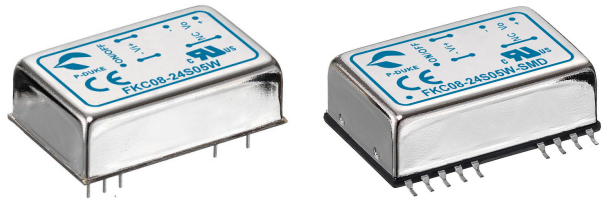


# FKC08W SERIES

DC-DC CONVERTER

4:1 ULTRA WIDE INPUT RANGE  
UP TO 8 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, & EN50155 SAFETY APPROVALS
- CE MARKED
- COMPLIANT TO RoHS II & REACH

## APPLICATIONS

- RAILWAY SYSTEM
- 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	Output Voltage	Output Current @Full Load	Input Current @ No Load	Efficiency	Maximum Capacitor Load
	VDC	VDC	mA	mA	%	µF
FKC08-24S3P3W	9 ~ 36	3.3	2400	40	85	1330
FKC08-24S05W	9 ~ 36	5	1600	40	87	1330
FKC08-24S12W	9 ~ 36	12	666	25	86	288
FKC08-24S15W	9 ~ 36	15	533	25	86	200
FKC08-24D05W	9 ~ 36	±5	±800	20	84	±900
FKC08-24D12W	9 ~ 36	±12	±333	25	86	±133
FKC08-24D15W	9 ~ 36	±15	±267	25	86	±90
FKC08-48S3P3W	18 ~ 75	3.3	2400	20	85	1330
FKC08-48S05W	18 ~ 75	5	1600	20	87	1330
FKC08-48S12W	18 ~ 75	12	666	13	87	288
FKC08-48S15W	18 ~ 75	15	533	13	88	200
FKC08-48D05W	18 ~ 75	±5	±800	10	84	±900
FKC08-48D12W	18 ~ 75	±12	±333	13	87	±133
FKC08-48D15W	18 ~ 75	±15	±267	13	87	±90
FKC08-110S3P3W	43 ~ 160	3.3	2400	8	84	1330
FKC08-110S05W	43 ~ 160	5	1600	8	85	1330
FKC08-110S12W	43 ~ 160	12	666	4	86	288
FKC08-110S15W	43 ~ 160	15	533	4	86	200
FKC08-110D05W	43 ~ 160	±5	±800	5	82	±900
FKC08-110D12W	43 ~ 160	±12	±333	5	85	±133
FKC08-110D15W	43 ~ 160	±15	±267	5	85	±90

## PART NUMBER STRUCTURE

<b>FKC08</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: 18~75 110: 43~160	S: Single	3P3: 3.3 05: 5 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
Operating input voltage range	24Vin(nom)			9	24	36	VDC
	48Vin(nom)			18	48	75	
	110Vin(nom)			43	110	160	
Start up voltage	24Vin(nom)					9	VDC
	48Vin(nom)					18	
	110Vin(nom)					43	
Shutdown voltage	24Vin(nom)				8		VDC
	48Vin(nom)				16		
	110Vin(nom)				40		
Start up time	Constant resistive load	Power up		450			ms
Input surge voltage	100 ms, max.	24Vin(nom)				50	VDC
		48Vin(nom)				100	
		110Vin(nom)				170	
Input reflected ripple current				20		mAp-p	
Input filter				Pi type			
Remote ON/OFF	Referred to -Vin pin	Positive logic	DC-DC ON		Open or 3.0 ~ 12VDC		mA
			DC-DC OFF		Short or 0 ~ 1.2VDC		
			Input current of Ctrl pin	-0.5		+0.5	
		Remote off input current		2.5			

**OUTPUT SPECIFICATIONS**

Parameter	Conditions			Min.	Typ.	Max.	Unit
Voltage accuracy				-1.0		+1.0	%
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	
	10% Load to 90% Load	DIP type	Single	-0.3		+0.3	
			Dual	-0.8		+0.8	
		SMD type	Single	-0.8		+0.8	
		Dual	-0.8		+0.8		
Cross regulation	Asymmetrical load 25%/100% FL		Dual	-5.0		+5.0	%
Ripple and noise	20MHz bandwidth	24Vin(nom)			50		mVp-p
		48Vin(nom)			50		
		110Vin(nom)			75		
Temperature coefficient				-0.02		+0.02	%/°C
Transient response recovery time	25% load step change				250		µs
Over voltage protection	Single Output	3.3Vout			3.9		VDC
		5Vout			6.2		
		12Vout			15		
		15Vout			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				270	300	330	kHz
Safety approvals				UL60950-1 EN60950-1 IEC60950-1 EN50155			
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			2.832 x 10 <sup>6</sup> hrs			

