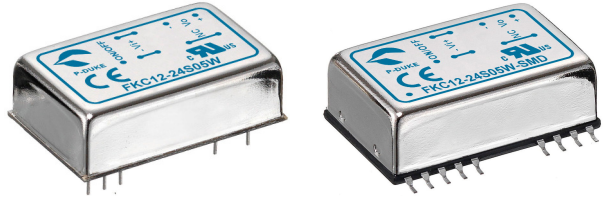


# FKC12W SERIES

DC-DC CONVERTER

4:1 ULTRA WIDE INPUT RANGE  
UP TO 12 Watts



## FEATURES

- NO MINIMUM LOAD REQUIRED
- 1600VDC INPUT TO OUTPUT ISOLATION
- STANDARD 1.25 X 0.80 X 0.40 INCH 24 PIN DIP AND SMD PACKAGE
- 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

<b>1600VDC ISOLATION</b>	<b>REMOTE CONTROL</b>	<b>UVP</b>	<b>OCP</b>	<b>SCP</b>
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## TECHNICAL SPECIFICATION

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

Model Number	Input Range VDC	Output Voltage VDC	Output Current @Full Load mA	Input Current @ No Load mA	Efficiency %	Maximum Capacitor Load µF
FKC12-24S3P3W	9 ~ 36	3.3	3500	55	84	2000
FKC12-24S05W	9 ~ 36	5.1	2400	55	87	2000
FKC12-24S12W	9 ~ 36	12	1000	13	87	430
FKC12-24S15W	9 ~ 36	15	800	11	87	300
FKC12-24D05W	9 ~ 36	±5	±1200	15	84	±1250
FKC12-24D12W	9 ~ 36	±12	±500	12	87	±200
FKC12-24D15W	9 ~ 36	±15	±400	20	87	±120
FKC12-48S3P3W	18 ~ 75	3.3	3500	17	84	2000
FKC12-48S05W	18 ~ 75	5.1	2400	20	87	2000
FKC12-48S12W	18 ~ 75	12	1000	6	87	430
FKC12-48S15W	18 ~ 75	15	800	6	88	300
FKC12-48D05W	18 ~ 75	±5	±1200	7	85	±1250
FKC12-48D12W	18 ~ 75	±12	±500	7	87	±200
FKC12-48D15W	18 ~ 75	±15	±400	7	87	±120

## PART NUMBER STRUCTURE

<b>FKC12</b>	<b>- 48</b>	<b>S</b>	<b>05</b>	<b>W</b>	<b>- SMD</b>
Series Name	Input Voltage (VDC)	Output Quantity	Output Voltage (VDC)	Input Range	Mounting Type Option
	24: 9~36 48: 18~75	S: Single	33: 3.3 05: 5.1 12: 12 15: 15	4 : 1	□: DIP type SMD: SMD type
		D: Dual	05: ± 5 12: ±12 15: ±15		

## INPUT SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
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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)		8 16		VDC
Start up time	Constant resistive load	Power up Remote ON/OFF		450 5		ms
Input surge voltage	100 ms, max.	24Vin(nom) 48Vin(nom)			50 100	VDC
Input reflected ripple current				20		mAp-p
Input filter					Pi type	
Remote ON/OFF	Referred to -Vin pin	Positive logic DC-DC ON DC-DC OFF Input current of Ctrl pin Remote off input current			Open or 3.0 ~ 12VDC Short or 0 ~ 1.2VDC -0.5 +0.5 2.5	mA mA

## OUTPUT SPECIFICATIONS

Parameter	Conditions			Min.	Typ.	Max.	Unit
Voltage accuracy				-1.2		+1.2	%
Line regulation	Low Line to High Line at Full Load			-0.2		+0.2	%
Load regulation	No Load to Full Load	DIP type	Single	-0.5		+0.5	%
			Dual	-1.0		+1.0	
		SMD type	Single	-1.0		+1.0	%
			Dual	-1.0		+1.0	
Cross regulation	Asymmetrical load 25%/100% FL		Dual	-5.0		+5.0	%
Ripple and noise	20MHz bandwidth				85		mVp-p
Temperature coefficient				-0.02		+0.02	%/°C
Transient response recovery time	25% load step change				250		µs
Over voltage protection					3.9		VDC
					6.2		
					15		
					18		
Over load protection	% of Iout rated				150		%
Short circuit protection				Continuous, automatic recovery			

## GENERAL SPECIFICATIONS

Parameter	Conditions			Min.	Typ.	Max.	Unit
Isolation voltage	1 minute	DIP type	Input to Output	1600			VDC
			Input (Output) to Case	1600			
		SMD type	Input to Output	1600			
			Input (Output) to Case	1000			
Isolation resistance	500VDC			1			GΩ
Isolation capacitance						1500	pF
Switching frequency				360	400	440	kHz
Safety approvals				UL60950-1 EN60950-1 IEC60950-1			
Case material				Nickel-coated copper			
Base material				Non-conductive black plastic			
Potting material				Epoxy (UL94 V-0)			
Weight				18g (0.62oz)			
MTBF	MIL-HDBK-217F			2.087 x 10 <sup>6</sup> hrs			

