

Efficiency >92% 235W/in³ Open Frame Package OCP 2.96Mhrs MTBF

Remote ON/OFF INPUT 2:1 OVP OTP



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.

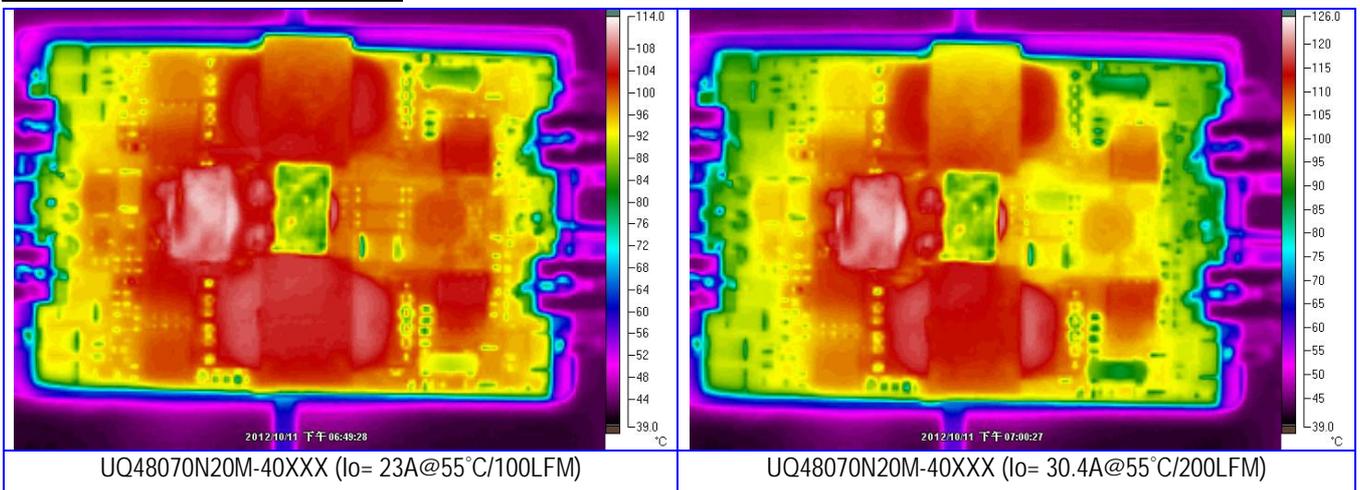
PART NUMBER SYSTEM

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=12V 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	Part Number *	Maximum Input	Maximum Output	Efficiency
UQ48120abcd-25XXX	36V~75V 326W	12.0V/25A 300W	92%	UQ24120abcd-25XXX	18V~36V 330W	12.0V/25A 300W	91%
UQ48070abcd-40XXX	36V~75V 308W	7.0V/40A 280W	91%	UQ24070abcd-40XXX	18V~36V 308W	7.0V/40A 280W	91%
UQ48050abcd-60XXX	36V~75V 330W	5.0V/60A 300W	91%	UQ24050abcd-60XXX	18V~36V 330W	5.0V/60A 300W	90%
UQ48033abcd-60XXX	36V~75V 221W	3.3V/60A 198W	90%	UQ24033abcd-60XXX	18V~36V 221W	3.3V/60A 198W	90%

REFERENCED THERMAL IMAGES



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

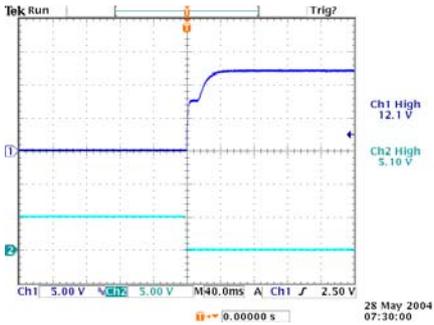
General Parameters		
Conversion Efficiency	Typical	See table
Switching Frequency	Typical	330KHz
MTBF	Bellcore TR-332 issue 6	2.96x10 ⁶ hrs @GB/25°C (UQ48050abcd-60XXX)
OTP	Internal	110°C(Tc) ±5°C
Weight	1.0mm metal plate 3.0mm metal plate	43g 56g

