



FEC30W SERIES

DC-DC CONVERTER



4 : 1 ULTRA WIDE INPUT RANGE
UP TO 30Watts



FEATURES

- NO MINIMUM LOAD REQUIRED
- 1600VDC INPUT TO OUTPUT ISOLATION
- STANDARD 2.00 X 1.60 X 0.40 INCH
- SIX-SIDED CONTINUOUS SHIELD
- UL60950-1, EN60950-1, & IEC60950-1 SAFETY APPROVALS
- CE MARKED
- COMPLIANT TO RoHS II & REACH

APPLICATIONS

- WIRELESS NETWORK
- TELECOM/DATACOM
- INDUSTRY CONTROL SYSTEM
- DISTRIBUTED POWER ARCHITECTURES
- SEMICONDUCTOR EQUIPMENT

1600VDC ISOLATION	REMOTE CONTROL	UVP	OCP	SCP	OVP	OTP
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TECHNICAL SPECIFICATION

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

Model Number	Input Range	Output Voltage	Output Current @Full Load	Input Current @ No Load	Efficiency	Maximum Capacitor Load (1)
	VDC	VDC	A	mA	%	µF
FEC30-24S1P5W	10 ~ 40	1.5	8	35	80	65000
FEC30-24S1P8W	10 ~ 40	1.8	8	35	83	65000
FEC30-24S2P5W	10 ~ 40	2.5	8	40	85	33000
FEC30-24S3P3W	10 ~ 40	3.3	6	50	87	19500
FEC30-24S05W	10 ~ 40	5	6	65	87	10200
FEC30-24S12W	10 ~ 40	12	2.5	65	87	3300
FEC30-24S15W	10 ~ 40	15	2	70	88	1100
FEC30-24D12W	10 ~ 40	±12	±1.25	30	84	±1000
FEC30-24D15W	10 ~ 40	±15	±1	35	85	±680
FEC30-48S1P5W	18 ~ 75	1.5	8	20	80	65000
FEC30-48S1P8W	18 ~ 75	1.8	8	20	83	65000
FEC30-48S2P5W	18 ~ 75	2.5	8	25	86	33000
FEC30-48S3P3W	18 ~ 75	3.3	6	30	87	19500
FEC30-48S05W	18 ~ 75	5	6	30	88	10200
FEC30-48S12W	18 ~ 75	12	2.5	35	87	3300
FEC30-48S15W	18 ~ 75	15	2	45	88	1100
FEC30-48D12W	18 ~ 75	±12	±1.25	25	85	±1000
FEC30-48D15W	18 ~ 75	±15	±1	25	86	±680

PART NUMBER STRUCTURE

FEC30	-	48	S	05	W	-	N	HS
Series Name		Input Voltage (VDC)	Output Quantity	Output Voltage (VDC)	Input Range		Remote Control Option	Assembly Option
		24: 10~40 48: 18~75	S: Single	1P5: 1.5 1P8: 1.8 2P5: 2.5 3P3: 3.3 05: 5 12: 12 15: 15 12: ±12 15: ±15	4:1		□: Positive logic N: Negative logic	□: None HS: Heat-sink HC: Heat-sink & Clamp
			D: Dual					

INPUT SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Operating input voltage range	24Vin(nom)		10	24	40	VDC
	48Vin(nom)		18	48	75	
Input reflected ripple current				20		mAp-p
Start up voltage	24Vin(nom)				10	VDC
	48Vin(nom)				18	
Shutdown voltage	24Vin(nom)			8		VDC
	48Vin(nom)			16		
Start up time	Constant resistive load	Power up		10		ms
		Remote ON/OFF		10		
Input surge voltage	100 ms, max.	24Vin(nom)			50	VDC
		48Vin(nom)			100	
Input filter			L-C type			
Remote ON/OFF	Referred to -Vin pin	Positive logic	DC-DC ON	Open or 3 ~ 12VDC		
		(Standard)	DC-DC OFF	Short or 0 ~ 1.2VDC		
		Negative logic	DC-DC ON	Short or 0 ~ 1.2VDC		
		(Option)	DC-DC OFF	Open or 3 ~ 12VDC		
		Input current of Ctrl pin	-0.5		+0.5	mA
		Remote off input current		3.0		mA

OUTPUT SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Voltage accuracy			-1.0		+1.0	%
Line regulation	Low Line to High Line at Full Load		-0.5		+0.5	%
Load regulation	No Load to Full Load	Single	-0.5		+0.5	%
		Dual	-1.0		+1.0	
Cross regulation	Asymmetrical load 25%/100% FL	Dual	-5.0		+5.0	%
Voltage adjustability			-10		+10	%
Ripple and noise	20MHz bandwidth With a 0.1μF/50V MLCC	Others		60		mVp-p
		5Vout		75		
		12Vout, 15Vout		100		
Temperature coefficient			-0.02		+0.02	%/°C
Transient response recovery time	25% load step change			250		μs
Over voltage protection	Zener diode clamp	1.5Vout		3.9		VDC
		1.8Vout		3.9		
		2.5Vout		3.9		
		3.3Vout		3.9		
		5Vout		6.2		
		12Vout		15		
		15Vout		18		
Over load protection	% of Iout rated				150	%
Short circuit protection			Continuous, automatic recovery			

GENERAL SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Isolation voltage	1 minute	Input to Output	1600			VDC
		Input (Output) to Case	1600			
Isolation resistance	500VDC		1			GΩ
Isolation capacitance					1000	pF
Switching frequency			270	300	330	kHz
Safety approvals			UL60950-1 EN60950-1 IEC60950-1			
Case material			Nickel-coated copper			
Base material			FR4 PCB			
Potting material			Epoxy (UL94 V-0)			
Weight			48g (1.69oz)			
MTBF	MIL-HDBK-217F, Full load		7.598 x 10 ⁵ hrs			

