



**POWER MATE  
TECHNOLOGY CO.,LTD.**

# FKC05-SERIES



**UL E193009**  
**TUV R3-50007936**  
**CB JPTUV-003641**  
**CE MARK**

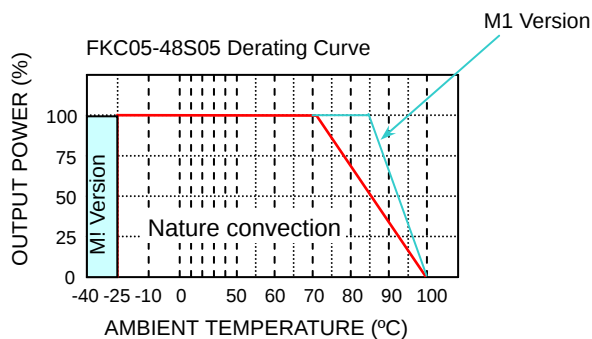
- 5 WATTS OUTPUT POWER
- 2:1 AND 4:1 WIDE INPUT VOLTAGE RANGE
- INTERNATIONAL SAFETY STANDARD APPROVAL
- FIVE-SIDED SHIELD
- HIGH EFFICIENCY UP TO 84%
- STANDARD 24 PIN DIP PACKAGE & SMD TYPE PACKAGE
- FIXED SWITCHING FREQUENCY

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. The FKC05 features 1600VDC of isolation, short-circuit protection and as well as five sided shielding. All models are particularly suited to telecommunications, industrial, mobile telecom and test equipment applications.

## 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       |                                        | ± 2%                            |
| Minimum load (Note 1)            |                                 |                                        | 10% of FL                       |
| Line regulation                  | LL to HL at Full Load           |                                        | ± 0.2%                          |
| Load regulation                  | 25% to 100% FL                  | Single<br>Dual                         | ± 0.5%<br>± 1%                  |
| Cross regulation(Dual)           | Asymmetrical load 25% / 100% FL |                                        | ± 5%                            |
| Ripple and noise                 | 20MHz bandwidth                 |                                        | 50mVp-p                         |
| Temperature coefficient          |                                 |                                        | ± 0.02% / °C, max               |
| Transient response recovery time | 25% load step change            |                                        | 200uS                           |
| Over load protection             | % of FL at nominal input        |                                        | 170% typ                        |
| Short circuit protection         |                                 |                                        | Continuous, automatics recovery |
| INPUT SPECIFICATIONS             |                                 |                                        |                                 |
| Input voltage range              | FKC05                           | 12V nominal input                      | 9 – 18VDC                       |
|                                  |                                 | 24V nominal input                      | 18 – 36VDC                      |
|                                  |                                 | 48V nominal input                      | 36 – 75VDC                      |
|                                  | FKC05-W                         | 24V nominal input                      | 9 – 36VDC                       |
|                                  |                                 | 48V nominal input                      | 18 – 75VDC                      |
| Input filter                     |                                 |                                        | Pi type                         |
| Input surge voltage<br>100mS max |                                 | 12V input                              | 36VDC                           |
|                                  |                                 | 24V input                              | 50VDC                           |
|                                  |                                 | 48V input                              | 100VDC                          |
| Input reflected ripple (Note 2)  |                                 | Nominal Vin and full load              | 20mAp-p                         |
| Start up time                    |                                 | Nominal Vin and constant resistor load | 600mS typ                       |



