



P-DUKE POWER

FED30TW Series

DC-DC Converter
Up to 30 Watts

3

YEARS
WARRANTY

ROHS
COMPLIANT

REACH
COMPLIANT



Automation



Datacom



IPC



Industry



Measurement



Telecom



Automobile



Boat



Charger



Medical



PV



Railway

UL US CB CE

1600
VDC
Isolation
Voltage

4 : 1
Wide
Input
Range

6
sided
Shielding

REMOTE
ON
OFF

OCP

OTP

OVP

SCP

UVP

PART NUMBER STRUCTURE

FED30	-	48	T	0515	W	-	N	HC
Series Name		Input Voltage (VDC)	Output Quantity	Output Voltage Primary / Auxiliary (VDC)	Input Range		Remote Control Option	Assembly Option
		24:9~36 48:18~75	T:Triple	3312: 3.3 / ±12 3315: 3.3 / ±15 0512: 5 / ±12 0515: 5 / ±15	4:1		□: Positive logic N: Negative logic	□: None HC: Heat-sink with Clamp

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

Model Number	Input Range	Output Voltage	Output Current @ Full Load		Input Current @ No Load	Efficiency	Maximum Capacitor Load
	VDC	VDC	Min. Load mA	Full Load mA	mA	%	µF
FED30-24T3312W	9 ~ 36	3.3 / ±12	500 / ±42	5000 / ±416	105	87	15000 / ±340
FED30-24T3315W	9 ~ 36	3.3 / ±15	500 / ±33	5000 / ±333	105	87	15000 / ±220
FED30-24T0512W	9 ~ 36	5 / ±12	400 / ±42	4000 / ±416	105	88	8000 / ±340
FED30-24T0515W	9 ~ 36	5 / ±15	400 / ±33	4000 / ±333	105	88	8000 / ±220
FED30-48T3312W	18 ~ 75	3.3 / ±12	500 / ±42	5000 / ±416	55	87	15000 / ±340
FED30-48T3315W	18 ~ 75	3.3 / ±15	500 / ±33	5000 / ±333	55	87	15000 / ±220
FED30-48T0512W	18 ~ 75	5 / ±12	400 / ±42	4000 / ±416	55	88	8000 / ±340
FED30-48T0515W	18 ~ 75	5 / ±15	400 / ±33	4000 / ±333	55	88	8000 / ±220

*The output requires a minimum loading on the output to maintain specified regulation. Operation under no-load condition will not damage these devices, however they may not meet all listed specification.

INPUT SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating input voltage range	24Vin(nom) 48Vin(nom)	9 18	24 48	36 75	VDC
Start up voltage	24Vin(nom) 48Vin(nom)			9 18	VDC
Shutdown voltage	24Vin(nom) 48Vin(nom)	7 15	8 16	8.8 17.5	VDC
Start up time	Constant resistive load Power up Remote ON/OFF			30 30	ms
Input surge voltage	100 ms, max. 24Vin(nom) 48Vin(nom)			50 100	VDC
Input filter				Pi type	
Remote ON/OFF	Referred to -Vin pin Positive logic (Standard) DC-DC ON DC-DC OFF Negative logic (Option) DC-DC ON DC-DC OFF Input current of Ctrl pin Remote off input current	-0.5	3	Open or 3 ~ 12VDC Short or 0 ~ 1.2VDC Short or 0 ~ 1.2VDC Open or 3 ~ 12VDC +0.5	mA mA

