



The **CPH** series provides up to 350W/100A outputs with industry standard half brick package. The efficient SR stage is combined with patented "Buck Reset" topology that would reduce power loss to achieve 176W/in³ power density. The single side component and multi-layer 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.

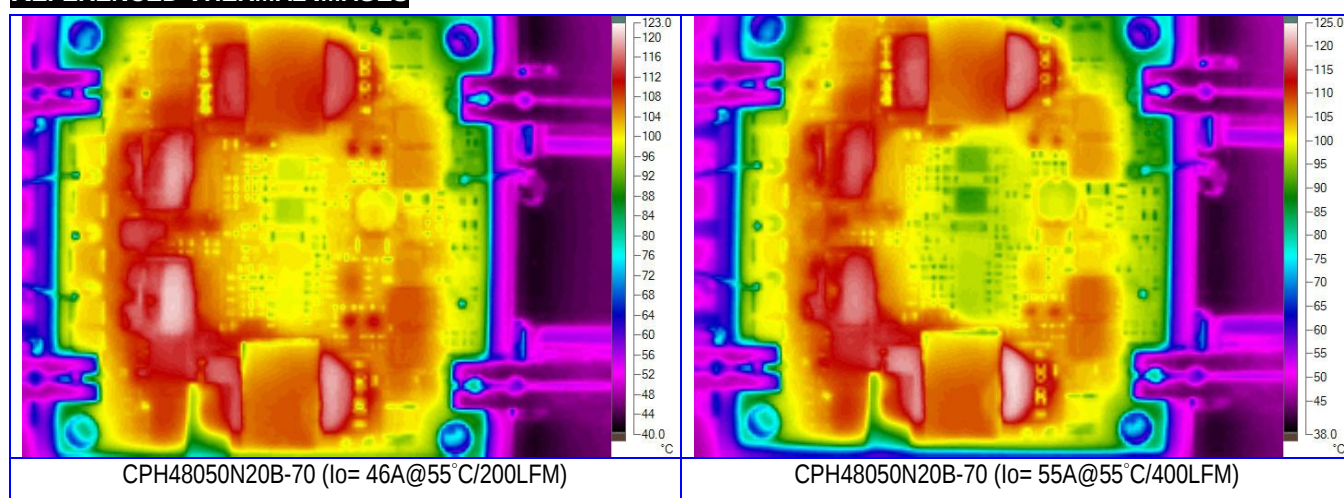
PART NUMBER SYSTEM

CPH	48	050	a	b	c	d	-	70	XX	X
Series Name	Input Voltage	Output Voltage	Enable Logic	Pin Dimension	Standoff Height	Base-Plate		Output Current	Suffix	Version
CPH	48=36V~75V 24=18V~36V	Unit: 0.1V Increments 050=5V 033=3.3V	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 A : 3.0mm Sink-Plate B : 5.0mm Sink-Plate E : Metallic enclosure (1.0mm metal plate)		00~A0 : 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
CPH48050abcd-70XXX	36V~75V	390W	5.0V/70A 350W 90%	CPH24050abcd-70XXX	18V~36V	395W 5.0V/70A 350W	89%
CPH48033abcd-70XXX	36V~75V	260W	3.3V/70A 231W 89%	CPH24033abcd-70XXX	18V~36V	265W 3.3V/70A 231W	88%
CPH48025abcd-80XXX	36V~75V	230W	2.5V/80A 200W 88%	CPH24025abcd-80XXX	18V~36V	235W 2.5V/80A 200W	87%
CPH48018abcd-A0XXX	36V~75V	215W	1.8V/100A 180W 85%	CPH24018abcd-A0XXX	18V~36V	220W 1.8V/100A 180W	84%
CPH48015abcd-A0XXX	36V~75V	185W	1.5V/100A 150W 84%	CPH24015abcd-A0XXX	18V~36V	190W 1.5V/100A 150W	83%

