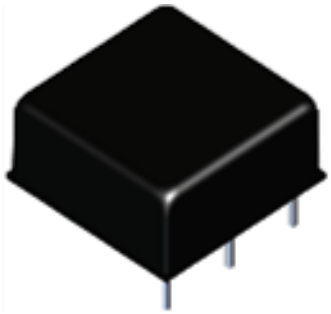
PFB30WR4-(D)J Series
DC-DC Converters

Features

- 4:1 Wide input range voltage
- 30W power in compact size 1x1" package
- -40°C to +105°C operating temperature
- No minimum load required
- 6-sided continuous shield
- Continuous short circuit protection
- EMI class A without external circuit

Application

- Industry control application
- Stand by power application
- Telecom/Datacom application
- Save space solution



Selection Guide

Part Number	Input voltage	Output voltage	Output current @ full load	Input current @ no load	Efficiency (1) (typ.)	Capacitive load (2) (max.)
PFB30WR4-243.3J	9-36 VDC Nom. 24VDC	3.3 VDC	7000 mA	10 mA	88.5%	10000μF
PFB30WR4-2405J		5 VDC	6000 mA	10 mA	89.0%	7200μF
PFB30WR4-2412J		12 VDC	2500 mA	10 mA	90.0%	1200μF
PFB30WR4-2415J		15 VDC	2000 mA	10 mA	90.5%	1000μF
PFB30WR4-2424J		24 VDC	1250 mA	10 mA	90.5%	380μF
PFB30WR4-2412DJ		±12 VDC	±1250 mA	10 mA	89.0%	±750μF
PFB30WR4-2415DJ		±15 VDC	±1000 mA	10 mA	90.0%	±500μF
PFB30WR4-483.3J	18-75 VDC Nom. 48VDC	3.3 VDC	7000 mA	10 mA	88.0%	10000μF
PFB30WR4-4805J		5 VDC	6000 mA	10 mA	90.0%	7200μF
PFB30WR4-4812J		12 VDC	2500 mA	10 mA	90.5%	1200μF
PFB30WR4-4815J		15 VDC	2000 mA	10 mA	90.5%	1000μF
PFB30WR4-4824J		24 VDC	1250 mA	10 mA	90.5%	380μF
PFB30WR4-4812DJ		±12 VDC	±1250 mA	10 mA	90.5%	±750μF
PFB30WR4-4815DJ		±15 VDC	±1000 mA	10 mA	91.0%	±500μF

1. The efficiency is test by nominal input and max. full load @25°C.
2. The capacitive load is test by minimum input and constant resistive load.
3. All specifications valid at nominal input voltage, full load and 25°C after warm-up time unless otherwise stated.

Part Number

P F B 3 0 W R 4 – 2 4 0 5

- 3 0 — Power
- 2 4 — Input voltage
- 0 5 — Output voltage

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The products were used in Computers, Industrial controls, Medical equipment, Transportation, EV, ECO-power, Aero-space application and communication.

Specifications

	Parameter	Conditions	Min.	Typ.	Max.	Unit
Input	Input filter			Pi filter		
	Input voltage range		9 18		36 75	VDC VDC
	Start-up time	Constant resistive load, nominal input		30		mS
	Start-up voltage (0%-100% load)	24Vin 48Vin		9 18		VDC VDC
	Under voltage lockout (0%-100% load)	24Vin 48Vin		7.5 16		VDC VDC
	Input surge voltage (0.1s Max.)	24Vin 48Vin			50 100	VDC VDC
	Remote ON/OFF	DC-DC ON DC-DC OFF Input current (remote off mode)		Open or 3.5~15 VDC Short or 0~1.2 VDC 2 mA		
Output	Voltage accuracy	100% load at nominal Vin	-1		+1	%
	Ripple& noise (1)				75	mVp-p
	Line regulation (LL to HL at 100% load)	Single output Dual output	-0.2 -0.5		+0.2 +0.5	% %
	Load regulation (0%-100% load)	Single output Dual output	-0.2 -1.0		+0.2 +1.0	% %
	Crossing regulation	Asymmetrical load 25%/100%	-5		+5	%
	Operating frequency	PFB30WR4-243.3, 483.3 PFB30WR4-24XX PFB30WR4-48XX PFB30WR4-4815, 4815D		300 400 370 430		KHz KHz KHz KHz
	Voltage adjustability	0%~100% load at Vin range Pout ≦ max rated power	-10		+10	%
	Transient response recovery time	25% load step change (75%-100% load)		250		μs
Environment	Operating temperature	Derating curve	-40		105	˚C
	Storage temperature		-55		125	˚C
	Max. case temperature				110	˚C
	Relative Humidity		5		95	%RH
	MTBF	25˚C	560			kHours
	Vibration			MIL-STD-202G		
Function	Isolation voltage	1 min., Input to output	1600			VDC
	Isolation resistance	500VDC	1			GΩ
	Isolation capacitance				2400	pF
	Over load protection	24Vin 48Vin		170 190		% %
	Over voltage protection	3.3V output 5V output 12V output 15V output 24V output ±12V output ±15V output		5.3 6.2 15 18 30 ±15 ±18		VDC VDC VDC VDC VDC VDC VDC
	Over temperature protection			115		˚C
	Short circuit protection			Continuous, Automatic recovery		
	Safety approvals			UL62368-1/ EN62368-1/ IEC62368-1		
Physical	Dimension			25.4 x 25.4 x 10.0 mm		
	Weight			17		g
	Case material			Nickel plated metal with FR-4 base		
	Potting material			Silicone		

