POWER MATE TECHNOLOGY CO.,LTD.

FKC03-SERIES

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, 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

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 9-18, 18-36 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	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	± 0.2%
		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%, typ.
Short circuit protection			Continuous, automatics 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			10^9 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		3.155×10^6 hrs
	MIL-HDBK-217F		2.597×10^6 hrs

INPUT SPECIFICATIONS

Input voltage range	12V nominal input	9 – 18VDC
	24V nominal input	18 – 36VDC
	48V nominal input	36 – 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	20mAp-p
Start up time	Nominal Vin 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 ~ +105ºC
Thermal impedance	Nature convection	20ºC/watt
Thermal shock		MIL-STD-810F
Vibration		MIL-STD-810F
Relative humidity		5% to 95% RH

EMC CHARACTERISTICS

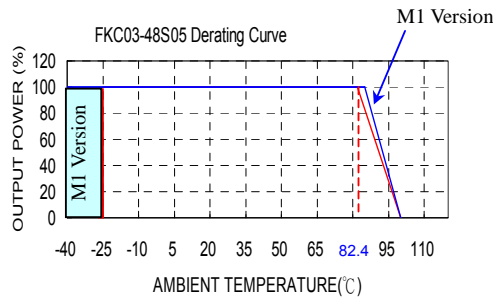| EMI	EN55022		Class A
ESD	EN61000-4-2	Air ± 8KV	Perf. Criteria A
		Contact ± 6KV	
Radiated immunity	EN61000-4-3	10 V/m	Perf. Criteria A
Fast transient (Note 7)	EN61000-4-4	± 2KV	Perf. Criteria B
Surge (Note 7)	EN61000-4-5	± 1KV	Perf. Criteria B
Conducted immunity	EN61000-4-6	10 Vr.m.s	Perf. Criteria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

