

The **PowerSquare** series provides up to 2000W/120A outputs with industry standard full 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 that would reduce power loss to achieve 102W/in³ power density. The multi-layer single side circuit board design plus the unique module structure would enhance the thermal performance and improve its reliability. Modules are designed for Industrial, Telecom, Servers, Networking equipments and other applications that use a 300V (200~400V) input bus.

PART NUMBER SYSTEM

PS	2H	480	a	b	c	d	-	N	42	XX	X
Series Name	Input Voltage	Output Voltage	Enable Logic	Pin Dimension	Standoff Height	Base-Plate		Current Share	Output Current	Suffix	Version
PS	200V~420V	Unit: 0.1V Increments 480=48V 120=12V	P: Positive N: Negative	0 : 0.12" 1 : 0.16" 2 : 0.20" 3 : 0.24"	0 : 0.04"	E : 1.5mm Metal Plate		N : without Current share S : secondary Current share	00~C0 : for output current rating	For marketing purpose only	

MODEL LIST (Contact to factory special input / output)

Part Number *	Maximum Input	Maximum Output			Efficiency
PS2H480abcd-N42XXX	200V~420V	2191W	48V/42A	2016W	92%
PS2H280abcd-N72XXX	200V~420V	2191W	28V/72A	2016W	92%
PS2H240abcd-N83XXX	200V~420V	2191W	24V/83A	2016W	92%
PS2H120abcd-NC0XXX	200V~420V	2191W	12V/120A	2016W	92%

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: 48V Models Transient (100mS): 48V Models	+190V to +420Vdc 450V Maximum
Isolation Voltage	Input to Output Input to Case Output to Case	3.0KV Minimum 1.5KV Minimum 1.0KV Minimum
Remote Control		-0.5V to +12Vdc

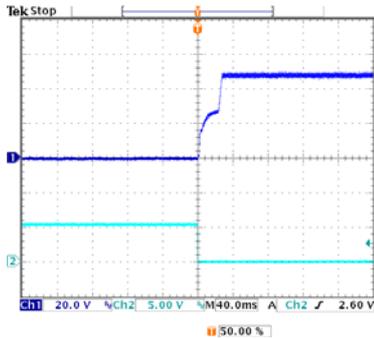
General Parameters		
Conversion Efficiency	Typical	See table
Switching Frequency	Typical	160KHz
MTBF	Bellcore TR-332 issue 6	1.55x10 ⁶ hrs @GB/25°C. (PS2H480abcd-N42XXX)
OTP	Internal	110°C(Tc) ±5°C
Weight	1.5mm metal plate	870g

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

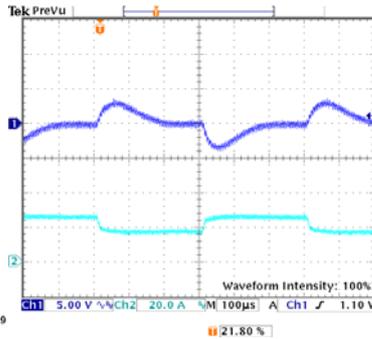
Input		
Operation Voltage Range	300V Models	+200V to +400Vdc
Reflected Ripple Current	L _{EXT} = 20uH	30mA rms/200mAp-p
Input Over Voltage Protection		+435Vmax.
Turn-On Voltage Threshold	300V Models	+190V to +198Vdc
Turn-Off Voltage Threshold	300V Models	+185V to +194Vdc
Off State Input Current	V _{NOM}	12mA Max
Latch-State Input Current	V _{NOM}	20mA Max
Input Capacitance	300V Models	10.0uF Max

Output		
Voltage Accuracy	Typical	±1.0%
Line Regulation	Full Input Range	±0.3%
Load Regulation	5%~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	100mS/250mS

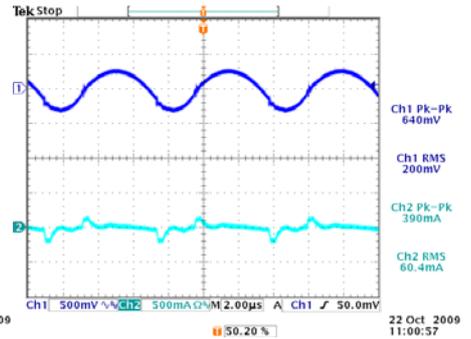
TYPICAL WAVES AND CURVES



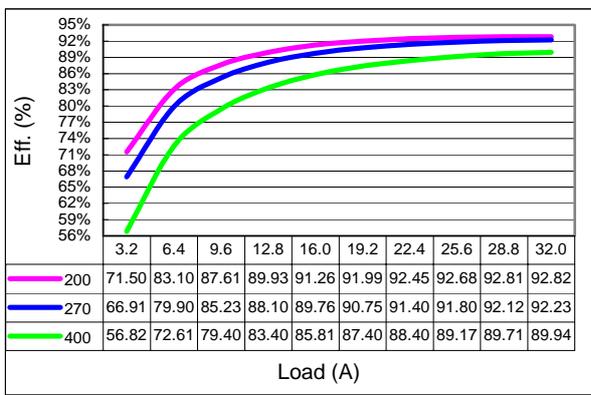
Start-up waveform of PS2H480abcd-S32XXX
(V_{IN} : 270V, Load: 32A)



