



# FKC15W SERIES

DC-DC CONVERTER

4:1 ULTRA WIDE INPUT RANGE  
 UP TO 15 Watts



## FEATURES

- NO MINIMUM LOAD REQUIRED
- 1600VDC INPUT TO OUTPUT ISOLATION
- STANDARD 1.25 X 0.80 X 0.40 INCH AND 24 PIN DIP 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>	<b>LOW STANDBY POWER</b>
--------------------------	-----------------------	------------	------------	------------	--------------------------

## 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
	VDC	VDC	mA	mA	%	µF
FKC15-24S3P3W	9 ~ 36	3.3	4000	6	88	4700
FKC15-24S05W	9 ~ 36	5.1	3000	6	90	3300
FKC15-24S12W	9 ~ 36	12	1250	6	90	600
FKC15-24S15W	9 ~ 36	15	1000	6	90	400
FKC15-24D05W	9 ~ 36	±5	±1500	6	86	±1500
FKC15-24D12W	9 ~ 36	±12	±625	6	89	±288
FKC15-24D15W	9 ~ 36	±15	±500	6	90	±200
FKC15-48S3P3W	18 ~ 75	3.3	4000	4	89	4700
FKC15-48S05W	18 ~ 75	5.1	3000	4	89	3300
FKC15-48S12W	18 ~ 75	12	1250	4	90	600
FKC15-48S15W	18 ~ 75	15	1000	4	90	400
FKC15-48D05W	18 ~ 75	±5	±1500	4	86	±1500
FKC15-48D12W	18 ~ 75	±12	±625	4	89	±288
FKC15-48D15W	18 ~ 75	±15	±500	4	90	±200

## PART NUMBER STRUCTURE

<b>FKC15</b>	<b>-</b>	<b>48</b>	<b>S</b>	<b>05</b>	<b>W</b>
Series Name		Input Voltage (VDC)	Output Quantity	Output Voltage (VDC)	Input Range
		24: 9~36 48: 18~75	S: Single	3P3: 3.3 05: 5.1 12: 12 15: 15	4 : 1
			D: Dual	05: ± 5 12: ±12 15: ±15	

**INPUT SPECIFICATIONS**

Parameter	Conditions		Min.	Typ.	Max.	Unit
Operating input voltage range		24V <sub>in</sub> (nom) 48V <sub>in</sub> (nom)	9 18	24 48	36 75	VDC
Start up voltage		24V <sub>in</sub> (nom) 48V <sub>in</sub> (nom)			9 18	VDC
Shutdown voltage		24V <sub>in</sub> (nom) 48V <sub>in</sub> (nom)		8 16		VDC
Start up time	Constant resistive load	Power up Remote ON/OFF			60 60	ms
Input surge voltage	1 second, max.	24V <sub>in</sub> (nom) 48V <sub>in</sub> (nom)			50 100	VDC
Input reflected ripple current				20		mAp-p
Input filter				Pi type		
Remote ON/OFF	Referred to -V <sub>in</sub> pin	Positive logic DC-DC ON DC-DC OFF Input current of Ctrl pin Remote off input current	-0.5		Open or 3.0 ~ 12VDC Short or 0 ~ 1.2VDC +0.5	mA mA

**OUTPUT SPECIFICATIONS**

Parameter	Conditions		Min.	Typ.	Max.	Unit
Voltage accuracy			-1.0		+1.0	%
Line regulation	Low Line to High Line at Full Load	Single Dual	-0.2 -0.5		+0.2 +0.5	%
Load regulation	No Load to Full Load	Single Dual	-0.5 -1.0		+0.5 +1.0	%
	10% Load to 90% Load	Single Dual	-0.3 -0.8		+0.3 +0.8	%
Cross regulation	Asymmetrical load 25%/100% FL	Dual	-5.0		+5.0	%
Ripple and noise	20MHz bandwidth With a 1 $\mu$ F/25V X7R MLCC			60		mVp-p
Temperature coefficient			-0.02		+0.02	%/°C
Transient response recovery time	25% load step change			250		$\mu$ s
Over voltage protection		3.3V <sub>out</sub> 5.1V <sub>out</sub> 12V <sub>out</sub> 15V <sub>out</sub>		3.9 6.2 15 18		VDC
Over load protection	% of I <sub>out</sub> 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			G $\Omega$
Isolation capacitance					2000	pF
Switching frequency			297	330	363	kHz
Safety approvals						UL60950-1 EN60950-1 IEC60950-1
Case material						Nickel-coated copper
Base material						FR4 PCB
Potting material						Silicone (UL94 V-0)
Weight						14.4g (0.51oz)
MTBF	MIL-HDBK-217F					1.603 x 10 <sup>6</sup> hrs