**ENVIRONMENTAL SPECIFICATIONS**

Parameter	Conditions	Min.	Typ.	Max.	Unit
Operating ambient temperature <sup>(1)</sup>	3.3Vout, ±5Vout	Without derating	-40	+70	°C
		With derating	+70	+105	
	Others	Without derating	-40	+78	
		With derating	+78	+105	
Maximum case temperature				105	°C
Storage temperature range		-55		+125	°C
Thermal impedance	Natural convection		20		°C/W
Thermal shock					MIL-STD-810F
Shock					EN61373, MIL-STD-810F
Vibration					EN61373, MIL-STD-810F
Relative humidity					5% to 95% RH

**EMC SPECIFICATIONS**

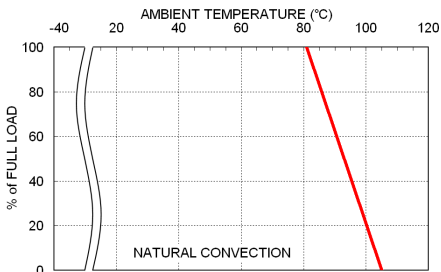
Parameter	Conditions	Level
EMI <sup>(2)</sup>	EN55022, EN55011	Class A · Class B
ESD	EN61000-4-2 Air ± 8kV and Contact ± 6kV	Perf. Criteria A
Radiated immunity	EN61000-4-3 20 V/m	Perf. Criteria A
Fast transient <sup>(3)</sup>	EN61000-4-4 ± 2kV	Perf. Criteria A
Surge <sup>(3)</sup>	EN61000-4-5 ± 2kV	Perf. Criteria A
Conducted immunity	EN61000-4-6 10 Vr.m.s	Perf. Criteria A

**Note:**

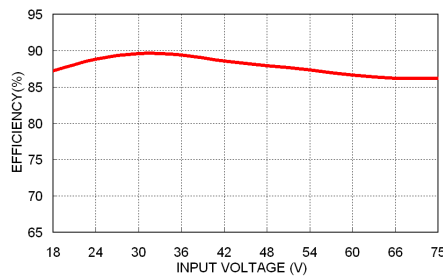
- Converter can meet the railway T2 and TX temperature requirement.  
T2: -40 °C ~ +70 °C as all models; TX: -40 °C ~ +85 °C as power derating to 55% output power.
- The standard modules meet EMI Class A or Class B with external components. For further information, please contact with P-DUKE.
- An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5.  
The filter capacitor Power Mate suggest: : 24Vin/48Vin Nippon chemi-con KY series, 220µF/100V  
: 110 Vin Nippon chemi-con KXJ series, 150µF/200V

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

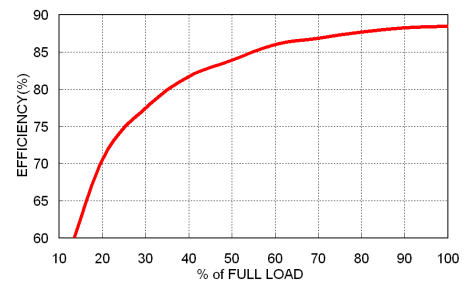
**CHARACTERISTIC CURVE**



FKC08-48S05W Derating Curve



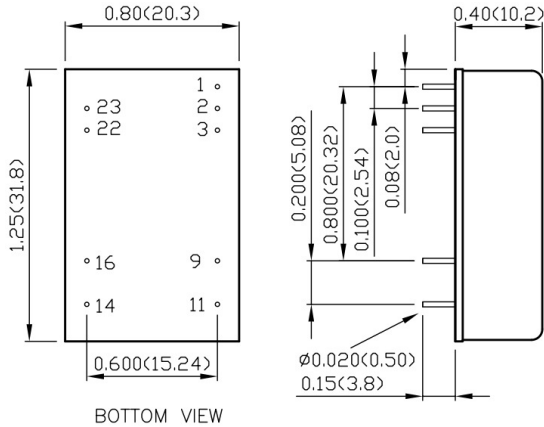
FKC08-48S05W Efficiency vs. Input Voltage



FKC08-48S05W Efficiency vs. Output Load

**MECHANICAL DRAWING**

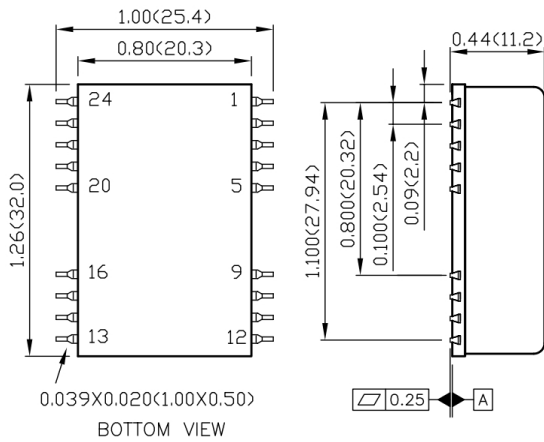
**DIP type**



**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**



**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			

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)