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

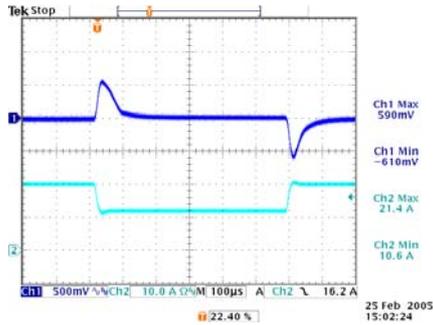
Input		
Operation Voltage Range	24V Models 48V Models	+18V to +36Vdc +36V to +75Vdc
Reflected Ripple Current	L _{EXT} = 10uH	30mA rms/100mAp-p
Power ON Voltage Ranges	24V Models 48V Models	+17.0V to +18.0Vdc +34.0V to +36.0Vdc
Power OFF Voltage Ranges	24V Models 48V Models	+15.6V to +16.6Vdc +31.2V to +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

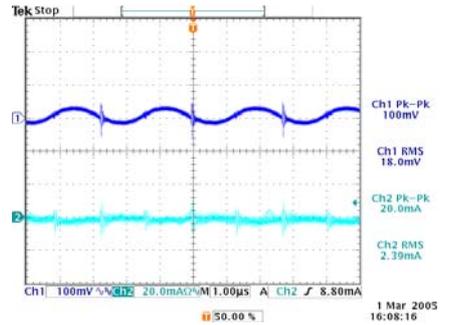
TYPICAL WAVES AND CURVES



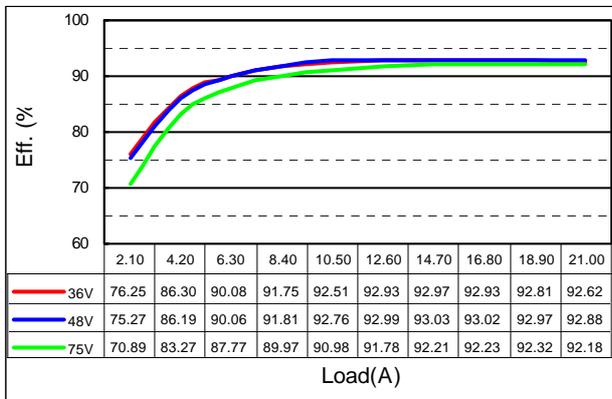
Start-up waveform of UQ48120abcd-21XXX
(V_{IN} : 50V, Load: 21A)



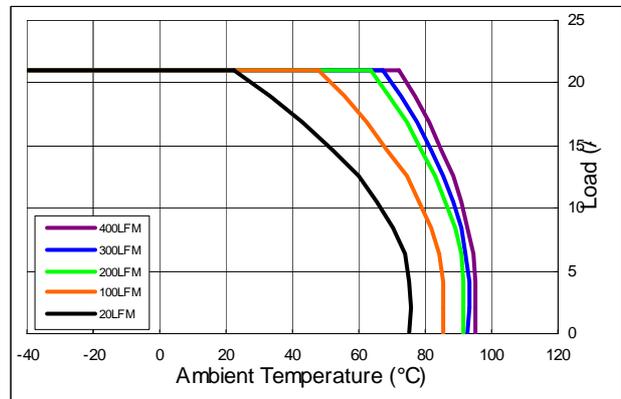
Transient response of UQ48120abcd-21XXX
(V_{IN} : 50V, Load: 20A/10A@2.5A/µs)



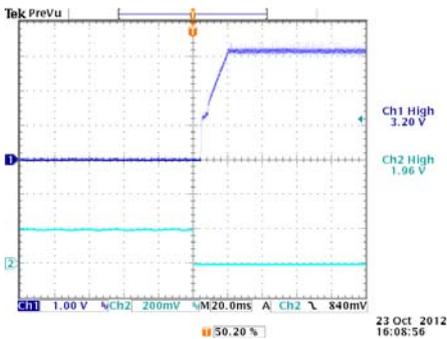
Input/Output ripples of UQ48120abcd-21XXX
(V_{IN} : 50V, Load: 21A, L_{IN} =10µH)



