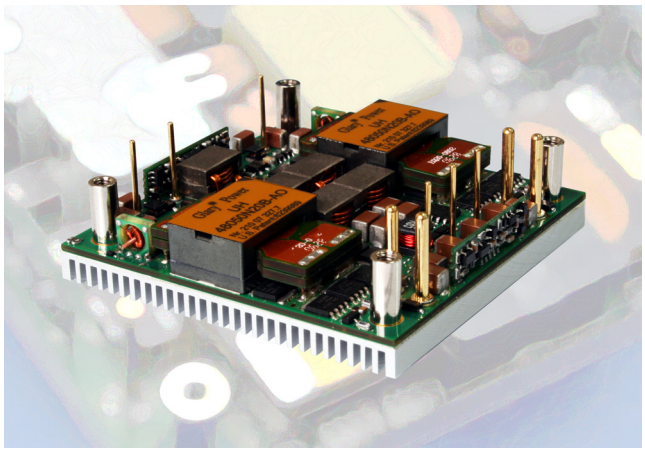
Glary Power Technology

1/2 Brick
UH48130ABCD-X62

- 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/in3 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:

A (Enable Logic):	**P**: Positive	**N**: Negative		
B (Pin Length):	**0**: 0.12"	**1**: 0.16"	**2**: 0.20"	**3**: 0.24"
C (Standoff Height):	**0**: 0.02"	**1**: 0.08"	**2**: 0.16"	
D (Base-Plate/Module Thickness):	**M**: 1.0mm Metal Plate/0.44"			
	A: 3.0mm Sink-Plate/0.55"		**B**: 5.0mm Sink-Plate/0.60"	
X (Current Share):	**N:** Without current share			
	P: Current share connect in Primary		**S:** Current share connect in Secondary	
EF (Output):	**62** for output current rating 62Amps			

Pb

RoHS 2002/95/EC

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	-0.5V to +80Vdc
	Transient (100mS):	
	48V Models	100Vdc Maximum
Isolation Voltage	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_{EXT} = 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_{NOM}	6mA Max
Latch-State Input Current	V_{NOM}	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	2.36×10^6 hrs @GB/25°C.
	TR-332 issue 6	1.04×10^6 hrs @GB/50°C.
OTP	Internal	110°C (T_C)
Weight	1mm Metal Plate	87g
	3mm Sink Plate	94g

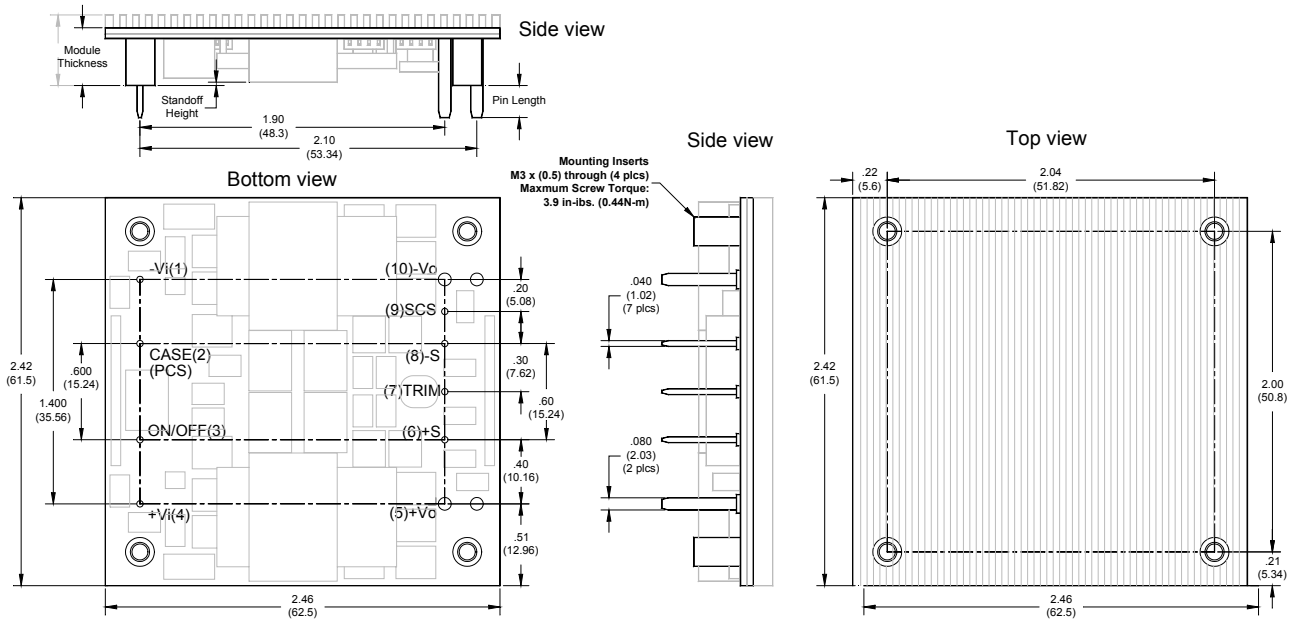
OUTPUT SPECIFICATIONS

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_o
Over Voltage Protection	V_{NOM}, 10% Load	115~130 %Vo
Output Current Limits	V_{NOM}	108%~125%
Voltage Trim	V_{NOM}, 10% Load	±10%
Input Ripple Rejection (<1KHz)	V_{NOM}, Full Load	-50dB
Step Load (2.5A/uS)	50%~75% Load	6%Vo/500uS
Start-Up Delay Time	V_{NOM}, Full Load	50mS/250mS

