POWER MATE TECHNOLOGY CO., LTD.

FED30 SERIES

30 WATTS DC-DC CONVERTER

FEATURES

- **30 WATTS MAXIMUM OUTPUT POWER**
- **OUTPUT CURRENT UP TO 8.5A**
- **STANDARD 2.00 X 1.00 X 0.40 INCH**
- **HIGH EFFICIENCY UP TO 91%**
- **2:1 WIDE INPUT VOLTAGE RANGE**
- **SIX-SIDED CONTINUOUS SHIELD**
- **FIXED SWITCHING FREQUENCY**
- **CE MARK MEETS 2006/95/EC, 2011/95/EC AND 2004/108/EC**
- **SAFETY MEETS UL60950-1, EN60950-1 AND IEC60950-1**
- **ISO9001 CERTIFIED MANUFACTURING FACILITIES**
- **COMPLIANT TO RoHS EU DIRECTIVE 2011/65/EU**

OPTIONS

NEGATIVE LOGIC REMOTE ON/OFF

APPLICATIONS

Wireless Network
Telecom/Datacom
Industry Control System
Measurement
Semiconductor Equipment

DESCRIPTION

The FED30 series offer 30 watts of output power from a 2 x 1 x 0.4 inch package. FED30 series have 2:1 wide input voltage of 9~18VDC, 18~36 and 36~75VDC. The FED30 series have features 1600VDC of isolation, short circuit protection, over-current protection, over-voltage protection, over-temperature protection and six sided shielding.

TECHNICAL SPECIFICATION

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

OUTPUT SPECIFICATIONS

Output power			30 Watts max.
Voltage accuracy			±1%
Voltage adjustability	Single output		± 10%
Minimum load			0%
Line regulation	LL to HL at Full Load		± 0.2%
Load regulation	No load to Full load	Single Dual	± 0.5% ± 1%
Cross regulation (Dual)	Asymmetrical load 25% / 100% FL		± 5%
Ripple and noise	20MHz bandwidth (Measured with a 1uF/50V MLCC)	1.5-5.1Vo 12-15Vo	100mVp-p 150mVp-p
Temperature coefficient			±0.02% / °C, max.
Transient response recovery time	25% load step change		250µs
Over voltage protection Zener diode clamp	1.5V 2.5V 3.3V 5.0V & 5.1V & ±5V 12V & ±12V 15V & ±15V	Output Output Output Output Output Output	2.0V 3.3V 3.9V 6.2V 15V 18V
Over load protection	% of FL at nominal input		150%
Short circuit protection	Continuous, automatics recovery		

GENERAL SPECIFICATIONS

Efficiency		See table
Isolation voltage	Input to Output Input (Output) to Case	1600VDC min. 1minute 1600VDC min. 1minute
Case grounding	Connect case to –input	with decoupling Y Cap
Isolation resistance	500VDC	10^9ohms, min.
Isolation capacitance		1500pF, max.
Switching frequency		430kHz± 10%
Design meets safety standard		IEC60950-1, UL60950-1, EN60950-1
Case material		Nickel-coated copper
Base material		FR4 PCB
Potting material		Epoxy (UL94-V0)
Dimensions		2.00 X 1.00 X 0.40 Inch (50.8X 25.4 X 10.2 mm)
Weight		30.5g(1.07oz)
MTBF (Note 1)	MIL-HDBK-217F	1.453 x 10^6 hrs.

INPUT SPECIFICATIONS

Input voltage range	12VDC nominal input 24VDC nominal input 48VDC nominal input		9 ~ 18VDC 18 ~ 36VDC 36 ~ 75VDC
Input filter			Pi type
Input surge voltage	12VDC input 24VDC input 48VDC input		25VDC 100ms, max. 50VDC 100ms, max. 100VDC 100ms, max.
Input reflected ripple current			20mAp-p
Start up time	Nominal input and constant resistive load	Power up Remote ON/OFF	30ms 30ms
Start-up voltage	12VDC input 24VDC input 48VDC input		9VDC, max. 18VDC, max. 36VDC, max.
Shutdown voltage	12VDC input 24VDC input 48VDC input		8VDC 16VDC 32VDC
Remote ON/OFF (Note 5) (Positive logic)(Standard)	DC-DC ON DC-DC OFF		Open or 3V < Vr < 12V Short or 0V < Vr < 1.2V
(Negative logic)(Option)	DC-DC ON DC-DC OFF		Short or 0V < Vr < 1.2V Open or 3V < Vr < 12V
Input current of Remote control pin		Nominal Input	-0.5mA ~ +0.5mA
Remote off state input current		Nominal Input	3mA

ENVIRONMENTAL SPECIFICATIONS

Operating ambient temperature		-40ºC to +50ºC (without derating) +50ºC to +85ºC (with derating)
Maximum case temperature		105ºC
Storage temperature range		-55ºC to +125ºC
Over temperature protection		115ºC
Thermal impedance (Note 6)	Nature convection Nature convection with heat-sink	12ºC/Watt 10ºC/Watt
Thermal shock		MIL-STD-810F
Vibration		MIL-STD-810F
Relative humidity		5% to 95% RH

