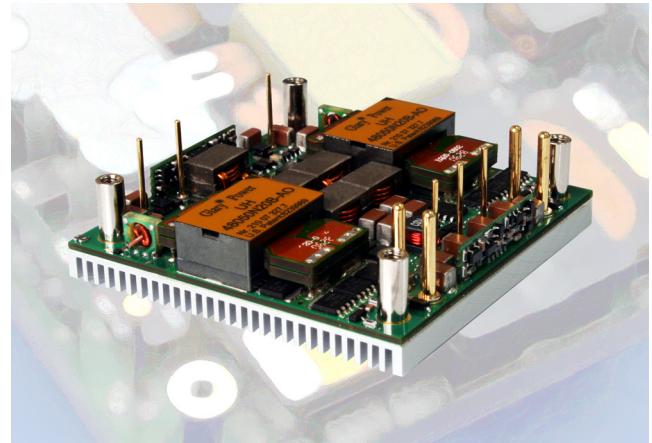


- High efficiency ..... 93%@13V/62A  
..... 94%@13V/50A
- High useable current
  - ... 13V/50A at Tc 60°C/400LFM (with 5.0mm Sink-Plate)
  - ... 13V/62A at Tc 58°C/450LFM (with 5.0mm Sink-Plate)
- Low profile footprint (1.0mm Metal-Plate)..... 2.42"×2.46" ×0.46"
- Operation temperature ..... -40°C~110°C
- Sink-Plate (SP) flexible thermal managing capability (see drawing)



The UH48130ABCD-X62 provides up to 806W/62A outputs with industry standard half brick package. The efficient SR stage is combined with patented "Buck Reset" topology for reduce power loss to achieve 294W/in<sup>3</sup> power density. The multi-layer single side circuit board design plus the patented Sink-Plate technology is able to enhance the thermal performance and improve its reliability. Modules are designed for Telecom, Servers, Networking equipments and other applications that use a 48V (36~75V) input bus.

Part Number *	Maximum Input	Maximum Output	Efficiency
UH48130ABCD- X62	36V~75V	866W 13V/62A 806W	93%

Part Number *	Maximum Input	Maximum Output	Efficiency

\* Options for **UH48130ABCD-X62** are as follows:

- |   |  |   |   |
|---|--|---|---|
| <b>A</b> (Enable Logic):                | <b>P</b> : Positive                        | <b>N</b> : Negative                         |   |
| <b>B</b> (Pin Length):                  | <b>0</b> : 0.12"                           | <b>1</b> : 0.16"                            | <b>2</b> : 0.20"                              |
| <b>C</b> (Standoff Height):             | <b>0</b> : 0.02"                           | <b>1</b> : 0.08"                            | <b>2</b> : 0.16"                              |
| <b>D</b> (Base-Plate/Module Thickness): | <b>M</b> : 1.0mm Metal Plate/0.44"         | <b>A</b> : 3.0mm Sink-Plate/0.55"           | <b>B</b> : 5.0mm Sink-Plate/0.60"             |
| <b>X</b> (Current Share):               | <b>N</b> : Without current share           | <b>P</b> : Current share connect in Primary | <b>S</b> : Current share connect in Secondary |
| <b>EF</b> (Output):                     | <b>62</b> for output current rating 62Amps |   |   |



**Example:** **UH48130P20M-N62** is a **UH** series half brick 48V to 13V/62A dc/dc converter with positive control logic, 0.20" pin length, 0.02" of standoff height and 1.0mm metal plate. It features no current share function and the total height is 0.02"+0.44"=0.46"

ABSOLUTE MAXIMUM RATINGS		
Temperature	Operation	-40°C to +110°C
	Storage	-55°C to +125°C
Input Voltage Range	Operation:	
	48V Models Transient (100mS):	-0.5V to +80Vdc
Isolation Voltage	48V Models	100Vdc Maximum
	Input to Output	2.0KVdc
	Input to Case	1.0KVdc
	Output to Case	1.0KVdc
Remote Control Voltage		-0.5V to +12Vdc

