



**DESCRIPTION:** 3W 3KVDC Isolated Single & Dual Output DC/DC Converters

The PPH-3W series are miniature, isolated 2W DC/DC converters in a SIP and DIP package. They offer the ideal solution in many space critical applications for board level power distribution. The internal SMD construction makes it possible to offer a product with high performance at low cost. The series offers smaller size, improved efficiency, lower output ripple noise and 3KVDC isolation.

### FEATURES

RoHS compliant	Efficiency up to 86%	Power density up to 1.44W/cm <sup>3</sup>
Operating temperature: -40°C to 105°C	Dual output from a single input rail	UL 94V-0 package material
Power sharing on output	3KVDC isolation	Industry standard pinout
Input voltage: 3.3V, 5V, 12V, 15V, 24V, 48V	Output voltage: ±5V, ±9V, ±12V, ±15V, ±24V / 3.3V, 5V, 9V, 12V, 15V, 24V	CE certification

### SELECTION GUIDE

Part Number	Nominal Input Voltage	Output Voltage	Output Current (Max./Min)	Efficiency	Package Style
	V	V	mA	%	
PPH0505D-3W	5	±5	±300/±30	80	DIP
PPH0509D-3W	5	±9	±166.5/±16.65	80	DIP
PPH0512D-3W	5	±12	±125/±12.5	81	DIP
PPH0515D-3W	5	±15	±100/±10	84	DIP
PPH0505S-3W	5	±5	±300/±30	80	SIP
PPH0509S-3W	5	±9	±166.5/±16.65	80	SIP
PPH0512S-3W	5	±12	±125/±12.5	82	SIP
PPH0515S-3W	5	±15	±100/±10	83	SIP
PPH0524S-3W	5	±24	±62.5/±6.25	84	SIP
PPH1205D-3W	12	±5	±300/±30	80	DIP
PPH1209D-3W	12	±9	±166.5/±16.65	83	DIP
PPH1212D-3W	12	±12	±125/±12.5	84	DIP
PPH1215D-3W	12	±15	±100/±10	86	DIP
PPH1224D-3W	12	±24	±62.5/±6.25	85	SIP
PPH1205S-3W	12	±5	±300/±30	80	SIP
PPH1209S-3W	12	±9	±166.5/±16.65	83	SIP
PPH1212S-3W	12	±12	±125/±12.5	84	SIP
PPH1215S-3W	12	±15	±100/±10	86	SIP
PPH1224S-3W	12	±24	±62.5/±6.25	85	SIP
PPH1505D-3W	15	±5	±300/±30	80	DIP
PPH1505S-3W	15	±5	±300/±30	80	SIP
PPH1515S-3W	15	±15	±100/±10	86	SIP
PPH2405D-3W	24	±5	±300/±30	80	DIP
PPH2409D-3W	24	±9	±166.5/±16.65	85	DIP
PPH2412D-3W	24	±12	±125/±12.5	86	DIP
PPH2415D-3W	24	±15	±100/±10	86	DIP
PPH2424D-3W	24	±24	±62.5/±6.25	85	DIP
PPH2405S-3W	24	±5	±300/±30	82	SIP
PPH2409S-3W	24	±9	±166.5/±16.65	85	SIP
PPH2412S-3W	24	±12	±125/±12.5	85	SIP
PPH2415S-3W	24	±15	±100/±10	85	SIP
PPH2424S-3W	24	±24	±62.5/±6.25	85	SIP
PPH4805D-3W	48	±5	±300/±30	82	DIP
PPH4809D-3W	48	±9	±166.5/±16.65	82	DIP
PPH4812D-3W	48	±12	±125/±12.5	85	DIP
PPH4815D-3W	48	±15	±100/±10	85	DIP
PPH4805S-3W	48	±5	±300/±30	82	SIP
PPH4809S-3W	48	±9	±166.5/±16.65	83	SIP
PPH4812S-3W	48	±12	±125/±12.5	85	SIP
PPH4815S-3W	48	±15	±100/±10	84	SIP

### SELECTION GUIDE

Part Number	Nominal Input Voltage	Output Voltage	Output Current(Max./Min)	Efficiency	Package Style
	V	V	mA	%	
PPH0303DA-3W	3.3	3.3	909/90.9	73	DIP
PPH0305DA-3W	3.3	5	600/60	79	DIP
PPH0503DA-3W	5	3.3	909/90.9	74	DIP
PPH0505DA-3W	5	5	600/60	80	DIP
PPH0509DA-3W	5	9	333/33.3	80	DIP
PPH0512DA-3W	5	12	250/25	81	DIP
PPH0515DA-3W	5	15	200/20	84	DIP
PPH1205DA-3W	12	5	600/60	80	DIP
PPH1209DA-3W	12	9	333/33.3	83	DIP
PPH1212DA-3W	12	12	250/25	84	DIP
PPH1215DA-3W	12	15	200/20	86	DIP
PPH1224DA-3W	12	24	125/12.5	87	DIP
PPH2405DA-3W	24	5	600/60	80	DIP
PPH2409DA-3W	24	9	333/33.3	85	DIP
PPH2412DA-3W	24	12	250/25	86	DIP
PPH2415DA-3W	24	15	200/20	86	DIP
PPH2424DA-3W	24	24	125/12.5	85	DIP
PPH4805DA-3W	48	5	600/60	82	DIP
PPH4809DA-3W	48	9	333/33.3	82	DIP
PPH4812DA-3W	48	12	250/25	85	DIP
PPH4815DA-3W	48	15	200/20	85	DIP

