POWER MATE TECHNOLOGY CO., LTD.

FED30 SERIES

DC-DC CONVERTER

2:1 WIDE INPUT RANGE
UP TO 30Watts

FEATURES

- NO MINIMUM LOAD REQUIRED
- 1600VDC INPUT TO OUTPUT ISOLATION
- STANDARD 2.00 X 1.00 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

TECHNICAL SPECIFICATION All specifications are typical at nominal input, full load and 25℃ 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
FED30-12S1P5	9 ~ 18	1.5	8.5	70	79	20000
FED30-12S2P5	9 ~ 18	2.5	8	100	84	20000
FED30-12S3P3	9 ~ 18	3.3	8	90	85	20000
FED30-12S05	9 ~ 18	5	6	130	87	14400
FED30-12S5P1	9 ~ 18	5.1	6	130	87	14400
FED30-12S12	9 ~ 18	12	2.5	90	89	3000
FED30-12S15	9 ~ 18	15	2	80	89	2000
FED30-12D05	9 ~ 18	±5	±3	90	87	±3000
FED30-12D12	9 ~ 18	±12	±1.25	50	87	±2000
FED30-12D15	9 ~ 18	±15	±1	40	87	±1300
FED30-24S1P5	18 ~ 36	1.5	8.5	50	80	20000
FED30-24S2P5	18 ~ 36	2.5	8	50	85	20000
FED30-24S3P3	18 ~ 36	3.3	8	50	87	20000
FED30-24S05	18 ~ 36	5	6	75	90	14400
FED30-24S5P1	18 ~ 36	5.1	6	75	90	14400
FED30-24S12	18 ~ 36	12	2.5	40	91	3000
FED30-24S15	18 ~ 36	15	2	30	91	2000
FED30-24D05	18 ~ 36	±5	±3	70	90	±3000
FED30-24D12	18 ~ 36	±12	±1.25	30	89	±2000
FED30-24D15	18 ~ 36	±15	±1	30	90	±1300
FED30-48S1P5	36 ~ 75	1.5	8.5	45	80	20000
FED30-48S2P5	36 ~ 75	2.5	8	45	85	20000
FED30-48S3P3	36 ~ 75	3.3	8	30	87	20000
FED30-48S05	36 ~ 75	5	6	45	90	14400
FED30-48S5P1	36 ~ 75	5.1	6	45	89	14400
FED30-48S12	36 ~ 75	12	2.5	40	91	3000
FED30-48S15	36 ~ 75	15	2	40	91	2000
FED30-48D05	36 ~ 75	±5	±3	35	90	±3000
FED30-48D12	36 ~ 75	±12	±1.25	30	88	±2000
FED30-48D15	36 ~ 75	±15	±1	20	89	±1300

PART NUMBER STRUCTURE

FED30 - 48 S 05 - N HS

Series Name	Input Voltage (VDC)	Output Quantity	Output Voltage (VDC)	Remote Control Option	Assembly Option
	12: 9~18	**S:** Single	**1P5:** 1.5	□: Positive logic	□: None
	24: 18~36		**2P5:** 2.5	**N:** Negative logic	**HS:** Heat-sink
	48: 36~75		**3P3:** 3.3		**HC:** Heat-sink with Clamp
			05: 5		
			5P1: 5.1		
			12: 12		
			15: 15		
		D: Dual	**05:** ±5		
			12: ±12		
			15: ±15		

INPUT SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Operating input voltage range		12Vin(nom)	9	12	18	VDC
		24Vin(nom)	18	24	36	
		48Vin(nom)	36	48	75	
Input reflected ripple current	Nominal input and Full load			20		mAp-p
Start-up voltage		12Vin(nom)			9	VDC
		24Vin(nom)			18	
		48Vin(nom)			36	
Shutdown voltage		12Vin(nom)		8		VDC
		24Vin(nom)		16		
		48Vin(nom)		32		
Start up time	Constant resistive load	Power up		30		ms
		Remote ON/OFF		30		
Input surge voltage	100 ms, max.	12Vin(nom)			25	VDC
		24Vin(nom)			50	
		48Vin(nom)			100	
Input filter				Pi type		
Remote ON/OFF	Referred to –Vin pin	Positive logic (Standard) DC-DC ON		Open or 3 ~ 12VDC		
		Positive logic (Standard) DC-DC OFF		Short or 0 ~ 1.2VDC		
		Negative logic (Option) DC-DC ON		Short or 0 ~ 1.2VDC		
		Negative logic (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		-0.2		+0.2	%
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	Single output		-10		+10	%
Ripple and noise	Measured by 20MHz bandwidth	Others		100		mVp-p
	With a 1μF/50V MLCC	12Vout, 15Vout		150		
Temperature coefficient			-0.02		+0.02	%/℃
Transient response recovery time	25% load step change			250		μs
Over voltage protection		1.5Vout		2.0		VDC
		2.5Vout		3.3		
		3.3Vout		3.9		
		5Vout, 5.1Vout		6.2		
		12Vout		15		
		15Vout		18		
Over load protection	% of Iout rated			150		%
Short circuit protection				Continuous, automatics recovery		

GENERAL SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Isolation voltage	1 minute	Input to Output Input(Output) to Case	1600 1600			VDC
Case grounding	Connect case to -Vin with decoupling Y Cap					
Isolation resistance	500VDC		1			GΩ
Isolation capacitance					1500	pF
Switching frequency			387	430	473	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						30.5g (1.07oz)
MTBF	MIL-HDBK-217F, Full load					1.453 x 10^6 hrs