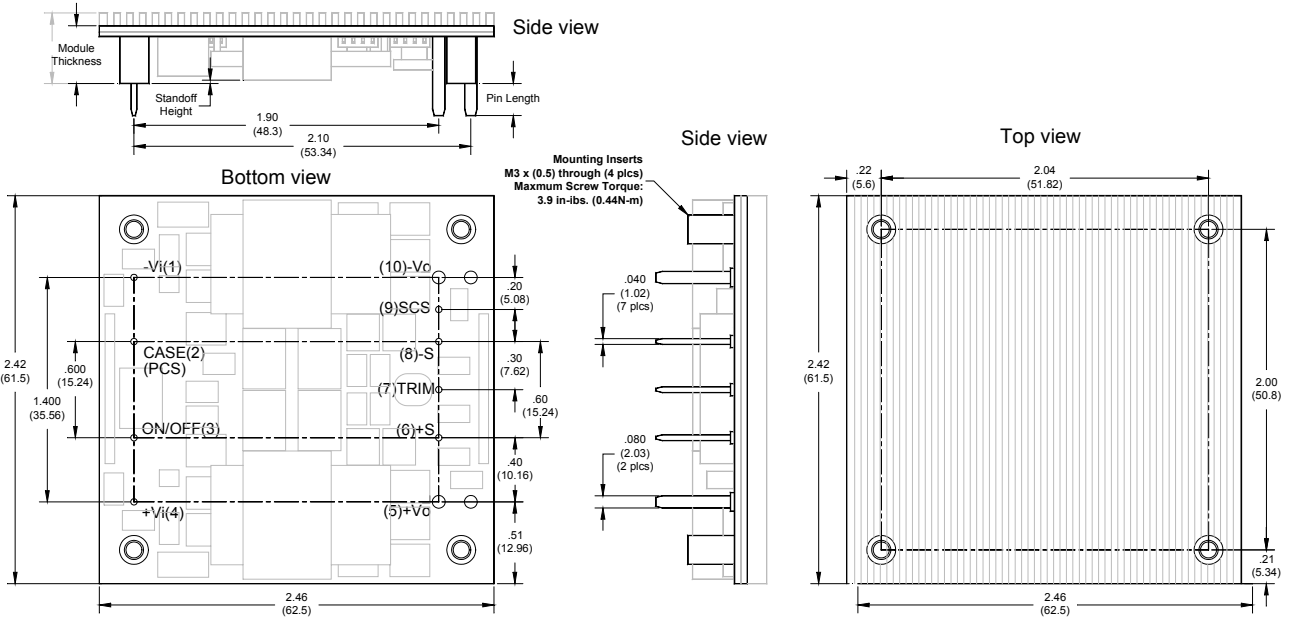
INPUT SPECIFICATIONS		
Operation Voltage Range	48V Models	+36V to +75Vdc
Reflected Ripple Current	L <sub>EXT</sub> = 20uH	30mA Max
Power ON Voltage Ranges	48V Models	+34.5V to +35.8Vdc
Power OFF Voltage Ranges	48V Models	+33.0V to +34.8Vdc
Off State Input Current	V <sub>NOM</sub>	6mA Max
Latch-State Input Current	V <sub>NOM</sub>	8mA Max
Input Capacitance		48.0uF Max
	48V Models	15.0uF Max

GENERAL SPECIFICATION		
Conversion Efficiency	Typical	See table
Switching Frequency	Typical	330KHz
MTBF	Bellcore	2.36×10 <sup>6</sup> hrs @GB/25°C.
	TR-332 issue 6	1.04×10 <sup>6</sup> hrs @GB/50°C.
OTP	Internal	110°C (T <sub>c</sub> )
Weight	1mm Metal Plate	87g
	3mm Sink Plate	94g

OUTPUT SPECIFICATIONS		
Voltage Accuracy	Typical	±1.0%
Line Regulation	Full Input Range	±0.3%
Load Regulation	10%~100%	±0.3%
Temperature Drift	-40°C ~100°C	±0.03%/°C
Output Tolerance Band	All Conditions	±4%
Ripple & Noise (20MHz)	Peak-Peak (RMS)	3% (1%) V <sub>o</sub>
Over Voltage Protection	V <sub>NOM</sub> , 10% Load	115~130 %V <sub>o</sub>
Output Current Limits	V <sub>NOM</sub>	108%~125%
Voltage Trim	V <sub>NOM</sub> , 10% Load	±10%
Input Ripple Rejection (<1KHz)	V <sub>NOM</sub> , Full Load	-50dB
Step Load (2.5A/uS)	50%~75% Load	6%Vo/500uS
Start-Up Delay Time	V <sub>NOM</sub> , Full Load	50mS/250mS

CONTROL FUNCTIONS		
Remote Control	Logic High	+3.0V to +6.5V
	Logic Low	0V to +1.0V
Input Current of Remote Control Pin		-0.5mA ~ +1.5mA

**Important Note:** General specifications and the performances are related to standard series only, no special customer specification display here except requested items.