EMC CHARACTERISTICS

EMI (Note 7)	EN55022			Class A, Class B
ESD	EN61000-4-2	Air Contact	± 8kV ± 6kV	Perf. Criteria A
Radiated immunity	EN61000-4-3		10 V/m	Perf. Criteria A
Fast transient (Note 8)	EN61000-4-4		± 2kV	Perf. Criteria A
Surge (Note 8)	EN61000-4-5		± 1kV	Perf. Criteria A
Conducted immunity	EN61000-4-6		10 Vr.m.s	Perf. Criteria A

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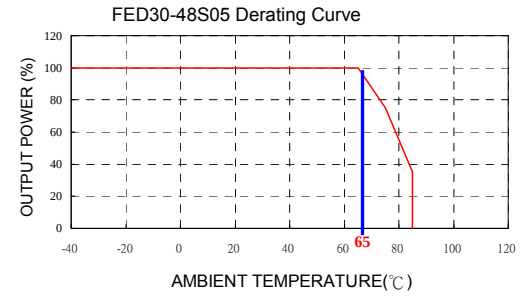
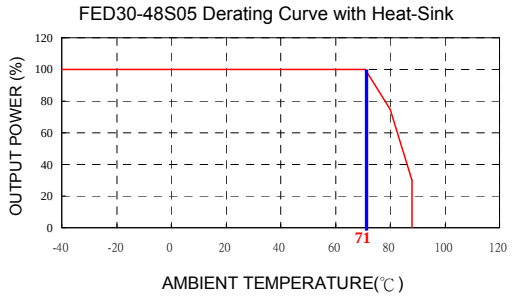
Model Number	Input Range	Output Voltage	Output Current		Output [3] Ripple & Noise	No load[2] Input Current	Eff [3] (%)	Capacitor[4] Load max
			Min. Load	Max. Load				
FED30-12S1P5	9 ~ 18 VDC	1.5 VDC	0mA	8500mA	100mVp-p	70mA	79	20000μF
FED30-12S2P5	9 ~ 18 VDC	2.5 VDC	0mA	8000mA	100mVp-p	100mA	84	20000μF
FED30-12S3P3	9 ~ 18 VDC	3.3 VDC	0mA	8000mA	100mVp-p	90mA	85	20000μF
FED30-12S05	9 ~ 18 VDC	5.0 VDC	0mA	6000mA	100mVp-p	130mA	87	14400μF
FED30-12S5P1	9 ~ 18 VDC	5.1 VDC	0mA	6000mA	100mVp-p	130mA	87	14400μF
FED30-12S12	9 ~ 18 VDC	12 VDC	0mA	2500mA	150mVp-p	90mA	89	3000μF
FED30-12S15	9 ~ 18 VDC	15 VDC	0mA	2000mA	150mVp-p	80mA	89	2000μF
FED30-12D05	9 ~ 18 VDC	±5VDC	0mA	±3000mA	100mVp-p	90mA	87	± 3000μF
FED30-12D12	9 ~ 18 VDC	±12VDC	0mA	±1250mA	150mVp-p	50mA	87	± 2000μF
FED30-12D15	9 ~ 18 VDC	±15VDC	0mA	±1000mA	150mVp-p	40mA	87	± 1300μF
FED30-24S1P5	18 ~ 36 VDC	1.5 VDC	0mA	8500mA	100mVp-p	50mA	80	20000μF
FED30-24S2P5	18 ~ 36 VDC	2.5 VDC	0mA	8000mA	100mVp-p	50mA	85	20000μF
FED30-24S3P3	18 ~ 36 VDC	3.3 VDC	0mA	8000mA	100mVp-p	50mA	87	20000μF
FED30-24S05	18 ~36 VDC	5.0 VDC	0mA	6000mA	100mVp-p	75mA	90	14400μF
FED30-24S5P1	18 ~ 36 VDC	5.1 VDC	0mA	6000mA	100mVp-p	75mA	90	14400μF
FED30-24S12	18 ~ 36 VDC	12 VDC	0mA	2500mA	150mVp-p	40mA	91	3000μF
FED30-24S15	18 ~ 36 VDC	15 VDC	0mA	2000mA	150mVp-p	30mA	91	2000μF
FED30-24D05	18 ~ 36 VDC	±5VDC	0mA	±3000mA	100mVp-p	70mA	90	± 3000μF
FED30-24D12	18 ~ 36 VDC	±12VDC	0mA	±1250mA	150mVp-p	30mA	89	± 2000μF
FED30-24D15	18 ~ 36 VDC	±15VDC	0mA	±1000mA	150mVp-p	30mA	90	± 1300μF
FED30-48S1P5	36 ~ 75 VDC	1.5 VDC	0mA	8500mA	100mVp-p	45mA	80	20000μF
FED30-48S2P5	36 ~ 75 VDC	2.5 VDC	0mA	8000mA	100mVp-p	45mA	85	20000μF
FED30-48S3P3	36 ~ 75 VDC	3.3 VDC	0mA	8000mA	100mVp-p	30mA	87	20000μF
FED30-48S05	36 ~ 75 VDC	5.0 VDC	0mA	6000mA	100mVp-p	45mA	90	14400μF
FED30-48S5P1	36 ~ 75 VDC	5.1 VDC	0mA	6000mA	100mVp-p	45mA	89	14400μF
FED30-48S12	36 ~ 75 VDC	12 VDC	0mA	2500mA	150mVp-p	40mA	91	3000μF
FED30-48S15	36 ~ 75 VDC	15 VDC	0mA	2000mA	150mVp-p	40mA	91	2000μF
FED30-48D05	36 ~ 75 VDC	±5VDC	0mA	±3000mA	100mVp-p	35mA	90	± 3000μF
FED30-48D12	36 ~ 75 VDC	±12VDC	0mA	±1250mA	150mVp-p	30mA	88	± 2000μF
FED30-48D15	36 ~ 75 VDC	±15VDC	0mA	±1000mA	150mVp-p	20mA	89	± 1300μF

