Glary Power Technology

UQ Series
Quarter Brick up to 300W／60A

Efficiency >92% | 235W/in³ | Open Frame Package | OCP | 2.96Mhrs MTBF | Remote ON OFF | INPUT 2:1 | OVP | OTP | Pb | RoHS 2002/95/EC

The ***UQ*** series provides up to 300W/60A outputs with industry standard quarter brick package. The efficient SR stage is combined with patented "Buck Reset" topology that would reduce power loss to achieve 235W/in³ power density. The multi-layer single side circuit board design plus the patented Sink-Plate technology would enhance the thermal performance and improve its reliability. Modules are designed for Telecom, Servers, Networking equipments and other applications that use a 24V or 48V input bus.

PART NUMBER SYSTEM

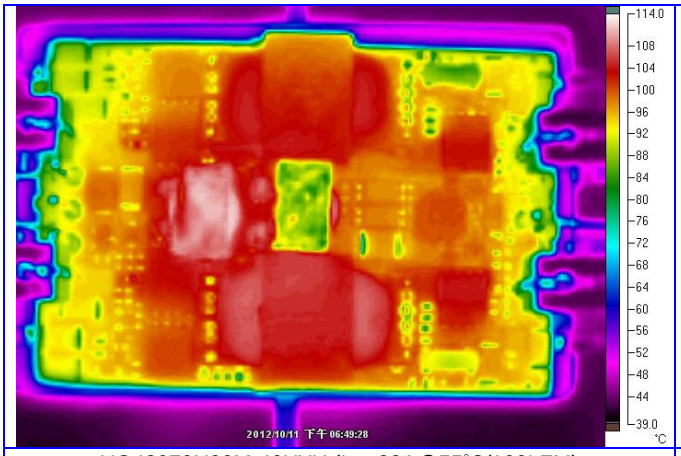
UQ	48	120	a	b	c	d	-	25	XX	X
Series Name	Input Voltage	Output Voltage	Enable Logic	Pin Dimension	Standoff Height	Base-Plate		Output Current	Suffix	Version
UQ	**48=**36V~75V **24=**18V~36V	**Unit:** 0.1V Increments **120=12**V **050=**5V	**P:** Positive **N:** Negative	**0**：0.12" **1**：0.16" **2**：0.20" **3**：0.24"	**0**：0.02" **1**：0.08" **2**：0.16"	**M**：1.0mm Metal Plate **S**：3.0mm Metal Plate **Z**：5.0mm Metal Plate **A**：3.0mm Sink-Plate **B**：5.0mm Sink-Plate	-	**00~60**： For output current rating	For marketing purpose only	

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

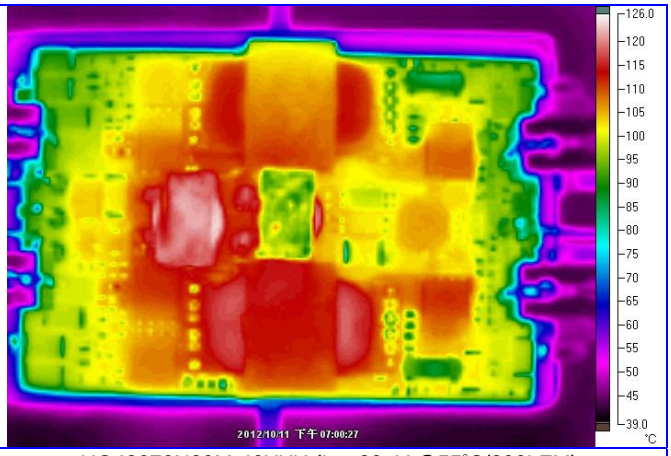
Part Number *	Maximum Input		Maximum Output		Efficiency
UQ48120abcd-25XXX	36V~75V	326W	12.0V/25A	300W	92%
UQ48070abcd-40XXX	36V~75V	308W	7.0V/40A	280W	91%
UQ48050abcd-60XXX	36V~75V	330W	5.0V/60A	300W	91%
UQ48033abcd-60XXX	36V~75V	221W	3.3V/60A	198W	90%

Part Number *	Maximum Input		Maximum Output		Efficiency
UQ24120abcd-25XXX	18V~36V	330W	12.0V/25A	300W	91%
UQ24070abcd-40XXX	18V~36V	308W	7.0V/40A	280W	91%
UQ24050abcd-60XXX	18V~36V	330W	5.0V/60A	300W	90%
UQ24033abcd-60XXX	18V~36V	221W	3.3V/60A	198W	90%

