

**SERIES:** PHP1-M | **DESCRIPTION:** DC-DC CONVERTER

**FEATURES**

- up to 1 W isolated output
- surface mount package
- 1:1 input range
- single unregulated output
- 2,000 Vdc isolation voltage
- -40 to 100°C temperature range
- efficiency up to 76%
- UL/cUL safety approval

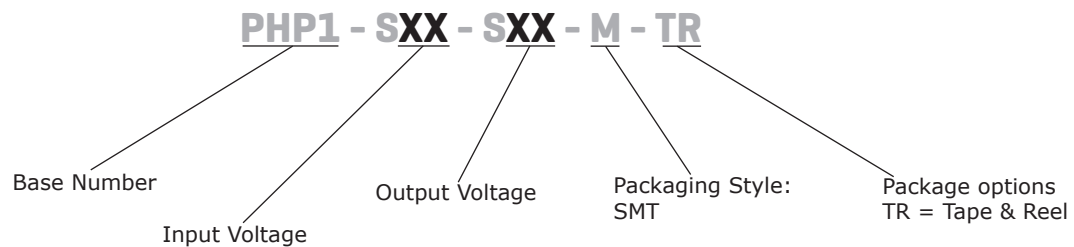


**MODEL**

MODEL	input voltage		output voltage	output current	output power	ripple & noise <sup>1</sup>	efficiency
	typ (Vdc)	range (Vdc)	(Vdc)	max (mA)	max (W)	max (mVp-p)	typ (%)
PHP1-S3-S5-M	3.3	2.97~3.63	5	200	1	100	75
PHP1-S5-S5-M	5	4.5~5.5	5	200	1	100	75
PHP1-S5-S12-M	5	4.5~5.5	12	84	1	100	76
PHP1-S5-S15-M	5	4.5~5.5	15	66	1	100	76
PHP1-S12-S5-M	12	10.8~13.2	5	200	1	100	73
PHP1-S15-S5-M	15	13.5~16.5	5	200	1	100	74

Notes: 1. At full load, nominal input, 20 MHz bandwidth oscilloscope, output terminated with a 0.1 μF multilayer low ESR ceramic capacitor.  
2. All specifications measured at Ta=25°C, nominal input voltage, rated output load, and after warm up unless otherwise specified.

**PART NUMBER KEY**



## INPUT

parameter	conditions/description	min	typ	max	units
operating input voltage	3.3 Vdc input model	2.97	3.3	3.63	Vdc
	5 Vdc input models	4.5	5	5.5	Vdc
	12 Vdc input model	10.8	12	13.2	Vdc
	15 Vdc input model	13.5	15	16.5	Vdc

## OUTPUT

parameter	conditions/description	min	typ	max	units
maximum capacitive load <sup>1</sup>	5 Vdc output models			1000	μF
	12 Vdc output model			330	μF
	15 Vdc output model			220	μF
voltage accuracy	at Vin nominal, full load, see tolerance envelope curves			±5	%
line regulation	measured from low to high line, full load		±1	±1.5	%
load regulation	measured from 20~100% load		±6	±10	%
switching frequency	at Vin nominal	20	60	100	kHz

Note: 1. Maximum capacitive load is defined as the capacitive load that will allow start up in under 1 second without damage.

## SAFETY AND COMPLIANCE

parameter	conditions/description	min	typ	max	units
isolation voltage	input to output for 1 second		2,000		Vdc
isolation resistance	at 500 Vdc	10,000			MΩ
isolation capacitance				75	pF
safety approvals	UL/cUL (60950-1, 2nd Edition)				
MTBF	as per MIL-HDBK-217F, full load, 25°C	2,992,000			hours
	as per MIL-HDBK-217F, full load, 85°C	955,000			hours
RoHS	2011/65/EU				

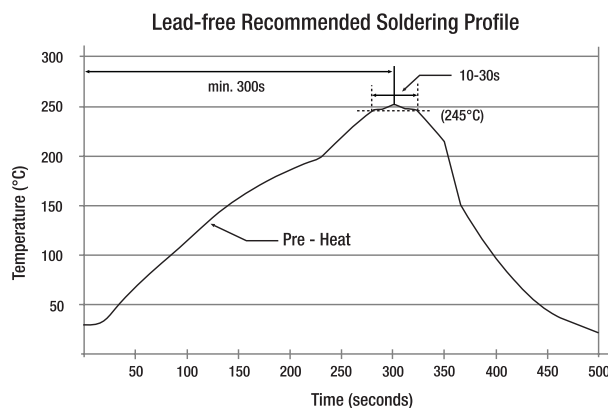
## ENVIRONMENTAL

parameter	conditions/description	min	typ	max	units
operating temperature		-40		100	°C
storage temperature		-55		125	°C
operating humidity	non-condensing			95	%

## SOLDERABILITY

parameter	conditions/description	min	typ	max	units
reflow soldering <sup>2</sup>	see reflow solder profile			245	°C

Note: 2. In accordance with JEDEC STD-020C.