ENVIRONMENTAL SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating ambient temperature	With derating	-40		+85	°C
Maximum case temperature				+100	°C
Over temperature protection			+115		°C
Storage temperature range		-55		+125	°C
Thermal impedance	Vertical direction by natural convection (20LFM) Without heat-sink With heat-sink		10 8.24		°C/W
Thermal shock					MIL-STD-810F
Vibration					MIL-STD-810F
Relative humidity					5% to 95% RH

EMC SPECIFICATIONS

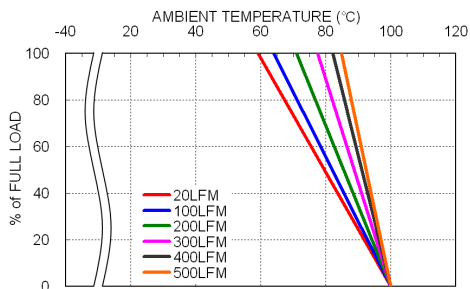
Parameter	Conditions	Level
EMI (2)	EN55022	Class A, Class B
ESD	EN61000-4-2 Air ± 8kV and Contact ± 6kV	Perf. Criteria B
Radiated immunity	EN61000-4-3 10 V/m	Perf. Criteria A
Fast transient (3)	EN61000-4-4 ±2kV	Perf. Criteria A
Surge (3)	EN61000-4-5 ±1kV	Perf. Criteria B
Conducted immunity	EN61000-4-6 10 Vr.m.s	Perf. Criteria A
Power frequency magnetic field	EN61000-4-8 100A/m continuous; 1000A/m 1 second	Perf. Criteria A

Note:

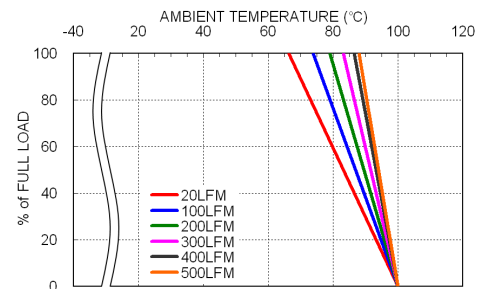
1. Test by minimum input and constant resistive load.
2. The standard module meets EN55022 Class A and Class B with external components. For further information, please contact with P-DUKE.
3. An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5. The filter capacitor Power Mate suggest: Nippon chemi-con KY series, 220µF/100V.

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

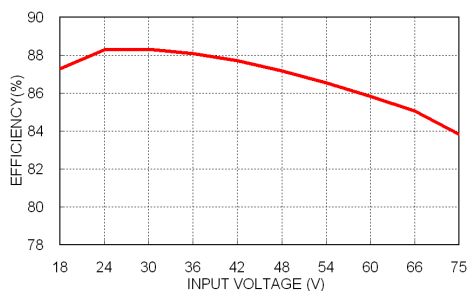
CHARACTERISTIC CURVE



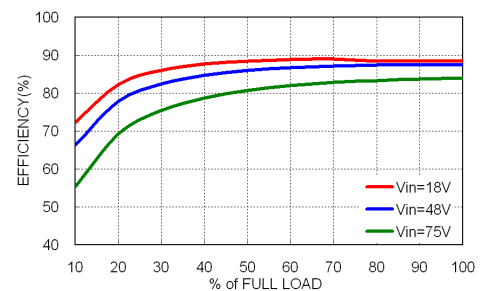
FEC30-48S05W Derating Curve



FEC30-48S05W Derating Curve With Heat-sink

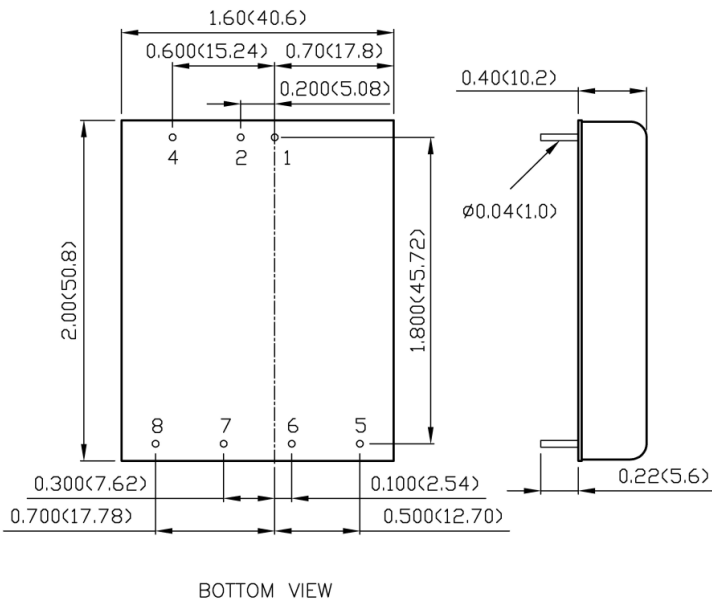


FEC30-48S05W Efficiency vs. Input Voltage



FEC30-48S05W Efficiency vs. Output Load

MECHANICAL DRAWING

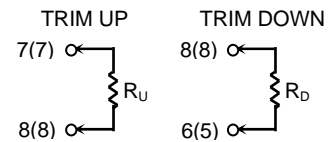


PIN CONNECTION

PIN	SINGLE	DUAL
1	+Vin	+Vin
2	-Vin	-Vin
4	Ctrl	Ctrl
5	No pin	+Vout
6	+Vout	Common
7	-Vout	-Vout
8	Trim	Trim

EXTERNAL OUTPUT TRIMMING

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



1. All dimensions in inch (mm)
2. Tolerance :x.xx±0.02 (x.xx±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)