REFERENCED THERMAL IMAGES



UQ48070N20M-40XXX (Io= 23A@55°C/100LFM)



UQ48070N20M-40XXX (Io= 30.4A@55°C/200LFM)

SPECIFICATIONS

Absolute Maximum Ratings		
Temperature	Operation Storage	-40°C to +110°C -55°C to +125°C
Input Voltage Range	Operation: 24V Models 48V Models Transient (100mS): 24V Models 48V Models	 -0.5V to +40Vdc -0.5V to +80Vdc 50V Maximum 100V Maximum
Isolation Voltage	Input to Output Input to Case Output to Case	2.0KV Minimum 1.0KV Minimum 1.0KV Minimum
Remote Control		-0.5V to +12Vdc

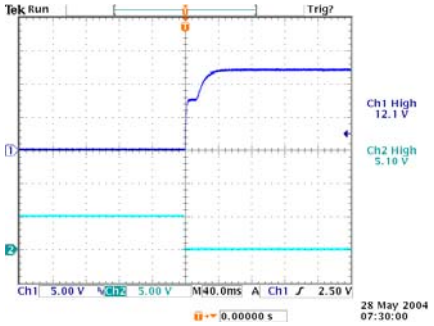
General Parameters		
Conversion Efficiency	Typical	See table
Switching Frequency	Typical	330KHz
MTBF	Bellcore TR-332 issue 6	2.96×10^6 hrs @GB/25°C (UQ48050abcd-60XXX)
OTP	Internal	110°C(Tc) ±5°C
Weight	1.0mm metal plate 3.0mm metal plate	43g 56g

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

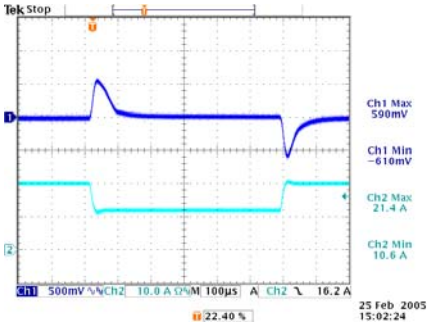
Input		
Operation Voltage Range	24V Models 48V Models	+18V to +36Vdc +36V to +75Vdc
Reflected Ripple Current	L_{EXT} = 10uH	30mA rms/100mAp-p
Power ON Voltage Ranges	24V Models 48V Models	+17.0V to +18.0Vdc +34.0V to +36.0Vdc
Power OFF Voltage Ranges	24V Models 48V Models	+15.6V to +16.6Vdc +31.2V to +33.2Vdc
Off State Input Current	V_{NOM}	6mA Max
Latch-State Input Current	V_{NOM}	8mA Max
Input Capacitance	24V Models 48V Models	33.0uF Max 12.0uF Max

Output		
Voltage Accuracy	Typical	±1.0%
Line Regulation	Full Input Range	±0.3%
Load Regulation	0%~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 %V_O
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/μS)	50%~75% Load	±6%Vo/500μS
Start-Up Delay Time	V_{NOM}, Full Load	20mS/250mS

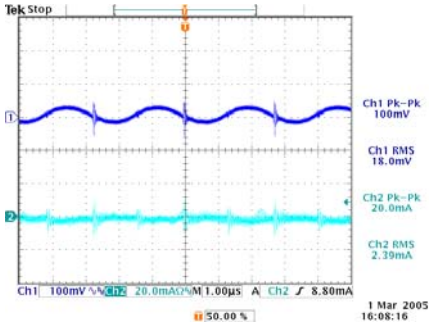
TYPICAL WAVES AND CURVES



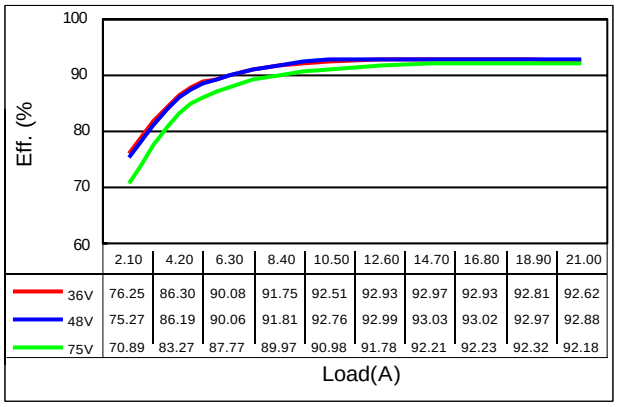
Start-up waveform of UQ48120abcd-21XXX
(V_{IN}: 50V, Load: 21A)



