POWER MATE TECHNOLOGY CO., LTD.

FKC03 SERIES

3 WATTS DC-DC CONVERTER

FEATURES

- 3 WATTS REGULATED OUTPUT POWER
- OUTPUT CURRENT UP TO 500mA
- STANDARD 1.25 X 0.80 X 0.40 INCH
- HIGH EFFICIENCY UP TO 82%
- 2:1 WIDE INPUT VOLTAGE RANGE
- FIVE-SIDED SHIELD
- FIXED SWITCHING FREQUENCY (300kHz)
- STANDARD 24 PIN DIP PACKAGE & SMD TYPE PACKAGE
- OVER CURRENT PROTECTION
- CE MARK MEETS 2006/95/EC, 2011/95/EC AND 2004/108/EC
- SAFETY MEETS UL60950-1, EN60950-1 AND IEC60950-1
- ISO9001 CERTIFIED MANUFACTURING FACILITIES
- COMPLIANT TO RoHS EU DIRECTIVE 2011/65/EU

APPLICATIONS

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

OPTIONS

SMD TYPE, M1 TYPE

DESCRIPTION

The FKC03 series offer 3 watts of output power from a package in an IC compatible 24pin DIP configuration without derating to 71ºC ambient temperature and pin to pin compatible with FKC05 series. FKC03 series have 2:1 wide input voltage of 9~18VDC, 18~36VDC and 36~75VDC.

TECHNICAL SPECIFICATION

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

OUTPUT SPECIFICATIONS			
Output power			3 Watts, max.
Voltage accuracy			± 1%
Minimum load			0%
Line regulation	LL to HL at Full Load		± 0.2%
Load regulation	No Load to Full Load	Single	± 0.2%
		Dual	± 1%
Cross regulation(Dual)	Asymmetrical load 25% / 100% FL		± 5%
Ripple and noise	20MHz bandwidth		See table
Temperature coefficient			±0.02% / ºC, max.
Transient response recovery time	25% load step change		200µs
Over load protection	% of FL at nominal input		180%
Short circuit protection			Continuous, automatics recovery

GENERAL SPECIFICATIONS			
Efficiency			See table
Isolation voltage	Input to Output		1600VDC, min. 1minute
	Input(Output) to Case	DIP	1600VDC, min. 1minute
		SMD	1000VDC, min. 1minute
Isolation resistance	500VDC		10^9 ohms, min.
Isolation capacitance			300pF, max.
Switching frequency			300kHz, ±10%
Design meet safety 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		3.155×10^6 hrs
	MIL-HDBK-217F		2.597×10^6 hrs

INPUT SPECIFICATIONS		
Input voltage range	12VDC nominal input	9 ~ 18VDC
	24VDC nominal input	18 ~ 36VDC
	48VDC nominal input	36 ~ 75VDC
Input filter		Pi type
Input surge voltage	12VDC input	36VDC 100ms, max.
	24VDC input	50VDC 100ms, max.
	48VDC input	100VDC 100ms, max.
Input reflected ripple current		20mAp-p
Start up time	Nominal input and constant resistive load	Power up 350ms, max.

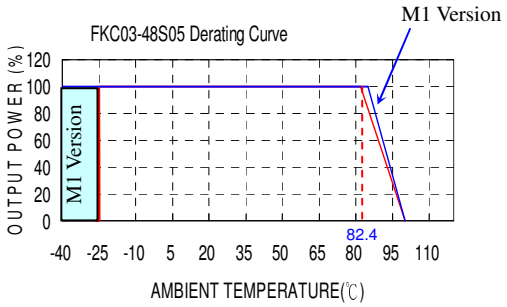
ENVIRONMENTAL SPECIFICATIONS		
Operating ambient temperature	Standard	-25ºC~+85ºC (with derating)
	M1 (Note 6)	-40ºC~+85ºC (non-derating)
Maximum case temperature		+100ºC
Storage temperature range		-55ºC ~ +125ºC
Thermal impedance	Natural convection	20ºC/watt
Thermal shock		MIL-STD-810F
Vibration		MIL-STD-810F
Relative humidity		5% to 95% RH

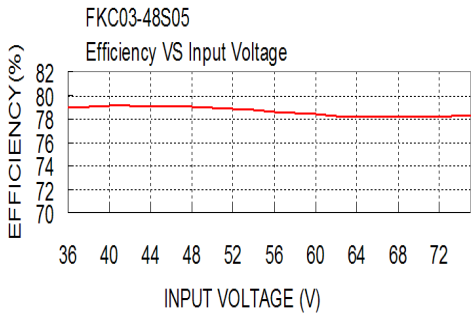
EMC CHARACTERISTICS				
EMI	EN55022			Class A, Class B
ESD	EN61000-4-2	Air	± 8kV	Perf. Criteria A
		Contact	± 6kV	
Radiated immunity	EN61000-4-3		10 V/m	Perf. Criteria A
Fast transient (Note 7)	EN61000-4-4		± 2kV	Perf. Criteria B
Surge (Note 7)	EN61000-4-5		± 1kV	Perf. Criteria B
Conducted immunity	EN61000-4-6		10 Vr.m.s	Perf. Criteria A

