Size: 1.25 x 0.80 x 0.40 inches

Applications:
- Medical Equipment
- Telecom/Datacom
- Semiconductor Equipment
- Industry Control Systems
- PV Power Systems
- IGBT Gate Drivers

FEATURES

- 2µA Patient Leakage Current
- Single & Dual Outputs
- High Efficiency up to 89%
- 4:1 Ultra Wide Input Voltage Ranges
- Built-in EMI Class A Filter
- Up to 10 Watts Output Power
- 5000VAC I/O 2MOPP Isolation
- Reinforced Insulation for 250VAC Working Voltage
- Clearance and Creepage Distance: 8.0mm/2MOPP
- Short Circuit, Over Voltage, and Over Load Protection
- CE Marked
- Compliant to RoHS II & REACH
- ANSI/AAMI ES60601-1, EN60601-1, IEC60601-1 3rd Edition, UL60950-1, EN60950-1, & IEC60950-1 Safety Approvals
- Optional Remote On/Off Control and Trim Pin

DESCRIPTION

The DCMPPW10 series of medical DC/DC power converters provides up to 10 Watts of output power in a 1.25” x 0.80” x 0.40” DIP package. This series consists of single and dual output models with 4:1 ultra wide input voltage ranges of 9-36VDC and 18-75VDC. Some features include high efficiency up to 89%, 5000VAC I/O (2 MOPP) isolation, and -40°C to +105°C operating temperature range. These converters are also protected against short circuit, over voltage, and over load conditions. All models are RoHS compliant and have ANSI/AAMI ES60601-1, EN60601-1, IEC60601-1 3rd Edition, UL60950-1, EN60950-1, and IEC60950-1 safety approvals. Remote on/off and Trim functions are also available for this series.

MODEL SELECTION TABLE

SINGLE OUTPUT MODELS

Model Number (1)	Input Voltage	Output Voltage	Output Current	Output Ripple & Noise	No Load Input Current	Output Power	Efficiency	Maximum Capacitive Load
DCMPPW10-24S33x	24VDC (9 - 36 VDC)	3.3 VDC	2500mA	30mVp-p	6mA	8.25W	83%	3000µF
DCMPPW10-24S05x		5 VDC	2000mA	30mVp-p	6mA	10W	86.5%	2500µF
DCMPPW10-24S12x		12 VDC	830mA	40mVp-p	6mA	10W	89%	430µF
DCMPPW10-24S15x		15 VDC	670mA	40mVp-p	6mA	10W	89%	350µF
DCMPPW10-24S24x		24 VDC	416mA	50mVp-p	6mA	10W	89%	125µF
DCMPPW10-48S33x	48 VDC (18 - 75 VDC)	3.3 VDC	2500mA	30mVp-p	4mA	8.25W	82.5%	3000µF
DCMPPW10-48S05x		5 VDC	2000mA	30mVp-p	4mA	10W	86.5%	2500µF
DCMPPW10-48S12x		12 VDC	830mA	40mVp-p	4mA	10W	89%	430µF
DCMPPW10-48S15x		15 VDC	670mA	40mVp-p	4mA	10W	89%	350µF
DCMPPW10-48S24x		24 VDC	416mA	50mVp-p	4mA	10W	88.5%	125µF

DUAL OUTPUT MODELS

Model Number (1)	Input Voltage	Output Voltage	Output Current	Output Ripple & Noise	No Load Input Current	Output Power	Efficiency	Maximum Capacitive Load
DCMPPW10-24D05x	24 VDC (9 - 36 VDC)	±5 VDC	±1000mA	30mVp-p	6mA	10W	85%	±1440µF
DCMPPW10-24D12x		±12 VDC	±416mA	40mVp-p	6mA	10W	89%	±250µF
DCMPPW10-24D15x		±15 VDC	±333mA	40mVp-p	6mA	10W	88%	±180µF
DCMPPW10-48D05x	48 VDC (18 - 75 VDC)	±5 VDC	±1000mA	30mVp-p	4mA	10W	85%	±1440µF
DCMPPW10-48D12x		±12 VDC	±416mA	40mVp-p	4mA	10W	88%	±250µF
DCMPPW10-48D15x		±15 VDC	±333mA	40mVp-p	4mA	10W	88%	±180µF

TECHNICAL SPECIFICATIONS: DCMPPW10 SERIES

All specifications are based on 25°C, Nominal Input Voltage, and Maximum Output Current unless otherwise noted.
We reserve the right to change specifications based on technological advances.