CONTROL FUNCTIONS

Remote Control	Logic High	+3.0V t0 +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-ibs. (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

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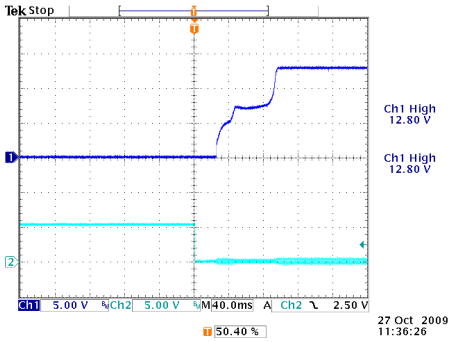
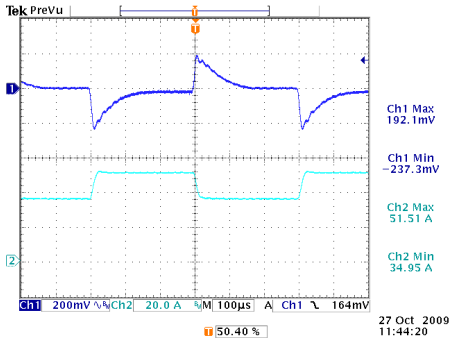
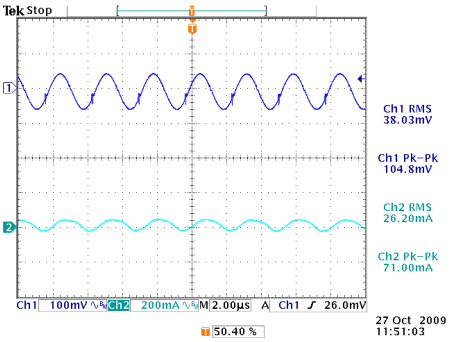


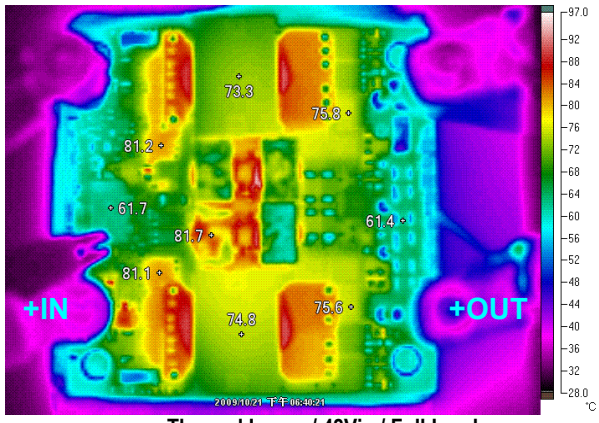
Start-Up Waveform
(VIN: 48V, Load: 62A)



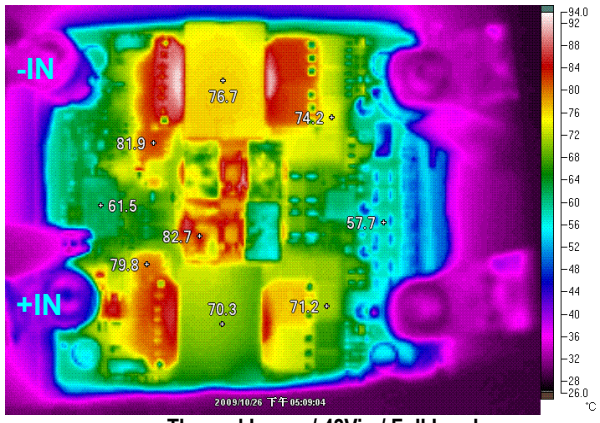
Transient Response
(VIN: 48V, Load: 52A/35A@2.5A/µS)



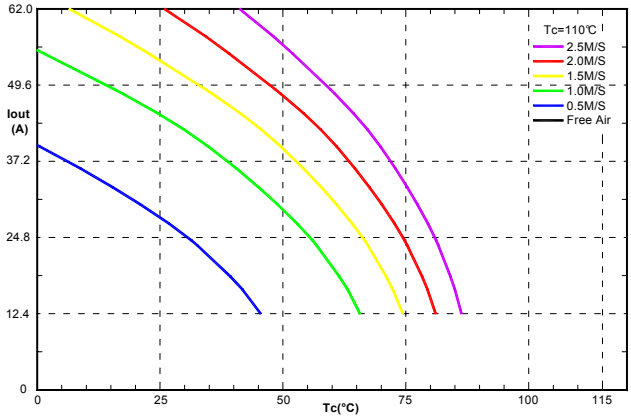
Output Ripple/Noise and Input Ripple Current
(VIN: 48V, Load: 62A, LIN=20uH)