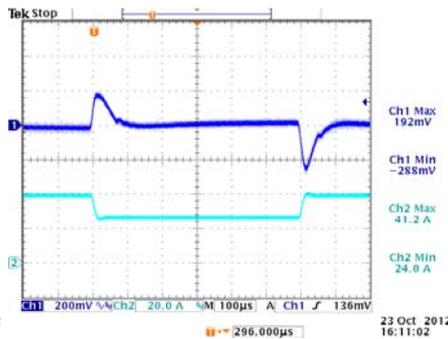
Efficiency plot of UQ48120abcM-21XXX



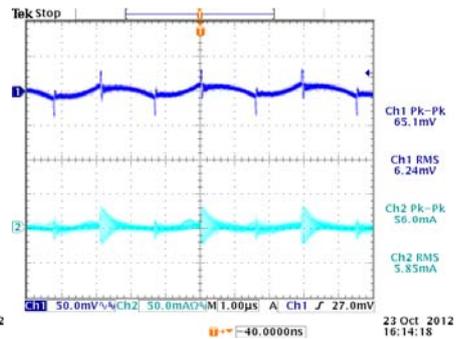
Derating curves of UQ48120abcM-21XXX for $T_C = 110^\circ\text{C}$



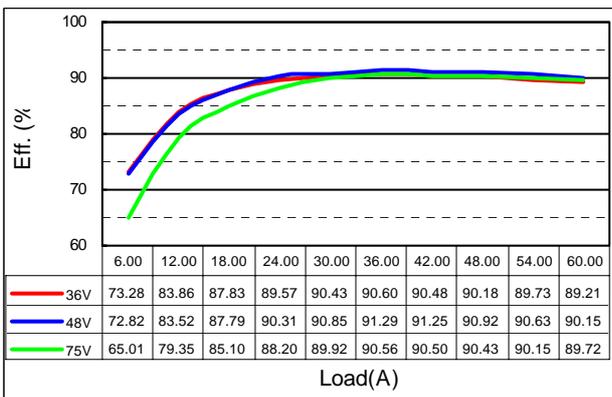
Start-up waveform of UQ48033abcd-60XXX
(V_{IN} : 48V, Load: 60A)



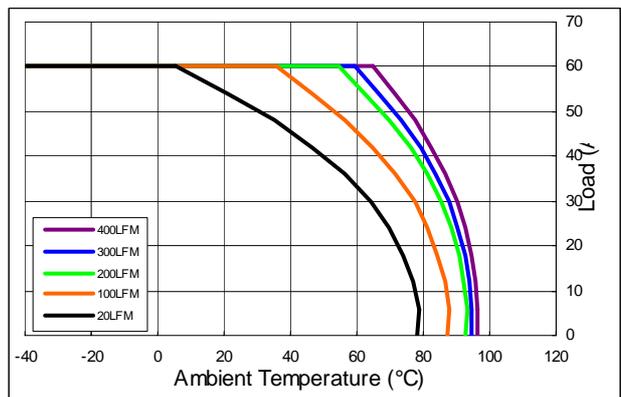
Transient response of UQ48033abcd-60XXX
(V_{IN} : 48V, Load: 41.0A/24.0A@2.5A/µs)



