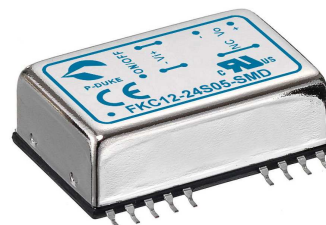


FKC12 SERIES

DC-DC CONVERTER

2:1 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

1600VDC ISOLATION	REMOTE CONTROL	UVP	OCP	SCP
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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
FKC12-12S2P5	9 ~ 18	2.5	3500	50	82	2000
FKC12-12S3P3	9 ~ 18	3.3	3500	60	84	2000
FKC12-12S05	9 ~ 18	5.1	2400	53	86	2000
FKC12-12S12	9 ~ 18	12	1000	15	86	430
FKC12-12S15	9 ~ 18	15	800	17	86	300
FKC12-12D05	9 ~ 18	±5	±1200	24	82	±1250
FKC12-12D12	9 ~ 18	±12	±500	19	87	±200
FKC12-12D15	9 ~ 18	±15	±400	24	87	±120
FKC12-24S2P5	18 ~ 36	2.5	3500	36	83	2000
FKC12-24S3P3	18 ~ 36	3.3	3500	36	85	2000
FKC12-24S05	18 ~ 36	5.1	2400	35	87	2000
FKC12-24S12	18 ~ 36	12	1000	16	87	430
FKC12-24S15	18 ~ 36	15	800	17	87	300
FKC12-24D05	18 ~ 36	±5	±1200	15	83	±1250
FKC12-24D12	18 ~ 36	±12	±500	15	88	±200
FKC12-24D15	18 ~ 36	±15	±400	18	88	±120
FKC12-48S2P5	36 ~ 75	2.5	3500	10	83	2000
FKC12-48S3P3	36 ~ 75	3.3	3500	14	85	2000
FKC12-48S05	36 ~ 75	5.1	2400	23	87	2000
FKC12-48S12	36 ~ 75	12	1000	11	87	430
FKC12-48S15	36 ~ 75	15	800	5	87	300
FKC12-48D05	36 ~ 75	±5	±1200	6	83	±1250
FKC12-48D12	36 ~ 75	±12	±500	6	88	±200
FKC12-48D15	36 ~ 75	±15	±400	6	88	±120

PART NUMBER STRUCTURE

FKC12 - 48 S 05 - SMD

Series Name

Input
Voltage
(VDC)

12: 9~18
24: 18~36
48: 36~75

Output
Quantity

S: Single

Output
Voltage
(VDC)

2P5: 2.5
3P3: 3.3
05: 5.1
12: 12
15: 15

Mounting Type
Option

□: DIP type
SMD: SMD type

D: Dual

05: ±5
12: ±12
15: ±15

INPUT SPECIFICATIONS

Parameter	Conditions			Min.	Typ.	Max.	Unit
Operating input voltage range		12Vin(nom) 24Vin(nom) 48Vin(nom)		9 18 36	12 24 48	18 36 75	VDC
Start up voltage		12Vin(nom) 24Vin(nom) 48Vin(nom)				9 18 36	VDC
Shutdown voltage		12Vin(nom) 24Vin(nom) 48Vin(nom)			8 16 33		VDC
Start up time	Constant resistive load	Power up Remote ON/OFF			450 5		ms
Input surge voltage	100 ms, 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				-1.2		+1.2	%
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	DIP type SMD type	Single 2.5Vout Single others Dual Single 2.5Vout Single others Dual	-1.0 -0.5 -1.0 -1.0 -1.0 -1.0		+1.0 +0.5 +1.0 +1.0 +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	Single Output	2.5Vout 3.3Vout 5.1Vout 12Vout 15Vout			3.9 3.9 6.2 15 18		VDC
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 SMD type	Input to Output Input (Output) to Case Input to Output Input (Output) to Case	1600 1600 1600 1000			VDC
Isolation resistance	500VDC			1			GΩ
Isolation capacitance						1200	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					2.064 x 10 ⁶ hrs	

ENVIRONMENTAL SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating ambient temperature	2.5Vout, 3.3Vout, ± 5 Vout	Without derating	-40	+61	$^{\circ}\text{C}$
		With derating	+61	+100	
	Others	Without derating	-40	+66	
		With derating	+66	+100	
Maximum case temperature				100	$^{\circ}\text{C}$
Storage temperature range		-55		+125	$^{\circ}\text{C}$
Thermal impedance	Natural convection		20		$^{\circ}\text{C/W}$
Thermal shock				MIL-STD-810F	
Vibration				MIL-STD-810F	
Relative humidity				5% to 95% RH	

EMC SPECIFICATIONS

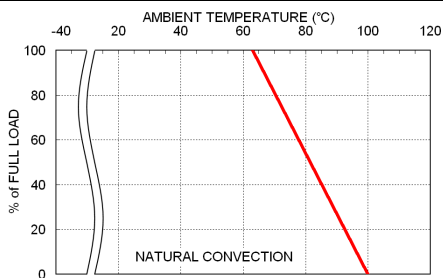
Parameter	Conditions	Level
EMI ⁽¹⁾	EN55022	Class A, Class B
ESD	EN61000-4-2	Perf. Criteria A
Radiated immunity	EN61000-4-3	Perf. Criteria A
Fast transient ⁽²⁾	EN61000-4-4	Perf. Criteria A
Surge ⁽²⁾	EN61000-4-5	Perf. Criteria A
Conducted immunity	EN61000-4-6	Perf. Criteria A
Power frequency magnetic field	EN61000-4-8	Perf. Criteria A

Note:

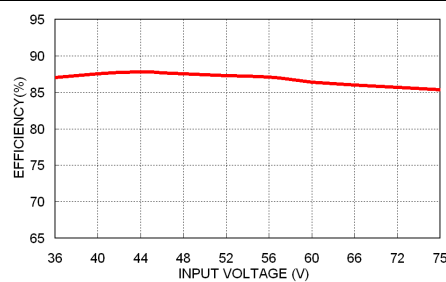
- The standard modules meet EMI Class A or Class B with external components. For further information, please contact with P-DUKE.
- An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5.
The filter Power Mate suggests: Nippon chemi-con KY series, 220 μF /100V.

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

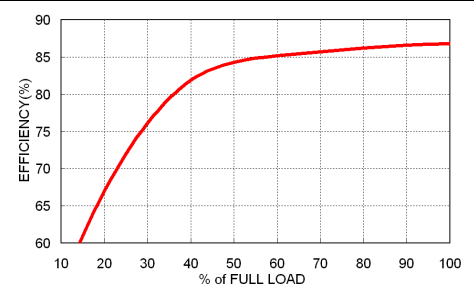
CHARACTERISTIC CURVE



FKC12-48S05 Derating Curve



FKC12-48S05 Efficiency vs. Input Voltage



FKC12-48S05 Efficiency vs. Output Load

DIP type



Technical drawing showing the bottom view of a rectangular plate. The overall dimensions are 1.00 (25.4) in width and 1.26 (32.0) in height. The inner dimensions are 0.80 (20.3) in width and 1.100 (27.94) in height. The plate has 12 holes, numbered 1 through 12, arranged in two columns of six. The hole locations are defined by dimensions: 0.039 X 0.020 (1.00 X 0.50) from the bottom-left corner, 0.800 (20.32) from the top edge, 0.100 (2.54) from the right edge, and 0.09 (2.2) from the bottom edge. A section line A-A is indicated on the right side.

IN CONNECTION			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

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			

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)