Transient response of UQ48120abcd-21XXX
(V_{IN}: 50V, Load: 20A/10A@2.5A/µS)

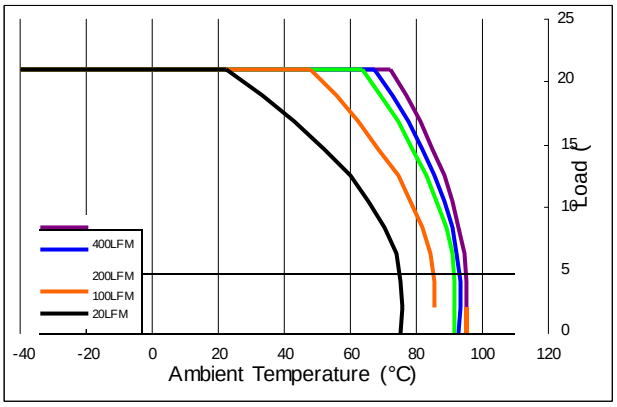


Input/Output ripples of UQ48120abcd-21XXX
(V_{IN}: 50V, Load: 21A, L_{IN}=10uH)

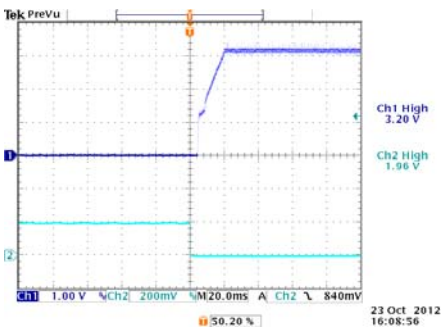


	2.10	4.20	6.30	8.40	10.50	12.60	14.70	16.80	18.90	21.00
36V	76.25	86.30	90.08	91.75	92.51	92.93	92.97	92.93	92.81	92.62
48V	75.27	86.19	90.06	91.81	92.76	92.99	93.03	93.02	92.97	92.88
75V	70.89	83.27	87.77	89.97	90.98	91.78	92.21	92.23	92.32	92.18

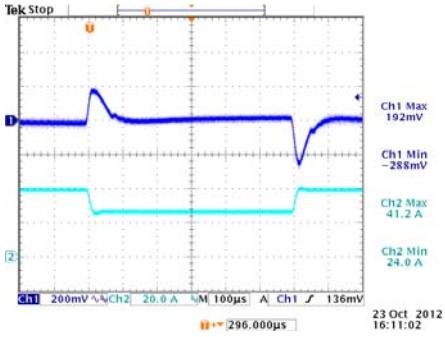
Efficiency plot of UQ48120abcM-21XXX



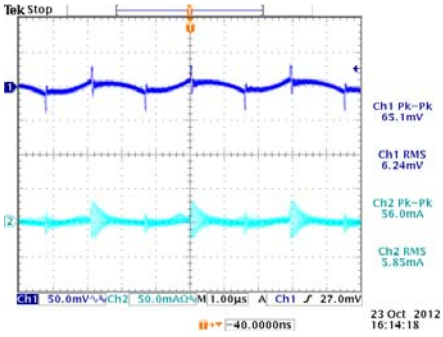
Derating curves of UQ48120abcM-21XXX for T_C= 110°C



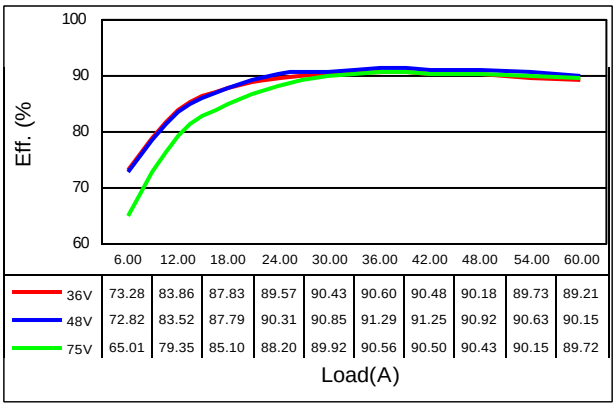
Start-up waveform of UQ48033abcd-60XXX
(V_{IN}: 48V, Load: 60A)



Transient response of UQ48033abcd-60XXX
(V_{IN}: 48V, Load: 41.0A/24.0A@2.5A/µS)

