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 | 2 : 1 Input Range | NO Min. Load Required | REMOTE ON OFF | SCP | UVP

PART NUMBER STRUCTURE

EDL02 - 48 S 05

Series Name	Input Voltage (VDC)	Output Quantity	Output Voltage (VDC)
	05:4.5~13.2 **12:**9~18 **24:**18~36 **48:**36~75	**S:**Single	**3P3:**3.3 **05:**5 **09:**9 **12:**12 **15:**15 **24:**24
		D: Dual	**05:**±5 **12:**±12 **15:**±15

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

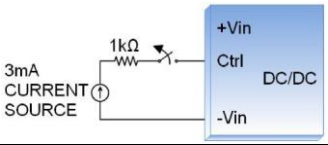
Model Number	Input Range VDC	Output Voltage VDC	Output Current @ Full Load mA	Input Current @ No Load mA	Efficiency %	Maximum Capacitor Load μF
EDL02-05S3P3	4.5 ~ 13.2	3.3	500	35	78	3300
EDL02-05S05	4.5 ~ 13.2	5	400	35	81	1680
EDL02-05S09	4.5 ~ 13.2	9	222	45	84	1000
EDL02-05S12	4.5 ~ 13.2	12	167	45	84	820
EDL02-05S15	4.5 ~ 13.2	15	134	45	84	680
EDL02-05S24	4.5 ~ 13.2	24	83	45	85	220
EDL02-05D05	4.5 ~ 13.2	±5	±200	45	81	±1000
EDL02-05D12	4.5 ~ 13.2	±12	±83	45	85	±470
EDL02-05D15	4.5 ~ 13.2	±15	±67	55	84	±330
EDL02-12S3P3	9 ~ 18	3.3	500	20	78	3300
EDL02-12S05	9 ~ 18	5	400	20	82	1680
EDL02-12S09	9 ~ 18	9	222	25	84	1000
EDL02-12S12	9 ~ 18	12	167	25	85	820
EDL02-12S15	9 ~ 18	15	134	25	85	680
EDL02-12S24	9 ~ 18	24	83	25	85	220
EDL02-12D05	9 ~ 18	±5	±200	25	82	±1000
EDL02-12D12	9 ~ 18	±12	±83	25	85	±470
EDL02-12D15	9 ~ 18	±15	±67	25	84	±330
EDL02-24S3P3	18 ~ 36	3.3	500	10	78	3300
EDL02-24S05	18 ~ 36	5	400	10	83	1680
EDL02-24S09	18 ~ 36	9	222	10	85	1000
EDL02-24S12	18 ~ 36	12	167	10	86	820
EDL02-24S15	18 ~ 36	15	134	10	85	680
EDL02-24S24	18 ~ 36	24	83	10	85	220
EDL02-24D05	18 ~ 36	±5	±200	10	83	±1000
EDL02-24D12	18 ~ 36	±12	±83	10	85	±470
EDL02-24D15	18 ~ 36	±15	±67	15	86	±330
EDL02-48S3P3	36 ~ 75	3.3	500	8	76	3300
EDL02-48S05	36 ~ 75	5	400	8	80	1680
EDL02-48S09	36 ~ 75	9	222	8	82	1000
EDL02-48S12	36 ~ 75	12	167	8	84	820
EDL02-48S15	36 ~ 75	15	134	8	85	680
EDL02-48S24	36 ~ 75	24	83	8	85	220
EDL02-48D05	36 ~ 75	±5	±200	8	80	±1000
EDL02-48D12	36 ~ 75	±12	±83	8	85	±470
EDL02-48D15	36 ~ 75	±15	±67	8	83	±330

INPUT SPECIFICATIONS

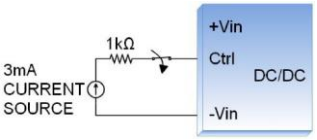
Parameter	Conditions		Min.	Typ.	Max.	Unit
Operating input voltage range		5Vin(nom)	4.5	5	13.2	VDC
		12Vin(nom)	9	12	18	
		24Vin(nom)	18	24	36	
		48Vin(nom)	36	48	75	
Start up voltage		5Vin(nom)			4.5	VDC
		12Vin(nom)			9	
		24Vin(nom)			18	
		48Vin(nom)			36	
Shutdown voltage		5Vin(nom)	2	3	4	VDC
		12Vin(nom)	6	7	8	
		24Vin(nom)	13	15	17	
		48Vin(nom)	29	32	35	
Start up time	Constant resistive load	Power up		10	20	ms
		Remote ON/OFF		10	20	
Input surge voltage	1 second, max.	5Vin(nom)			15	VDC
		12Vin(nom)			25	
		24Vin(nom)			50	
		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			140	180	240	%
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					6.621 x10^6 hrs

