

Standard Case



Size: 0.86in x 0.44in x 0.36in (21.8mm x 11.2mm x 9.1mm)

Metal Case



Size: 0.86in x 0.44in x 0.38in (21.8mm x 11.2mm x 9.6mm)



OPTIONS

- Input Voltage
- Case Type
 - Standard
 - Metal
- Output Quantity

FEATURES

- No Minimum Load Required
- 1600VDC Input to Output Insulation
- Compact Size and Low Profile
- Low Standby Power
- CE Marked
- 2:1 Wide Input Range
- RoHS and REACH Compliant
- High Efficiency up to 89%
- Single and Dual Output Voltages
- Over Load and Short Circuit Protection
- UL60950-1, EN60950-1, IEC60950-1, UL62368-1, EN62368-1, & IEC62368-1 Safety Approvals

APPLICATIONS

- Wireless Networks
- Telecom/Datacom
- Industry Control Systems
- Distributed Power Architectures
- Semiconductor Equipment

DESCRIPTION

The DCPDL09 series of DC DC converters offers up to 90 watts of output power in a compact and low profile package. This series consists of both single and dual output models with 2:1 wide input ranges. Models in this series have a high efficiency up to 89%, low standby power, and over load and short circuit protection. Models are also compliant to both RoHS and REACH and have UL60950-1, EN60950-1, IEC60905-1, UL62368-1, EN62368-1, & IEC62368-1 safety approvals.

MODEL SELECTION TABLE

Single Output Models

Model Number ⁽¹⁾	Input Voltage Range	Output Voltage	Output Current @Full Load	Ripple & Noise	No Load Input Current	Output Power	Maximum Capacitive Load	Efficiency
DCPDL09-12S3P3x	9~18	3.3VDC	2000mA	50mVp-p	10mA	Up to 9W	2600µF	81%
DCPDL09-12S05x	9~18	5VDC	1600mA	50mVp-p	10mA		1300µF	85%
DCPDL09-12S09x	9~18	9VDC	1000mA	50mVp-p	10mA		800µF	86%
DCPDL09-12S12x	9~18	12VDC	750mA	75mVp-p	10mA		560µF	88%
DCPDL09-12S15x	9~18	15VDC	600mA	75mVp-p	10mA		560µF	89%
DCPDL09-12S24x	9~18	24VDC	375mA	75mVp-p	10mA		200µF	89%
DCPDL09-24S3P3x	18~36	3.3VDC	2000mA	50mVp-p	9mA	Up to 9W	2600µF	82%
DCPDL09-24S05x	18~36	5VDC	1600mA	50mVp-p	9mA		1300µF	85%
DCPDL09-24S09x	18~36	9VDC	1000mA	50mVp-p	9mA		800µF	87%
DCPDL09-24S12x	18~36	12VDC	750mA	75mVp-p	9mA		560µF	89%
DCPDL09-24S15x	18~36	15VDC	600mA	75mVp-p	9mA		560µF	89%
DCPDL09-24S24x	18~36	24VDC	375mA	75mVp-p	9mA		200µF	89%
DCPDL09-48S3P3x	36~75	3.3VDC	2000mA	50mVp-p	5mA	Up to 9W	2600µF	82%
DCPDL09-48S05x	36~75	5VDC	1600mA	50mVp-p	5mA		1300µF	85%
DCPDL09-48S09x	36~75	9VDC	1000mA	50mVp-p	5mA		800µF	87%
DCPDL09-48S12x	36~75	12VDC	750mA	75mVp-p	5mA		560µF	89%
DCPDL09-48S15x	36~75	15VDC	600mA	75mVp-p	5mA		560µF	89%
DCPDL09-48S24x	36~75	24VDC	375mA	75mVp-p	5mA		200µF	88%

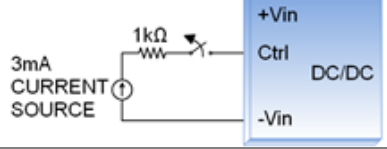
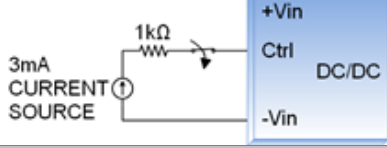
MODEL SELECTION TABLE