Save your cost ● 3S ● Save your time ● Save your space
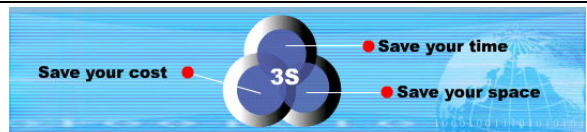
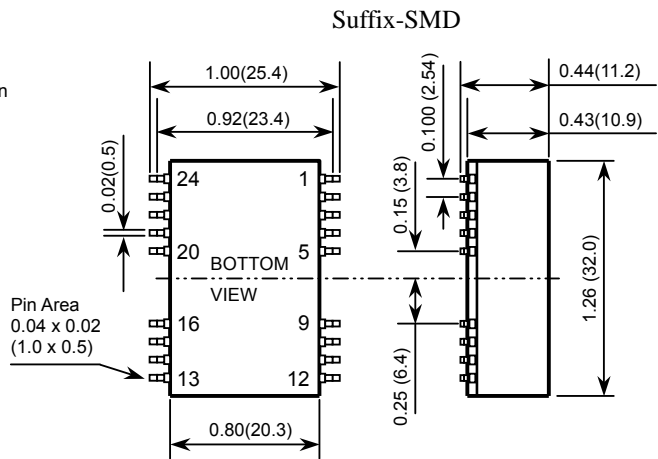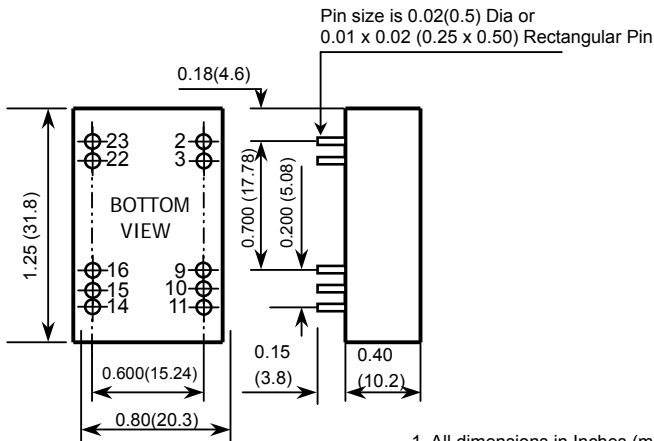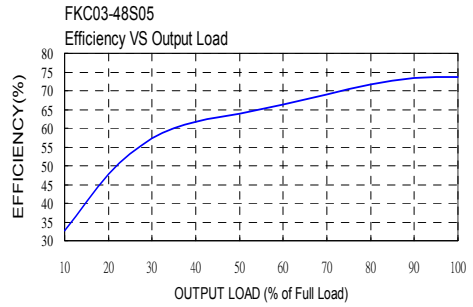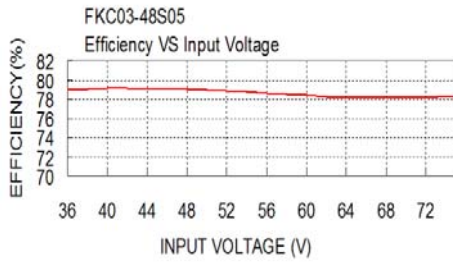| Model Number	Input Range	Output Voltage	Output Current		Output [4] Ripple & Noise	Input Current		Eff [4] (%)	Capacitor[5] Load max
			Min. load	Full load		No load [3]	Full load [2]		
FKC03-12S33	9 – 18 VDC	3.3 VDC	0mA	500mA	50mVp-p	10mA	194mA	75	2200µF
FKC03-12S05	9 – 18 VDC	5 VDC	0mA	500mA	50mVp-p	10mA	289mA	76	1000µF
FKC03-12S12	9 – 18 VDC	12 VDC	0mA	250mA	50mVp-p	10mA	329mA	80	220µF
FKC03-12S15	9 – 18 VDC	15 VDC	0mA	200mA	50mVp-p	15mA	325mA	81	150µF
FKC03-12D05	9 – 18 VDC	± 5 VDC	0mA	± 250mA	50mVp-p	15mA	282mA	78	± 470µF
FKC03-12D12	9 – 18 VDC	± 12 VDC	0mA	± 125mA	50mVp-p	15mA	329mA	80	± 100µF
FKC03-12D15	9 – 18 VDC	± 15 VDC	0mA	± 100mA	50mVp-p	20mA	321mA	82	± 68µF
FKC03-24S33	18 – 36 VDC	3.3 VDC	0mA	500mA	50mVp-p	10mA	101mA	72	2200µF
FKC03-24S05	18 – 36 VDC	5 VDC	0mA	500mA	50mVp-p	10mA	149mA	74	1000µF
FKC03-24S12	18 – 36 VDC	12 VDC	0mA	250mA	50mVp-p	15mA	169mA	78	220µF
FKC03-24S15	18 – 36 VDC	15 VDC	0mA	200mA	50mVp-p	15mA	169mA	78	150µF
FKC03-24D05	18 – 36 VDC	± 5 VDC	0mA	± 250mA	50mVp-p	15mA	149mA	74	± 470µF
FKC03-24D12	18 – 36 VDC	± 12 VDC	0mA	± 125mA	50mVp-p	20mA	171mA	77	± 100µF
FKC03-24D15	18 – 36 VDC	± 15 VDC	0mA	± 100mA	50mVp-p	20mA	171mA	77	± 68µF
FKC03-48S33	36 – 75 VDC	3.3 VDC	0mA	500mA	50mVp-p	5mA	49mA	74	2200µF
FKC03-48S05	36 – 75 VDC	5 VDC	0mA	500mA	50mVp-p	10mA	75mA	74	1000µF
FKC03-48S12	36 – 75 VDC	12 VDC	0mA	250mA	50mVp-p	10mA	83mA	79	220µF
FKC03-48S15	36 – 75 VDC	15 VDC	0mA	200mA	50mVp-p	10mA	84mA	78	150µF
FKC03-48D05	36 – 75 VDC	± 5 VDC	0mA	± 250mA	50mVp-p	10mA	76mA	73	± 470µF
FKC03-48D12	36 – 75 VDC	± 12 VDC	0mA	± 125mA	50mVp-p	10mA	83mA	79	± 100µF
FKC03-48D15	36 – 75 VDC	± 15 VDC	0mA	± 100mA	50mVp-p	10mA	86mA	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. Maximum value at nominal input voltage and full load of standard type.
3. Typical value at nominal input voltage and no load.
4. Typical value at nominal input voltage and full load.
5. Test by minimum Vin and constant resistive load.
6. M1 version is more efficient, 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, ESR 48mΩ.

FKC03-48S05 Derating Curve

FKC03-48S05
Efficiency VS Input Voltage

FKC03-48S05
Efficiency VS Output Load

Suffix-SMD

Pin size is 0.02(0.5) Dia or
0.01 x 0.02 (0.25 x 0.50) Rectangular Pin

0.18(4.6)

BOTTOM VIEW

1.25 (31.8)

0.700 (17.78)
0.200 (5.08)

0.600(15.24)
0.80(20.3)

0.15 (3.8)
0.40 (10.2)

1.00(25.4)
0.92(23.4)
0.02(0.5)

24 1
20 BOTTOM VIEW 5
16 9
13 12

0.80(20.3)

Pin Area
0.04 x 0.02
(1.0 x 0.5)

0.100 (2.54)
0.15 (3.8)
0.25 (6.4)

0.44(11.2)
0.43(10.9)
1.26 (32.0)

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	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	Others	NC	NC