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	3.06×10^6 hrs @GB/25°C (CPH48050abcd-70XXX)
OTP	Internal	110°C(Tc) $\pm 5^\circ\text{C}$
Weight	Open frame Metallic enclosure	60g / 1.0mm metal plate 95g / 1.0mm metal plate

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

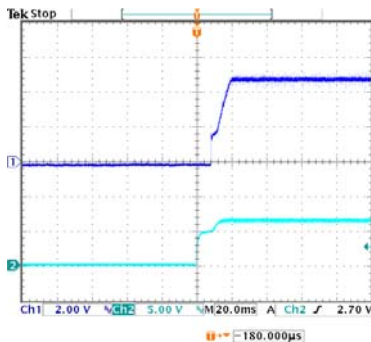
Input

Operation Voltage Range	24V Models 48V Models	+18V to +36Vdc +36V to +75Vdc
Reflected Ripple Current	$L_{EXT} = 10\mu\text{H}$	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	42.0uF Max 15.0uF Max

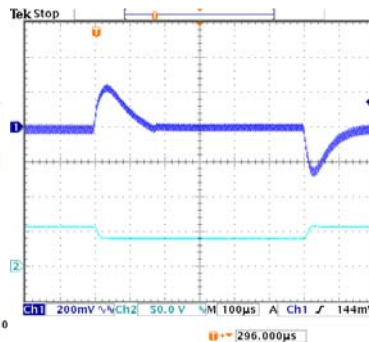
Output

Voltage Accuracy	Typical	$\pm 1.0\%$
Line Regulation	Full Input Range	$\pm 0.3\%$
Load Regulation	0%~100%	$\pm 0.3\%$
Temperature Drift	-40°C ~100°C	$\pm 0.03\%/^\circ\text{C}$
Output Tolerance Band	All Conditions	$\pm 4\%$
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	$\pm 10\%$
Input Ripple Rejection (<1KHz)	V_{NOM} , Full Load	-50dB
Step Load (2.5A/ μS)	50%~75% Load	$\pm 6\%V_O/500\mu\text{S}$
Start-Up Delay Time	V_{NOM} , Full Load	20mS/250mS

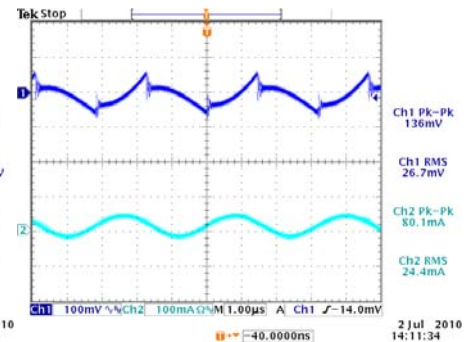
TYPICAL WAVES AND CURVES



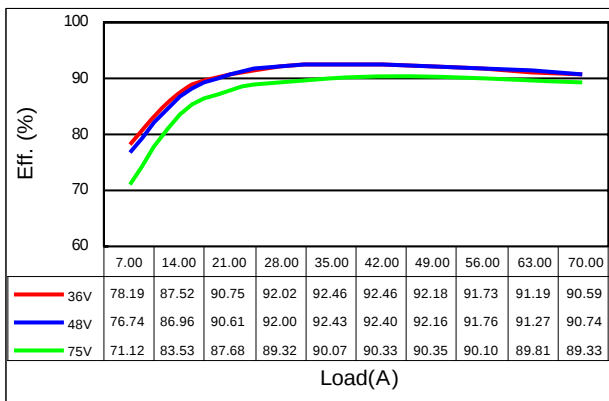
Start-up waveform of CPH48050abcd-70XXX
(V_{IN} : 48V, Load: 70A)



