



# P-DUKE POWER

## EDL02W Series

DC-DC Converter  
Up to 2 Watts

**3**  
YEARS  
WARRANTY

ROHS  
COMPLIANT

REACH  
COMPLIANT



Automation



Datacom



IPC



Industry



Measurement



Telecom



Automobile



Boat



Charger



Medical



PV



Railway

CE UK  
CA

**1600**  
VDC  
Isolation  
Voltage

**4 : 1**  
Wide  
Input  
Range

**NO**  
Min. Load  
Required

REMOTE  
**ON**  
**OFF**

**SCP**

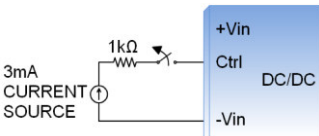
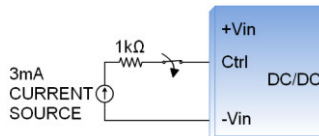
**UVP**

### PART NUMBER STRUCTURE

EDL02 -	48	S	05	W
Series Name	Input Voltage (VDC)	Output Quantity	Output Voltage (VDC)	Input Range
	12:4.5~18 24:9~36 48:18~75	S: Single	3P3:3.3 05:5 09:9 12:12 15:15 24:24	4 : 1
		D: Dual	05:±5 12:±12 15:±15	

**TECHNICAL SPECIFICATION** All specifications are typical at nominal input, full load and 25°C unless otherwise noted

Model Number	Input Range	Output Voltage	Output Current @ Full Load	Input Current @ No Load	Efficiency	Maximum Capacitor Load
	VDC	VDC	mA	mA	%	μF
EDL02-12S3P3W	4.5 ~ 18	3.3	500	30	75	3300
EDL02-12S05W	4.5 ~ 18	5	400	30	80	1680
EDL02-12S09W	4.5 ~ 18	9	222	35	81	1000
EDL02-12S12W	4.5 ~ 18	12	167	35	81	820
EDL02-12S15W	4.5 ~ 18	15	134	40	82	680
EDL02-12S24W	4.5 ~ 18	24	83	40	82	220
EDL02-12D05W	4.5 ~ 18	±5	±200	35	80	±1000
EDL02-12D12W	4.5 ~ 18	±12	±83	40	82	±470
EDL02-12D15W	4.5 ~ 18	±15	±67	45	81	±330
EDL02-24S3P3W	9 ~ 36	3.3	500	20	76	3300
EDL02-24S05W	9 ~ 36	5	400	20	80	1680
EDL02-24S09W	9 ~ 36	9	222	20	80	1000
EDL02-24S12W	9 ~ 36	12	167	20	82	820
EDL02-24S15W	9 ~ 36	15	134	20	82	680
EDL02-24S24W	9 ~ 36	24	83	20	82	220
EDL02-24D05W	9 ~ 36	±5	±200	20	79	±1000
EDL02-24D12W	9 ~ 36	±12	±83	20	82	±470
EDL02-24D15W	9 ~ 36	±15	±67	20	80	±330
EDL02-48S3P3W	18 ~ 75	3.3	500	10	74	3300
EDL02-48S05W	18 ~ 75	5	400	10	79	1680
EDL02-48S09W	18 ~ 75	9	222	10	81	1000
EDL02-48S12W	18 ~ 75	12	167	10	82	820
EDL02-48S15W	18 ~ 75	15	134	10	81	680
EDL02-48S24W	18 ~ 75	24	83	10	81	220
EDL02-48D05W	18 ~ 75	±5	±200	10	79	±1000
EDL02-48D12W	18 ~ 75	±12	±83	10	81	±470
EDL02-48D15W	18 ~ 75	±15	±67	10	81	±330

INPUT SPECIFICATIONS						
Parameter	Conditions		Min.	Typ.	Max.	Unit
Operating input voltage range	12Vin(nom)		4.5	12	18	VDC
	24Vin(nom)		9	24	36	
	48Vin(nom)		18	48	75	
Start up voltage	12Vin(nom)				4.5	VDC
	24Vin(nom)				9	
	48Vin(nom)				18	
Shutdown voltage	12Vin(nom)		2	3	4	VDC
	24Vin(nom)		6	7	8	
	48Vin(nom)		13	15	17	
Start up time	Constant resistive load	Power up		10	20	ms
		Remote ON/OFF		10	20	
Input surge voltage	1 second, max.	12Vin(nom)			25	VDC
		24Vin(nom)			50	
		48Vin(nom)			100	
Input filter			Capacitor type			
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			
						

OUTPUT SPECIFICATIONS						
Parameter	Conditions		Min.	Typ.	Max.	Unit
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	Single	-1.0		+1.0	%
		Dual	-1.0		+1.0	
	10% Load to 90% Load	Single	-0.5		+0.5	%
		Dual	-0.8		+0.8	
Cross regulation	Asymmetrical load 25%/100% FL		-5.0		+5.0	%
Ripple and noise	Measured by 20MHz bandwidth			75		mVp-p
Temperature coefficient			-0.02		+0.02	%/°C
Transient response recovery time	25% load step change			500		μs
Over current protection			130	170	230	%
Short circuit protection			Continuous, automatic recovery			

GENERAL SPECIFICATIONS						
Parameter	Conditions		Min.	Typ.	Max.	Unit
Isolation voltage	1 minute	Input to Output	1600			VDC
Isolation resistance	500VDC		1			GΩ
Isolation capacitance					50	pF
Switching frequency	Full load to minimum load		100			kHz
Safety meets			IEC/ EN/ UL 62368-1			
Case material			Non-conductive black plastic			
Potting material			Silicone (UL94 V-0)			
Weight			4.5g (0.16oz)			
MTBF	MIL-HDBK-217F		6.621 x 10 <sup>6</sup> hrs			

