



### FEATURES

- 5 WATTS OUTPUT POWER
- OUTPUT CURRENT UP TO 1000mA
- STANDARD 1.25 X 0.80 X 0.40 INCH
- HIGH EFFICIENCY UP TO 84%
- 2:1 AND 4:1 WIDE INPUT VOLTAGE RANGE
- FIVE-SIDED SHIELD
- FIXED SWITCHING FREQUENCY
- STANDARD 24 PIN DIP PACKAGE & SMD TYPE PACKAGE
- CE MARK MEETS 2006/95/EC, 93/68/EEC AND 2004/108/EC
- UL60950-1, EN60950-1 AND IEC60950-1 LICENSED
- ISO9001 CERTIFIED MANUFACTURING FACILITIES
- COMPLIANT TO RoHS EU DIRECTIVE 2002/95/EC

### APPLICATIONS

Wireless Network  
Telecom/Datacom  
Industry Control System  
Measurement Equipment  
Semiconductor Equipment

### OPTIONS

SMD TYPE, M1 TYPE, M2 TYPE

### DESCRIPTION

The FKC05 series offer 5 watts of output power from a package in an IC compatible 24pin DIP configuration without derating to 71°C ambient temperature and pin to pin compatible with FKC03 series. FKC05 series have 2:1 wide input voltage of 9-18, 18-36 and 36-75VDC. FKC05-W series have 4:1 ultra wide input voltage of 9-36 and 18-75VDC.

## TECHNICAL SPECIFICATION

All specifications are typical at nominal input, full load and 25°C otherwise noted

OUTPUT SPECIFICATIONS		
Output power		5 Watts, max.
Voltage accuracy	Full load and nominal Vin	± 1%
Minimum load		0%
Line regulation	LL to HL at Full Load	± 0.2%
Load regulation	No Load to Full Load	Single ± 0.5% Dual ± 1%
Cross regulation(Dual)	Asymmetrical load 25% / 100% FL	± 5%
Ripple and noise	20MHz bandwidth	See table
Temperature coefficient		±0.02% / °C, max.
Transient response recovery time	25% load step change	200µs
Over load protection	% of FL at nominal input	170%, typ.
Short circuit protection		Continuous, automatic recovery
GENERAL SPECIFICATIONS		
Efficiency		See table
Isolation voltage	Input to Output	1600VDC, min.
	Input ( Output ) to Case	DIP 1600VDC, min. SMD 1000VDC, min.
Isolation resistance		10 <sup>9</sup> ohms, min.
Isolation capacitance		300pF, max.
Switching frequency		300KHz, typ.
Approvals and standard		IEC60950-1, UL60950-1, EN60950-1
Case material		Nickel-coated copper
Base material		Non-conductive black plastic
Potting material		Epoxy (UL94-V0)
Dimensions		1.25 X 0.80 X 0.40 Inch (31.8 X 20.3 X 10.2 mm)
Weight	DIP	16g (0.55oz)
	SMD	18g (0.62oz)
MTBF (Note 1)	BELLCORE TR-NWT-000332	3.165 x 10 <sup>6</sup> hrs
	MIL-HDBK-217F	1.631 x 10 <sup>6</sup> hrs

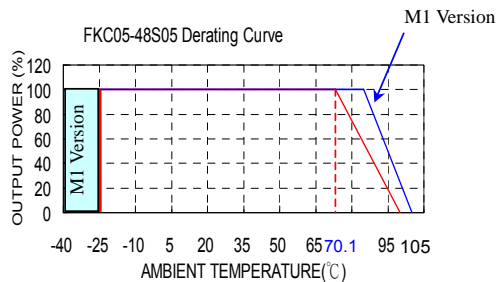
INPUT SPECIFICATIONS			
Input voltage range	FKC05	12V nominal input	9 – 18VDC
		24V nominal input	18 – 36VDC
	FKC05-W	48V nominal input	36 – 75VDC
		24V nominal input	9 – 36VDC
		48V nominal input	18 – 75VDC
Input filter			Pi type
Input surge voltage 100ms max		12V input	36VDC
		24V input	50VDC
		48V input	100VDC
Input reflected ripple current	Nominal Vin and full load		20mA <sub>p-p</sub>
Start up time	Nominal Vin and constant resistive load	Power up	450ms, max.
ENVIRONMENTAL SPECIFICATIONS			
Operating ambient temperature	Standard	-25°C~+85°C (with derating)	
	M1 (Note 6)	-40°C~+85°C (non-derating)	
	M2 (W series)	-40°C~+85°C (with derating)	
Maximum case temperature	Standard	+100°C	
	M1	+105°C	
Storage temperature range		-55°C ~ +105°C	
Thermal impedance	Nature convection	20°C/watt	
Thermal shock		MIL-STD-810F	
Vibration		MIL-STD-810F	
Relative humidity		5% to 95% RH	
EMC CHARACTERISTICS			
EMI	EN55022		Class A
ESD	EN61000-4-2	Air ± 8KV	Perf. Criteria A
		Contact ± 6KV	
Radiated immunity	EN61000-4-3	10 V/m	Perf. Criteria A
Fast transient (Note 7)	EN61000-4-4	± 2KV	Perf. Criteria B
Surge (Note 7)	EN61000-4-5	± 1KV	Perf. Criteria B
Conducted immunity	EN61000-4-6	10 Vr.m.s	Perf. Criteria A



