P-DUKE POWER

EDL03W Series

DC-DC Converter
Up to 3 Watts

3 YEARS WARRANTY

RoHS COMPLIANT

REACH COMPLIANT



Automation | Datacom | IPC

Industry | Measurement | Telecom

Automobile | Boat | Charger

Medical | PV | Railway

CE UKCA

1600 VDC Isolation Voltage | 4 : 1 Wide Input Range | NO Min. Load Required | REMOTE ON OFF | SCP | UVP

PART NUMBER STRUCTURE

EDL03 - 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℃ unless otherwise noted

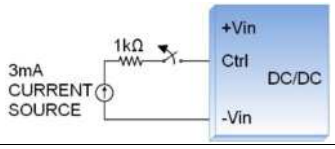
Model Number	Input Range	Output Voltage	Output Current @ Full Load	Input Current @ No Load	Efficiency	Maximum Capacitor Load
	VDC	VDC	mA	mA	%	μF
EDL03-12S3P3W	4.5 ~ 18	3.3	700	35	75	4400
EDL03-12S05W	4.5 ~ 18	5	600	40	79	2200
EDL03-12S09W	4.5 ~ 18	9	333	40	81	1300
EDL03-12S12W	4.5 ~ 18	12	250	40	82	1000
EDL03-12S15W	4.5 ~ 18	15	200	40	83	820
EDL03-12S24W	4.5 ~ 18	24	125	40	82	470
EDL03-12D05W	4.5 ~ 18	±5	±300	40	80	±1200
EDL03-12D12W	4.5 ~ 18	±12	±125	40	82	±520
EDL03-12D15W	4.5 ~ 18	±15	±100	50	81	±440
EDL03-24S3P3W	9 ~ 36	3.3	700	20	76	4400
EDL03-24S05W	9 ~ 36	5	600	20	80	2200
EDL03-24S09W	9 ~ 36	9	333	20	81	1300
EDL03-24S12W	9 ~ 36	12	250	25	83	1000
EDL03-24S15W	9 ~ 36	15	200	25	83	820
EDL03-24S24W	9 ~ 36	24	125	25	81	470
EDL03-24D05W	9 ~ 36	±5	±300	20	79	±1200
EDL03-24D12W	9 ~ 36	±12	±125	25	81	±520
EDL03-24D15W	9 ~ 36	±15	±100	25	81	±440
EDL03-48S3P3W	18 ~ 75	3.3	700	13	74	4400
EDL03-48S05W	18 ~ 75	5	600	13	80	2200
EDL03-48S09W	18 ~ 75	9	333	13	81	1300
EDL03-48S12W	18 ~ 75	12	250	13	82	1000
EDL03-48S15W	18 ~ 75	15	200	13	83	820
EDL03-48S24W	18 ~ 75	24	125	13	82	470
EDL03-48D05W	18 ~ 75	±5	±300	13	80	±1200
EDL03-48D12W	18 ~ 75	±12	±125	13	82	±520
EDL03-48D15W	18 ~ 75	±15	±100	13	82	±440

INPUT SPECIFICATIONS

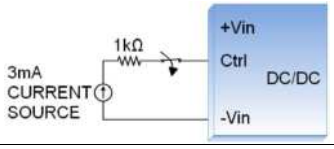
Parameter	Conditions		Min.	Typ.	Max.	Unit
Operating input voltage range		12Vin(nom)	4.5	12	18	
		24Vin(nom)	9	24	36	VDC
		48Vin(nom)	18	48	75	
Start up voltage		12Vin(nom)			4.5	
		24Vin(nom)			9	VDC
		48Vin(nom)			18	
Shutdown voltage		12Vin(nom)	2	3	4	
		24Vin(nom)	6	7	8	VDC
		48Vin(nom)	13	15	17	
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	
		24Vin(nom)			50	VDC
		48Vin(nom)			100	
Input filter				Capacitor type		
Remote ON/OFF		DC-DC ON		Open or high impedance		
	Ctrl pin applied current via 1kΩ	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	Dual	-5.0		+5.0	%
Ripple and noise	Measured by 20MHz bandwidth			75		mVp-p
Temperature coefficient			-0.02		+0.02	%/℃
Transient response recovery time	25% load step change			500		μs
Over current protection			130	170	230	%
Short circuit protection				Continuous, automatics 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					5.124 x 10^6 hrs

ENVIRONMENTAL SPECIFICATIONS

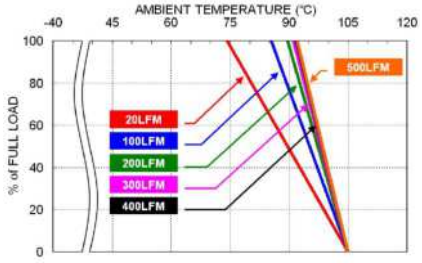
Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating ambient temperature	With derating	-40		+105	℃
Maximum case temperature				105	℃
Storage temperature range		-55		+125	℃
Thermal shock				MIL-STD-810F	
Vibration				MIL-STD-810F	
Relative humidity				5% to 95% RH	