| GENERAL SPECIFICATIONS       |                          |            |                                                    |
|------------------------------|--------------------------|------------|----------------------------------------------------|
| Efficiency                   |                          |            | See table                                          |
| Isolation voltage            | Input to Output          |            | 1600VDC, min                                       |
|                              | Input ( Output ) to Case | DIP<br>SMD | 1600VDC, min<br>1000VDC, min                       |
| Isolation resistance         |                          |            | 10 <sup>9</sup> ohms, min                          |
| Isolation capacitance        |                          |            | 300pF, max                                         |
| Switching frequency          |                          |            | 300KHz, typ                                        |
| Approvals and standard       |                          |            | IEC60950, UL1950, EN60950                          |
| 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<br>(31.8 X 20.3 X 10.2 mm) |
| Weight                       | DIP                      |            | 16g (0.55oz)                                       |
|                              | SMD                      |            | 18g (0.62oz)                                       |
| MTBF (Note 3)                |                          |            | 3.165 x 10 <sup>6</sup> hrs                        |
| ENVIRONMENTAL SPECIFICATIONS |                          |            |                                                    |
| Operating temperature range  | Standard                 |            | -25°C~+85°C (with derating)                        |
|                              | M1 (Note 4)              |            | -40°C~+85°C (non-derating)                         |
|                              | M2 (W series)            |            | -40°C~+85°C (with derating)                        |
| Maximum case temperature     |                          |            | +100°C                                             |
| Storage temperature range    |                          |            | -55°C ~ +105°C                                     |
| Thermal impedance            | Nature convection        |            | 20°C/watt                                          |
| Thermal shock                |                          |            | MIL-STD-810D                                       |
| Vibration                    |                          |            | 10~55Hz, 10G, 30minutues along X,Y and Z           |
| Relative humidity            |                          |            | 5% to 95% RH                                       |
| EMC CHARACTERISTICS          |                          |            |                                                    |
| Conducted emissions          | EN55022                  |            | Class A                                            |
| Radiated emissions           | EN55022                  |            | Class A                                            |
| ESD                          | EN61000-4-2              |            | Perf. Criteria2                                    |
| Radiated immunity            | EN61000-4-3              |            | Perf. Criteria2                                    |
| Fast transient               | EN61000-4-4              |            | Perf. Criteria2                                    |
| Surge                        | EN61000-4-5              |            | Perf. Criteria2                                    |
| Conducted immunity           | EN61000-4-6              |            | Perf. Criteria2                                    |

