



The ultra-compact high efficiency **U64** Nano-brick provides up to 40W/8A output with 0.7"×0.7" footprint, which is designed with the efficiently patented "Coupled-Inductor SR" topology. The DOSA compatible pin assignments and 60% more of available power are designed to help system designers with up to 50% of space saving for the power circuit area in the majority of the current application boards by simply a drop in replacement for system upgrade.

### Preliminary Data Sheet

#### PART NUMBER SYSTEM

U64	48	050	a	b	c	d	-	08	XX	X
Series Name	Input Voltage	Output Voltage	Enable Logic	Pin Dimension	Standoff Height	Base-Plate		Output Current	Suffix	Version
U64	48=36V~75V	Unit: 0.1V Increments 120=12V 050=5V	P: Positive N: Negative	0 : 0.12" 1 : 0.16" 2 : 0.20"	0 : 0.02"	O : Open frame standard type	-	00-08 : For output current rating	For marketing purpose only	

#### MODEL LIST (Contact to factory for special input / output)

Part Number *	Maximum Input	Maximum Output	Efficiency	Part Number *	Maximum Input	Maximum Output	Efficiency
U6448120abcd-03XXX	36V~75V	44W	12.0V/3.3A 40W 93%				
U6448050abcd-08XXX	36V~75V	45W	5.0V/8A 40W 91%				
U6448033abcd-10XXX	36V~75V	37W	3.3V/8A 27W 89%				
N6448025abcd-10XXX	36V~75V	29W	2.5V/8A 25W 87%				

#### REFERENCED THERMAL IMAGES

To be updated in next version	To be updated in next version
U6448033abcO-08 (I <sub>o</sub> = ?A@50°C/100LFM)	U6448033abcO-08 (I <sub>o</sub> = ?A@55°C/200LFM)

## SPECIFICATIONS

Absolute Maximum Ratings		
Temperature	Operation Storage	-40°C to +110°C -55°C to +125°C
Input Voltage Range	Operation: 48V Models Transient (100mS): 48V Models	-0.5V to +80Vdc 100V Maximum
Isolation Voltage	Input to Output	2.0KV Minimum
Remote Control		-0.5V to +12Vdc

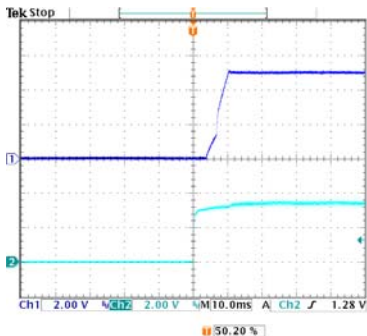
General Parameters		
Conversion Efficiency	Typical	See table
Switching Frequency	Typical	400KHz
MTBF	Bellcore TR-332 issue 6	7.6×10 <sup>6</sup> hrs @GB/25°C (U6448050abcd-08XXX)
OTP	Internal	110°C(Tc) ±5°C
Weight		6g

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

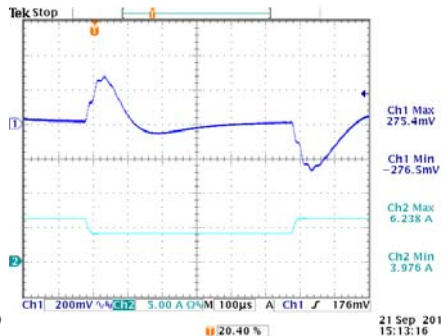
Input		
Operation Voltage Range	48V Models	+36V to +75Vdc
Reflected Ripple Current	L <sub>EXT</sub> = 10uH, C <sub>EXT</sub> = 47uF	30mA rms/100mAp-p
Power ON Voltage Ranges	48V Models	+34.0V to +36.0Vdc
Power OFF Voltage Ranges	48V Models	+31.2V to +33.2Vdc
Off State Input Current	V <sub>NOM</sub>	3mA Max
Latch-State Input Current	V <sub>NOM</sub>	8mA Max
Input Capacitance	48V Models	6.0uF Max

Output		
Voltage Accuracy	Typical	±1.0%
Line Regulation	Full Input Range	±0.2%
Load Regulation	10%~100%	±0.2%
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/μS)	50%~75% Load	±6%Vo/500μS
Start-Up Delay Time	V <sub>NOM</sub> , Full Load	20mS/250mS