## ENVIRONMENTAL SPECIFICATIONS

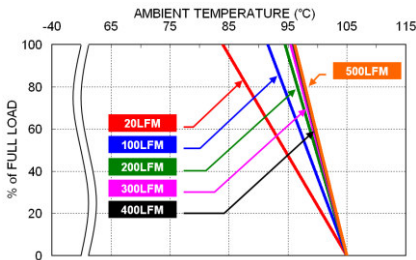
Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating ambient temperature	With derating	-40		+105	°C
Maximum case temperature				105	°C
Storage temperature range		-55		+125	°C
Thermal shock				MIL-STD-810F	
Vibration				MIL-STD-810F	
Relative humidity				5% to 95% RH	

## EMC SPECIFICATIONS

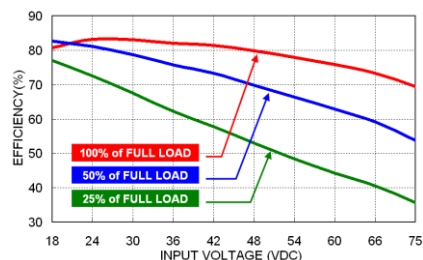
Parameter	Conditions	Level
EMI	EN55032 With external components	Class A · Class B
EMS	EN55035	
ESD	EN61000-4-2 Air ± 8kV and Contact ± 6kV	Perf. Criteria A
Radiated immunity	EN61000-4-3 10 V/m	Perf. Criteria A
Fast transient	EN61000-4-4 ±2kV With an external input filter capacitor (Nippon chemi-con KY series, 220µF/100V)	Perf. Criteria A
Surge	EN61000-4-5 ±1kV With an external input filter capacitor (Nippon chemi-con KY series, 220µF/100V)	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; 1000A/m 1 second	Perf. Criteria A

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

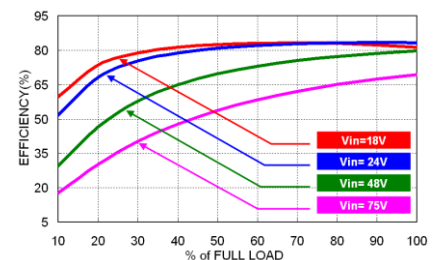
## CHARACTERISTIC CURVE



EDL02-48S05W Derating Curve



EDL02-48S05W Efficiency vs. Input Voltage



EDL02-48S05W Efficiency vs. Output Load

## FUSE CONSIDERATION

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

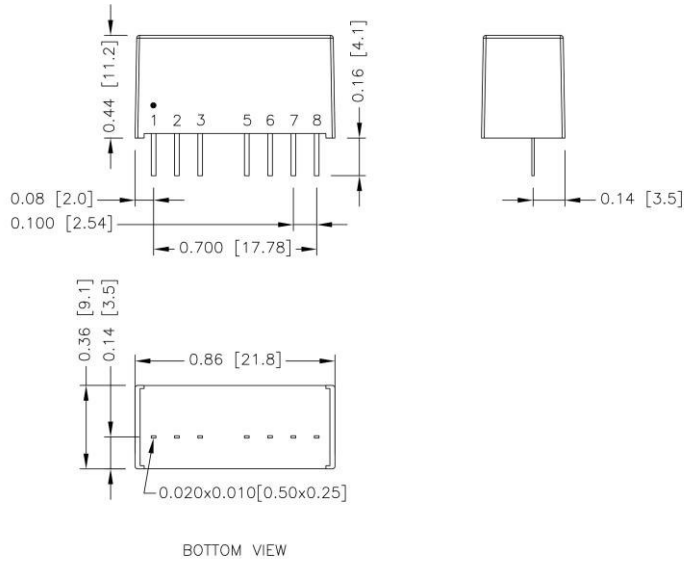
This encapsulated power module can be used in a wide variety of applications, ranging from simple stand-alone operation to an integrated part of sophisticated power architecture.

To maximum flexibility, internal fusing is not included; however, to achieve maximum safety and system protection, always use an input line fuse.

The input line fuse suggest as below :

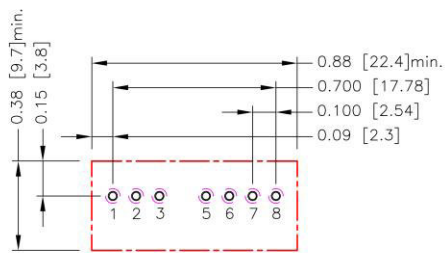
Model	Fuse Rating (A)	Fuse Type
EDL02-12S□□W · EDL02-12D□□W	1	Slow-Blow
EDL02-24S□□W · EDL02-24D□□W	0.5	Slow-Blow
EDL02-48S□□W · EDL02-48D□□W	0.315	Slow-Blow

The table based on the information provided in this data sheet on inrush energy and maximum DC input current at low Vin..

**MECHANICAL DRAWING**

**PIN CONNECTION**

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

- All dimensions in inch [mm]
- Tolerance :x.xx±0.02 [x.x±0.5]  
x.xxx±0.010 [x.xx±0.25]
- Pin dimension tolerance ±0.004 [0.10]

**RECOMMENDED PAD LAYOUT**


- All dimensions in inch(mm)  
 Pad size(lead free recommended)  
 Through hole 1.2.3.5.6.7.8:  $\varnothing 0.031$ [0.80]  
 Top view pad 1.2.3.5.6.7.8:  $\varnothing 0.039$ [1.00]  
 Bottom view pad 1.2.3.5.6.7.8:  $\varnothing 0.063$ [1.60]