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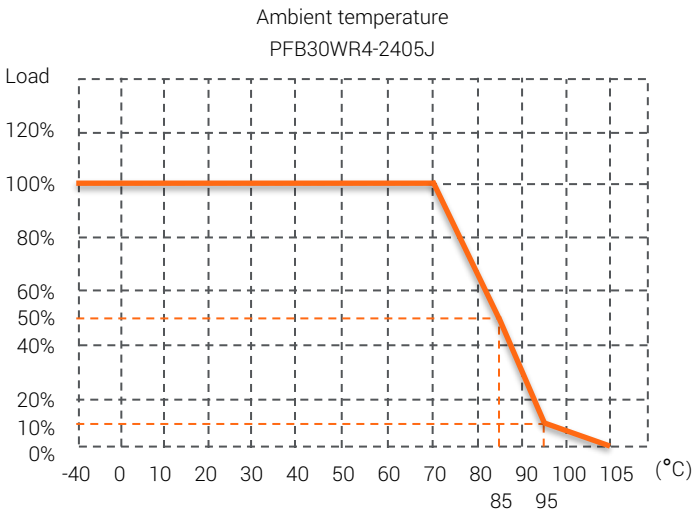
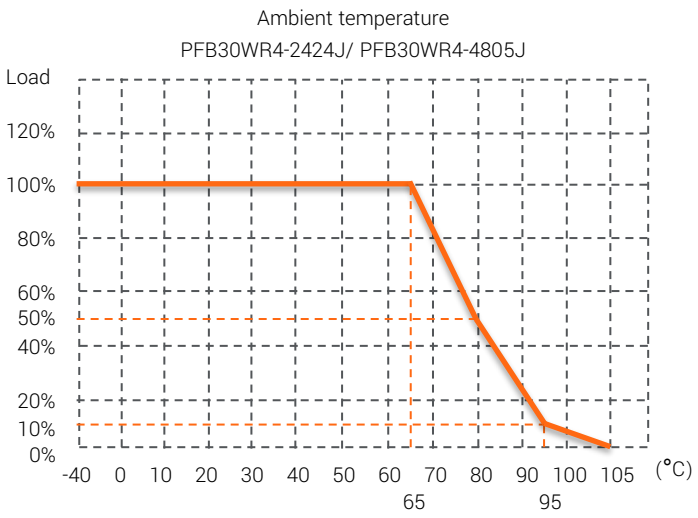
	Parameter	Conditions	Min.	Typ.	Max.	Unit
	Cooling method			Free air convection		
EMC	EMI [2]	EN55032		Class A/B		
	ESD	EN61000-4-2, Air±8KV; Contact±6KV		Criteria A		
	Radiated immunity [3]	EN61000-4-3		Criteria A		
	Fast transient [3]	EN61000-4-4, ±2KV		Criteria A		
	Surge [3]	EN61000-4-5, ±2KV		Criteria A		
	Conducted immunity [3]	EN61000-4-6		Criteria A		
	Magnetic field immunity	EN61000-4-8		Criteria A		

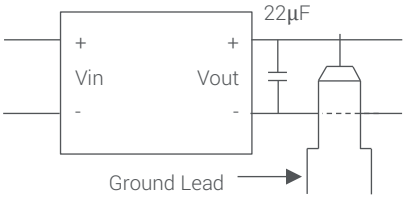
1. Ripple& noise: 20MHz BW at Vin range 0%~100% load (contact MLCC 22uF). Light load ripple & noise is no more than 150mVp-p
2. EMI class A without external circuit, and class B suggestion circuit, please check with our sales.
3. Test with E-CAP 680uF/100V at input terminal.
4. Derating measured with nominal line. Mounted test board (80 x 40 mm, 3Oz double layer).
5. The product information and specifications are subject to change without prior notice.