OUTPUT SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Voltage accuracy	3.3Vout, 5Vout 12Vout, 15Vout	-1.0 -5.0		+1.0 +5.0	%
Line regulation	Low Line to High Line at Full Load 3.3Vout, 5Vout 12Vout, 15Vout	-1.0 -5.0		+1.0 +5.0	%
Load regulation	Min. Load to Full Load 3.3Vout, 5Vout 12Vout, 15Vout	-1.0 -5.0		+1.0 +5.0	%
Ripple and noise	20MHz bandwidth (Measured with a 0.1µF/50V MLCC) 3.3Vout, 5Vout 12Vout, 15Vout		50 75		mVp-p
Temperature coefficient		-0.02		+0.02	%/°C
Transient response recovery time	25% load step change		250		µs
Over voltage protection	Zener diode clamp 3.3Vout 5Vout 12Vout 15Vout		3.9 6.2 15 18		VDC
Over load protection	% of Iout rated; Hiccup mode			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
Isolation resistance	500VDC	1			GΩ
Isolation capacitance				1500	pF
Switching frequency		360	400	440	kHz
Safety approvals	IEC /UL/ EN60950-1				UL:E193009 CB:UL(Demko)
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				1.177 x 10 ⁶ hrs

ENVIRONMENTAL SPECIFICATIONS

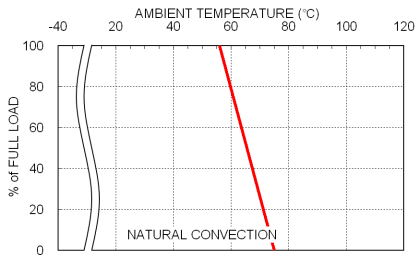
Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating ambient temperature	Without derating With derating	-40 +50		+50 +85	°C
Maximum case temperature				+105	°C
Over temperature protection			115		°C
Storage temperature range		-55		+125	°C
Thermal impedance	Without heat-sink With heat-sink		12 10		°C/W
Thermal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

EMC SPECIFICATIONS

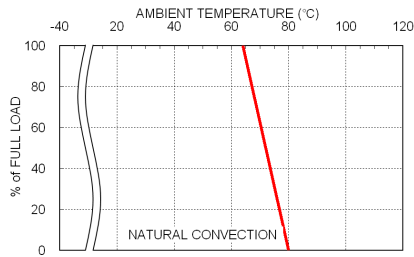
Parameter	Conditions	Level
EMI	EN55032 With external components	Class A, Class B
ESD	EN61000-4-2 Air ± 8kV and Contact ± 6kV	Perf. Criteria A
Radiated immunity	EN61000-4-3 10 V/m	Perf. Criteria A
Fast transient	EN61000-4-4 ±2kV	Perf. Criteria A
Surge	24VDC input With an external input filter capacitor (Nippon chemi-con KY series, 330μF/50V)	Perf. Criteria A
	48VDC input With an external input filter capacitor (Nippon chemi-con KY series, 220μF/100V)	
	EN61000-4-5 ±1kV	
Surge	24VDC input With an external input filter capacitor (Nippon chemi-con KY series, 330μF/50V)	Perf. Criteria A
	48VDC input With an external input filter capacitor (Nippon chemi-con KY series, 220μF/100V)	
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.

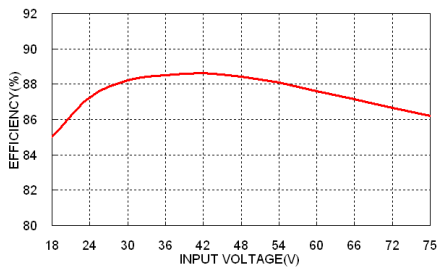
CHARACTERISTIC CURVE



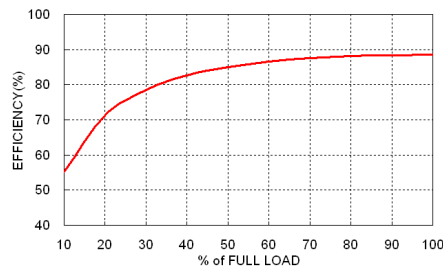
FED30-48T0515W Derating Curve



FED30-48T0515W Derating Curve With Heat-sink



FED30-48T0515W Efficiency vs. Input Voltage



FED30-48T0515W 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.