SPECIFICATION	TEST CONDITIONS		Min	Typ	Max	Unit
INPUT SPECIFICATIONS						
Input Voltage Range	24VDC nominal input models		9	24	36	VDC
	48VDC nominal input models		18	48	75	
Start-Up Voltage	24VDC nominal input models				9	VDC
	48VDC nominal input models				18	
Shutdown Voltage	24VDC nominal input models			8		VDC
	48VDC nominal input models			16		
Input Surge Voltage (3sec, max.)	24VDC nominal input models				50	VDC
	48VDC nominal input models				100	
Input Current	No Load		See Table			
Input Filter			Pi type			
Remote On/Off Control *(Only for "B" type pin connection models)*	Referenced to –INPUT pin	DC/DC ON	Open or 0 ~ 1.2VDC			
		DC/DC OFF	2.2 ~ 12 VDC			
Input Current of CTRL Pin	Nominal Vin		-0.5		1	mA
Remote Off Input Current	Nominal Vin			2.5		mA
OUTPUT SPECIFICATIONS						
Output Voltage			See Table			
Voltage Accuracy			-1.0		+1.0	%
Line Regulation	Low line to high line at full load	Single Output Models	-0.2		+0.2	%
		Dual Output Models	-0.5		+0.5	
Load Regulation	No load to full load	Single Output Models	-0.2		+0.2	%
		Dual Output Models	-1.0		+1.0	
Cross Regulation	Asymmetrical load 25%/100% FL	Dual Output Models	-5.0		+5.0	%
Voltage Adjustability *(Only for "B" type pin connection models)*	Single Output Models	3.3V, 5V, 12V Output Models	-10		+10	%
		15V, 24V Output Models	-10		+20	
	Dual Output Models	±5V, ±12V, ±15V Output Models	-10		+10	%
Output Power			See Table			
Output Current			See Table			
Maximum Capacitive Load	Minimum input and constant resistive load		See Table			
Ripple & Noise (20MHz BW)	Measured with a 10µF/25V X7R MLCC	3.3V, 5V Output Models		30		mVp-p
	Measured with a 10µF/25V X7R MLCC	12V, 15V Output Models		40		
	Measured with a 4.7µF/50V X7R MLCC	24V Output Models		50		
Transient Response Recovery Time	25% load step change			250		µs
Start-Up Time	Constant resistive load	Power Up		30		ms
		Remote On/Off		30		
Temperature Coefficient			-0.02		+0.02	%/°C
PROTECTION						
Short Circuit Protection			Continuous, automatic recovery			
Over Load Protection	% of rated Iout; hiccup mode			150		%
Over Voltage Protection	Single Output Models	3.3V Output Models	3.7		5.0	VDC
		5V Output Models	5.6		7.0	
		12V Output Models	13.5		16.0	
		15V Outputs Models	18.3		22.0	
		24V Output Models	29.1		34.5	
	Dual Output Models	5V Output Models	5.6		7.0	VDC
		12V Output Models	13.5		18.2	
		15V Output Models	17.0		22.0	
GENERAL SPECIFICATIONS						
Efficiency	Nominal input voltage and full load		See Table			
Switching Frequency			270	300	330	kHz
Isolation Voltage (Input to Output)	1 minute		5000			VAC
Isolation Capacitance				12	17	pF
Leakage Current	240VAC, 60Hz				2	µA
Clearance/Creepage			8			mm

TECHNICAL SPECIFICATIONS: DCMPPW10 SERIES

All specifications are based on 25°C, Nominal Input Voltage, and Maximum Output Current unless otherwise noted.
We reserve the right to change specifications based on technological advances.

SPECIFICATION	TEST CONDITIONS	Min	Typ	Max	Unit
ENVIRONMENTAL SPECIFICATIONS					
Operating Ambient Temperature	Without derating	-40		+77	°C
	With derating	+77		+105	
Storage Temperature Range		-55		+125	°C
Thermal Impedance	Natural convection (20LFM)		18		°C/W
Relative Humidity		5		95	% RH
Thermal Shock		MIL-STD-810F			
Vibration		MIL-STD-810F			
MTBF	MIL-HDBK-217F Ta=25°C, full load (G/B, controlled environment)	3,849,000 hours			
PHYSICAL SPECIFICATIONS					
Weight		0.48oz (14g)			
Dimensions (L x W x H)		1.25x0.80x0.40 inches (31.8x20.3x10.2mm)			
Case Material		Non-conductive black plastic			
Base Material		Non-conductive black plastic			
Potting Material		Silicon (UL94-V0)			
SAFETY & EMC CHARACTERISTICS					
Safety Approvals (pending)	ANSI/AAMI ES60601-1, IEC60601-1, EN60601-1, UL60950-1[6], EN60950-1, IEC60950-1				
EMI (See Note 2)	EN55011, EN55022, and FCC Part 18			Class A, Class B	
ESD	EN61000-4-2	Air ±8kV Contact ±6kV		Perf. Criteria A	
Radiated Immunity	EN61000-4-3	10 V/m		Perf. Criteria A	
Fast Transient (See Note 3)	EN61000-4-4	±2kV		Perf. Criteria A	
Surge (See Note 3)	EN61000-4-5	±2kV		Perf. Criteria A	
Conducted Immunity	EN61000-4-6	10 Vrms		Perf. Criteria A	
Power Frequency Magnetic Field	EN61000-4-8	100A/m continuous; 1000A/m 1 second		Perf. Criteria A	