Model Number	Input Range	Output Voltage	Output Current		Output (4) Ripple & Noise	Input Current		Eff (4) (%)	Capacitor(5) Load max
			Min. load	Full load		No load (3)	Full load (2)		
FKC05-12S33	9 – 18 VDC	3.3 VDC	0mA	1000mA	50mVp-p	10mA	382mA	76	2200µF
FKC05-12S05	9 – 18 VDC	5 VDC	0mA	1000mA	50mVp-p	10mA	563mA	78	1000µF
FKC05-12S12	9 – 18 VDC	12 VDC	0mA	470mA	50mVp-p	10mA	603mA	82	220µF
FKC05-12S15	9 – 18 VDC	15 VDC	0mA	400mA	50mVp-p	10mA	649mA	81	150µF
FKC05-12D05	9 – 18 VDC	± 5 VDC	0mA	± 500mA	50mVp-p	15mA	563mA	78	± 680µF
FKC05-12D12	9 – 18 VDC	± 12 VDC	0mA	± 230mA	50mVp-p	20mA	597mA	81	± 100µF
FKC05-12D15	9 – 18 VDC	± 15 VDC	0mA	± 190mA	50mVp-p	15mA	594mA	84	± 68µF
FKC05-24S33 (W)	18 – 36 (9 – 36) VDC	3.3 VDC	0mA	1000mA	50mVp-p	10mA(5mA)	194mA (191mA)	75 (76)	2200µF
FKC05-24S05 (W)	18 – 36 (9 – 36) VDC	5 VDC	0mA	1000mA	50mVp-p	15mA(10mA)	285mA (278mA)	77 (79)	1000µF
FKC05-24S12 (W)	18 – 36 (9 – 36) VDC	12 VDC	0mA	470mA	50mVp-p	15mA(5mA)	305mA (305mA)	81 (81)	220µF
FKC05-24S15 (W)	18 – 36 (9 – 36) VDC	15 VDC	0mA	400mA	50mVp-p	15mA(10mA)	325mA (312mA)	81 (84)	150µF
FKC05-24D05 (W)	18 – 36 (9 – 36) VDC	± 5 VDC	0mA	± 500mA	50mVp-p	15mA(10mA)	274mA (282mA)	80 (78)	± 680µF
FKC05-24D12 (W)	18 – 36 (9 – 36) VDC	± 12 VDC	0mA	± 230mA	50mVp-p	20mA(10mA)	288mA (295mA)	84 (82)	± 100µF
FKC05-24D15 (W)	18 – 36 (9 – 36) VDC	± 15 VDC	0mA	± 190mA	50mVp-p	20mA(10mA)	308mA (297mA)	81 (84)	± 68µF
FKC05-48S33 (W)	36 – 75 (18 – 75) VDC	3.3 VDC	0mA	1000mA	50mVp-p	10mA(5mA)	98mA (100mA)	74 (73)	2200µF
FKC05-48S05 (W)	36 – 75 (18 – 75) VDC	5 VDC	0mA	1000mA	50mVp-p	10mA(10mA)	143mA (138mA)	77 (79)	1000µF
FKC05-48S12 (W)	36 – 75 (18 – 75) VDC	12 VDC	0mA	470mA	50mVp-p	10mA(10mA)	151mA (155mA)	82 (80)	220µF
FKC05-48S15 (W)	36 – 75 (18 – 75) VDC	15 VDC	0mA	400mA	50mVp-p	10mA(10mA)	162mA (160mA)	81 (82)	150µF
FKC05-48D05 (W)	36 – 75 (18 – 75) VDC	± 5 VDC	0mA	± 500mA	50mVp-p	10mA(10mA)	141mA (145mA)	78 (76)	± 680µF
FKC05-48D12 (W)	36 – 75 (18 – 75) VDC	± 12 VDC	0mA	± 230mA	50mVp-p	5mA(10mA)	147mA (151mA)	82 (80)	± 100µF
FKC05-48D15 (W)	36 – 75 (18 – 75) VDC	± 15 VDC	0mA	± 190mA	50mVp-p	10mA(10mA)	150mA (156mA)	83 (80)	± 68µF