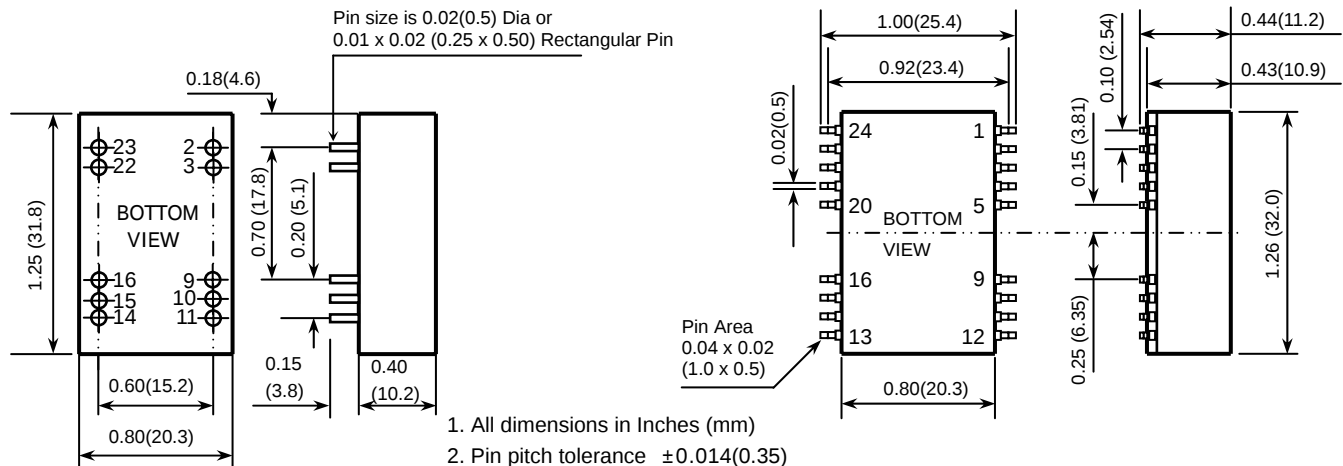


| Model Number    | Input Range           | Output Voltage | Output Current | Input Current <sup>(5)</sup> | Eff <sup>(6)</sup> (%) | Capacitor <sup>(7)</sup> Load max |
|-----------------|-----------------------|----------------|----------------|------------------------------|------------------------|-----------------------------------|
| FKC05-12S33     | 9 – 18 VDC            | 3.3 VDC        | 1000mA         | 382mA                        | 76                     | 2200uF                            |
| FKC05-12S05     | 9 – 18 VDC            | 5 VDC          | 1000mA         | 563mA                        | 78                     | 1000uF                            |
| FKC05-12S12     | 9 – 18 VDC            | 12 VDC         | 470mA          | 603mA                        | 82                     | 220uF                             |
| FKC05-12S15     | 9 – 18 VDC            | 15 VDC         | 400mA          | 649mA                        | 81                     | 150uF                             |
| FKC05-12D05     | 9 – 18 VDC            | ± 5 VDC        | ± 500mA        | 563mA                        | 78                     | ± 680uF                           |
| FKC05-12D12     | 9 – 18 VDC            | ± 12 VDC       | ± 230mA        | 597mA                        | 81                     | ± 100uF                           |
| FKC05-12D15     | 9 – 18 VDC            | ± 15 VDC       | ± 190mA        | 594mA                        | 84                     | ± 68uF                            |
| FKC05-24S33 (W) | 18 – 36 (9 – 36) VDC  | 3.3 VDC        | 1000mA         | 194mA (191mA)                | 75 (76)                | 2200uF                            |
| FKC05-24S05 (W) | 18 – 36 (9 – 36) VDC  | 5 VDC          | 1000mA         | 285mA (278mA)                | 77 (79)                | 1000uF                            |
| FKC05-24S12 (W) | 18 – 36 (9 – 36) VDC  | 12 VDC         | 470mA          | 305mA (309mA)                | 81 (80)                | 220uF                             |
| FKC05-24S15 (W) | 18 – 36 (9 – 36) VDC  | 15 VDC         | 400mA          | 325mA (312mA)                | 81 (84)                | 150uF                             |
| FKC05-24D05 (W) | 18 – 36 (9 – 36) VDC  | ± 5 VDC        | ± 500mA        | 274mA (282mA)                | 80 (78)                | ± 680uF                           |
| FKC05-24D12 (W) | 18 – 36 (9 – 36) VDC  | ± 12 VDC       | ± 230mA        | 288mA (295mA)                | 84 (82)                | ± 100uF                           |
| FKC05-24D15 (W) | 18 – 36 (9 – 36) VDC  | ± 15 VDC       | ± 190mA        | 308mA (297mA)                | 81 (84)                | ± 68uF                            |
| FKC05-48S33 (W) | 36 – 75 (18 – 75) VDC | 3.3 VDC        | 1000mA         | 98mA (100mA)                 | 74 (73)                | 2200uF                            |
| FKC05-48S05 (W) | 36 – 75 (18 – 75) VDC | 5 VDC          | 1000mA         | 143mA (138mA)                | 77 (79)                | 1000uF                            |
| FKC05-48S12 (W) | 36 – 75 (18 – 75) VDC | 12 VDC         | 470mA          | 151mA (155mA)                | 82 (80)                | 220uF                             |
| FKC05-48S15 (W) | 36 – 75 (18 – 75) VDC | 15 VDC         | 400mA          | 162mA (160mA)                | 81 (82)                | 150uF                             |
| FKC05-48D05 (W) | 36 – 75 (18 – 75) VDC | ± 5 VDC        | ± 500mA        | 141mA (145mA)                | 78 (76)                | ± 680uF                           |
| FKC05-48D12 (W) | 36 – 75 (18 – 75) VDC | ± 12 VDC       | ± 230mA        | 147mA (151mA)                | 82 (80)                | ± 100uF                           |
| FKC05-48D15 (W) | 36 – 75 (18 – 75) VDC | ± 15 VDC       | ± 190mA        | 154mA (159mA)                | 81 (79)                | ± 68uF                            |

**Note**

1. The FKC05 (W) series required a minimum 10% loading on the output to maintain specified regulation. Operation under no-load condition will not damage these devices, however they may not meet all listed specification.
2. Simulated source impedance of 12uH. 12uH inductor on series with + Vin.
3. BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C. (Ground fixed and controlled environment)
4. M1 version is more efficient, therefore, it can be operated in a more extensive temperature range than standard and M2 version
5. Maximum value at nominal input voltage and full load of standard type.
6. Typical value at nominal input voltage and full load
7. Test by minimum Vin and constant resistor load.
8. There is no pin at PIN10 & PIN15 for FKC05-W series

**Suffix-SMD**



**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       |

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