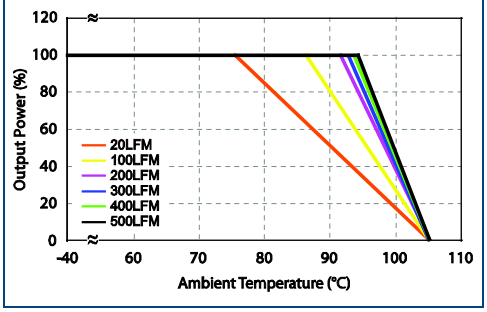
NOTES

1. The "**x**" in the model number represents the Pin Connection type. It can be "**A**" for pin connection type A or "**B**" for pin connection type B. See mechanical drawings on page 4 for more information.
2. The DCMPPW10 series meets EMI Class A without an external filter added. This series can only meet EMI Class B with external components added. Please contact factory for more information.
3. An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5.
   - For 24VDC nominal input models we recommend connecting an aluminum electrolytic capacitor (Nippon Chemi-con KY series, 470µF/50V) in parallel.
   - For 48VDC nominal input models we recommend connecting an aluminum electrolytic capacitor (Nippon Chemi-con KY series, 330µF/100V) in parallel.
4. Remote On/Off control is optional and is only available for "B" type pin connection models. To order the converter with remote on/off add the suffix "-P" to the model number (Ex: DCMPPW10-48S12B-P).
5. Trim function is optional and is only available for "B" type pin connection models. To order the converter with Trim pin add the suffix "-T" to the model number (Ex: DCMPPW10-48S12B-T).
6. This product is Listed to applicable standards and requirements by UL.

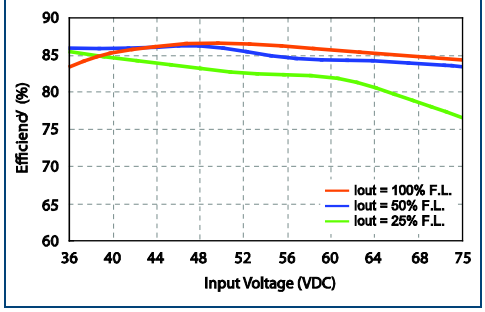
CAUTION: This power module is not internally fused. An input line fuse must always be used.
**Due to advances in technology, specifications subject to change without notice.*