ENVIRONMENTAL SPECIFICATIONS

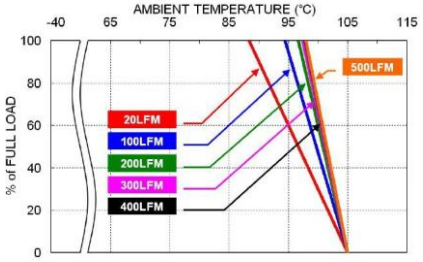
Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating ambient temperature	With derating	-40		+105	℃
Maximum case temperature				105	℃
Storage temperature range		-55		+125	℃
Thermal shock				MIL-STD-810F	
Vibration				MIL-STD-810F	
Relative humidity				5% to 95% RH	

EMC SPECIFICATIONS

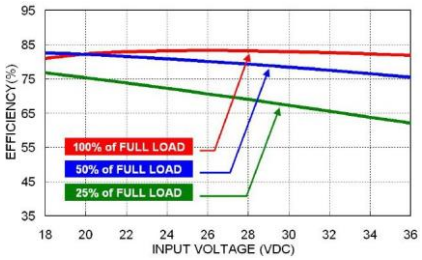
Parameter	Conditions	Level
EMI	EN55032	With external components Class A , Class B
EMS	EN55024	
ESD	EN61000-4-2	Air ± 8kV and Contact ± 6kV Perf. Criteria A
Radiated immunity	EN61000-4-3	10 V/m Perf. Criteria A
Fast transient	EN61000-4-4	±2kV With an external input filter capacitor (Nippon chemi-con KY 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.

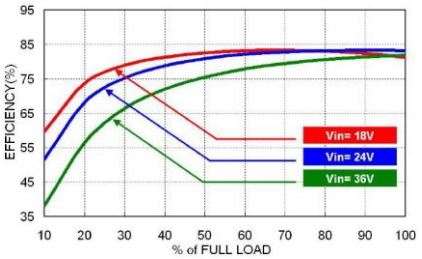
CHARACTERISTIC CURVE



EDL02-24S05 Derating Curve



EDL02-24S05 Efficiency vs. Input Voltage



EDL02-24S05 Efficiency vs. Output Load

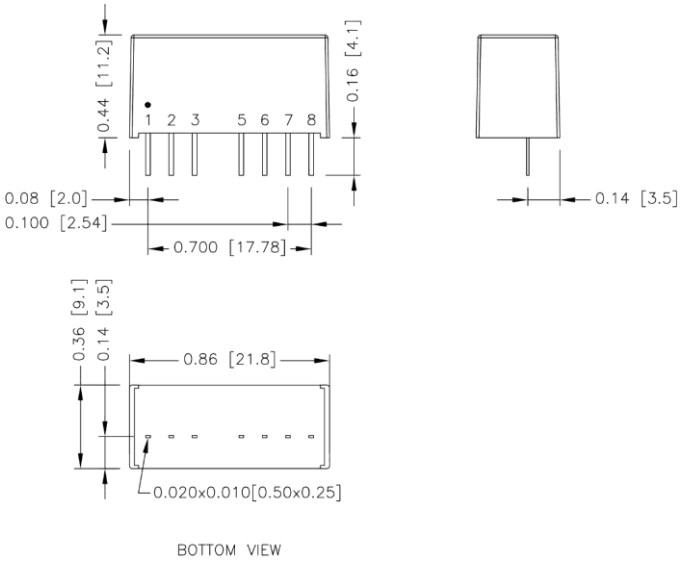
FUSE CONSIDERATION

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
EDL02-05S□□、EDL02-05D□□	1	Slow-Blow
EDL02-12S□□、EDL02-12D□□	0.5	Slow-Blow
EDL02-24S□□、EDL02-24D□□	0.315	Slow-Blow
EDL02-48S□□、EDL02-48D□□	0.16	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

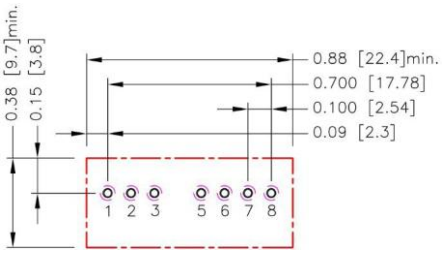


PIN CONNECTION

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±0.010 [x.xx±0.25]
3. Pin dimension tolerance ±0.004 [0.10]

RECOMMENDED PAD LAYOUT

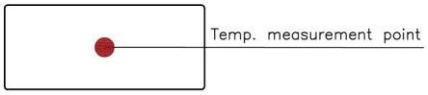


All dimensions in inch(mm)
Pad size(lead free recommended)
Through hole 1.2.3.5.6.7.8: ∅0.031[0.80]
Top view pad 1.2.3.5.6.7.8: ∅0.039[1.00]
Bottom view pad 1.2.3.5.6.7.8: ∅0.063[1.60]

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