**Module Mechanical Data**

**Connection:**

Designation	Function Description	Pin #
-Vi	Negative input	1
CASE (PCS)	Base plate (option: primary current share)	2
ON/OFF	Remote control. To turn-on and turn-off output.	3
+Vi	Positive input	4
+Vo	Positive output	5
+S	Positive remote sense	6
TRIM	Output voltage adjust	7
-S	Negative remote sense	8
SCS	Secondary current share bus	9
-Vo	Negative output	10

**Dimensions:** inches (mm)

**Tolerances:** .xx±0.02 (.x±0.5)  
.xxx±0.01 (.x±0.25)

**Weight:** 87g / 1.0mm Metal Plate  
94g / 3.0mm Sink-Plate

**Base plate:** Aluminum alloy with anode oxide

**Mounting inserts:** Iron alloy with Nickel plated  
[ Maximum Torque: 3.9 in.-lbs. (0.44N-m) ]

**Pin material:** Copper alloy or Brass

**Pin plating:** Golden over Nickel

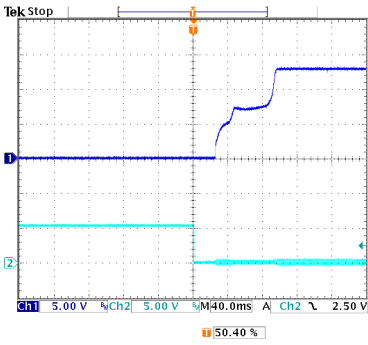
**Referenced EMC Circuit:**

The tested curve and referenced EMC circuit.

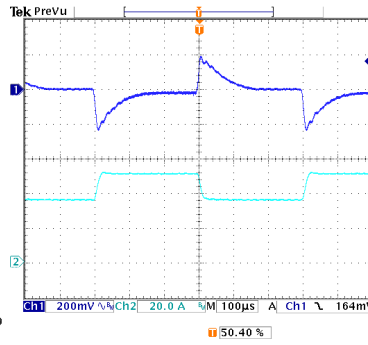
TBD

TBD

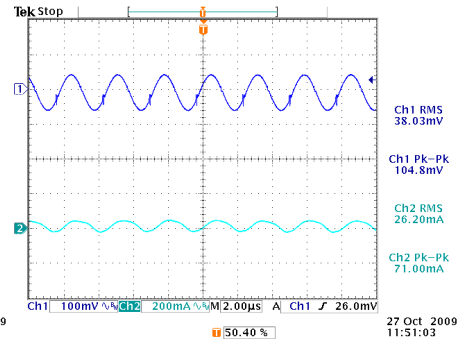
Important Note: General specifications and the performances related to standard series only, no special customer specification display here except requested items.



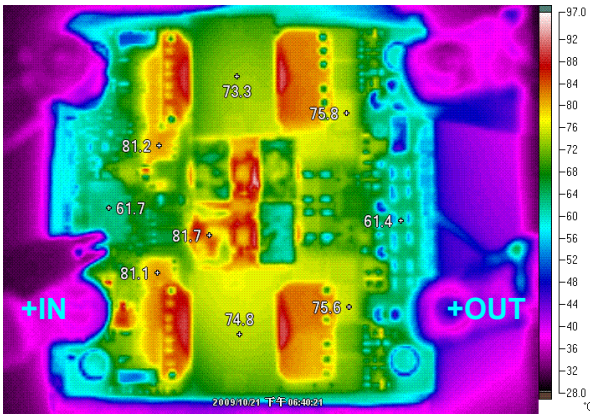
Start-Up Waveform  
(VIN: 48V, Load: 62A)