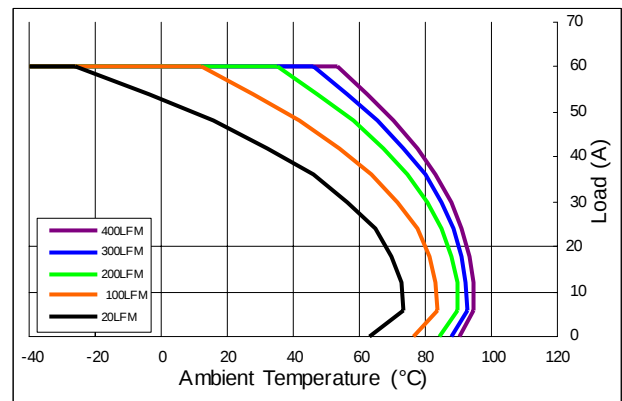
Transient response of CPH48050abcd-70XXX
(V_{IN} : 48V, Load: 52.5A/35.0A@2.5A/μs)



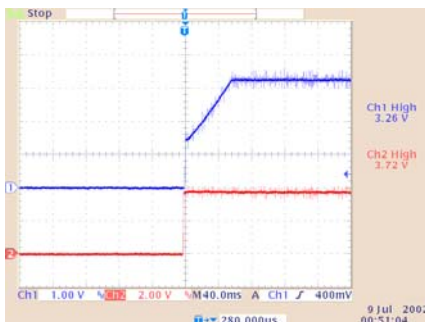
Input/Output ripples of CPH48050abcd-70XXX
(V_{IN} : 48V, Load: 70A, L_{IN} =10μH)



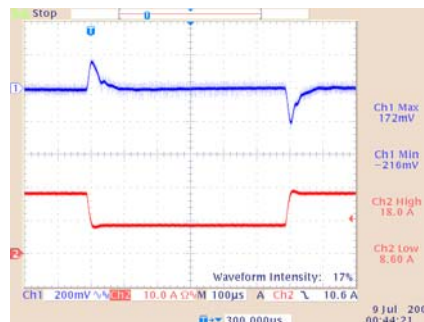
Efficiency Plot of CPH48050abcB-70XXX



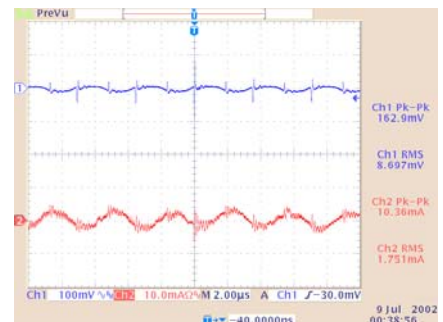
Derating Curves of CPH48050abcB-70XXX for $T_c = 110^\circ\text{C}$



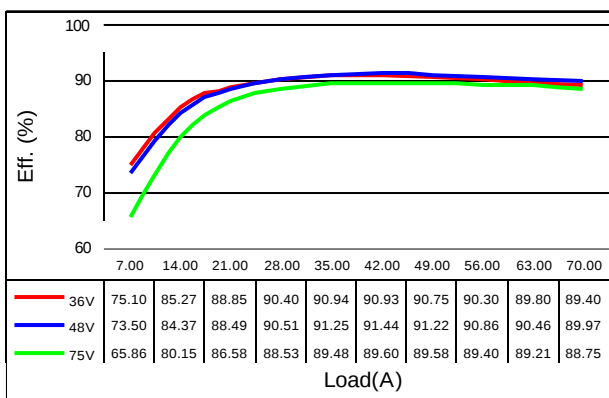
Start-up waveform of CPH48033abcd-70XXX
(V_{IN} : 48V, Load: 70A)



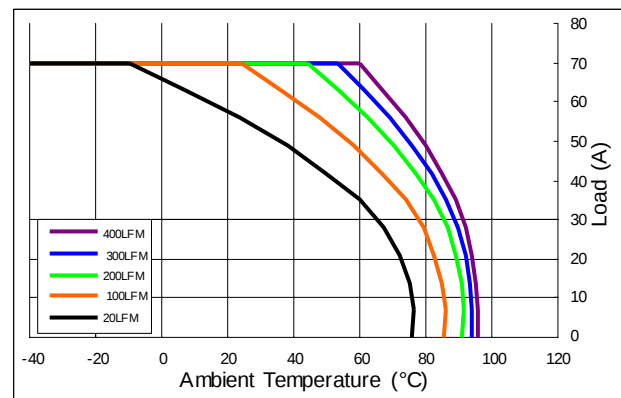
Transient response of CPH48033abcd-70XXX
(V_{IN} : 48V, Load: 18A/8A@2.5A/μs)



