



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

# PFKC05-SERIES



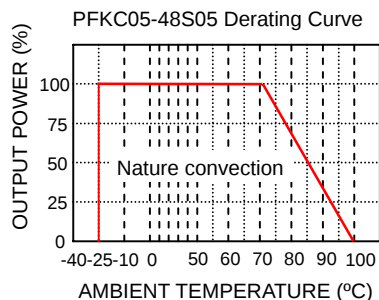
UL E193009  
TUV  
CB  
CE MARK

- 5 WATTS REGULATED OUTPUT POWER
- 2:1 WIDE INPUT VOLTAGE RANGE
- INTERNATIONAL SAFETY STANDARD APPROVAL
- OVER CURRENT PROTECTION
- HIGH EFFICIENCY UP TO 80%
- STANDARD 24 PIN DIP PACKAGE & SMD TYPE PACKAGE

The PFKC05 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 PFKC03, FKC03, FKC05 series. PFKC05 series have 2:1 wide input voltage of 9-18, 18-36 and 36-75VDC. The PFKC05 features 1600VDC of isolation and, short-circuit protection and suffix " H " can get 3000VDC isolation. 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                  | ± 1%                            |                               |
| 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                                       | ± 2%                            |                               |
| Cross regulation (Dual) Asymmetrical load 25% / 100% FL |                                            | ± 5%                            |                               |
| Ripple and noise                                        | 20MHz bandwidth                            | 3.3V/5V others                  | 75mVp-p<br>1%/p-p of Vout max |
| Temperature coefficient                                 |                                            | ±0.02% / °C, max                |                               |
| Transient response recovery time 25% load step change   |                                            | 500uS                           |                               |
| Over load protection                                    | % of FL at nominal input                   | 180% typ                        |                               |
| Short circuit protection                                |                                            | Continuous, automatics recovery |                               |
| 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<br>100mS max                        | 12V input                                  | 36VDC                           |                               |
|                                                         | 24V input                                  | 50VDC                           |                               |
|                                                         | 48V input                                  | 100VDC                          |                               |
| Input reflected ripple<br>(Note 2)                      | Nominal Vin and full load                  |                                 | 150mA p-p                     |
| Start up time                                           | Nominal Vin and<br>constant resistive load | Power up                        | 30mS typ                      |



| GENERAL SPECIFICATIONS       |                 |                                                    |                              |
|------------------------------|-----------------|----------------------------------------------------|------------------------------|
| Efficiency                   |                 | See table                                          |                              |
| Isolation voltage            | Input to Output | Standard Suffix " H "                              | 1600VDC, min<br>3000VDC, min |
| Isolation resistance         |                 | 10 <sup>9</sup> ohms, min                          |                              |
| Isolation capacitance        |                 | 300pF, max                                         |                              |
| Switching frequency          |                 | 100KHz, min                                        |                              |
| Approvals and standard       |                 | IEC60950-1, UL60950-1, EN60950-1                   |                              |
| Case material                |                 | Non-conductive black plastic                       |                              |
| 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             | 14g (0.48oz)                                       |                              |
|                              | SMD             | 15g (0.52oz)                                       |                              |
| MTBF (Note 3)                |                 | 3.731 x 10 <sup>6</sup> hrs                        |                              |
| ENVIRONMENTAL SPECIFICATIONS |                 |                                                    |                              |
| Operating temperature range  |                 | -25°C ~ +71°C                                      |                              |
| Storage temperature range    |                 | -55°C ~ +105°C                                     |                              |
| 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. Criteria B                                   |                              |
| Radiated immunity            | EN61000-4-3     | Perf. Criteria A                                   |                              |
| Fast transient               | EN61000-4-4     | Perf. Criteria B                                   |                              |
| Surge                        | EN61000-4-5     | Perf. Criteria B                                   |                              |
| Conducted immunity           | EN61000-4-6     | Perf. Criteria A                                   |                              |