EMC SPECIFICATIONS

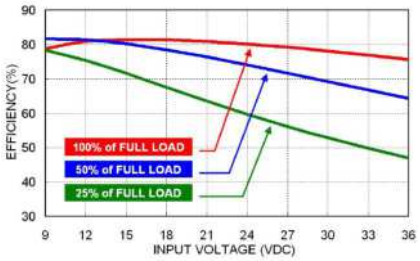
Parameter	Conditions		Level
EMI	EN55032	With external components	Class A，Class B
EMS	EN55035		
ESD	EN61000-4-2	Air ± 8kV and Contact ± 6kV	Perf. Criteria A
Radiated immunity	EN61000-4-3	10 V/m	Perf. Criteria A
Fast transient	EN61000-4-4	±2kV With an external input filter capacitor (Nippon Chemi-con KY 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.

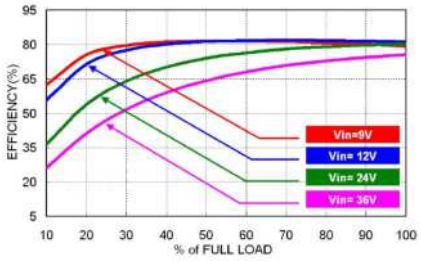
CHARACTERISTIC CURVE



EDL03-24S05W Derating Curve



EDL03-24S05W Efficiency vs. Input Voltage



EDL03-24S05W Efficiency vs. Output Load

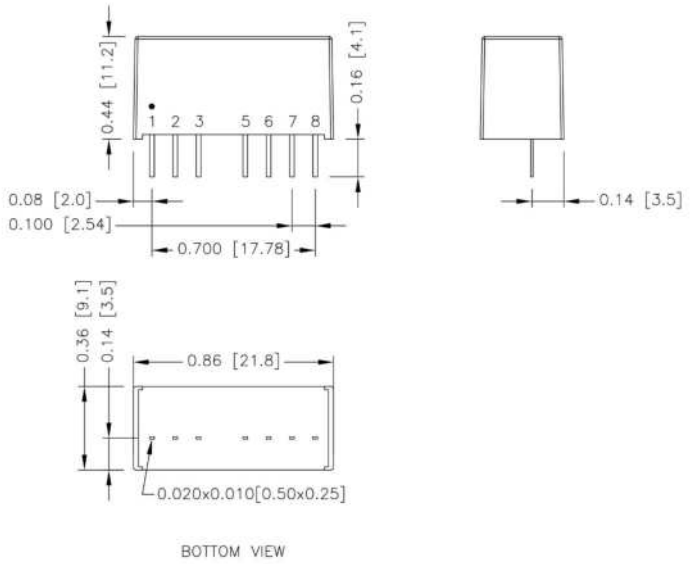
FUSE CONSIDERATION

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
EDL03-12S□□W、EDL03-12D□□W	1.6	Slow-Blow
EDL03-24S□□W、EDL03-24D□□W	0.8	Slow-Blow
EDL03-48S□□W、EDL03-48D□□W	0.5	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

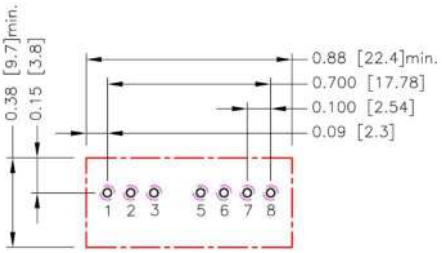


PIN CONNECTION

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

1. All dimensions in inch [mm]
2. Tolerance :x.xx±0.02 [x.x±0.5]
   x.xxx±0.01 [x.xx±0.25]
3. Pin dimension tolerance ±0.004 [0.1]

RECOMMENDED PAD LAYOUT

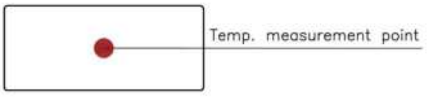


All dimensions in inch(mm)
Pad size(lead free recommended)
Through hole 1.2.3.5.6.7.8: Φ0.031[0.80]
Top view pad 1.2.3.5.6.7.8: Φ0.039[1.00]
Bottom view pad 1.2.3.5.6.7.8: Φ0.063[1.60]

THERMAL CONSIDERATIONS

The power module operates in a variety of thermal environments.
However, sufficient cooling should be provided to help ensure reliable operation of the unit.
Heat is removed by conduction, convection, and radiation to the surrounding environment.
Proper cooling can be verified by measuring the point as the figure below.
The temperature at this location should not exceed “Maximum case temperature”.
When operating, adequate cooling must be provided to maintain the test point temperature at or below “Maximum case temperature”.
You can limit this temperature to a lower value for extremely high reliability.

■ Thermal test condition with vertical direction by natural convection (20LFM).



TOP VIEW

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