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

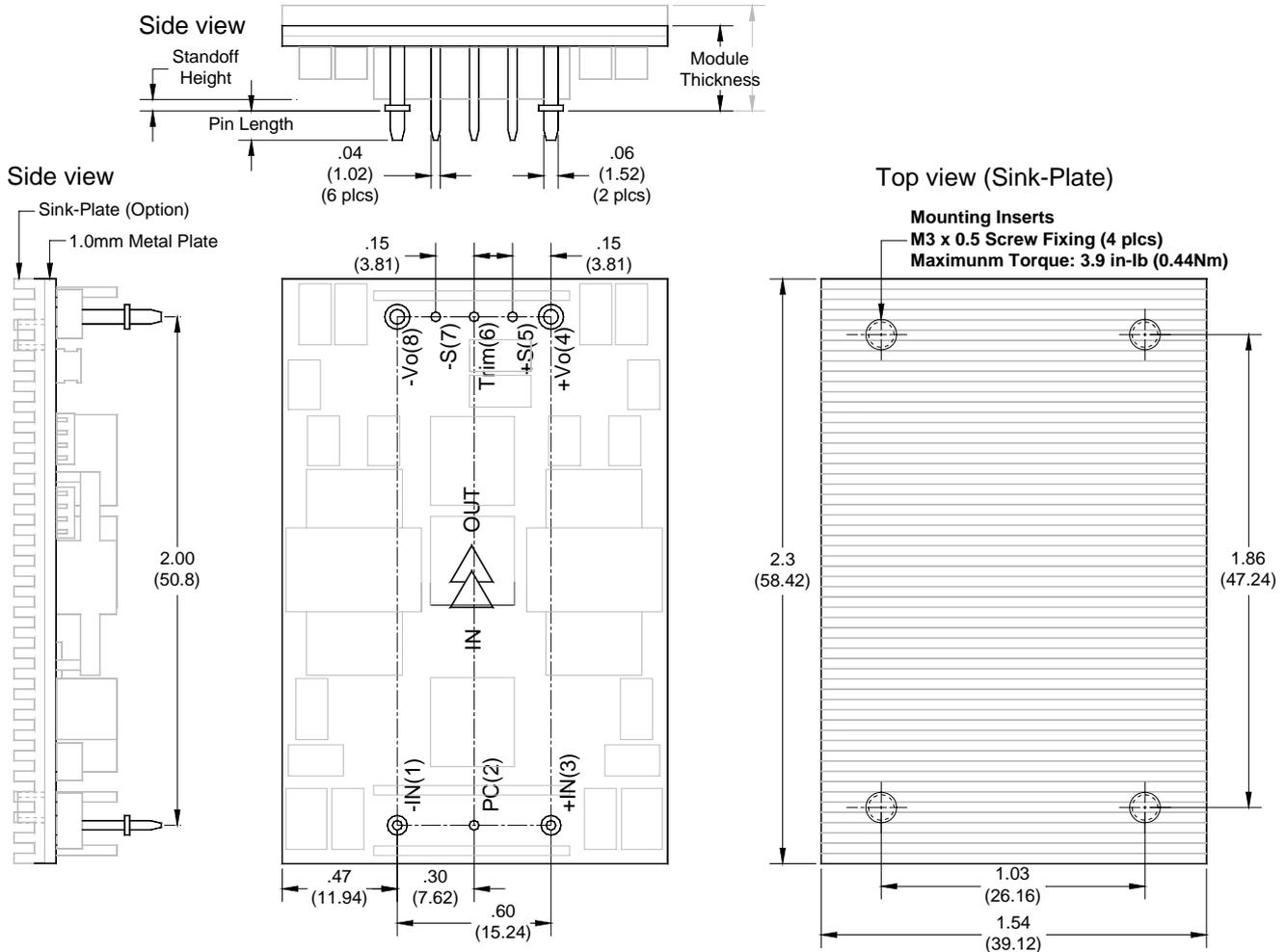


Efficiency plot of UQ48033abcM-60XXX



Derating curves of UQ48033abcM-60XXX for $T_C = 110^\circ\text{C}$

OPEN FRAME PACKAGE

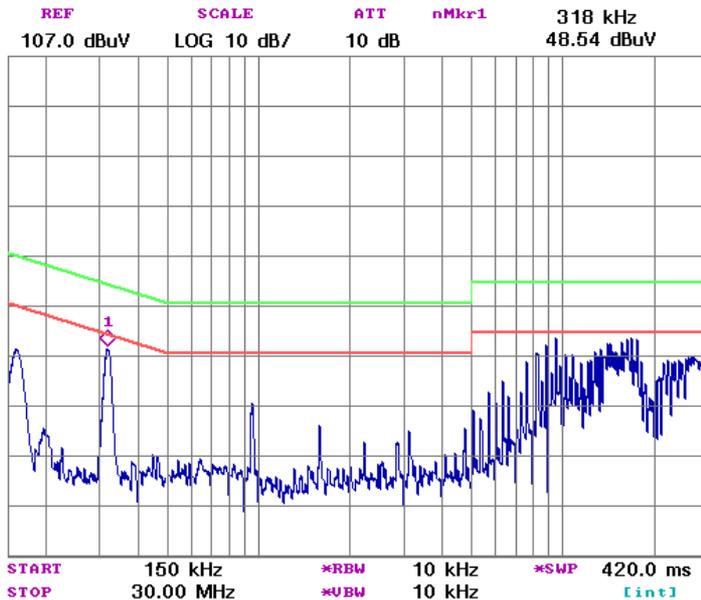


Dimensions and Pin Connections

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

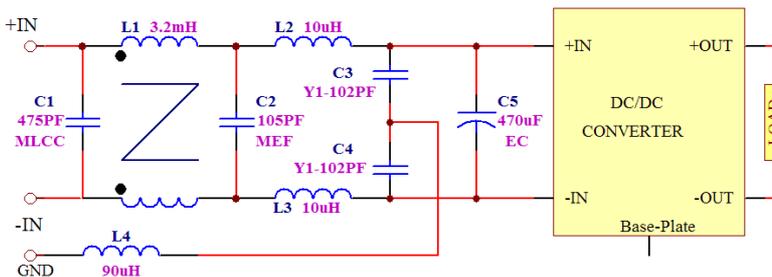


Referenced EMC Performance

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.