| Model Number | Input Range | Output Voltage | Output Current | Input Current <sup>(4)</sup> | Eff <sup>(5)</sup> (%) | Capacitor <sup>(6)</sup> Load max |
|--------------|-------------|----------------|----------------|------------------------------|------------------------|-----------------------------------|
| PFKC05-12S33 | 9 – 18 VDC  | 3.3 VDC        | 1000mA         | 404mA                        | 72                     | 2200uF                            |
| PFKC05-12S05 | 9 – 18 VDC  | 5 VDC          | 1000mA         | 579mA                        | 76                     | 1000uF                            |
| PFKC05-12S12 | 9 – 18 VDC  | 12 VDC         | 470mA          | 618mA                        | 80                     | 220uF                             |
| PFKC05-12S15 | 9 – 18 VDC  | 15 VDC         | 400mA          | 658mA                        | 80                     | 150uF                             |
| PFKC05-12D05 | 9 – 18 VDC  | ± 5 VDC        | ± 500mA        | 571mA                        | 77                     | ± 680uF                           |
| PFKC05-12D12 | 9 – 18 VDC  | ± 12 VDC       | ± 230mA        | 605mA                        | 80                     | ± 100uF                           |
| PFKC05-12D15 | 9 – 18 VDC  | ± 15 VDC       | ± 190mA        | 625mA                        | 80                     | ± 68uF                            |
| PFKC05-24S33 | 18 – 36 VDC | 3.3 VDC        | 1000mA         | 202mA                        | 72                     | 2200uF                            |
| PFKC05-24S05 | 18 – 36 VDC | 5 VDC          | 1000mA         | 278mA                        | 79                     | 1000uF                            |
| PFKC05-24S12 | 18 – 36 VDC | 12 VDC         | 470mA          | 306mA                        | 81                     | 220uF                             |
| PFKC05-24S15 | 18 – 36 VDC | 15 VDC         | 400mA          | 325mA                        | 81                     | 150uF                             |
| PFKC05-24D05 | 18 – 36 VDC | ± 5 VDC        | ± 500mA        | 282mA                        | 78                     | ± 680uF                           |
| PFKC05-24D12 | 18 – 36 VDC | ± 12 VDC       | ± 230mA        | 299mA                        | 81                     | ± 100uF                           |
| PFKC05-24D15 | 18 – 36 VDC | ± 15 VDC       | ± 190mA        | 309mA                        | 81                     | ± 68uF                            |
| PFKC05-48S33 | 36 – 75 VDC | 3.3 VDC        | 1000mA         | 100mA                        | 73                     | 2200uF                            |
| PFKC05-48S05 | 36 – 75 VDC | 5 VDC          | 1000mA         | 141mA                        | 78                     | 1000uF                            |
| PFKC05-48S12 | 36 – 75 VDC | 12 VDC         | 470mA          | 153mA                        | 81                     | 220uF                             |
| PFKC05-48S15 | 36 – 75 VDC | 15 VDC         | 400mA          | 162mA                        | 81                     | 150uF                             |
| PFKC05-48D05 | 36 – 75 VDC | ± 5 VDC        | ± 500mA        | 143mA                        | 77                     | ± 680uF                           |
| PFKC05-48D12 | 36 – 75 VDC | ± 12 VDC       | ± 230mA        | 149mA                        | 81                     | ± 100uF                           |
| PFKC05-48D15 | 36 – 75 VDC | ± 15 VDC       | ± 190mA        | 154mA                        | 81                     | ± 68uF                            |

**Note**

1. The PFKC05 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. Please add an external filter at converter input terminals when measuring input reflected ripple, as figure 1.  
L: Simulated source impedance of 12uH    C: Nippon chemi-con KMF series 47uF/100V
3. BELLCORE TR-NWT-000332. Case I: 50% Stress, Temperature at 40°C. (Ground fixed and controlled environment)
4. Maximum value at nominal input voltage and full load of standard type.
5. Typical value at nominal input voltage and full load.
6. Test by minimum Vin and constant resistive load.

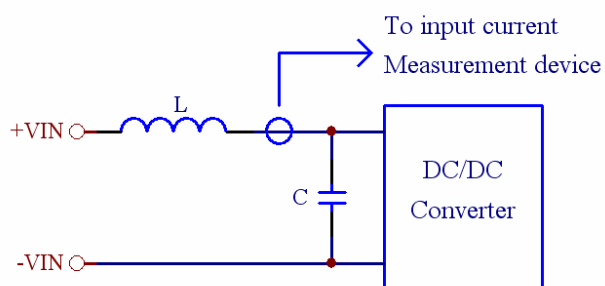
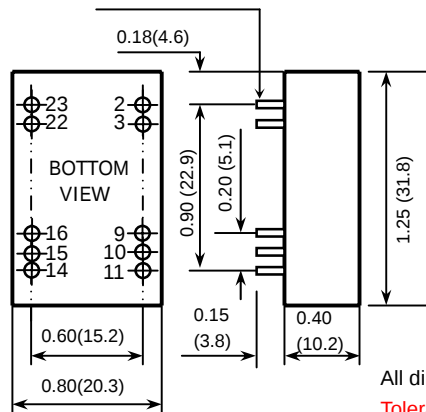


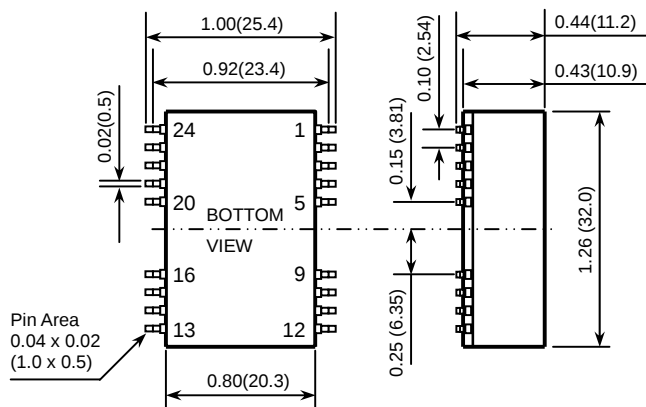
Figure 1



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



Suffix-SMD



All dimensions in Inches (mm)

Tolerance:  $X.XX \pm 0.02 (X.X \pm 0.5)$

$X.XXX \pm 0.01 (X.XX \pm 0.25)$

Pin pitch tolerance  $\pm 0.014 (0.35)$

**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       |