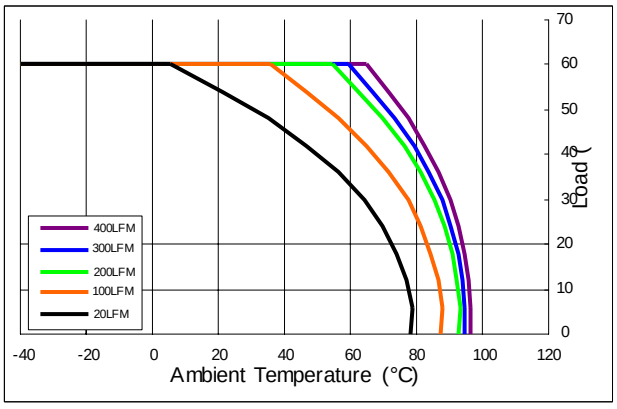


Input/Output ripples of UQ48033abcd-60XXX
(V_{IN}: 48V, Load: 60A, L_{IN}=10uH)



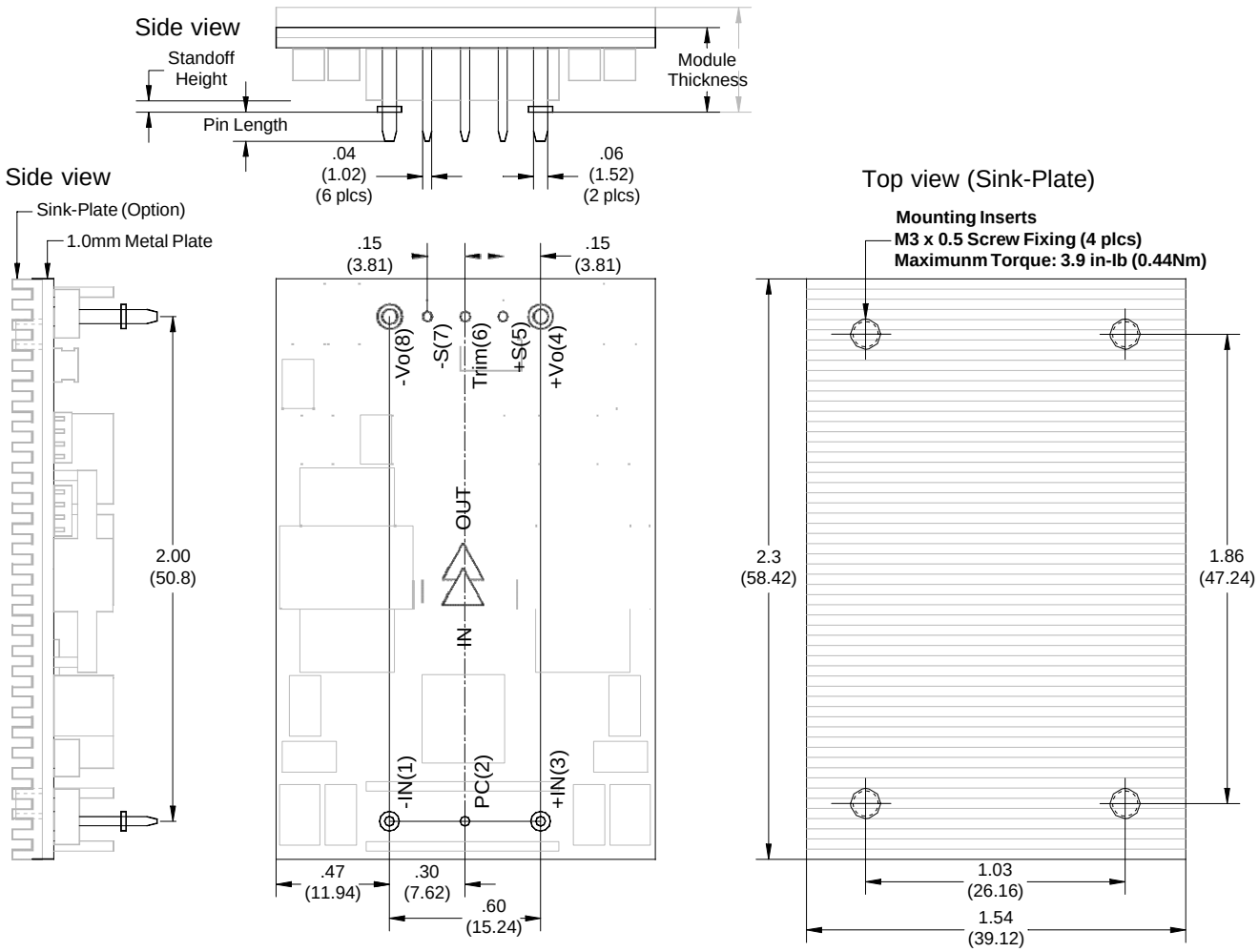
	6.00	12.00	18.00	24.00	30.00	36.00	42.00	48.00	54.00	60.00
36V	73.28	83.86	87.83	89.57	90.43	90.60	90.48	90.18	89.73	89.21
48V	72.82	83.52	87.79	90.31	90.85	91.29	91.25	90.92	90.63	90.15
75V	65.01	79.35	85.10	88.20	89.92	90.56	90.50	90.43	90.15	89.72