ENVIRONMENTAL SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Operating ambient temperature		Without derating With derating	-40 +50		+50 +85	℃
Maximum case temperature					+105	℃
Over temperature protection				115		℃
Storage temperature range			-55		+125	℃
Thermal impedance	Vertical direction by natural convection (20LFM)	Without heat-sink With heat-sink		12 10		℃/W
Thermal shock						MIL-STD-810F
Vibration						MIL-STD-810F
Relative humidity						5% to 95% RH

EMC SPECIFICATIONS

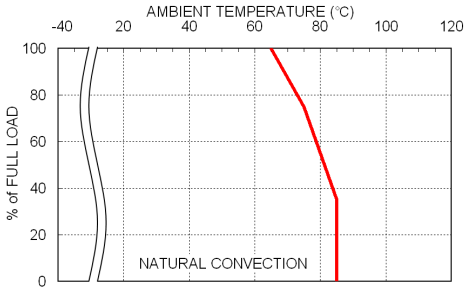
Parameter	Conditions		Level
EMI (2)	EN55022		Class A, Class B
ESD	EN61000-4-2	Air ± 8kV and Contact ± 6kV	Perf. Criteria A
Radiated immunity	EN61000-4-3	10 V/m	Perf. Criteria A
Fast transient (3)	EN61000-4-4	± 2kV	Perf. Criteria A
Surge (3)	EN61000-4-5	± 1kV	Perf. Criteria A
Conducted immunity	EN61000-4-6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

Note:

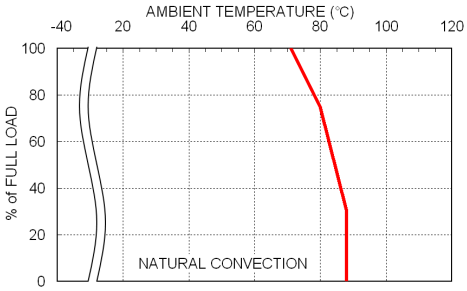
1. Test by minimum input and constant resistive load.
2. The standard module meet EN55022 Class A and Class B with external components. For further information, please contact with P-DUKE.
3. An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5.
   The filter capacitor Power Mate suggest: 12VDC input & 24VDC input Nippon chemi-con KY series, 330μF/50V
   48VDC input Nippon chemi-con KY series, 220μF/100V

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

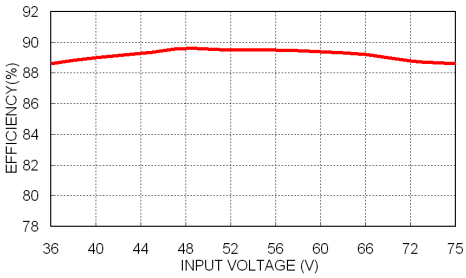
CHARACTERISTIC CURVE



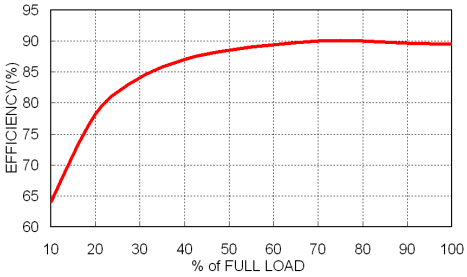
FED30-48S05 Derating Curve



FED30-48S05 Derating Curve With Heat-sink

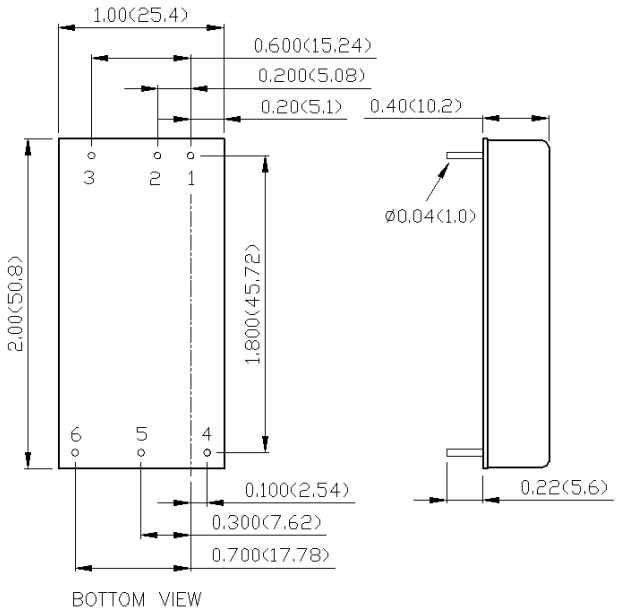


FED30-48S05 Efficiency vs. Input Voltage



FED30-48S05 Efficiency vs. Output Load

MECHANICAL DRAWING

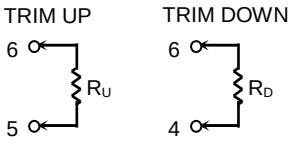


PIN CONNECTION

PIN	SINGLE	DUAL
1	+Vin	+Vin
2	-Vin	-Vin
3	Ctrl	Ctrl
4	+Vout	+Vout
5	-Vout	Common
6	Trim	-Vout

EXTERNAL OUTPUT TRIMMING

Output can be externally trimmed by using the method shown below.



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 pitch tolerance ±0.01 (0.25)
4. Pin dimension tolerance ±0.004(0.1)