

FKC15 SERIES

DC-DC CONVERTER

2:1 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

1600VDC ISOLATION	REMOTE CONTROL	UVP	OCP	SCP	LOW STANDBY POWER
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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
	VDC	VDC	mA	mA	%	µF
FKC15-12S3P3	9 ~ 18	3.3	4000	10	87	4700
FKC15-12S05	9 ~ 18	5.1	3000	10	90	3300
FKC15-12S12	9 ~ 18	12	1250	5	90	600
FKC15-12S15	9 ~ 18	15	1000	10	90	400
FKC15-12D05	9 ~ 18	±5	±1500	10	86	±1500
FKC15-12D12	9 ~ 18	±12	±625	6	90	±288
FKC15-12D15	9 ~ 18	±15	±500	10	90	±200
FKC15-24S3P3	18 ~ 36	3.3	4000	6	88	4700
FKC15-24S05	18 ~ 36	5.1	3000	6	90	3300
FKC15-24S12	18 ~ 36	12	1250	4	91	600
FKC15-24S15	18 ~ 36	15	1000	6	91	400
FKC15-24D05	18 ~ 36	±5	±1500	4	87	±1500
FKC15-24D12	18 ~ 36	±12	±625	6	90	±288
FKC15-24D15	18 ~ 36	±15	±500	6	90	±200
FKC15-48S3P3	36 ~ 75	3.3	4000	4	88	4700
FKC15-48S05	36 ~ 75	5.1	3000	4	90	3300
FKC15-48S12	36 ~ 75	12	1250	4	90	600
FKC15-48S15	36 ~ 75	15	1000	4	91	400
FKC15-48D05	36 ~ 75	±5	±1500	4	87	±1500
FKC15-48D12	36 ~ 75	±12	±625	4	90	±288
FKC15-48D15	36 ~ 75	±15	±500	4	90	±200

PART NUMBER STRUCTURE

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

INPUT SPECIFICATIONS

Parameter	Conditions		Min.	Typ.	Max.	Unit
Operating input voltage range	12Vin(nom)		9	12	18	VDC
	24Vin(nom)		18	24	36	
	48Vin(nom)		36	48	75	
Start up voltage	12Vin(nom)				9	VDC
	24Vin(nom)				18	
	48Vin(nom)				36	
Shutdown voltage	12Vin(nom)			8		VDC
	24Vin(nom)			16		
	48Vin(nom)			33		
Start up time	Constant resistive load	Power up Remote ON/OFF			60 60	ms
Input surge voltage	1 second, max.	12Vin(nom) 24Vin(nom) 48Vin(nom)			36 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			-1.0		+1.0	%
Line regulation	Low Line to High Line at Full Load	Single	-0.2		+0.2	%
		Dual	-0.5		+0.5	
Load regulation	No Load to Full Load	Single	-0.5		+0.5	%
		Dual	-1.0		+1.0	
	10% Load to 90% Load	Single	-0.3		+0.3	
		Dual	-0.8		+0.8	
Cross regulation	Asymmetrical load 25%/100% FL	Dual	-5.0		+5.0	%
Ripple and noise	20MHz bandwidth With a 1µF/25V X7R MLCC			60		mVp-p
Temperature coefficient			-0.02		+0.02	%/°C
Transient response recovery time	25% load step change			250		µs
Over voltage protection		3.3Vout		3.9		VDC
		5.1Vout		6.2		
		12Vout		15		
		15Vout		18		
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	1600			VDC
		Input (Output) to Case	1600			
Isolation resistance	500VDC		1			GΩ
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					1.797 x 10 ⁶ hrs

ENVIRONMENTAL SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit		
Operating ambient temperature	3.3Vout, ±5Vout	Without derating	-40	+60	°C		
		With derating	+60	+100			
	Others	Without derating	-40	+73			
				With derating	+73	+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		

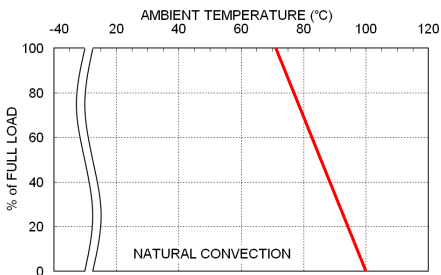
EMC SPECIFICATIONS

Parameter	Conditions	Level
EMI ⁽¹⁾	EN55022	Class A · Class B
ESD	EN61000-4-2	Air ± 8kV and Contact ± 6kV
Radiated immunity	EN61000-4-3	10 V/m
Fast transient ⁽²⁾	EN61000-4-4	± 2kV
Surge ⁽²⁾	EN61000-4-5	± 2kV
Conducted immunity	EN61000-4-6	10 Vr.m.s
Power frequency magnetic field	EN61000-4-8	100A/m continuous; 1000A/m 1 second

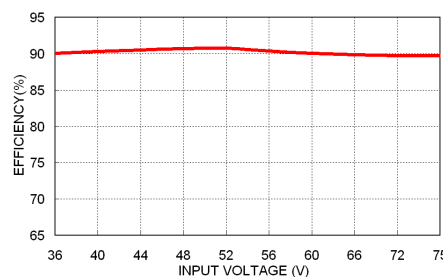
Note:

- 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.

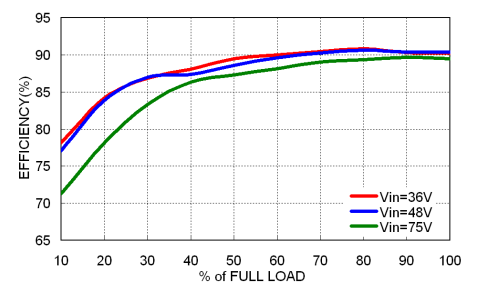
CAUTION: This power module is not internally fused. An input line fuse must always be used.

CHARACTERISTIC CURVE


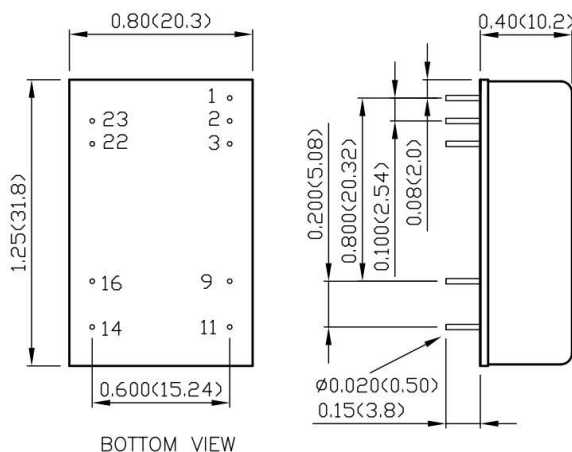
FKC15-48S05 Derating Curve



FKC15-48S05 Efficiency vs. Input Voltage



FKC15-48S05 Efficiency vs. Output Load

MECHANICAL DRAWING

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)