Derating Curve





Ripple & Noise Measure Method



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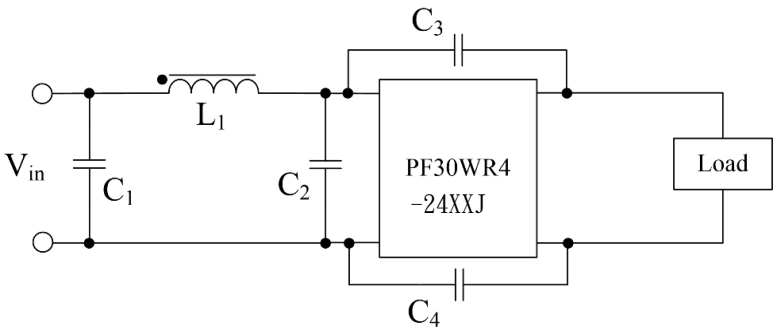
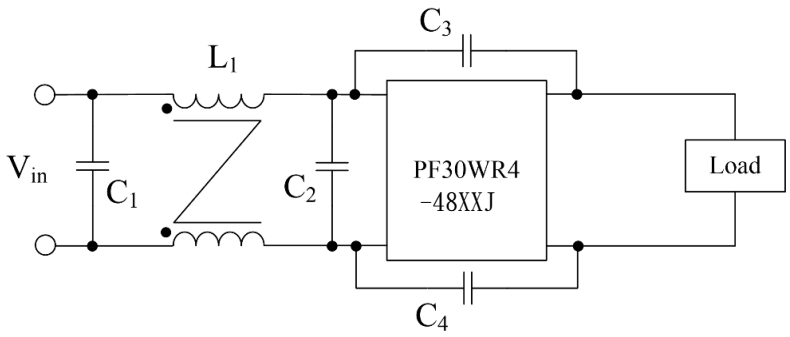
EMI Filtering-Suggestion for class B

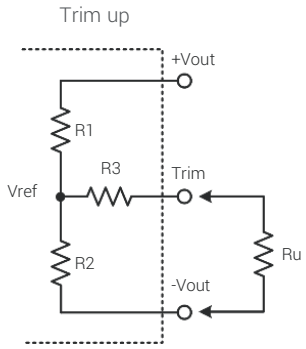


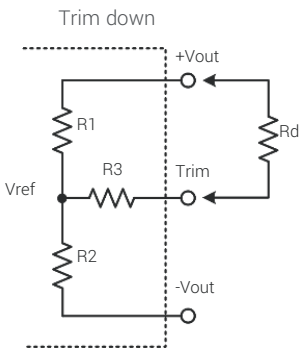
	C_1	L_1	C_2	C_3	C_4
PFB30WR4-24XXJ	4.7μF	10μH	4.7μF	2200pF	2200pF



	C_1	L_1	C_2	C_3	C_4
PFB30WR4-48XXJ	4.7μF	Common mode choke K5B 32μH	4.7μF	2200pF	2200pF

External Output Voltage Trimming





Formula for trim resistor:

UP: $Ru=\frac{aR_2}{R_2-a}-R_3$ $a=\frac{V_{ref}}{V_o'-V_{ref}}\cdot R_1$

DOWN: $Rd=\frac{bR_1}{R_1-b}-R_3$ $b=\frac{V_o'-V_{ref}}{V_{ref}}\cdot R_2$

NOTE:
1.Ru, Rd is mean trim resistor, please check the formula.
2.a & b: user define parameter, no actual meanings.
3. V_o' is mean trim up/down voltage.
4.Value for R1, R2, R3 and V_{ref} refer to the table below.

Model	R1	R2	R3	Vref
PFB30WR4-XX3.3J	16.6kΩ	10kΩ	52.3kΩ	1.25V
PFB30WR4-XX05J	10kΩ	10kΩ	35.7kΩ	2.5V
PFB30WR4-XX12J	38kΩ	10kΩ	48.7kΩ	2.5V
PFB30WR4-XX15J	50.1kΩ	10kΩ	64.9kΩ	2.5V
PFB30WR4-XX24J	86kΩ	10kΩ	73.2kΩ	2.5V

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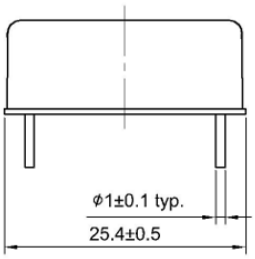
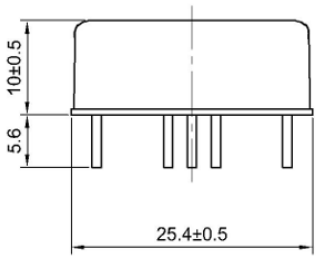
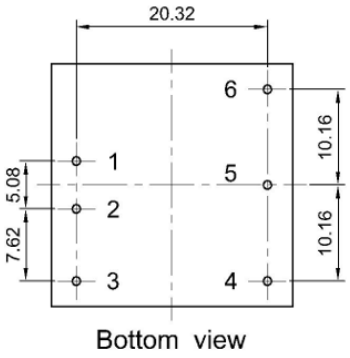
Mechanical Dimension & Pinning







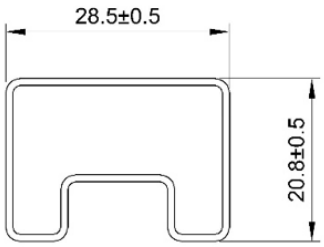
Pin	Single	Dual
1	+Vin	+Vin
2	-Vin	-Vin
3	CTRL	CTRL
4	-Vout	-Vout
5	Trim	Com.
6	+Vout	+Vout

UNIT : mm

TOL. : XX.X ±0.5mm

XX.XX ±0.25mm

Package



UNIT:mm
1 Tube = 8 pcs
Length:260±2mm

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