



**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.

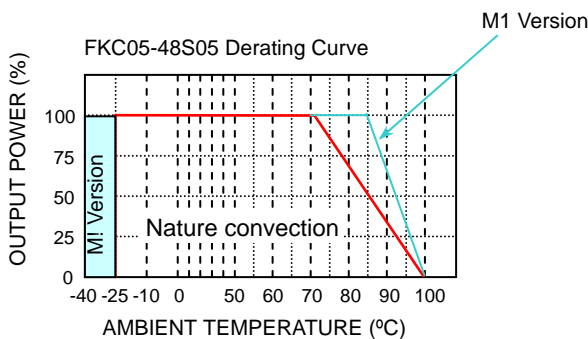
**TECHNICAL SPECIFICATION** All specifications are typical at nominal input, full load and 25°C otherwise noted

| 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              | ± 0.5%     |
|                                  |  | Dual                | ± 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              | 20mA <sub>p-p</sub> |            |
| 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          | 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, 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      |              |              |
|                        | (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, 30minutes 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 |



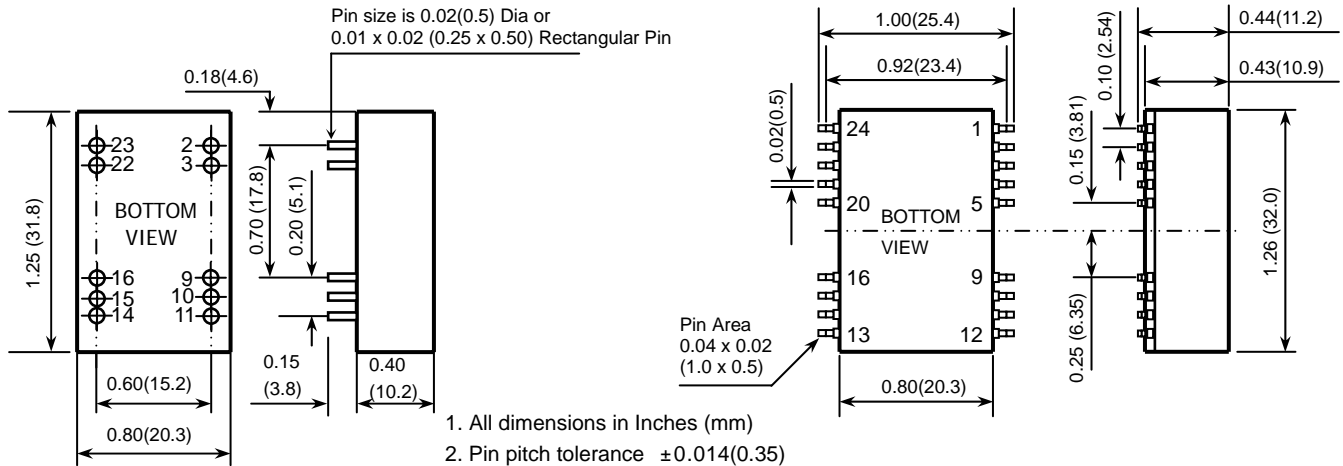


| Model Number    | Input Range           | Output Voltage | Output Current | Input Current <sup>(5)</sup> | Eff <sup>(6)</sup> (%) | Capacitor <sup>(7)</sup> Load max |
|-----------------|-----------------------|----------------|----------------|------------------------------|------------------------|-----------------------------------|
| 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**

- 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.
- Simulated source impedance of 12uH. 12uH inductor on series with + Vin.
- BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C. (Ground fixed and controlled environment)
- M1 version is more efficient, therefore, it can be operated in a more extensive temperature range than standard and M2 version
- Maximum value at nominal input voltage and full load of standard type.
- Typical value at nominal input voltage and full load
- Test by minimum Vin and constant resistor load.
- 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       |