**ENVIRONMENTAL SPECIFICATIONS**

Parameter	Conditions	Min.	Typ.	Max.	Unit	
Operating ambient temperature	±5Vout	Without derating	-40	+60	°C	
		With derating	+60	+100		
	Others	Without derating	-40	+70		
		With derating	+70	+100		
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**

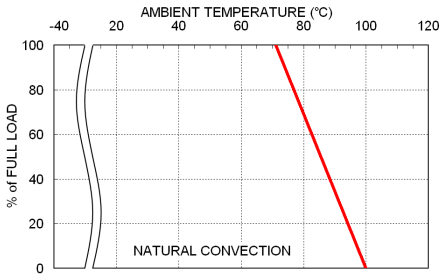
Parameter	Conditions	Level
EMI <sup>(1)</sup>	EN55022	Class A · Class B
ESD	EN61000-4-2	Air ± 8kV and Contact ± 6kV
Radiated immunity	EN61000-4-3	10 V/m
Fast transient <sup>(2)</sup>	EN61000-4-4	± 2kV
Surge <sup>(2)</sup>	EN61000-4-5	± 2kV
Conducted immunity	EN61000-4-6	10 Vr.m.s

**Note:**

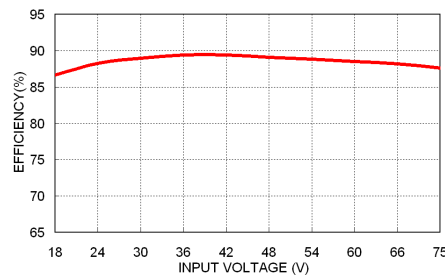
- The standard modules meet EMI Class A or Class B with external components. For further information, please contact with P-DUKE.
- An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5.  
The filter Power Mate suggests: Nippon chemi-con KY series, 220µF/100V.

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

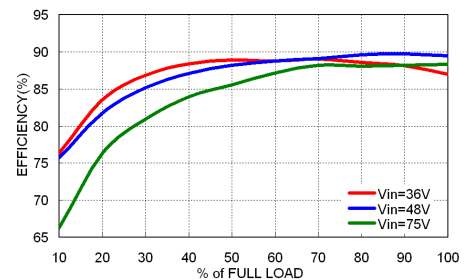
**CHARACTERISTIC CURVE**



FKC15-48S05W Derating Curve

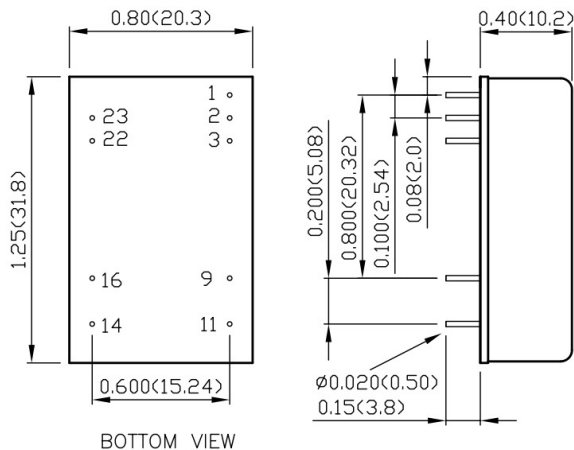


FKC15-48S05W Efficiency vs. Input Voltage



FKC15-48S05W Efficiency vs. Output Load

**MECHANICAL DRAWING**



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

- 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)