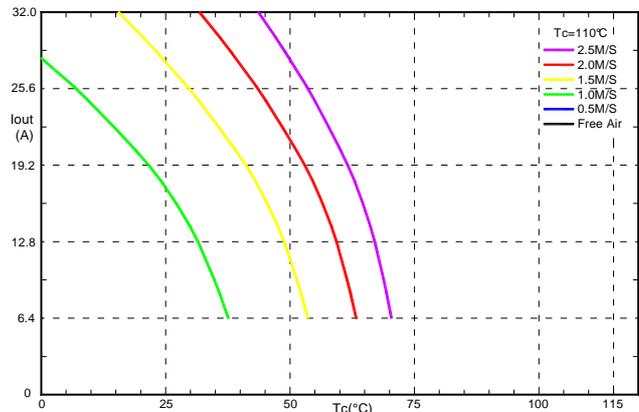
Transient response of PS2H480abcd-S32XXX
(V_{IN} : 270V, Load: 28A/15A@2.5A/µs)



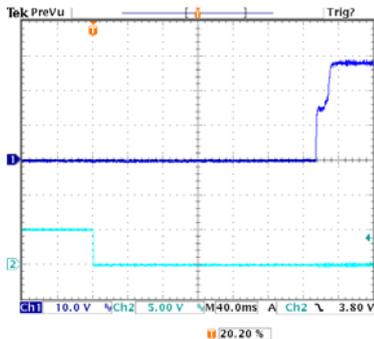
Input/Output ripples of PS2H480abcd-S32XXX
(V_{IN} : 270V, Load: 32A, L_{IN} =10µH)



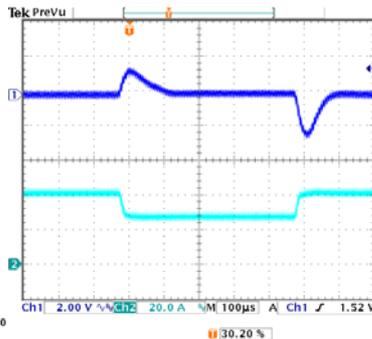
Efficiency plot of PS2H480abcd-S32XXX



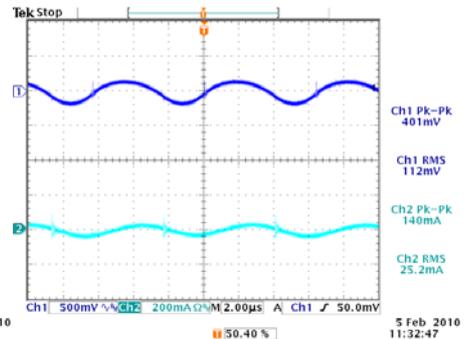
Derating curves of PS2H480abcd-S32XXX for $T_C = 110^\circ\text{C}$



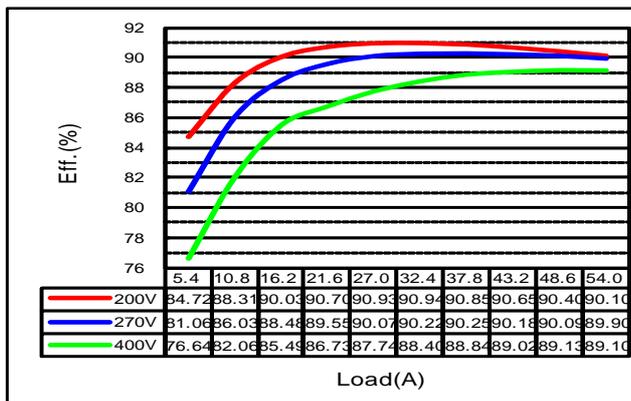
Start-up waveform of PS2H280abcd-S54XXX
(V_{IN} : 270V, Load: 54A)



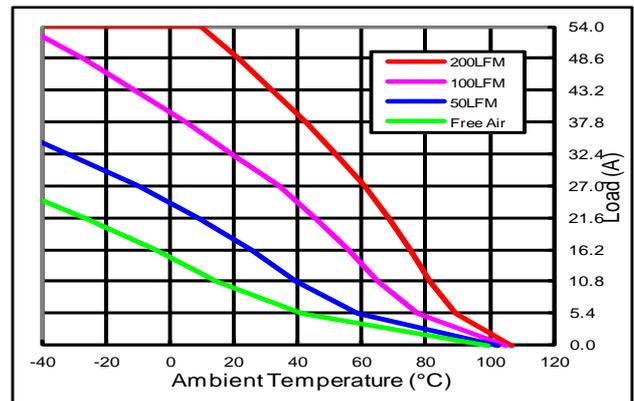
Transient response of PS2H280abcd-S54XXX
(V_{IN} : 270V, Load: 45A/24A@2.5A/µs)