## MECHANICAL

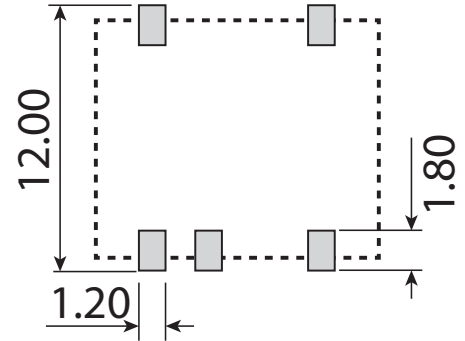
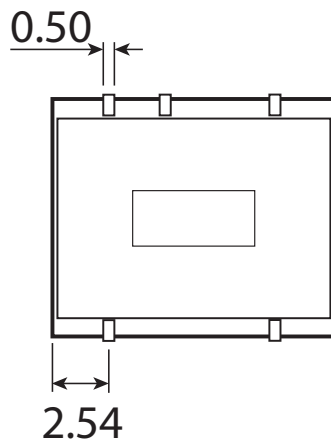
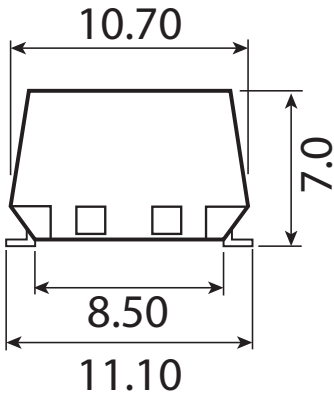
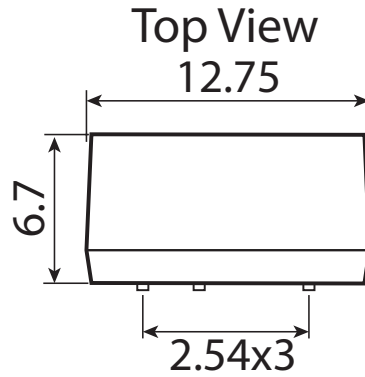
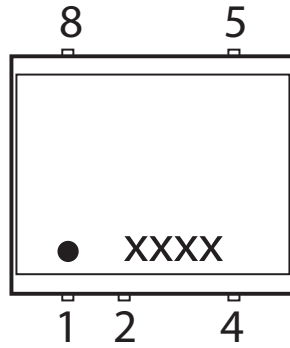
parameter	conditions/description	min	typ	max	units
dimensions	12.75 x 10.7 x 7.0				mm
case material	non-conductive black plastic (UL94V-0)				
weight			1.0		g

## MECHANICAL DRAWING

units: mm  
 tolerance: XX.X = ±0.5 mm  
 XX.XX = ±0.25 mm

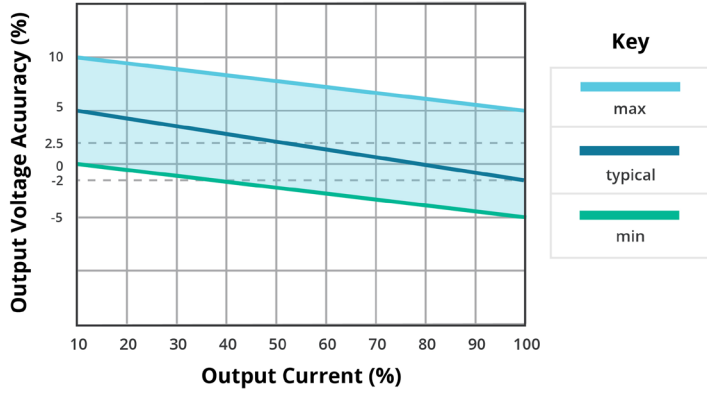
PIN CONNECTIONS	
PIN	Function
1	-Vin
2	+Vin
4	-Vout
5	+Vout
8	NC