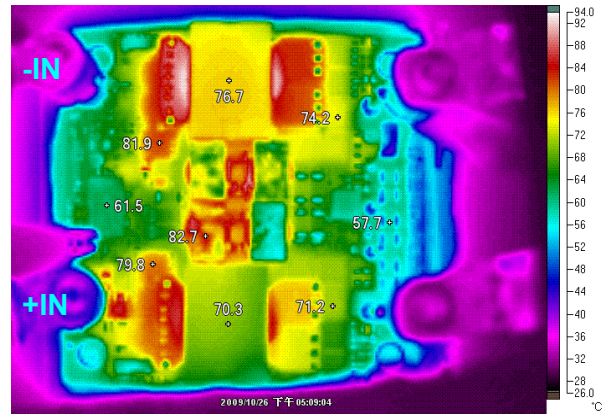
Transient Response  
(VIN: 48V, Load: 52A/35A@2.5A/μs)



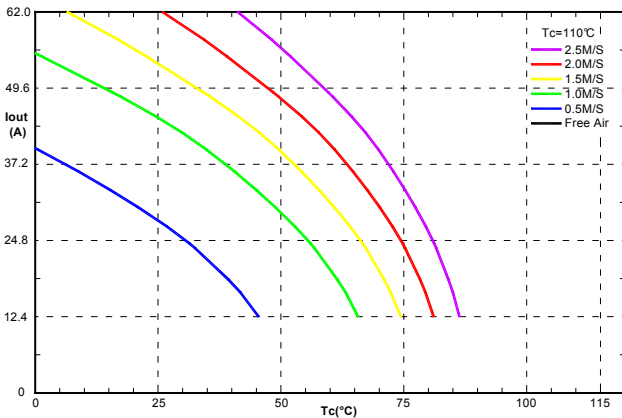
Output Ripple/Noise and Input Ripple Current  
(VIN: 48V, Load: 62A, LIN=20uH)



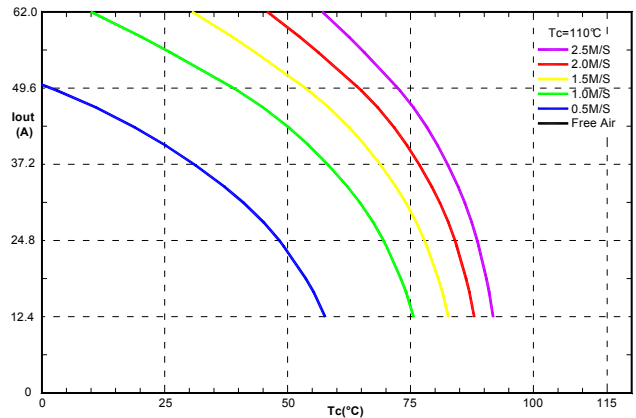
Thermal Image / 48Vin / Full Load  
(+IN/+OUT Direction/400LFM with Heat Sink 74x65x30mm)



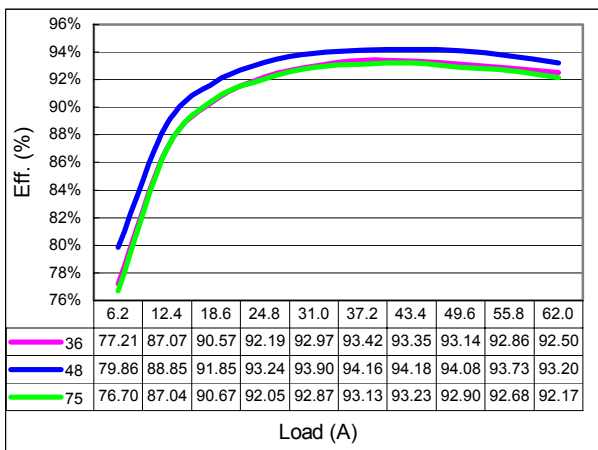
Thermal Image / 48Vin / Full Load  
(+IN-IN Direction/400LFM with Heat Sink 74x65x30mm)



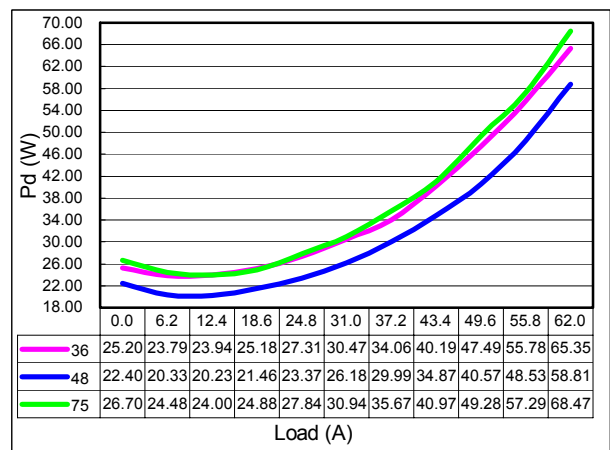
Derating Plot of UH48120ABCA-X50, with 3.0mm Sink-plate