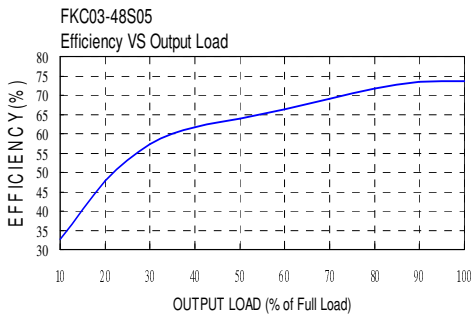
Model Number	Input Range	Output Voltage	Output Current		Output [2] Ripple & Noise	No load [3] Input Current	Eff [4] (%)	Capacitor[5] Load max
			Min. load	Full load				
FKC03-12S33	9 ~ 18 VDC	3.3 VDC	0mA	500mA	50mVp-p	10mA	75	2200μF
FKC03-12S05	9 ~ 18 VDC	5 VDC	0mA	500mA	50mVp-p	10mA	76	1000μF
FKC03-12S12	9 ~ 18 VDC	12 VDC	0mA	250mA	50mVp-p	10mA	80	220μF
FKC03-12S15	9 ~ 18 VDC	15 VDC	0mA	200mA	50mVp-p	15mA	81	150μF
FKC03-12D05	9 ~ 18 VDC	± 5 VDC	0mA	± 250mA	50mVp-p	15mA	78	± 470μF
FKC03-12D12	9 ~ 18 VDC	± 12 VDC	0mA	± 125mA	50mVp-p	15mA	80	± 100μF
FKC03-12D15	9 ~ 18 VDC	± 15 VDC	0mA	± 100mA	50mVp-p	20mA	82	± 68μF
FKC03-24S33	18 ~ 36 VDC	3.3 VDC	0mA	500mA	50mVp-p	10mA	72	2200μF
FKC03-24S05	18 ~ 36 VDC	5 VDC	0mA	500mA	50mVp-p	10mA	74	1000μF
FKC03-24S12	18 ~ 36 VDC	12 VDC	0mA	250mA	50mVp-p	15mA	78	220μF
FKC03-24S15	18 ~ 36 VDC	15 VDC	0mA	200mA	50mVp-p	15mA	78	150μF
FKC03-24D05	18 ~ 36 VDC	± 5 VDC	0mA	± 250mA	50mVp-p	15mA	74	± 470μF
FKC03-24D12	18 ~ 36 VDC	± 12 VDC	0mA	± 125mA	50mVp-p	20mA	77	± 100μF
FKC03-24D15	18 ~ 36 VDC	± 15 VDC	0mA	± 100mA	50mVp-p	20mA	77	± 68μF
FKC03-48S33	36 ~ 75 VDC	3.3 VDC	0mA	500mA	50mVp-p	5mA	74	2200μF
FKC03-48S05	36 ~ 75 VDC	5 VDC	0mA	500mA	50mVp-p	10mA	74	1000μF
FKC03-48S12	36 ~ 75 VDC	12 VDC	0mA	250mA	50mVp-p	10mA	79	220μF
FKC03-48S15	36 ~ 75 VDC	15 VDC	0mA	200mA	50mVp-p	10mA	78	150μF
FKC03-48D05	36 ~ 75 VDC	± 5 VDC	0mA	± 250mA	50mVp-p	10mA	73	± 470μF
FKC03-48D12	36 ~ 75 VDC	± 12 VDC	0mA	± 125mA	50mVp-p	10mA	79	± 100μF
FKC03-48D15	36 ~ 75 VDC	± 15 VDC	0mA	± 100mA	50mVp-p	10mA	77	± 68μF

Note
1. BELLCORE TR-NWT-000332. Case 1：50% Stress, Temperature at 40ºC.
   MIL-HDBK-217F Notice2 @Ta=25 ºC, Full load(Ground, Benign, controlled environment).
2. Typical value at nominal input and full load. (20MHz BW.)
3. Typical value at nominal input and no load.
4. Typical value at nominal input and full load.
5. Test by minimum input and constant resistive load.
6. M1 version is more efficiency, therefore, it can be operated in a more extensive temperature range than standard.
7. 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.

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

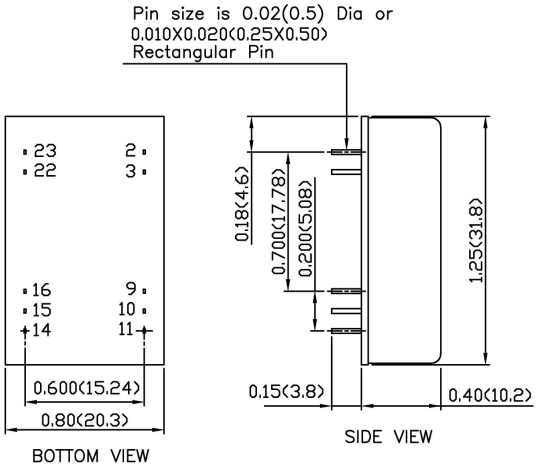




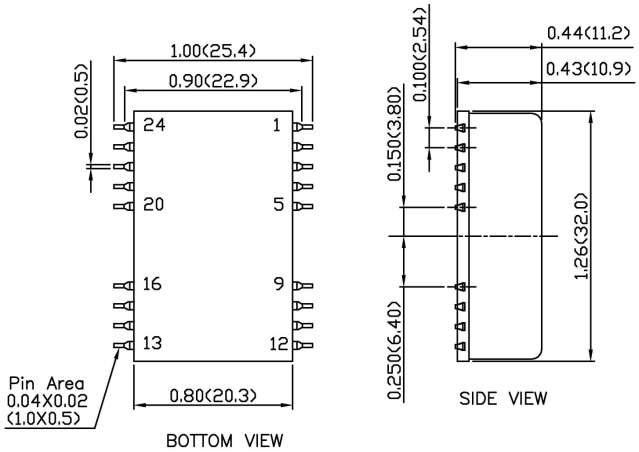


MECHANICAL DRAWING :

DIP TYPE



SMD TYPE



1. All dimensions in Inch (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	NC	15	NC	NC
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			