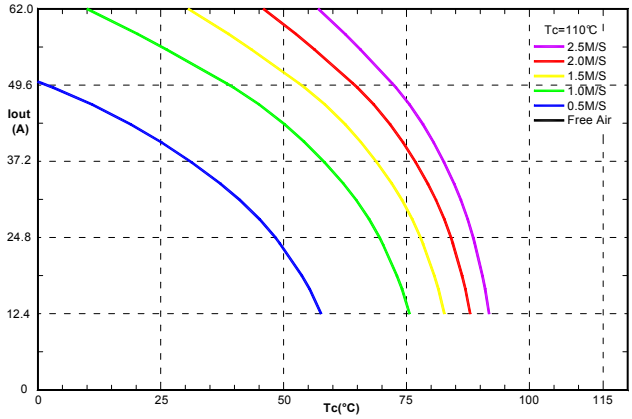
Thermal Image / 48Vin / Full Load
(+IN/+OUT Direction/400LFM with Heat Sink 74x65x30mm)



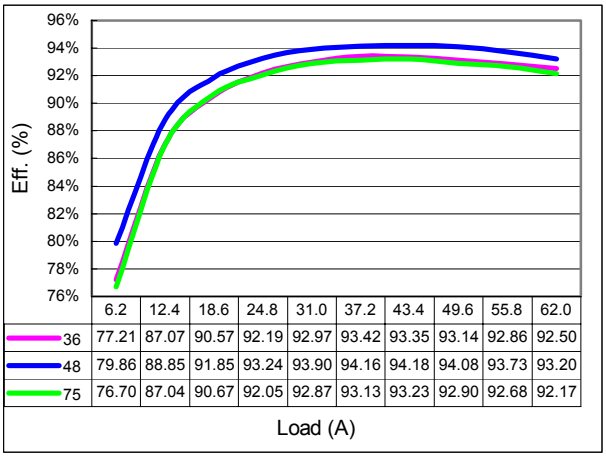
Thermal Image / 48Vin / Full Load
(+IN/-IN Direction/400LFM with Heat Sink 74x65x30mm)



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

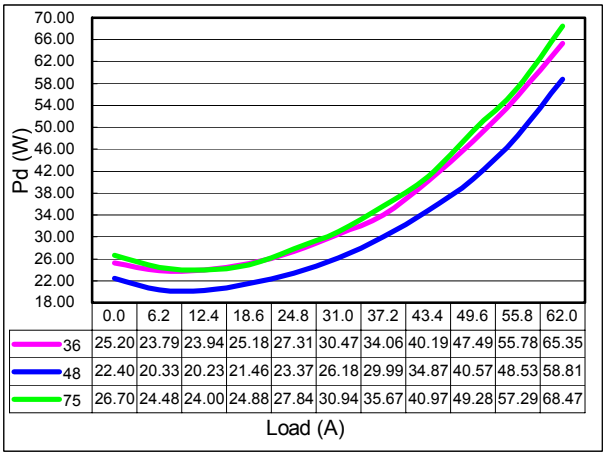


Derating Plot of UH48120ABCB-X50, with 5.0mm Sink-plate



	6.2	12.4	18.6	24.8	31.0	37.2	43.4	49.6	55.8	62.0
36	77.21	87.07	90.57	92.19	92.97	93.42	93.35	93.14	92.86	92.50
48	79.86	88.85	91.85	93.24	93.90	94.16	94.18	94.08	93.73	93.20
75	76.70	87.04	90.67	92.05	92.87	93.13	93.23	92.90	92.68	92.17

Efficiency Plot



	0.0	6.2	12.4	18.6	24.8	31.0	37.2	43.4	49.6	55.8	62.0
36	25.20	23.79	23.94	25.18	27.31	30.47	34.06	40.19	47.49	55.78	65.35
48	22.40	20.33	20.23	21.46	23.37	26.18	29.99	34.87	40.57	48.53	58.81
75	26.70	24.48	24.00	24.88	27.84	30.94	35.67	40.97	49.28	57.29	68.47

Power Loss Plot

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

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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
Total :	423.23

$\lambda_{Unit} = \pi_E * \Sigma\lambda_p$

= **423.23** **Failures / 10^9 Hours**

MTBF = **2,362,763** **Hours**

= **269.722** ***Years***

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.

Glary Power Technology

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
Total :	954.86

$\lambda_{Unit} = \pi_E * \Sigma\lambda_p$

= **954.86** **Failures / 10^9 Hours**

MTBF = **1,047,271** **Hours**

= **119.551** ***Years***

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.

Glary Power Technology

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
Total :	2391.04

$\lambda_{Unit} = \pi_E * \Sigma\lambda_p$

= **2391.04 Failures / 10^9 Hours**

MTBF = **418,229 Hours**

= **47.743** ***Years***

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.