Derating Plot of UH48120ABCB-X50, with 5.0mm Sink-plate



Efficiency Plot



Power Loss Plot

Important Note: General specifications and the performances referring to standard series only, no special customer specification display here except requested items.

## Reliability Prediction Result of UH48130P20M-N62

**Base Plate Temperature ( °C): 25**

**Input Range: 36~75V**

**Output Power: 13V / 62A**

The MTBF, calculated in accordance with the Parts Count Method of Bellcore TR-332 issue 6, December 1997. The General Case is used for calculations.

### *Parts Failure Rates*

Resistors :	12.01
Capacitors :	42.45
Diodes :	25.36
BiopolarTransistors :	7.31
Field Effect Transistors :	193.07
Optocouplers :	7.31
Chokes :	29.18
Transformers :	9.92
Integreated Circuits :	91.04
Zener Diode:	3.36
Thermistor:	2.21
<b>Total :</b>	<b>423.23</b>

$$\begin{aligned}\lambda_{\text{Unit}} &= \pi_E * \sum \lambda_p \\ &= \mathbf{423.23 \text{ Failures / } 10^9 \text{ Hours}} \\ \text{MTBF} &= \mathbf{2,362,763 \text{ Hours}} \\ &= \mathbf{269.722 \text{ Years}}\end{aligned}$$

The detail MTBF calculation of UH series dc/dc converters are base on specified base plate temperature with component temperature rise listed as following pages.

## Reliability Prediction Result of UH48130P20M-N62

**Base Plate Temperature ( °C): 50**

**Input Range: 36~75V**

**Output Power: 13V / 62A**

The MTBF, calculated in accordance with the Parts Count Method of Bellcore TR-332 issue 6, December 1997. The General Case is used for calculations.

### *Parts Failure Rates*

Resistors :	18.87
Capacitors :	49.36
Diodes :	49.21
BiopolarTransistors :	60.28
Field Effect Transistors :	367.04
Optocouplers :	60.28
Chokes :	45.22
Transformers :	15.14
Integreated Circuits :	277.09
Zener Diode:	5.28
Thermistor:	7.09
<b>Total :</b>	<b>954.86</b>

$$\begin{aligned}\lambda_{\text{Unit}} &= \pi_E * \sum \lambda_p \\ &= \mathbf{954.86 \text{ Failures / } 10^9 \text{ Hours}} \\ \text{MTBF} &= \mathbf{1,047,271 \text{ Hours}} \\ &= \mathbf{119.551 \text{ Years}}\end{aligned}$$

The detail MTBF calculation of UH series dc/dc converters are base on specified base plate temperature with component temperature rise listed as following pages.

## Reliability Prediction Result of UH48130P20M-N62

**Base Plate Temperature ( °C): 75**

**Input Range: 36~75V**

**Output Power: 13V / 62A**

The MTBF, calculated in accordance with the Parts Count Method of Bellcore TR-332 issue 6, December 1997. The General Case is used for calculations.

### *Parts Failure Rates*

Resistors :	27.79
Capacitors :	56.15
Diodes :	86.82
BiopolarTransistors :	366.94
Field Effect Transistors :	637.07
Optocouplers :	366.94
Chokes :	65.84
Transformers :	21.78
Integreated Circuits :	734.60
Zener Diode:	7.77
Thermistor:	19.31
<b>Total :</b>	<b>2391.04</b>

$$\begin{aligned}\lambda_{\text{Unit}} &= \pi_E * \sum \lambda_p \\ &= \mathbf{2391.04 \text{ Failures / } 10^9 \text{ Hours}} \\ \text{MTBF} &= \mathbf{418,229 \text{ Hours}} \\ &= \mathbf{47.743 \text{ Years}}\end{aligned}$$

The detail MTBF calculation of UH series dc/dc converters are base on specified base plate temperature with component temperature rise listed as following pages.