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

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.

Efficiency >92% 145W/in³ Full Metal Package OCP 2.96Mhrs MTBF

Remote ON/OFF INPUT 2:1 OVP OTP



The **Enclosed UQ** series provides up to 300W/60A outputs with industry standard quarter brick pin assignment. The high thermal conductivity silicone potted six-sides metal package is designed for applications under extreme environmental conditions. The efficient SR stage is combined with patented "Buck Reset" topology for reduce power loss to achieve 145W/in³ power density. The multi-layer single side circuit board design plus the metal-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	050	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=12V 050=5V	P: Positive N: Negative	0 : 0.12" 1 : 0.16" 2 : 0.20" 3 : 0.24"	0 : 0.02"	U : 3.0mm Metal Plate V : 5.0mm Metal 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	Part Number *	Maximum Input		Maximum Output		Efficiency
UQ48120abcd-25XXX	36V~75V	326W	12.0V/25A	300W	92%	UQ24120abcd-25XXX	18V~36V	330W	12.0V/25A	300W	92%
UQ48070abcd-40XXX	36V~75V	308W	7.0V/40A	280W	91%	UQ24070abcd-40XXX	18V~36V	308W	7.0V/40A	280W	91%
UQ48050abcd-60XXX	36V~75V	330W	5.0V/60A	300W	91%	UQ24050abcd-60XXX	18V~36V	330W	5.0V/60A	300W	90%
UQ48033abcd-60XXX	36V~75V	221W	3.3V/60A	198W	90%	UQ24033abcd-60XXX	18V~36V	221W	3.3V/60A	198W	90%

REFERENCED THERMAL IMAGES

To be updated in next version	To be updated in next version
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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

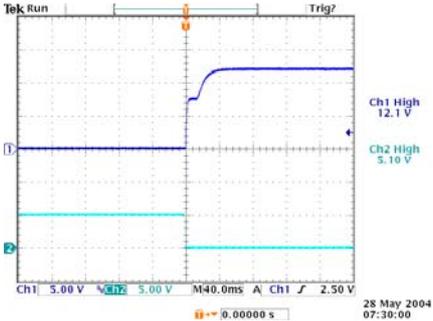
General Parameters		
Conversion Efficiency	Typical	See table
Switching Frequency	Typical	330KHz
MTBF	Bellcore TR-332 issue 6	2.96x10 ⁶ hrs @GB/25°C (UQ48050abcd-60XXX)
OTP	Internal	110°C(Tc) ±5°C
Weight	3.0mm metal plate 5.0mm metal plate	105g 119g

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

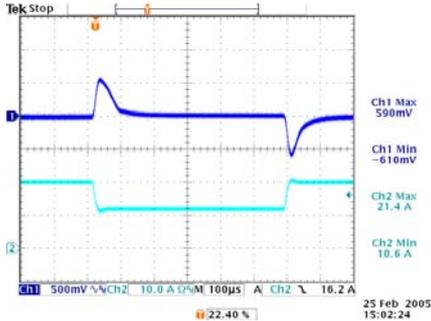
Input		
Operation Voltage Range	24V Models 48V Models	+18V to +36Vdc +36V to +75Vdc
Reflected Ripple Current	L _{EXT} = 10uH	30mA rms/100mAp-p
Power ON Voltage Ranges	24V Models 48V Models	+17.0V to +18.0Vdc +34.0V to +36.0Vdc
Power OFF Voltage Ranges	24V Models 48V Models	+15.6V to +16.6Vdc +31.2V to +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