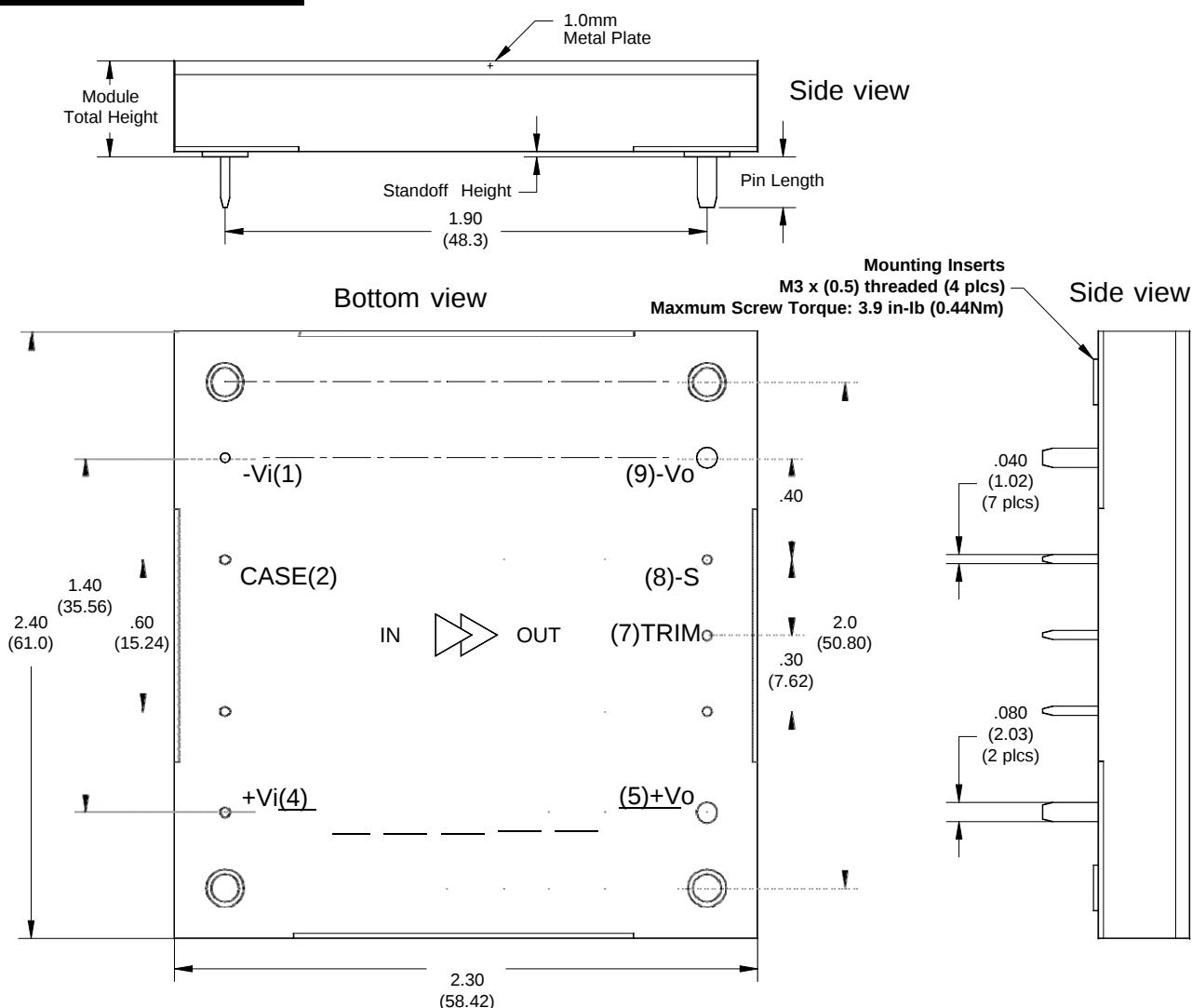
Input/Output ripples of CPH48033abcd-70XXX
(V_{IN} : 48V, Load: 70A, L_{IN} =10μH)