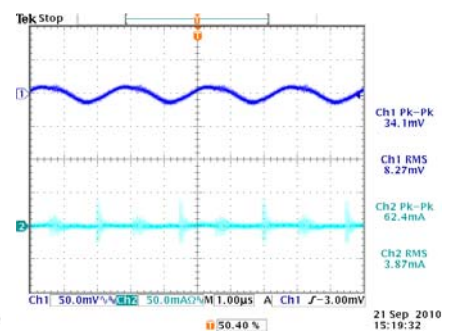
## TYPICAL WAVES AND CURVES



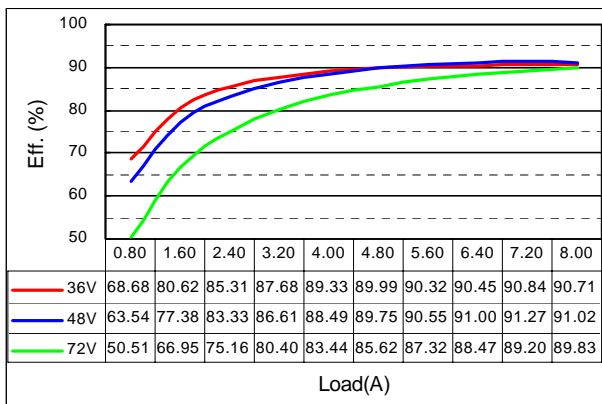
Start-up waveform of U6448050abcd-08XXX  
( $V_{IN}$ : 48V, Load: 8A)



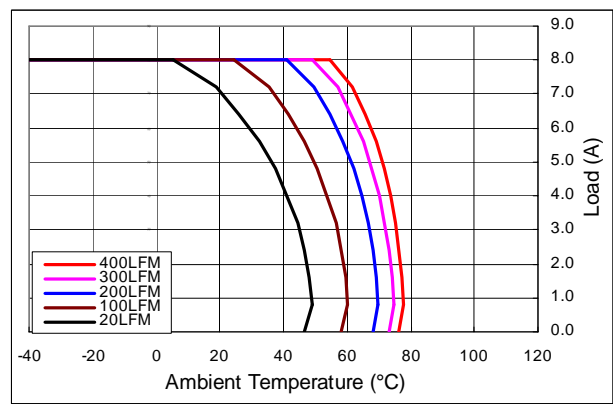
Transient response of U6448050abcd-08XXX  
( $V_{IN}$ : 48V, Load: 6.0A/4.0A@2.5A/µs)



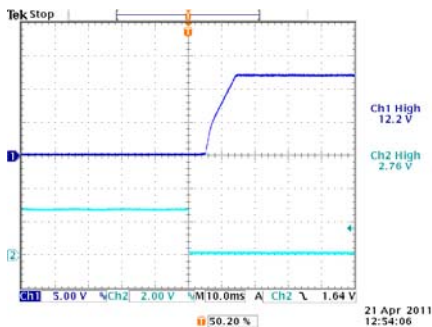
Input/Output ripples of U6448050abcd-08XXX  
( $V_{IN}$ : 48V, Load: 8A,  $L_{IN}$ =10uH,  $C_{IN}$ =47uF)



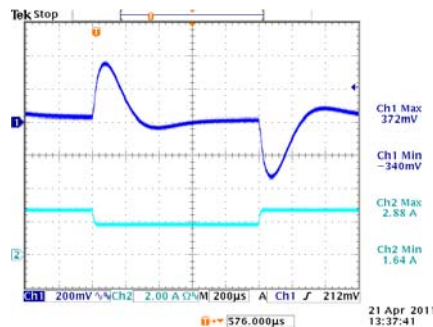
Efficiency plot of U6448050abcd-08XXX



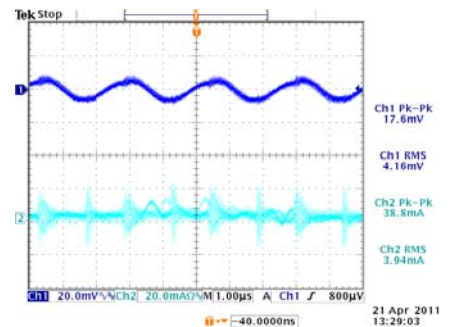
Derating curves of U6448050abcd-08XXX for  $T_c = 110^\circ\text{C}$



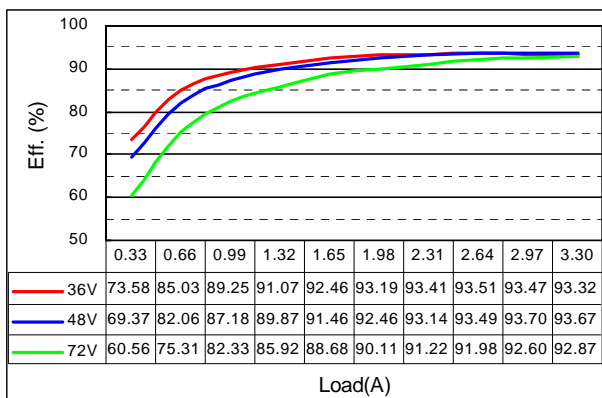
Start-up waveform of U6448120N000-03XXX  
( $V_{IN}$ : 48V, Load: 3.3A)