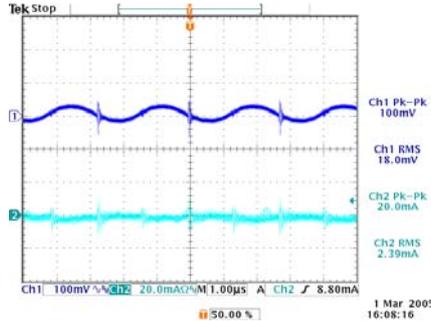
TYPICAL WAVES AND CURVES



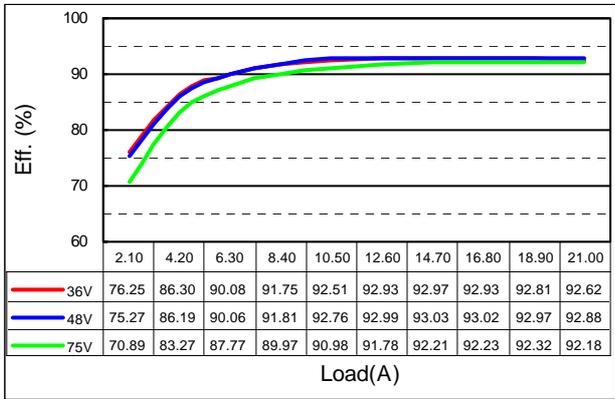
Start-up waveform of UQ48120abcd-21XXX
(V_{IN} : 50V, Load: 21A)



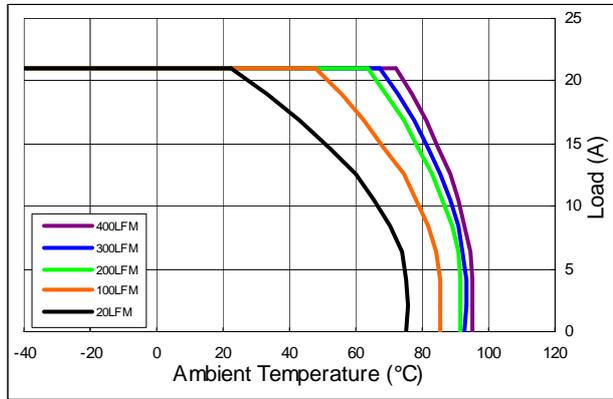
Transient response of UQ48120abcd-21XXX
(V_{IN} : 50V, Load: 21.0A/10.5A@2.5A/µs)



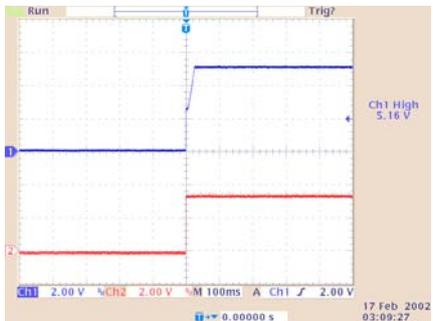
Input/Output ripples of UQ48120abcd-21XXX
(V_{IN} : 50V, Load: 21A, L_{IN} =10uH, C_{IN} =470uF)



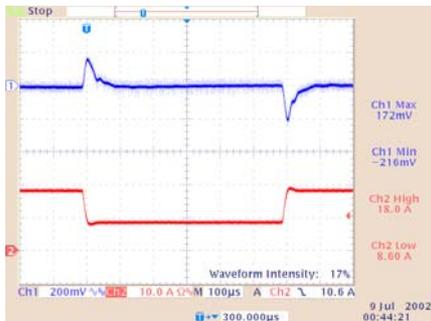
Efficiency plot of UQ48120abcB-21XXX



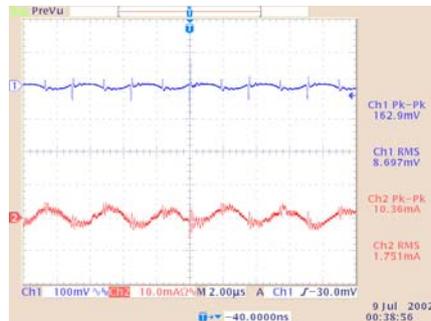
Derating curves of UQ48120abcB-21XXX for $T_C = 110^\circ\text{C}$