Efficiency Plot of CPH48033abcB-70XXX



Derating Curves of CPH48033abcB-70XXX for $T_c = 110^\circ\text{C}$

METAL ENCLOSED PACKAGE**Dimensions and Pin Connections**

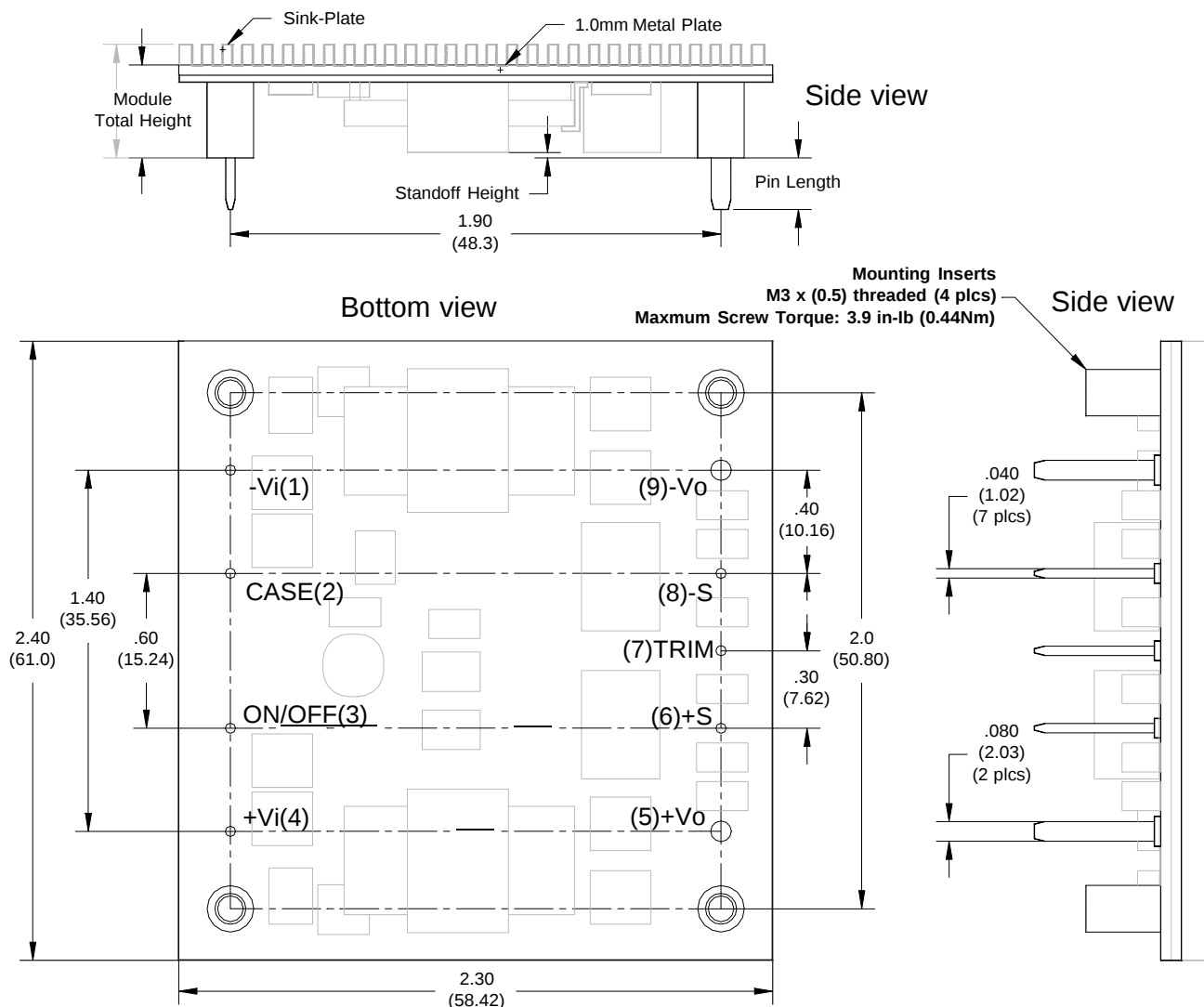
Designation	Function Description	Pin #
-Vi	Negative input	1
CASE	Connected to base plate	2
ON/OFF	Remote control. To turn-on and turn-off output.	3
+Vi	Positive input	4
+Vo	Positive output	5
+S	Positive remote sense	6
TRIM	Output voltage adjust	7
-S	Negative remote sense	8
-Vo	Negative output	9