Dual Output Models

Model Number	Input Voltage Range	Output Voltage	Output Current @Full Load	Ripple & Noise	No Load Input Current	Output Power	Maximum Capacitive Load	Efficiency
DCPDL09-12D05x	9~18	±5VDC	±800mA	50mVp-p	10mA	Up to 9W	±800µF	85%
DCPDL09-12D12x	9~18	±12VDC	±375mA	75mVp-p	10mA		±390µF	88%
DCPDL09-12D15x	9~18	±15VDC	±300mA	75mVp-p	10mA		±200µF	88%
DCPDL09-24D05x	18~36	±5VDC	±800mA	50mVp-p	9mA	Up to 9W	±800µF	86%
DCPDL09-24D12x	18~36	±12VDC	±375mA	75mVp-p	9mA		±390µF	88%
DCPDL09-24D15x	18~36	±15VDC	±300mA	75mVp-p	9mA		±200µF	87%
DCPDL09-48D05x	36~75	±5VDC	±800mA	50mVp-p	5mA	Up to 9W	±800µF	86%
DCPDL09-48D12x	36~75	±12VDC	±375mA	75mVp-p	5mA		±390µF	87%
DCPDL09-48D15x	36~75	±15VDC	±300mA	75mVp-p	5mA		±200µF	87%

SPECIFICATIONS

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									
Operating Input Voltage Range	12Vin (Nominal)			9	12	18	VDC		
	24Vin (Nominal)			18	24	36			
	48Vin (Nominal)			36	48	75			
Input Surge Voltage	1 Second, Max.	12Vin (Nominal)				36	VDC		
		24Vin (Nominal)				50			
		48Vin (Nominal)				100			
Input Filter				Capacitor Type					
OUTPUT SPECIFICATIONS									
Output Voltage				See Table					
Voltage Accuracy				-1.0		+1.0	%		
Line Regulation	Low Line to High Line at Full Load			-0.2		+0.2	%		
Load Regulation	No Load to Full Load			-1.0		+1.0	%		
Output Power						90	W		
Output Current				See Table					
Cross Regulation	Asymmetrical Load 25%/100% FL	Dual		-5.0		+5.0	%		
Maximum Capacitive Load				See Table					
Ripple & Noise (20MHz bandwidth)	20MHz bandwidth With a 1µF/50V X7R MLCC	3.3Vout, 5Vout, 9Vout			50		mVp-p		
		12Vout, 15Vout, 24Vout			75				
Transient Response Recovery Time	25% load step change				250		µS		
Start-Up Time	Constant Resistive Load	Power Up			50		mS		
		Remote ON/OFF			50				
Temperature Coefficient				-0.02		+0.02	%/°C		
REMOTE ON/OFF CONTROL									
Remote ON/OFF	Ctrl pin applied current via 1kΩ	DC-DC ON		Open or High Impedance					
		DC-DC OFF		2	3	4	mA		
		Remote Off Input Current				2.5	mA		
Application Circuit	DC-DC ON								
	DC-DC OFF								
PROTECTION									
Short Circuit Protection				Continuous, Automatics Recovery					
Over Load Protection	% of lout rated; Hiccup Mode				180		%		
ENVIRONMENTAL SPECIFICATIONS									
Operating Ambient Temperature	3.3Vout	Standard Type	Without Derating	-40		+100	°C		
			Derating	+45		+100			
		Suffix "M"	Without Derating	-40		+100			
			Derating	+50		+100			
	Other Outputs	Standard Type	Without Derating	-40		+100			
			Derating	+55		+100			
		Suffix "M"	Without Derating	-40		+100			
			Derating	+60		+100			
Storage Temperature				-55		+125	°C		
Thermal Shock				MIL-STD-810F					
Relative Humidity				5		95	%RH		
Vibration				MIL-STD-810F					
MTBF	MIL-HDBK-217F, Full Load	Standard Type		2.696E+06 hrs					
		Suffix "M"		2.939E+06 hrs					