Input/Output ripples of PS2H280abcd-S54XXX
(V_{IN} : 270V, Load: 54A, L_{IN} =10µH)

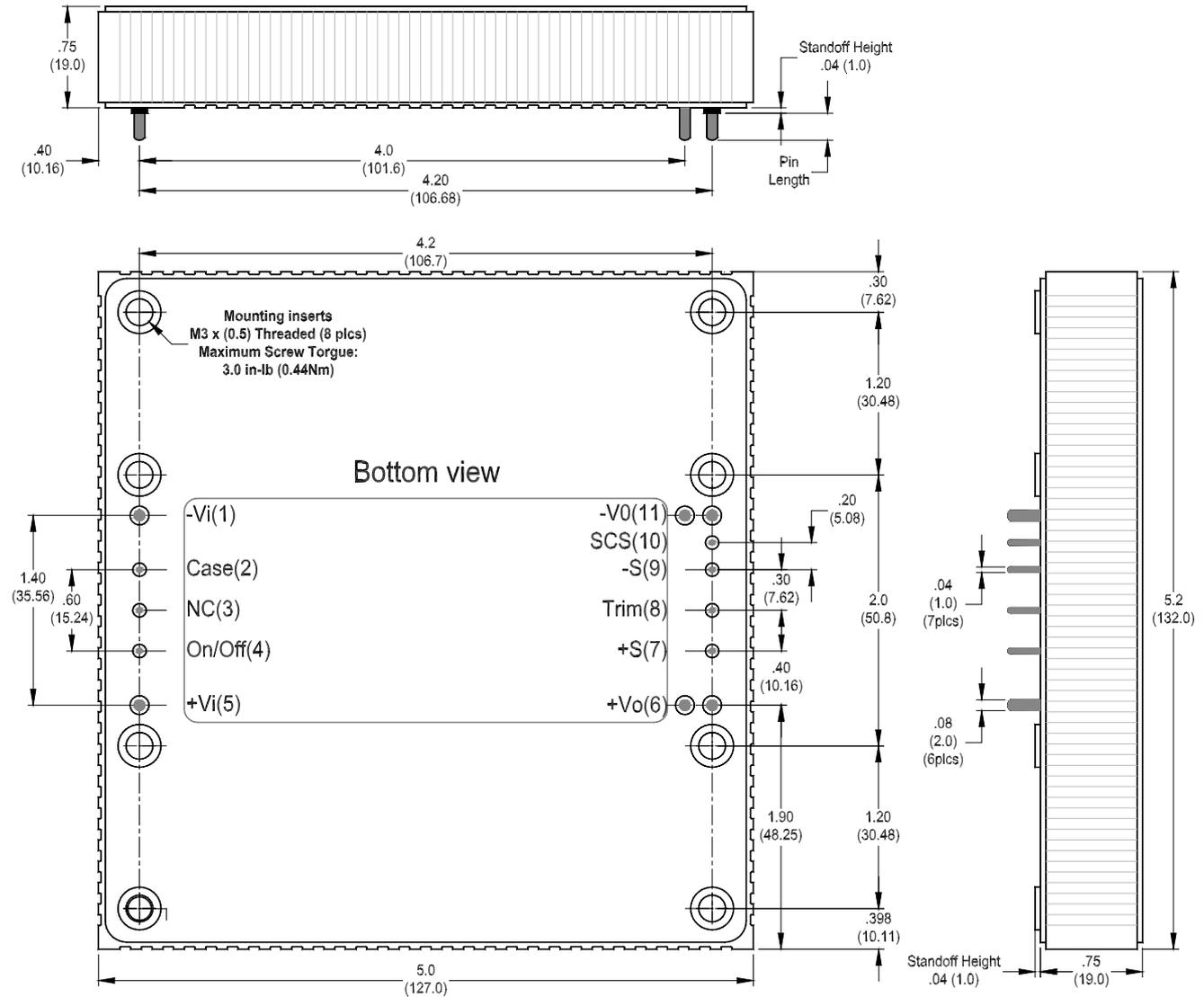


Efficiency plot of PS2H280abcd-S54XXX



Derating curves of PS2H280abcd-S54XXX 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
NC	No connection	3
ON/OFF	Remote control. To turn-on and turn-off output.	4
+Vi	Positive input	5
+Vo	Positive output	6
+S	Positive remote sense	7
TRIM	Output voltage adjust	8
-S	Negative remote sense	9
SCS	Secondary current share bus	10
-Vo	Negative output	11

Dimensions: inches (mm)

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

Weight: 870g

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.

To be updated in next version

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.*