Dimensions: inches (mm)**Tolerances:** .xx±0.02 (.x±0.5)

.xxx±0.01 (.x±0.25)

Weight: 95g / 1.0mm 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

OPEN FRAME PACKAGE

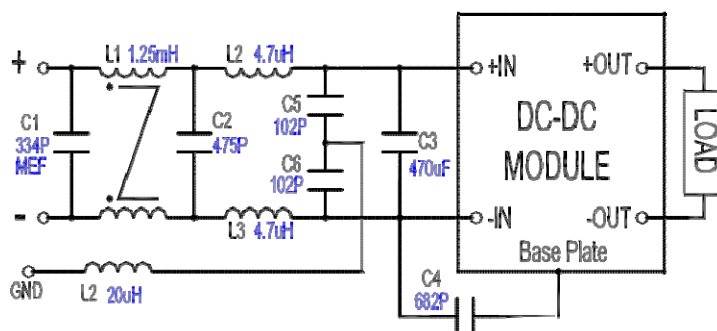
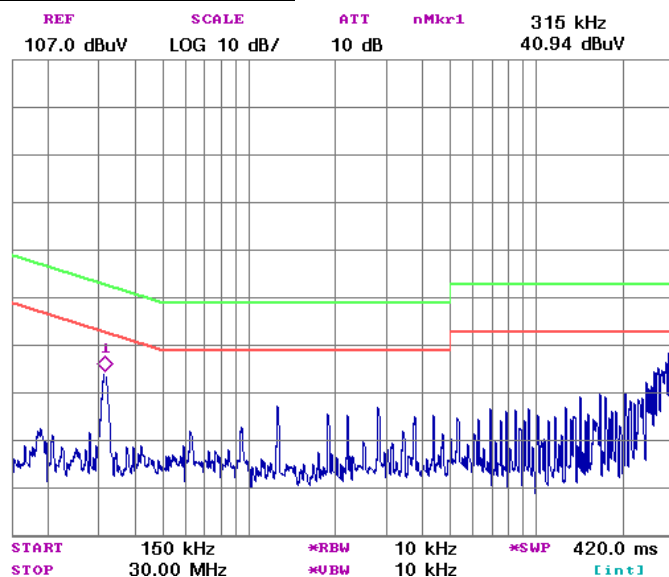


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Dimensions: inches (mm)
Tolerances: .xx±0.02 (.x±0.5)
 .xxx±0.01 (.x±0.25)
Weight: 60g / 1.0mm metal plate
Base plate: Aluminum alloy with anode oxide
Mounting inserts: Stainless steel
Maximum torque: 3.9 in-lb (0.44Nm)
Pin material: Copper alloy or Brass
Pin plating: Golden over Nickel

REFERENCED EMC CIRCUIT



Measured conductive level of CPH48050abcd-70XXX
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.