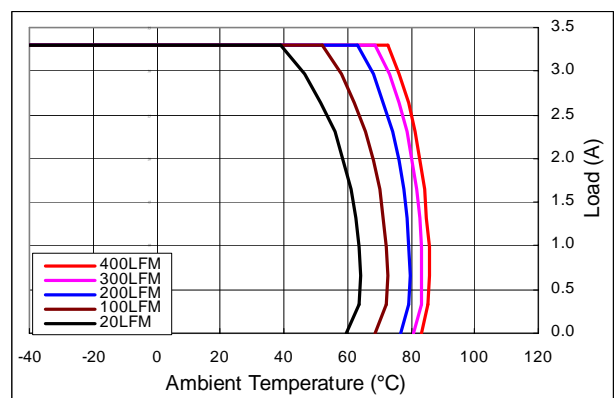
Transient response of U6448120N000-04XXX  
( $V_{IN}$ : 48V, Load: 2.5A/1.65A@2.5A/µs)



Input/Output ripples of U6448120N000-04XXX  
( $V_{IN}$ : 48V, Load: 3.3A,  $L_{IN}$ =10uH)

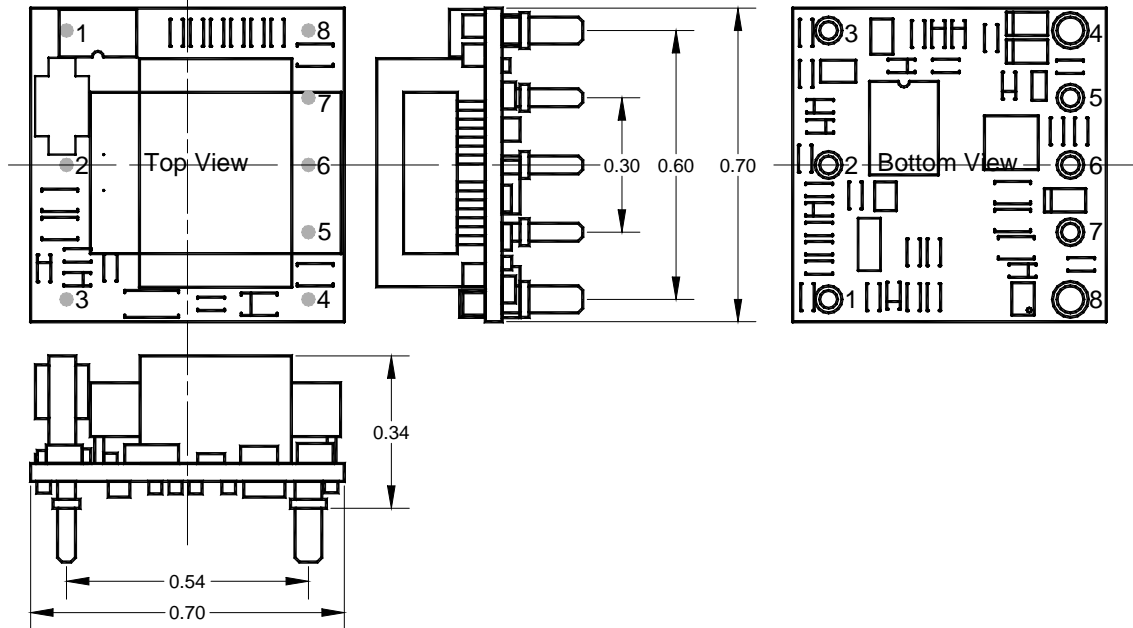


Efficiency plot of U6448120N000-03XXX



Derating curves of U6448120N000-03XXX for  $T_c = 110^\circ\text{C}$

## OPEN FRAME PACKAGE



Nano-Brick U64 series

### Dimensions and Pin Connections

Designation	Function Description	Pin #
+Vi	Positive input	1
Remote	ON/OFF control	2
-Vi	Negative input	3
-Vo	Negative output	4
-S	Negative remote sense	5
TRIM	Output voltage adjust	6
+S	Positive remote sense	7
+Vo	Positive output	8

**Dimensions:** inches (mm)

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

**Mass:** 6g / Nano brick

**Base plate:** None

**Pin material:** Copper alloy or Brass

**Pin plating:** Golden over Nickel

### NOTE:

1. It is recommended that the input should be protected by fuses or other protection devices.
2. All specifications are typical at nominal input, full load and 25°C unless otherwise noted.
3. Specifications are subject to change without notice.
4. Printed or downloaded datasheets are not subject to Glary document control.
5. Product labels shown, including safety agency certificates, may vary based on the date of manufacture.
6. Information provided in this documentation is for ordering purposes only.
7. This product is not designed for use in critical life support systems, equipment used in hazardous environments, nuclear control systems or other such applications, which necessitate specific safety and regulatory standards other than the ones listed in this datasheet.

### IMPORTANT

- ✳ General specifications and the performances are related to standard series only, no special customer specification display here except requested items.
- ✳ In order to secure effective usage of converter and the validity of Glary's service and warranty coverage, please refer to the application notes for general usage. For needs of usage beyond the application notes, please contact to Glary headquarter or our regional sales representative office for help.