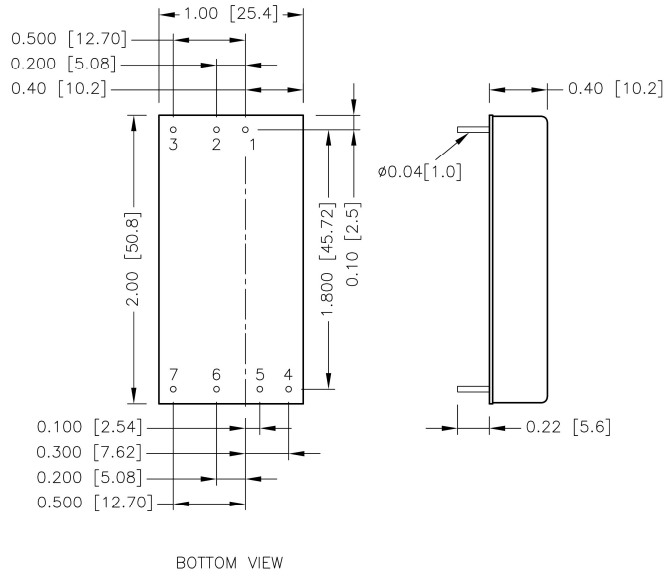
To maximum flexibility, internal fusing is not included; however, to achieve maximum safety and system protection, always use an input line fuse.

The input line fuse suggest as below :

Model	Fuse Rating (A)	Fuse Type
FED30-24T□□□W	6.3	Slow-Blow
FED30-48T□□□W	3.15	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



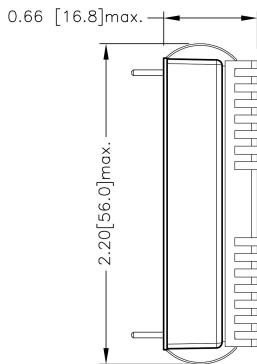
PIN CONNECTION

PIN	TRIPLE
1	+Vin
2	-Vin
3	Ctrl
4	+Aux
5	-Aux
6	Common
7	+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 pitch tolerance ±0.01 [0.25]
4. Pin dimension tolerance ±0.004[0.10]

HEAT-SINK OPTIONS

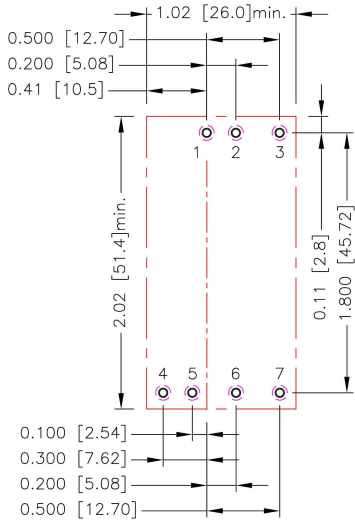
-HC (Heat-sink with clamps)



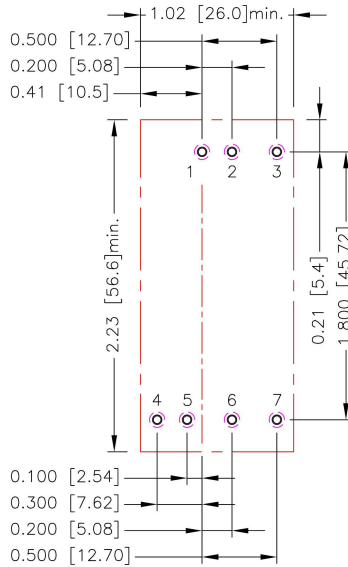
* All dimensions in inch [mm]

RECOMMENDED PAD LAYOUT

Standard



-HC

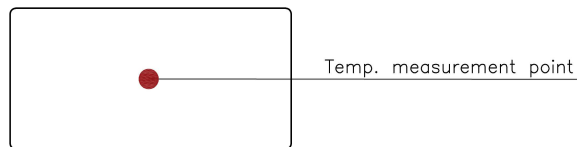


All dimensions in inch[mm]
 Pad size(lead free recommended)
 Through hole 1.2.3.4.5.6.7: $\Phi 0.051$ [1.30]
 Top view pad 1.2.3.4.5.6.7: $\Phi 0.064$ [1.63]
 Bottom view pad 1.2.3.4.5.6.7: $\Phi 0.102$ [2.60]

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