NC = no connection

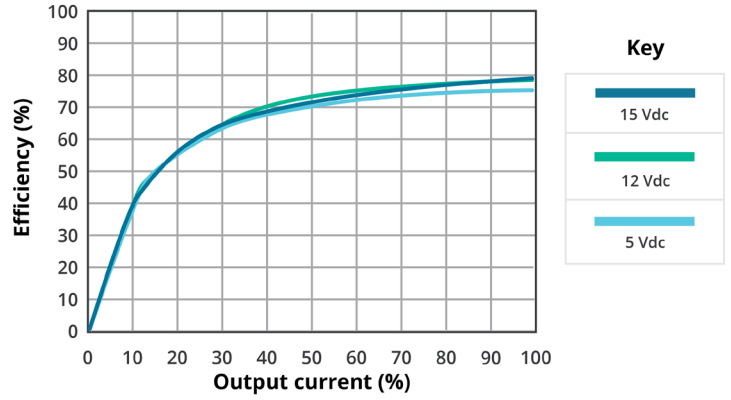


## PERFORMANCE CURVES

**OUTPUT REGULATION CURVE**  
(nominal input)



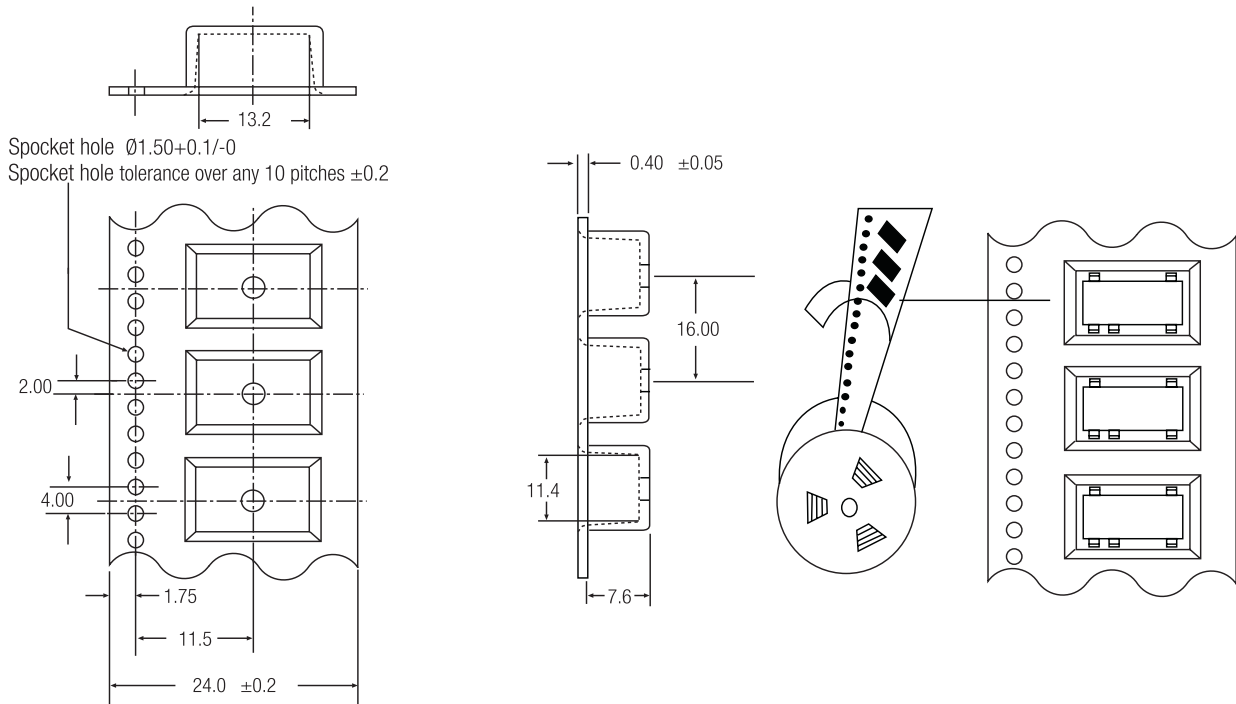
**EFFICIENCY VS OUTPUT LOAD**



## PACKAGING

units: mm

Tape & Reel: Conforms to EIA-481-2  
 Reel Size: Ø13"  
 QTY: 500 pcs per reel



## REVISION HISTORY

rev.	description	date
1.0	initial release	07/25/2016
1.01	company logo updated	03/30/2021
1.02	performance curves updated	07/06/2021
1.03	packaging updated	06/13/2024
1.04	company address updated	11/05/2024

The revision history provided is for informational purposes only and is believed to be accurate.



**CUI INC**

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**Headquarters**

15575 SW Sequoia Pkwy #100  
Portland, OR 97224  
**800.275.4899**

Fax 503.612.2383  
**cui.com**  
techsupport@cui.com

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