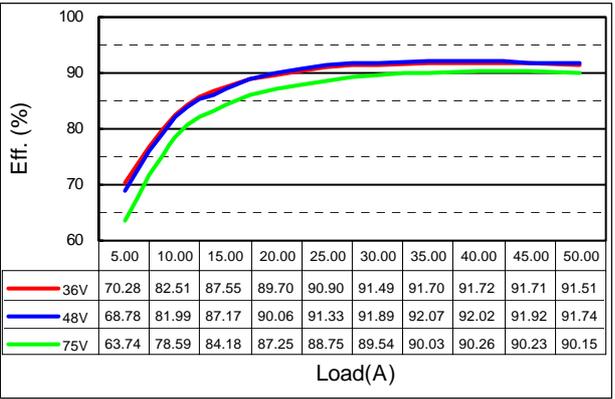
Start-up waveform of UQ48050abcd-50XXX
(V_{IN} : 50V, Load: 50A)



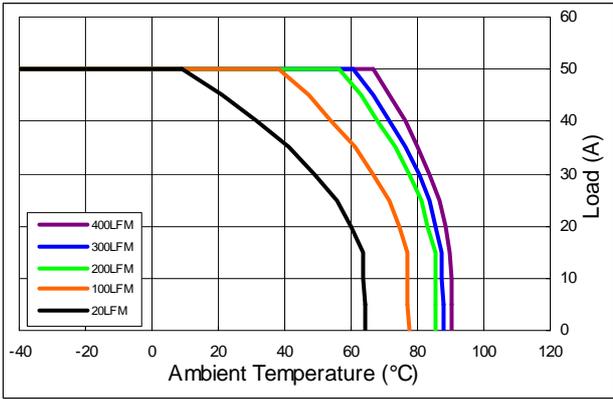
Transient response of UQ48050abcd-50XXX
(V_{IN} : 50V, Load: 18.0A/8.5A@2.5A/µs)



Input/Output ripples of UQ48050abcd-50XXX
(V_{IN} : 50V, Load: 50A, L_{IN} =10uH)