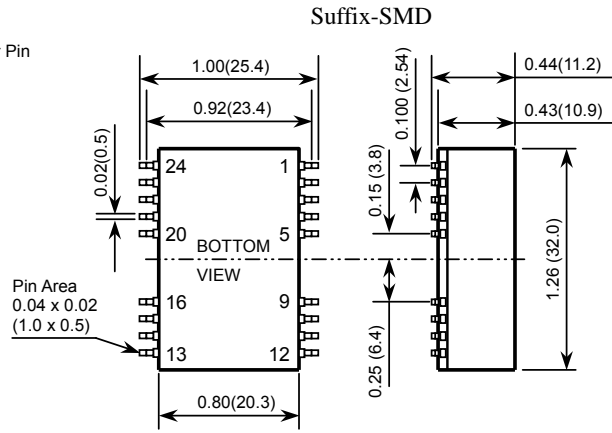
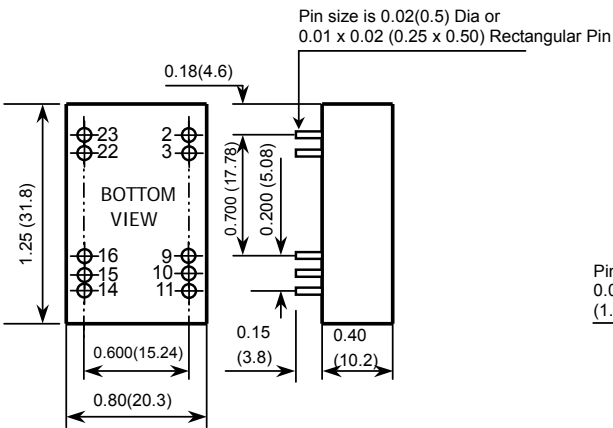
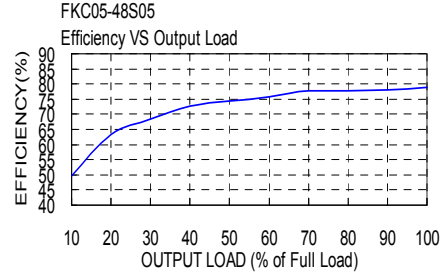
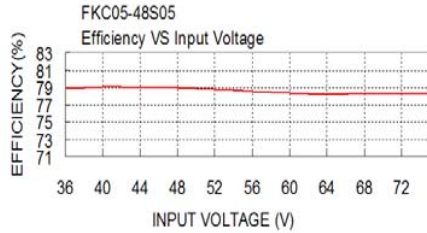
**Note**

- BELLCORE TR-NWT-000332. Case 1 : 50% Stress, Temperature at 40°C.  
MIL-HDBK-217F Notice2 @Ta=25 °C, Full load(Ground, Benign, controlled environment).
- Maximum value at nominal input voltage and full load of standard type.
- Typical value at nominal input voltage and no load.
- Typical value at nominal input voltage and full load.
- Test by minimum Vin and constant resistive load.
- M1 version is more efficient, therefore, it can be operated in a more extensive temperature range than standard and M2 version.
- 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: Nippon chemi-con KY series, 220µF/100V, ESR 48mΩ
- There is no pin at PIN10 & PIN15 for FKC05-W series.





# 5 WATTS DC-DC CONVERTER



1. All dimensions in Inches (mm)  
Tolerance: X.XX±0.02 (X.X±0.5)  
X.XXX±0.01 (X.XX±0.25)
2. Pin pitch tolerance ±0.01(0.25)
3. Pin dimension tolerance ±0.004 (0.1)

DIP PIN CONNECTION					
PIN	SINGLE	DUAL	PIN	SINGLE	DUAL
2	- INPUT	- INPUT	23	+ INPUT	+ INPUT
3	- INPUT	- INPUT	22	+ INPUT	+ INPUT
9	NC	COMMON	16	- OUTPUT	COMMON
10	NC(Note 8)	NC(Note 8)	15	NC(Note 8)	NC(Note 8)
11	NC	- OUTPUT	14	+ OUTPUT	+ OUTPUT

SMD PIN CONNECTION					
PIN	SINGLE	DUAL	PIN	SINGLE	DUAL
2	- INPUT	- INPUT	23	+ INPUT	+ INPUT
3	- INPUT	- INPUT	22	+ INPUT	+ INPUT
9	NC	COMMON	16	- OUTPUT	COMMON
10	NC	NC	15	NC	NC
11	NC	- OUTPUT	14	+ OUTPUT	+ OUTPUT
Others	NC	NC	Others	NC	NC