Add suffix "P" for continuous short circuit protection, for example PPH0505SP-3W.

### GENERAL CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Switching frequency	3.3V & 5V input		90		kHz
Switching frequency	12V input		90		kHz
Switching frequency	15V input		90		kHz
Switching frequency	24V & 48V input		90		kHz

### INPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Voltage range	3.3V input	2.9	3.3	3.6	V
Voltage range	5V input	4.5	5	5.5	V
Voltage range	12V input	11	12	13	V
Voltage range	15V input	13.4	15	16.4	V
Voltage range	24V input	22	24	26	V
Voltage range	48V input	43	48	53	V

### OUTPUT CHARACTERISTICS

Parameter	Conditions	Min.	Max.	Units
Rated Power	TA=-40°C to 85°C		3	W
Voltage Set Point Accuracy	TPH0505D/S	-5	7.5	%
Voltage Set Point Accuracy	All other types	-5	5	%
Line regulation	High VIN to low VIN (voltage variation +/-5%)		1.2	%
Load Regulation(10% load to rated load)	5V output		10	%
Load Regulation(10% load to rated load)	9V output		10	%
Load Regulation(10% load to rated load)	12V output		10	%
Load Regulation(10% load to rated load)	15V output		10	%

### ISOLATION CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation test voltage	Flash tested for 1 second	3000			VDC
Resistance	Viso= 1000V	1			GΩ

## ABSOLUTE MAXIMUM RATINGS

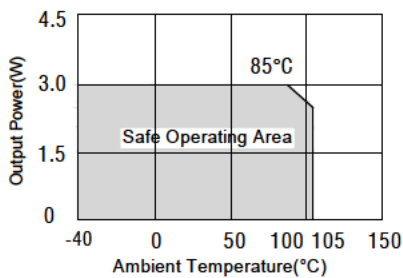
Short-circuit protection	1 second
Lead temperature 1.5mm from case for 10 seconds	300°C
Internal power dissipation	300mW
Input voltage $V_{in}$ , PPH03	5.5V
Input voltage $V_{in}$ , PPH05	7V
Input voltage $V_{in}$ , PPH12	15V
Input voltage $V_{in}$ , PPH15	18V
Input voltage $V_{in}$ , PPH24	28V
Input voltage $V_{in}$ , PPH48	54V

## TEMPERATURE CHARACTERISTICS

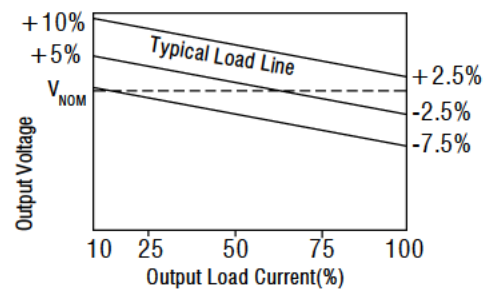
Parameter	Conditions	Min.	Typ.	Max.	Units
Specification	Derating if the temperature $\geq 85^\circ\text{C}$	-40		105	$^\circ\text{C}$
Storage		-50		130	$^\circ\text{C}$
Case Temperature above	5V output		33		$^\circ\text{C}$
Case Temperature above	12V output		27		$^\circ\text{C}$
Cooling	Free air convection				

All specifications typical at  $T_A=25^\circ\text{C}$ , nominal input voltage and rated output current unless otherwise