SPECIFICATIONS

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
GENERAL SPECIFICATIONS							
Efficiency				See Table			
Switching Frequency	Single				400		kHz
	Dual				500		
Isolation Voltage	1 minute	Input to Output	Standard Type	1600			VDC
			Suffix "M"	1600			
		Input (Output) to Case	Suffix "M"	1600			
Isolation Resistance	500VDC			1			GΩ
Isolation Capacitance			Standard Type			50	pF
			Suffix "M"			50	
PHYSICAL SPECIFICATIONS							
Weight	MIL-HDBK-217F, Full load	Standard Type		0.17oz (4.8g)			
		Suffix "M"		0.21oz (5.9g)			
Dimensions (L x W x H)	Standard Type			0.86in x 0.44in x0.36in (21.8mm x 11.2mm x 9.1mm)			
	Suffix "M"			0.86in x 0.44in x 0.38in (21.8mm x 11.2mm x 9.6mm)			
Case Material	Standard Type			Non-conductive black plastic			
	Suffix "M"			Copper			
Base Material				None			
Potting Material				Silicone (UL94 V-0)			
SAFETY & EMC CHARACTERISTICS							
Safety Approvals				EN60950-1 UL60950-1 IEC60950-1 EN62368-1 UL62368-1 IEC62368-1			
EMI ⁽²⁾	EN55022			Class A Class B			
ESD	EN61000-4-2	Air ± 8kV and Contact ± 6kV		Perf. Criteria A			
Radiated Immunity	EN61000-4-3	20 V/m		Perf. Criteria A			
Fast Transient ⁽³⁾	EN61000-4-4	±2kV		Perf. Criteria A			
Surge ⁽³⁾	EN61000-4-5	±2kV		Perf. Criteria A			
Conducted Immunity	EN61000-4-6	10 Vr.m.s		Perf. Criteria A			
Power Frequency Magnetic Field	EN61000-4-8	100A/m continuous; 100A/m 1 second		Perf. Criteria A			

NOTES

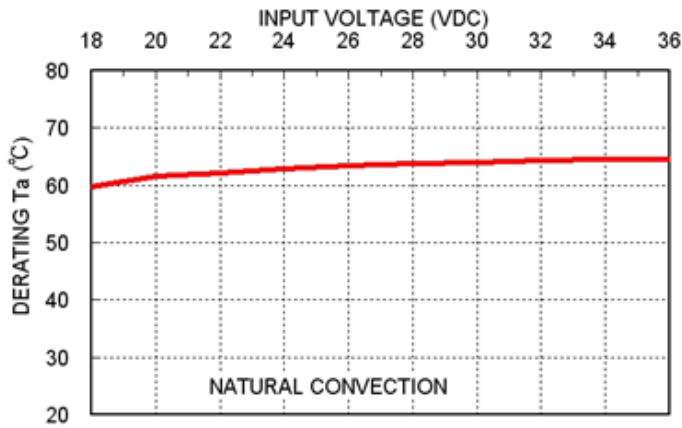
- "x" in model name indicates the case type. "x" can be "S" to indicate standard (plastic) case or "M" to indicate metal case.
- The standard modules either EMI Class A or Class B with external components. For further information, please contact factory.
- An external input filter capacitor is required if the module is to meet EN61000-4-4 and EN61000-4-5. We suggest the following:
 DCPDL09-12xxx & DCPDL09-24xxx recommend to use an aluminum electrolytic capacitor (Nippon chemi-con KY series, 220μF/100V) and a TVS (SMDJ70A, 70V, 3000Watt peak pulse power) to connect in parallel.
 DCPDL09-48xxx recommended to use an aluminum electrolytic capacitor (Nippon chemi-con KY series, 220μF/100V) and a TVS (SMDJ120A, 120V, 3000Watt peak pulse power) to connect in parallel.

CAUTION: This power module is not internally fused. An input line fuse must always be used.

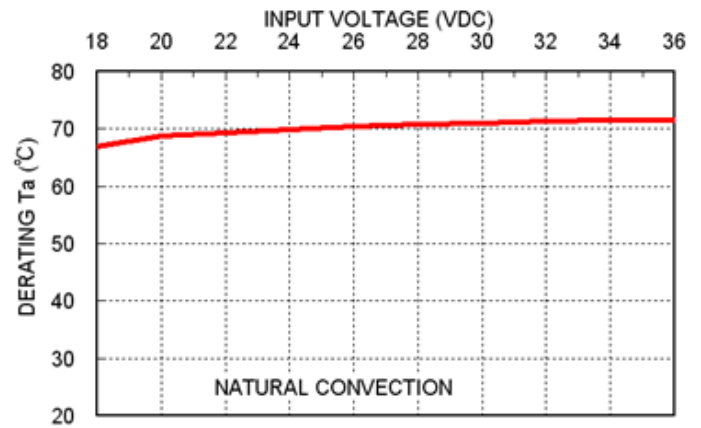
**Due to advances in technology, specifications subject to change without notice.*

