



## PWA\_CS-2W & PWB\_CS-2W Series

### 2W, ULTRAWIDE INPUT, ISOLATED & REGULATED DUAL/SINGLE OUTPUT, DC/DC CONVERTER

multi-country patent protection **RoHS**

#### FEATURES

High Efficiency up to 82%  
 I/O Isolation 1500VDC  
 4:1 wide input range  
 Short Circuit Protection(automatic recovery)  
 Operating Temperature: -40°C to +85°C  
 Remote ON/OFF control  
 Internal SMD construction  
 Low Ripple and Noise  
 RoHS Compliance

#### APPLICATIONS

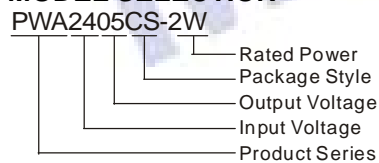
The PWA\_CS-2W & PWB\_CS-2W Series are specially designed for applications where a wide range input voltage power supplies are isolated from the input power supply in a distributed power supply system on a circuit board.  
 These products apply to:  
 1) Where the voltage of the input power supply is wide range.  
 2) Where isolation is necessary between input and output.  
 3) Where the regulation of the output voltage and the output ripple noise are demanded.

#### PRODUCT PROGRAM

Part Number	Input			Output			Efficiency (% Typ)			
	Voltage (VDC)			Voltage (VDC)	Current (mA)					
	Nominal	Range	Max*		Max	Nominal				
PWA2405CS-2W	24	9-36	40	±5	±200	±20	76			
PWA2409CS-2W				±9	±111	±11	78			
PWA2412CS-2W				±12	±83	±8	82			
PWA2415CS-2W				±15	±67	±7	81			
PWB2403CS-1W6				3.3	500	50	73			
PWB2405CS-2W				5	400	40	75			
PWB2409CS-2W				9	222	22	78			
PWB2412CS-2W				12	167	16	82			
PWB2415CS-2W				15	133	13	81			
PWA4805CS-2W				48	18-72	80	±5	±200	±20	75
PWA4809CS-2W							±9	±111	±11	77
PWA4812CS-2W							±12	±83	±8	81
PWA4815CS-2W	±15	±67	±7				80			
PWB4803CS-1W6	3.3	500	50				72			
PWB4805CS-2W	5	400	40				76			
PWB4809CS-2W	9	222	22				78			
PWB4812CS-2W	12	167	16				81			
PWB4815CS-2W	15	133	13	80						

Note: \*Input voltage over it may cause permanent damage to the device.

#### MODEL SELECTION



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#### ISOLATION SPECIFICATIONS

Item	Test conditions	Min	Typ	Max	Units
Isolation voltage	Flash tested for 60 seconds	1500			VDC
Isolation resistance	Test at 500VDC	1000			MΩ
Isolation Capacitance	Input/Output		80		PF

#### OUTPUT SPECIFICATIONS

Item	Test Conditions	Min	Typ	Max	Units
Output power	See Below Products Program	0.2		2	W
Output voltage accuracy	Refer To Recommended Circuit		±1	±3	%
Line regulation	From 10% To 100% Load		±0.5	±1.5	
Load regulation	Input Voltage From Low To High		±0.2	±0.75	
Temperature drift	Refer To Recommended Circuit			±0.03	%/°C
Ripple & Noise	20MHz Bandwidth		20	100	mVp-p
Switching frequency	100% Load, Nominal Input Voltage	100-550(PFM)			KHz

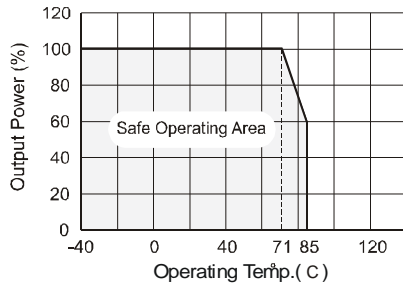
Note:

- All specifications measured at TA=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
- See below recommended circuits for more details.