## TEMPERATURE DERATING GRAPHS

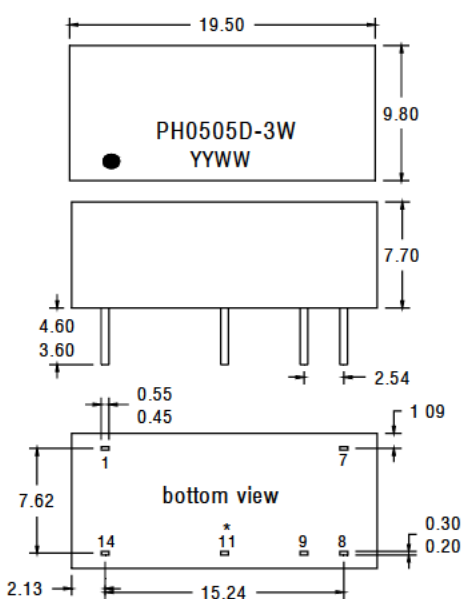


## TOLERANCE ENVELOPES

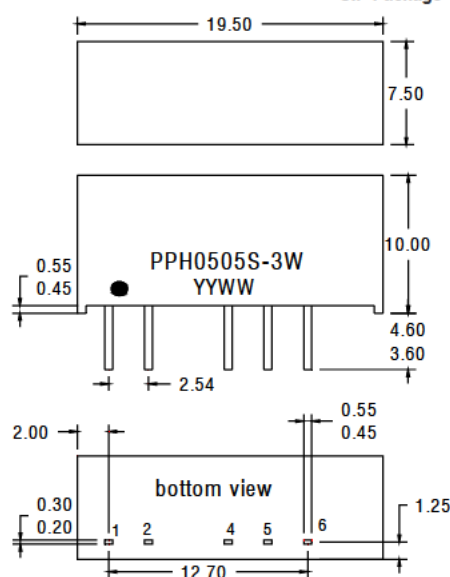


## MECHANICAL DIMENSIONS

### DIP Package



### SIP Package



## PIN CONNECTIONS

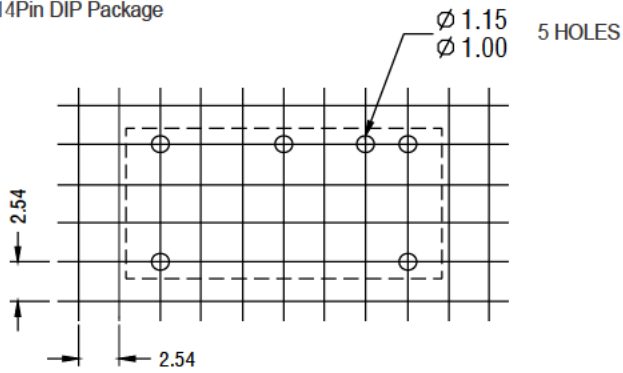
14 PIN DIP	
Pin	Function
1	-Vin
7	NC
8	OV
9	+Vout
11	-Vout
14	+Vin

7 PIN SIP	
Pin	Function
1	+Vin
2	-Vin
4	-Vout
5	OV
6	+Vout

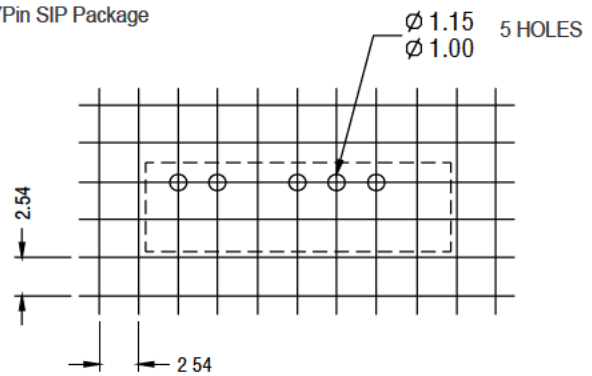
All dimensions in mm  $\pm 0.25\text{mm}$ . All pins on a 2.54 mm pitch and within  $\pm 0.25\text{mm}$  of true position.  
 Weight: 2.85g (DIP) 2.76g (SIP) \* Pin not fitted on single output variants.

### RECOMMENDED FOOTPRINT DETAILS

14Pin DIP Package

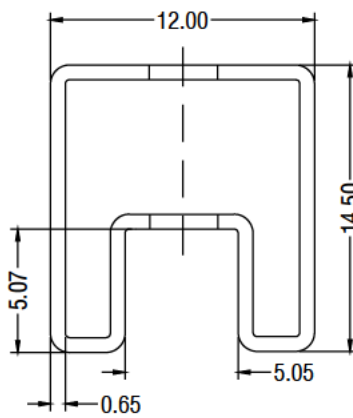


7Pin SIP Package

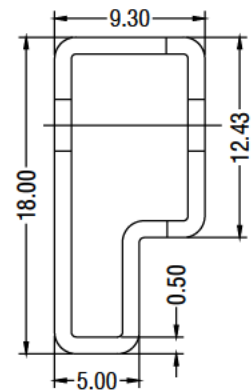


### TUBE OUTLINE DIMENSIONS

14Pin DIP Tube



7Pin SIP Tube



Unless otherwise stated all dimensions in mm  $\pm 0.5$ mm.

Tube length (14 Pin DIP) : 520mm  $\pm 2$ mm.

Tube length (7 Pin SIP) : 520mm  $\pm 2$ mm.

Tube Quantity:25PCS

### SOLDERING INFORMATION

This series is compatible with RoHS soldering systems with a peak wave solder temperature of 300°C for 10 seconds. Both SIP and DIP types in this series are backward compatible with Sn/Pb soldering systems.