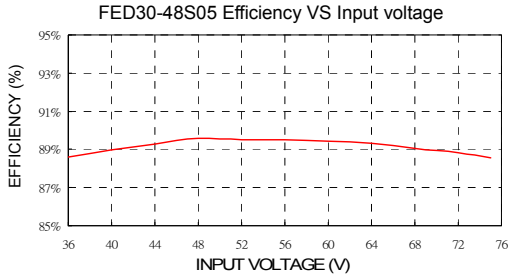
Note

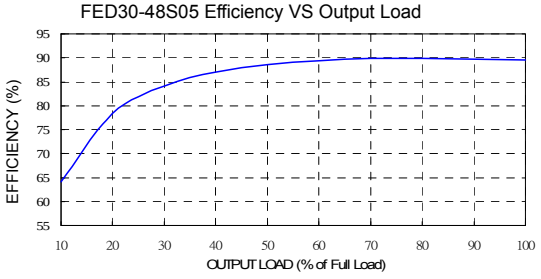
1. MIL-HDBK-217F @Ta=25 ºC, Full load.
2. Typical value at nominal input voltage and no load.
3. Typical value at nominal input voltage and full load.
4. Test by minimum input and constant resistive load.
5. The CTRL pin voltage is referenced to -INPUT.
6. Heat-sink is optional and P/N: 7G-0020A-F.
7. The FED30 series standard module meets EN55022 Class A and Class B with external components. For more detail information, please contact with P-DUKE.
8. An external filter capacitor is required if the module has to meet EN61000-4-4,EN61000-4-5. The filter capacitor Power Mate suggest: 12 VDC INPUT & 24 VDC INPUT : Nippon chemi-con KY series, 330μF/50V. 48 VDC INPUT : Nippon chemi-con KY series, 220μF/100V.

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

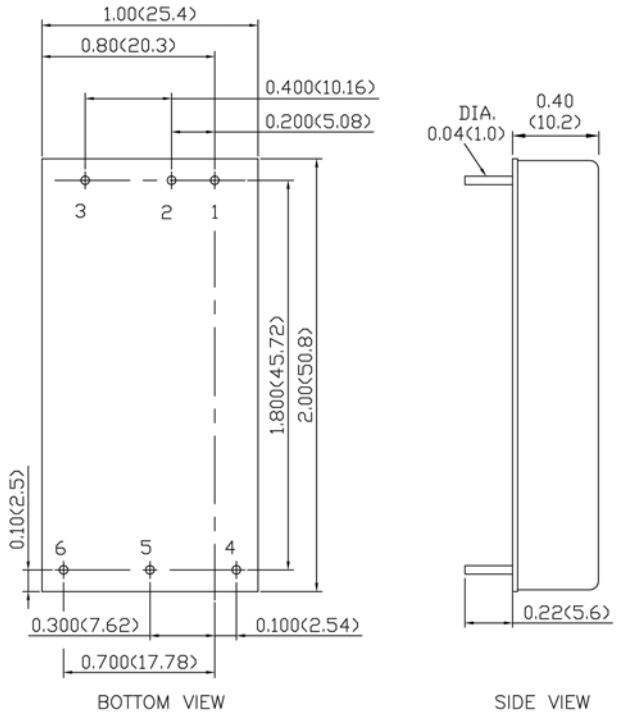








MECHANICAL DRAWING



1. All dimensions in Inch (mm)
   Tolerance: X.XX±0.02 (X.X±0.5)
   X.XXX±0.01 (X.XX±0.25)
2. Pin pitch tolerance ±0.01(0.25)
3. Pin dimension tolerance ±0.004 (0.1)

PIN CONNECTION		
PIN	SINGLE	DUAL
1	+ INPUT	+ INPUT
2	- INPUT	- INPUT
3	CTRL	CTRL
4	+ OUTPUT	+ OUTPUT
5	- OUTPUT	COMMON
6	TRIM	- OUTPUT

EXTERNAL OUTPUT TRIMMING

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