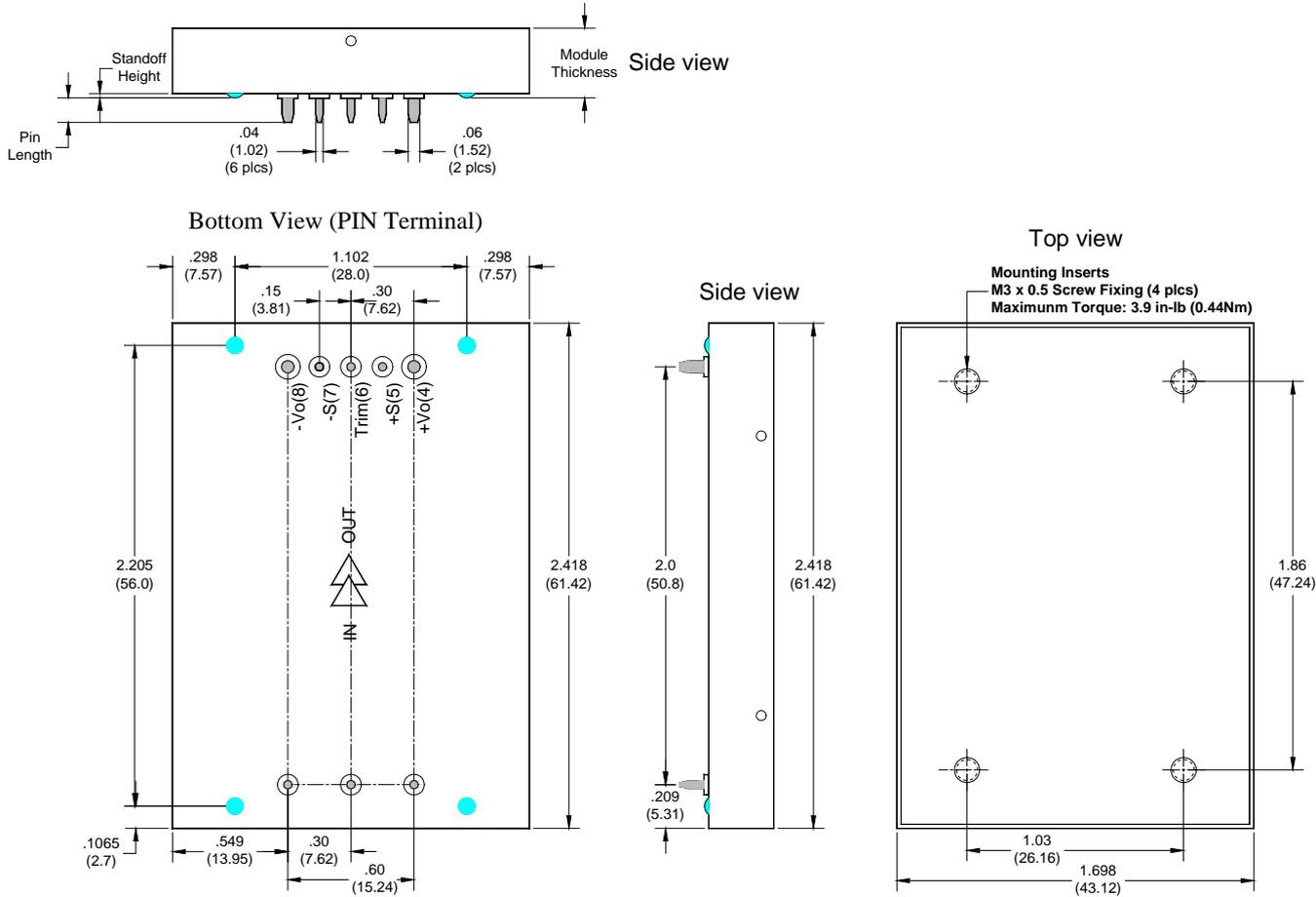
Efficiency plot of UQ48050abcB-50XXX



Derating curves of UQ48050abcB-50XXX for $T_C = 110^\circ\text{C}$

Enclosed UQ Series

METAL ENCLOSED PACKAGE

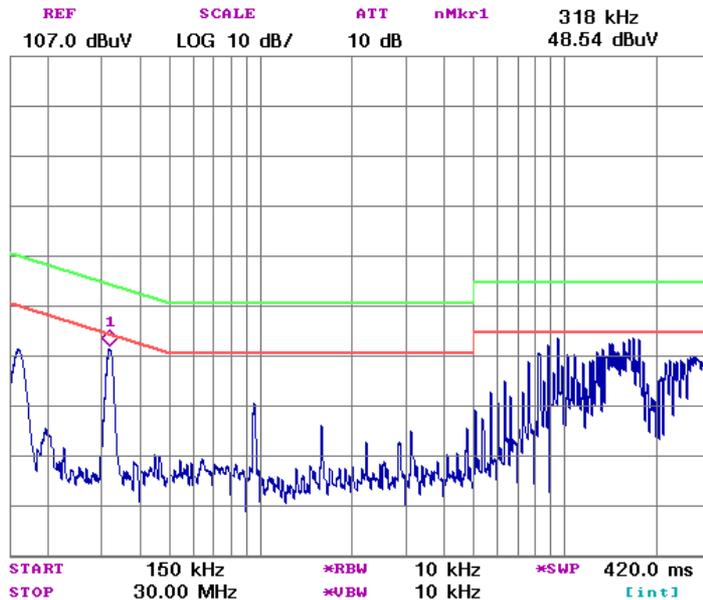


Dimensions and Pin Connections

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

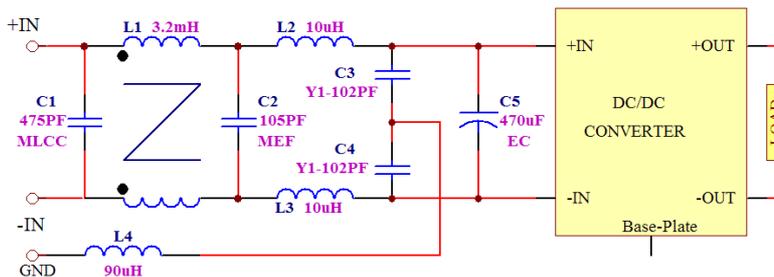
Dimensions: inches (mm)
Tolerances: .xx±0.02 (.x±0.5)
 .xxx±0.01 (.x±0.25)
Weight: 105g / 3.0mm metal plate
 119g / 5.0mm metal plate
Base plate: Aluminum alloy with anode oxide
Mounting inserts: Stainless steel
Maximum torque: 3.9 in-lb (0.44Nm)
Pin material: Copper alloy or Brass
Pin plating: Golden over Nickel

REFERENCED EMC CIRCUIT



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.



Measured conductive level of UQ48120abcd-21XXX and referenced filter circuit

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:

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