

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) 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			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	-0.5	2.5	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 10% Load to 90% Load	Single Dual Single Dual	-0.5 -1.0 -0.3 -0.8		+0.5 +1.0 +0.3 +0.8	%
Cross regulation	Asymmetrical load 25%/100% FL	Dual	-5.0		+5.0	%
Ripple and noise	20MHz bandwidth With a 1 μ F/25V X7R MLCC			60		mVp-p
Temperature coefficient			-0.02		+0.02	%/°C
Transient response recovery time	25% load step change			250		μ s
Over voltage protection		3.3Vout 5.1Vout 12Vout 15Vout		3.9 6.2 15 18		VDC
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 Input (Output) to Case	1600 1600			VDC
Isolation resistance	500VDC		1			G Ω
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, $\pm 5V_{out}$	Without derating	-40	+60	$^{\circ}\text{C}$
		With derating	+60	+100	
	Others	Without derating	-40	+73	
		With derating	+73	+100	
Maximum case temperature				105	$^{\circ}\text{C}$
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

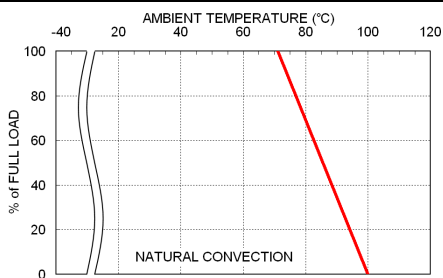
Parameter	Conditions	Level
EMI ⁽¹⁾	EN55022	Class A, Class B
ESD	EN61000-4-2	Perf. Criteria A
Radiated immunity	EN61000-4-3	Perf. Criteria A
Fast transient ⁽²⁾	EN61000-4-4	Perf. Criteria A
Surge ⁽²⁾	EN61000-4-5	Perf. Criteria A
Conducted immunity	EN61000-4-6	Perf. Criteria A
Power frequency magnetic field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

Note:

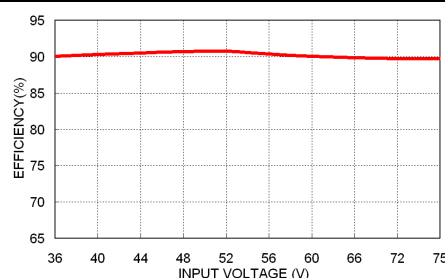
- The standard modules meet EMI Class A or Class B with external components. For further information, please contact with P-DUKE.
- An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5.
The filter Power Mate suggests: Nippon chemi-con KY series, 220 μF /100V.

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

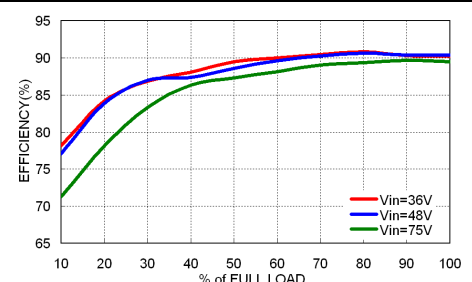
CHARACTERISTIC CURVE



FKC15-48S05 Derating Curve

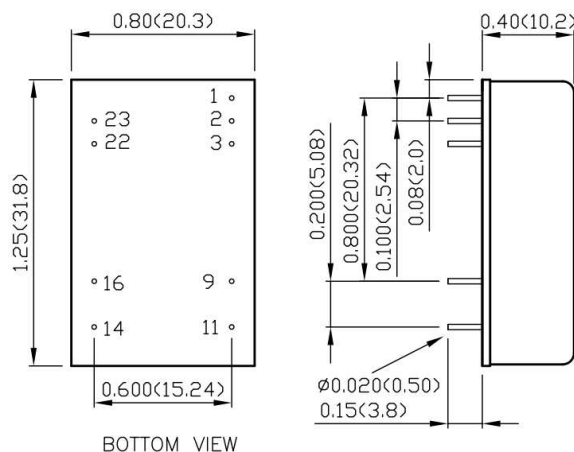


FKC15-48S05 Efficiency vs. Input Voltage



FKC15-48S05 Efficiency vs. Output Load

MECHANICAL DRAWING



PIN CONNECTION

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

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