

POWER MATE
P-DUKE **TECHNOLOGY CO., LTD.**
FED30TW SERIES
DC-DC CONVERTER



4 : 1 ULTRA WIDE INPUT RANGE
UP TO 30Watts



FEATURES

- 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, & EN50155 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 ⁽²⁾
	VDC	VDC	Min. Load ⁽¹⁾ 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

PART NUMBER STRUCTURE

FED30	-	48	T	0515	W	-	N	HS
Series Name		Input Voltage	Output Quantity	Output Voltage Primary / Auxiliary (VDC)	Input Range		Remote Control Option	Assembly Option
		(VDC) 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	□: No assembly HS: Heat-sink HC: Heat-sink with Clamp

INPUT SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Operating input voltage range	24Vin(nom)		9	24	36	VDC
	48Vin(nom)		18	48	75	
Input reflected ripple current				20		mAp-p
Start up voltage	24Vin(nom)				9	VDC
	48Vin(nom)				18	
Shutdown voltage	24Vin(nom)			8		VDC
	48Vin(nom)			16		
Start up time	Constant resistive load	Power up			30	ms
		Remote ON/OFF			30	
Input surge voltage	100 ms, max.	24Vin(nom)			50	VDC
		48 Vin(nom)			100	
Input filter						Pi type
Remote ON/OFF	Referred to -Vin pin	Positive logic				Open or 3 ~ 12VDC
		DC-DC ON				Short or 0 ~ 1.2VDC
		Negative logic				Short or 0 ~ 1.2VDC
		DC-DC ON				Open or 3 ~ 12VDC
		DC-DC OFF				
		Input current of Ctrl pin	-0.5		+0.5	mA
		Remote off input current		3		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	-1.0 -5.0		+1.0 +5.0	%
Load regulation	Min. Load to Full Load	-1.0 -5.0		+1.0 +5.0	%
Ripple and noise	20MHz bandwidth (Measured with a 0.1μF/50V MLCC)		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		3.9 6.2 15 18		VDC
Over load protection	% of Iout rated; Hiccup mode			150	%
Short circuit protection				Continuous, automatic 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		IEC60950-1, UL60950-1, EN60950-1			
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	1.177 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	Vertical direction by natural convection (20LFM) 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

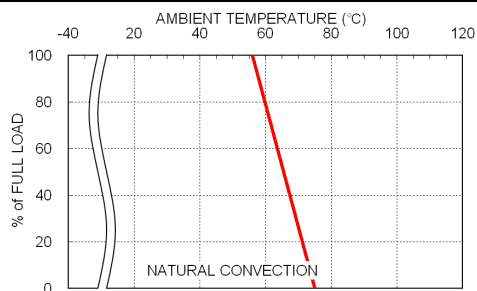
Parameter	Conditions	Level
EMI (3)	EN55022	Class A, Class B
ESD	EN61000-4-2 Air ± 8kV and Contact ± 6kV	Perf. Criteria A
Radiated immunity	EN61000-4-3 10 V/m	Perf. Criteria A
Fast transient (4)	EN61000-4-4 ±2kV	Perf. Criteria A
Surge (4)	EN61000-4-5 ±1kV	Perf. Criteria A
Conducted immunity	EN61000-4-6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

Note:

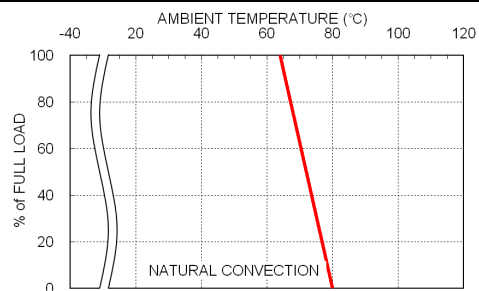
- The output requires a minimum loading on the output to maintain specified regulation. Operation under no-load condition will not damage these devices, however they may not meet all listed specification.
- Test by minimum input and constant resistive load
- The standard modules meet EN55022 Class A and Class B with external components. For more detail information, please contact with P-DUKE.
- 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: 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.

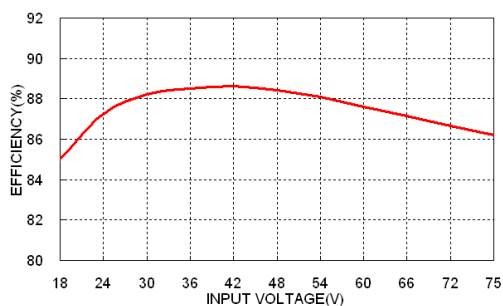
CHARACTERISTIC CURVE



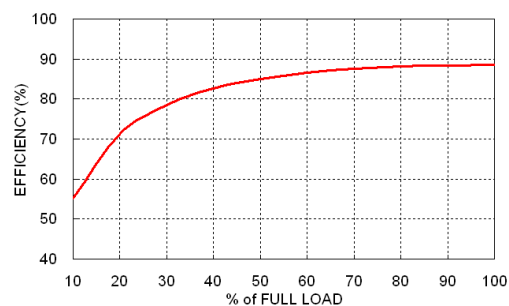
FED30-48T0515W Derating Curve



FED30-48T0515W Derating Curve With Heat-sink

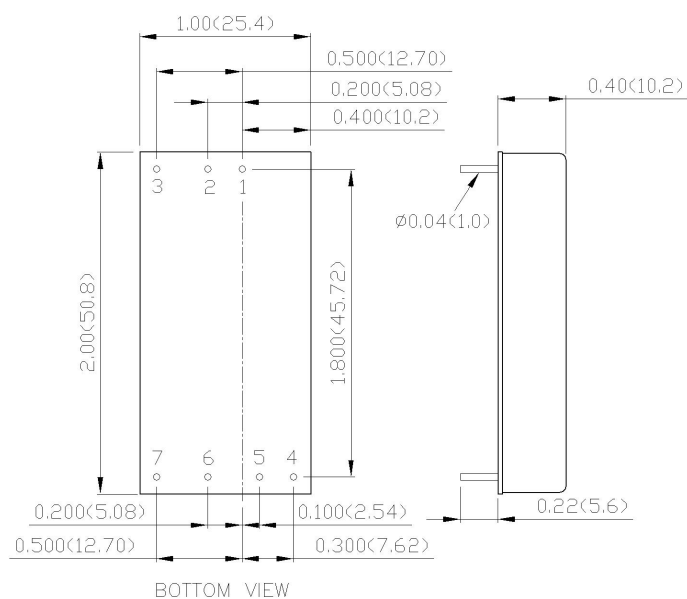


FED30-48T0515W Efficiency vs. Input Voltage



FED30-48T0515W Efficiency vs. Output Load

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(0.1)