CHARACTERISTIC CURVES

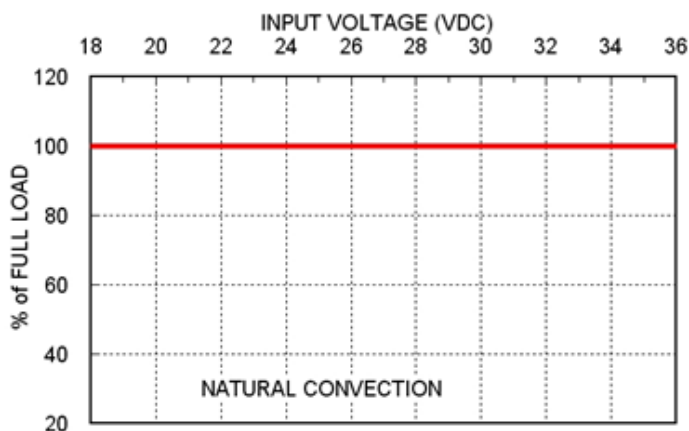
DCPDL09-24S12 Derating Ta vs. Input Voltage (at Full Load)



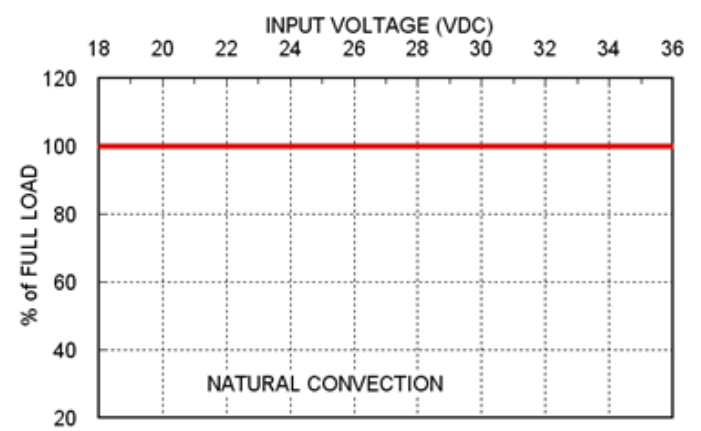
DCPDL09-24S12M Derating Ta vs. Input Voltage (at Full Load)



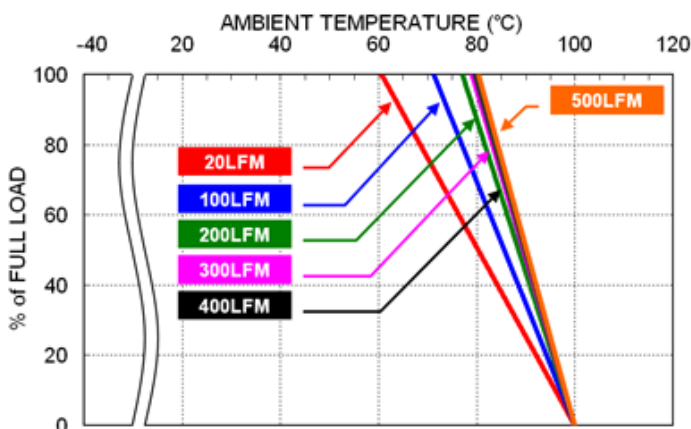
DCPDL09-24S12 Derating Ta vs Input Voltage (at Full Load)



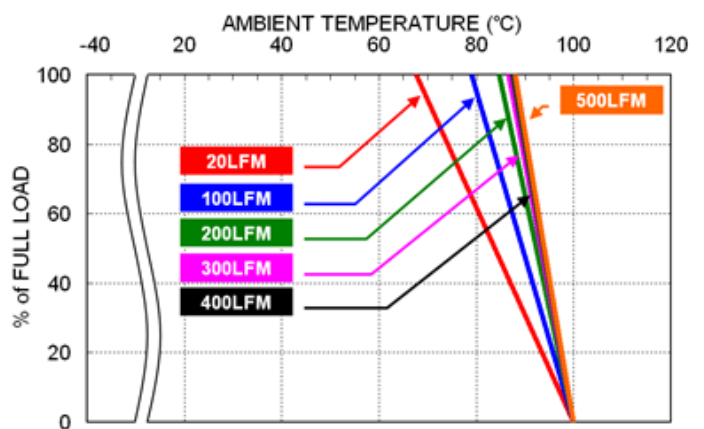
DCPDL09-24S12M Derating Ta vs Input Voltage (at Full Load)