Efficiency plot of UQ48033abcM-60XXX



Derating curves of UQ48033abcM-60XXX for T_C= 110°C

OPEN FRAME PACKAGE



Dimensions and Pin Connections

Designation	Function Description	Pin #
-IN	Negative input	**1**
PC	Remote control. To turn-on and turn-off output.	**2**
+IN	Positive input	**3**
+Vo	Positive output	**4**
+S	Positive remote sense	**5**
TRIM	Output voltage adjust	**6**
-S	Negative remote sense	**7**
-Vo	Negative output	**8**

Dimensions: inches (mm)
Tolerances: .xx±0.02 (.x±0.5)
.xxx±0.01 (.x±0.25)

Weight: 43g / 1.0mm metal plate
56g / 3.0mm metal plate

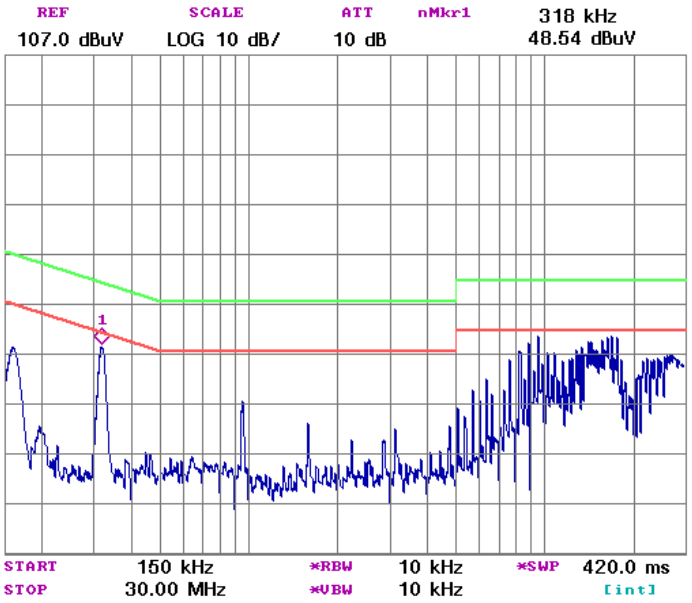
Base plate: Aluminum alloy with anode oxide

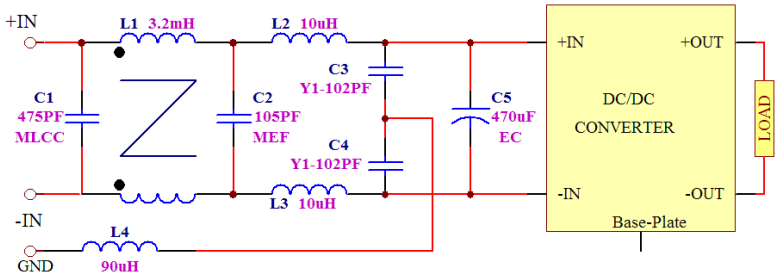
Mounting inserts: Stainless steel
Maximum torque: 3.9 in-lb (0.44Nm)

Pin material: Copper alloy or Brass

Pin plating: Golden over Nickel

REFERENCED EMC CIRCUIT





Measured conductive level of UQ48070abcd-35XXX and referenced filter circuit

Referenced EMC Performance

The tested result shown in left-hand side is obtained by loading the power module with a resistive load only. It can be used as a design reference for customer system. However! The performance of customer's system depends on the whole system design. It should be noted that modifications on the circuit parameters and fine adjustment of the final layout affect the final EMC performance greatly.

Bandwidth of EMC Components

No components are ideal for infinite frequency range. The bandwidth of EMC components should be taking into consideration when designing an EMC filter circuit. To connect ceramic capacitor with electricity capacitor in parallel and connect low inductance inductor with big one could get a better bandwidth.

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.