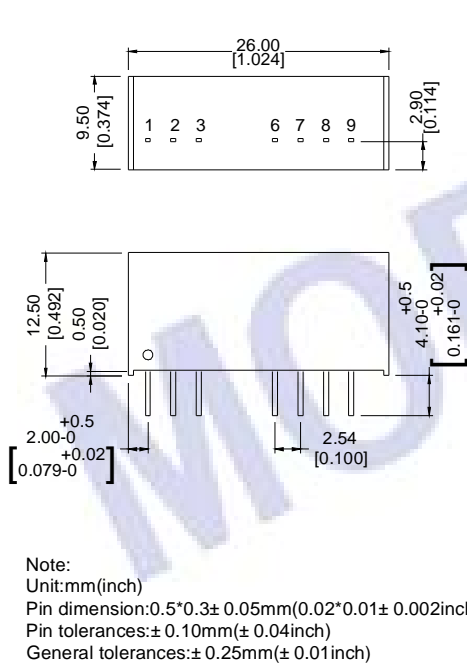
## COMMON SPECIFICATION

Item	Test Conditions	Min	Typ	Max	Units
Storage humidity			95		%
Operating temperature		-40		85	°C
Storage temperature		-55		125	
Temp. rise at full load			15	35	
Lead temperature	1.5mm from case for 10 seconds			300	
Cooling		Free air convection			
Short circuit protection		Continuous ,Automatic Recovery			
Case material		Plastic(UL94-V0)			
MTBF		1000			K Hours
Weigh			5.8		g

## TYPICAL TEMPERATURE CURVE



## OUTLINE DIMENSIONS & FOOTPRINT DETAILS

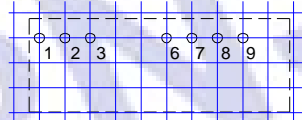


First Angle Projection

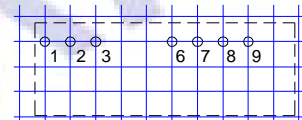
### RECOMMENDED FOOTPRINT DETAILS

Top view,grid:2.54mm(0.1inch)  
diameter:1.00mm

Dual Output



Single Output



### FOOTPRINT DETAILS

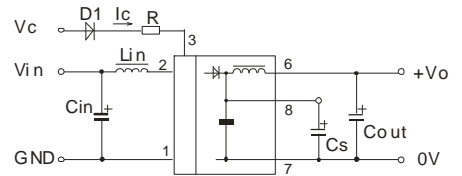
Pin	Singles	Dual
1	GND	GND
2	Vin	Vin
3	Ctrl	Ctrl
6	+Vo	+Vo
7	NC	0V
8	NC	NC
9	0V	-Vo

NC:No Connection

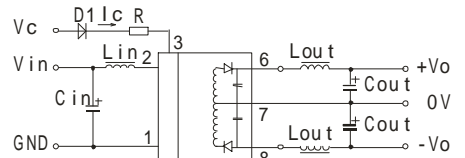
## Recommended Circuit

If you want to further decrease the input/output ripple, an "LC" filtering network may be connected to the input and output ends of the DC/DC converter, see (Figure 1).

Single output



Dual output



(Figure 1)

However, the capacitance of the output filter capacitor must be proper. If the capacitance is too big, a startup problem might arise. For every channel of output, provided the safe and reliable operation is ensured, the greatest capacitance of its filter capacitor sees (Table 1). General:

Cin:10-100uF

Cout:100uF

Lin:4.7-120uH

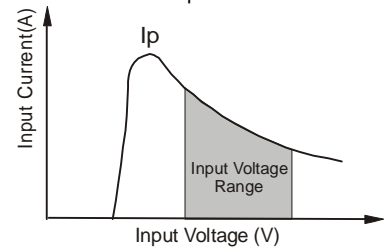
External Capacitor Table(Table 1)

Single Vout (VDC)	Cout (uF)	Dual Vout (VDC)	Cou (uF)
3.3	1200	--	--
5	820	±5	330
9	680	±9	270
12	170	±12	220
15	330	±15	180

## Input current

Nominal input voltage range. The input current of the power supply must be sufficient to the startup current (Ip) of the DC/DC module (Figure 2)

General: Ip ≤1.4\*lin-max



(Figure 2)

## APPLICATION NOTE

### Output Load

To ensure this module can operate efficiently and reliably, During operation, the minimum output load is not less than 10% of the full load, and that this product should never be operated under no load! If the actual output power is very small, please connect a resistor with proper resistance at the output end in parallel to increase the load, or use our company's products with a lower rated output power.

### TRL Terminal

When the open or high impedance, the converter work well; When this pin is 'high', the converter shutdown; It should be note that the input current should between 5-10mA,exceeding the maximum 20mA will cause permanence damage to the converter. The value of R can be derived as follows:

$$R = \frac{VC - VD - 1.0}{IC}$$

**No parallel connection or plug and play.**