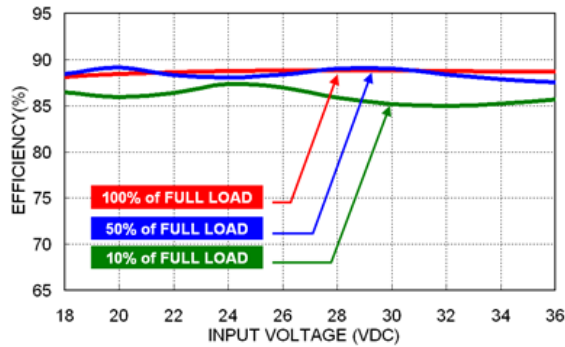
DCPDL09-24S12 Derating Curve



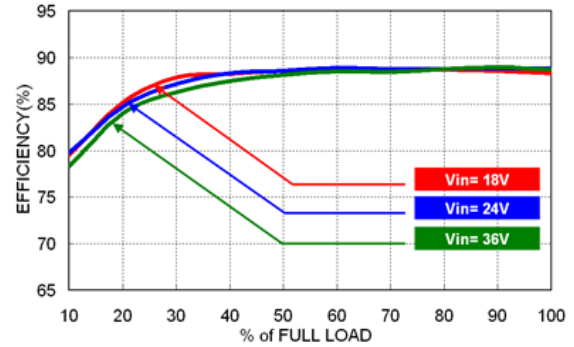
DCPDL09-24S12M Derating Curve



DCPDL09-24S12 Efficiency vs. Input Voltage

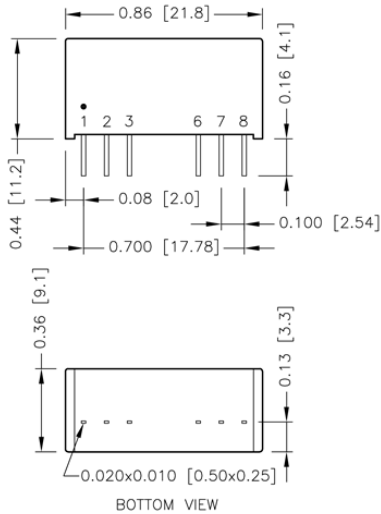


DCPDL09-24S12 Efficiency vs. Output Load



MECHANICAL DRAWINGS

Standard Type

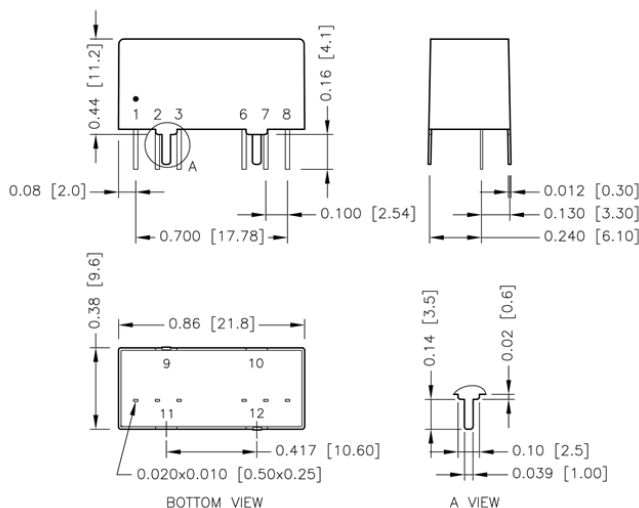


PIN Connection

PIN	SINGLE	DUAL
1	-Vin	-Vin
2	+Vin	+Vin
3	Ctrl	Ctrl
6	+Vout	+Vout
7	-Vout	Common
8	NC	-Vout

1. All dimensions in inch (mm)
Tolerance: $x.xx \pm 0.02$ ($x.x \pm 0.5$)
 $x.xxx \pm 0.01$ ($x.xx \pm 0.25$)
2. Pin Pitch Tolerance ± 0.01 (0.25)
3. Pin dimension Tolerance ± 0.004 (0.1)

Metal Case



PIN Connection

PIN	SINGLE	DUAL
1	-Vin	-Vin
2	+Vin	+Vin
3	Ctrl	Ctrl
6	+Vout	+Vout
7	-Vout	Common
8	NC	-Vout
9	Case	Case
10	Stand Off	Stand Off
11	Stand Off	Stand Off
12	Case	Case

1. All dimensions in inch (mm)
Tolerance: $x.xx \pm 0.02$ ($x.x \pm 0.5$)
 $x.xxx \pm 0.01$ ($x.xx \pm 0.25$)
2. Pin pitch tolerance ± 0.01 (0.25)
2. Pin pitch tolerance ± 0.004 (0.1)

MODEL NUMBER SETUP

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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 ISO9001-2008 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.

Contact **Wall Industries** for further information:

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