CHARACTERISTIC CURVES

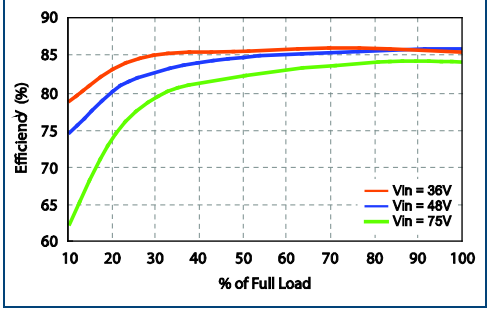
DCMPP10-48S05A Derating Curve



DCMPP10-48S05A Efficiency vs Input Voltage

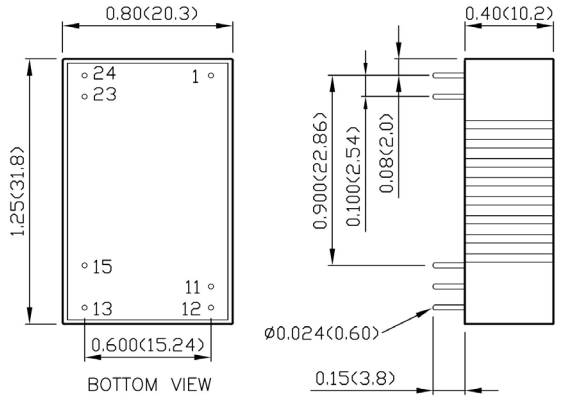


DCMPP10-48S05A Efficiency vs Output Load



MECHANICAL DRAWINGS

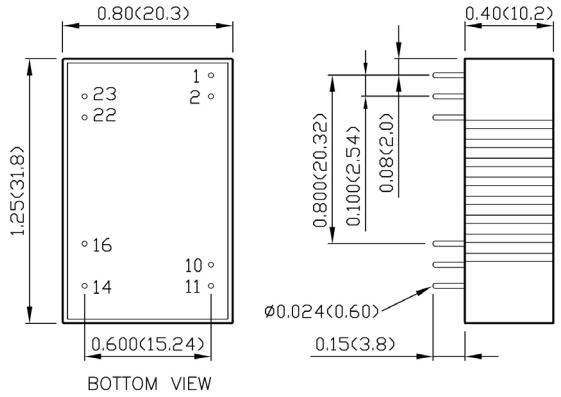
A Type Pin Connection (Suffix "A")



PIN CONNECTIONS		
PIN	SINGLE	DUAL
1	+Vin	+Vin
11	NO PIN	COMMON
12	-Vout	NO PIN
13	+Vout	-Vout
15	NO P IN	+Vout
23	-Vin	-Vin
24	-Vin	-Vin

1. Dimensions in inch (mm)
2. Tolerance: x.xx±0.02 (x.x±0.5)
   x.xxx±0.01 (x.xx±0.25)
3. Pin Pitch Tolerance: ±0.01 (±0.25)
   Pin Dimension Tolerance: ±0.004 (±0.1)

B Type Pin Connection (Suffix "B")



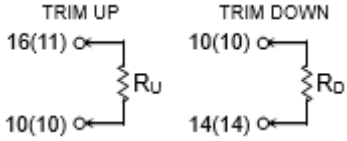
PIN CONNECTIONS		
PIN	SINGLE	DUAL
1	CTRL (Optional)/ No Pin*	CTRL (Optional)/No Pin*
2	-Vin	-Vin
10	TRIM (Optional)/No Pin*	TRIM (Optional)/No Pin*
11	**NO PIN/NC	-Vout
14	+Vout	+Vout
16	-Vout	COMMON
22	+Vin	+Vin
23	+Vin	+Vin

* If Ctrl of Trim options are not chosen then there is "No Pin" on the corresponding pin number.
** Pin 11 is "No Pin" for DCMPP10-XXSXXB-T, DCMPP10-XXSXXB-PT
*Pin 11 is "NC" for DCMPP10-XXSXXB, DCMPP10-XXSXXB-P

1. Dimensions in inch (mm)
2. Tolerance: x.xx±0.02 (x.x±0.5)
   x.xxx±0.01 (x.xx±0.25)
3. Pin Pitch Tolerance: ±0.01 (±0.25)
4. Pin Dimension Tolerance: ±0.004 (±0.1)

External Output Trimming

Output can be externally trimmed by using the method shown below. ( ) for dual output trim.



MODEL NUMBER SET

DCMPPW	10	-	48	S	05	B	-	P (1)	T (1)
Series Name	Output Power		Input Voltage	Output Quantity	Output Voltage	Pin Connection		Remote ON/OFF Option	Trim Option
	10: 10 Watts		**24:** 24 VDC	**S:** Single Output	**33:** 3.3 VDC	**A:** A Type		**None:** No Remote ON/OFF	**None:** No Trim
			48: 48 VDC		**05:** 5 VDC	**B:** B Type		**P:** Remote ON/OFF	**T:** Trim
					12: 12 VDC				
					15: 15 VDC				
					24: 24 VDC				
				D: Dual Output	**05:** ±5 VDC				
					12: ±12 VDC				
					15: ±15 VDC				

(1) Remote On/Off Control and Trim options are only available for “B” type pin connection models.

COMPANY INFORMATION

Wall Industries, Inc. has created custom and modified units for over 50 years. Our in-house research and development engineers will provide a solution that exceeds your performance requirements on-time and on budget. Our ISO9001 certification is just one example of our commitment to producing a high quality, well-documented product for our customers.

Our past projects demonstrate our commitment to you, our customer. Wall Industries, Inc. has a reputation for working closely with its customers to ensure each solution meets or exceeds form, fit and function requirements. We will continue to provide ongoing support for your project above and beyond the design and production phases. Give us a call today to discuss your future projects.

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