## ENVIRONMENTAL SPECIFICATIONS

Parameter	Conditions			Min.	Typ.	Max.	Unit
Operating ambient temperature	3.3Vout, ±5Vout	Without derating	With derating	-40		+61	°C
			With derating	+61		+105	
	Others	Without derating	With derating	-40		+69	
			With derating	+69		+105	
Maximum case temperature						105	°C
Storage temperature range				-55		+125	°C
Thermal impedance	Natural convection				20		°C/W
Thermal shock				MIL-STD-810F			
Vibration				MIL-STD-810F			
Relative humidity				5% to 95% RH			

## EMC SPECIFICATIONS

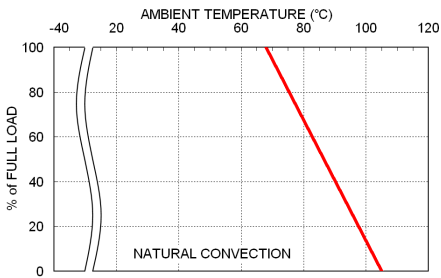
Parameter	Conditions		Level
EMI <sup>(1)</sup>	EN55022		Class A · Class B
ESD	EN61000-4-2	Air ± 8kV and Contact ± 6kV	Perf. Criteria A
Radiated immunity	EN61000-4-3	10 V/m	Perf. Criteria A
Fast transient <sup>(2)</sup>	EN61000-4-4	± 2kV	Perf. Criteria A
Surge <sup>(2)</sup>	EN61000-4-5	± 1kV	Perf. Criteria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

**Note:**

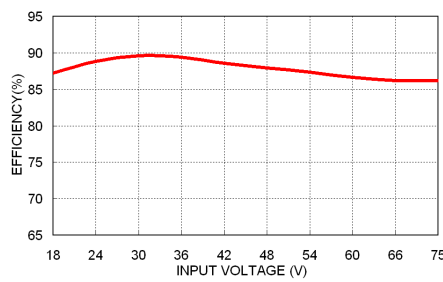
- The standard modules meet EMI Class A or Class B with external components. For further information, please contact with P-DUKE.
- An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5.  
The filter Power Mate suggests: Nippon chemi-con KY series, 220μF/100V.

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

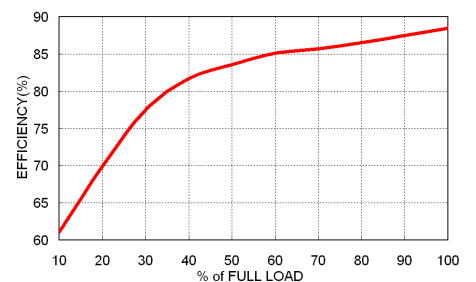
**CHARACTERISTIC CURVE**



FKC12-48S05W Derating Curve



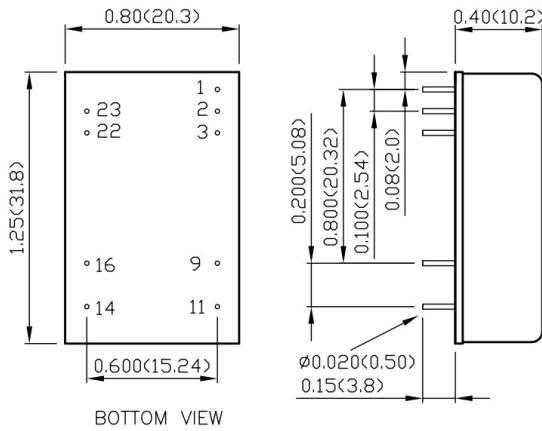
FKC12-48S05W Efficiency vs. Input Voltage



FKC12-48S05W Efficiency vs. Output Load

**MECHANICAL DRAWING**

**DIP type**

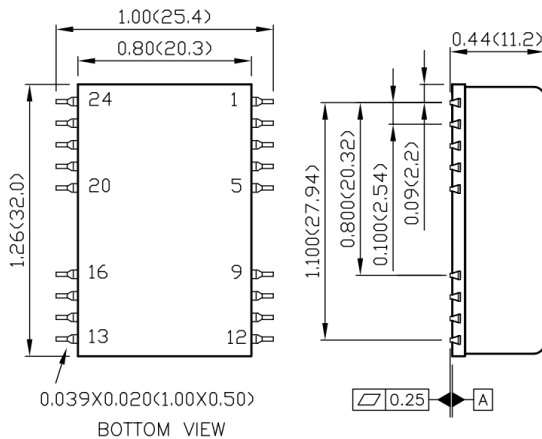


BOTTOM VIEW

**PIN CONNECTION**

PIN	SINGLE	DUAL	PIN	SINGLE	DUAL
1	Ctrl	Ctrl			
2	-Vin	-Vin	23	+Vin	+Vin
3	-Vin	-Vin	22	+Vin	+Vin
9	NC	Common	16	-Vout	Common
11	NC	-Vout	14	+Vout	+Vout

**SMD type**



BOTTOM VIEW

**PIN CONNECTION**

PIN	SINGLE	DUAL	PIN	SINGLE	DUAL
1	Ctrl	Ctrl			
2	-Vin	-Vin	23	+Vin	+Vin
3	-Vin	-Vin	22	+Vin	+Vin
9	NC	Common	16	-Vout	Common
11	NC	-Vout	14	+Vout	+Vout
Others	NC	NC			

- All dimensions in inch (mm)
- Tolerance :x.xx±0.02 (x.x±0.5)  
x.xxx±0.01 (x.xx±0.25)
- Pin pitch tolerance ±0.01 (0.25)
- Pin dimension tolerance ±0.004(0.1)