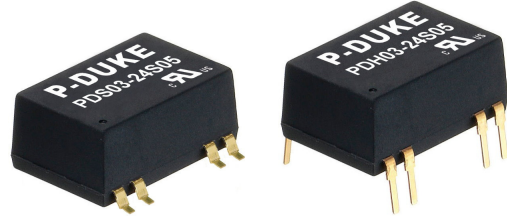


PDS03 PDH03 SERIES

DC-DC CONVERTER

2:1 WIDE INPUT RANGE
UP TO 3 Watts



FEATURES

- NO MINIMUM LOAD REQUIRED
- UP TO 3000VDC INPUT TO OUTPUT ISOLATION
- SMALL SIZE AND LOW PROFILE : 0.74 X 0.50 X 0.33 INCH
- LOW OUTPUT RIPPLE AND NOISE
- UL60950-1, EN60950-1, & IEC60950-1 SAFETY APPROVALS
- CE MARKED
- COMPLIANT TO RoHS II & REACH

APPLICATIONS

- WIRELESS NETWORK
- TELECOM/DATACOM
- INDUSTRY CONTROL SYSTEM
- DISTRIBUTED POWER ARCHITECTURES
- SEMICONDUCTOR EQUIPMENT

| | | | |
|--------------------------|--------------------------|-----------------------|------------|
| 3000VDC ISOLATION | 1600VDC ISOLATION | REMOTE CONTROL | SCP |
|--------------------------|--------------------------|-----------------------|------------|

TECHNICAL SPECIFICATION

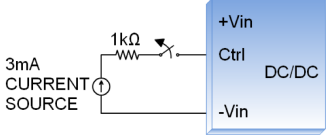
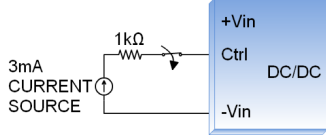
All specifications are typical at nominal input, full load and 25°C otherwise noted

| Model Number | Input Range | Output Voltage | Output Current @Full Load | Input Current @ No Load | Efficiency | Maximum Capacitor Load |
|-----------------|-------------|----------------|---------------------------|-------------------------|------------|------------------------|
| | VDC | VDC | mA | mA | % | µF |
| PDS(H)03-05S3P3 | 4.5 ~ 9 | 3.3 | 700 | 40 | 75 | 3300 |
| PDS(H)03-05S05 | 4.5 ~ 9 | 5 | 600 | 40 | 79 | 1680 |
| PDS(H)03-05S09 | 4.5 ~ 9 | 9 | 333 | 40 | 79 | 1000 |
| PDS(H)03-05S12 | 4.5 ~ 9 | 12 | 250 | 40 | 80 | 820 |
| PDS(H)03-05S15 | 4.5 ~ 9 | 15 | 200 | 50 | 81 | 680 |
| PDS(H)03-05D05 | 4.5 ~ 9 | ±5 | ±300 | 50 | 80 | ±1000 |
| PDS(H)03-05D12 | 4.5 ~ 9 | ±12 | ±125 | 50 | 80 | ±470 |
| PDS(H)03-05D15 | 4.5 ~ 9 | ±15 | ±100 | 55 | 81 | ±330 |
| PDS(H)03-12S3P3 | 9 ~ 18 | 3.3 | 700 | 30 | 76 | 3300 |
| PDS(H)03-12S05 | 9 ~ 18 | 5 | 600 | 30 | 81 | 1680 |
| PDS(H)03-12S09 | 9 ~ 18 | 9 | 333 | 30 | 80 | 1000 |
| PDS(H)03-12S12 | 9 ~ 18 | 12 | 250 | 30 | 82 | 820 |
| PDS(H)03-12S15 | 9 ~ 18 | 15 | 200 | 30 | 82 | 680 |
| PDS(H)03-12D05 | 9 ~ 18 | ±5 | ±300 | 30 | 80 | ±1000 |
| PDS(H)03-12D12 | 9 ~ 18 | ±12 | ±125 | 30 | 82 | ±470 |
| PDS(H)03-12D15 | 9 ~ 18 | ±15 | ±100 | 30 | 83 | ±330 |
| PDS(H)03-24S3P3 | 18 ~ 36 | 3.3 | 700 | 13 | 76 | 3300 |
| PDS(H)03-24S05 | 18 ~ 36 | 5 | 600 | 13 | 81 | 1680 |
| PDS(H)03-24S09 | 18 ~ 36 | 9 | 333 | 13 | 82 | 1000 |
| PDS(H)03-24S12 | 18 ~ 36 | 12 | 250 | 13 | 82 | 820 |
| PDS(H)03-24S15 | 18 ~ 36 | 15 | 200 | 13 | 83 | 680 |
| PDS(H)03-24D05 | 18 ~ 36 | ±5 | ±300 | 13 | 80 | ±1000 |
| PDS(H)03-24D12 | 18 ~ 36 | ±12 | ±125 | 13 | 83 | ±470 |
| PDS(H)03-24D15 | 18 ~ 36 | ±15 | ±100 | 13 | 83 | ±330 |
| PDS(H)03-48S3P3 | 36 ~ 75 | 3.3 | 700 | 10 | 76 | 3300 |
| PDS(H)03-48S05 | 36 ~ 75 | 5 | 600 | 10 | 81 | 1680 |
| PDS(H)03-48S09 | 36 ~ 75 | 9 | 333 | 10 | 80 | 1000 |
| PDS(H)03-48S12 | 36 ~ 75 | 12 | 250 | 10 | 82 | 820 |
| PDS(H)03-48S15 | 36 ~ 75 | 15 | 200 | 10 | 82 | 680 |
| PDS(H)03-48D05 | 36 ~ 75 | ±5 | ±300 | 10 | 81 | ±1000 |
| PDS(H)03-48D12 | 36 ~ 75 | ±12 | ±125 | 10 | 83 | ±470 |
| PDS(H)03-48D15 | 36 ~ 75 | ±15 | ±100 | 10 | 83 | ±330 |

PART NUMBER STRUCTURE

| | | | | |
|------------------------------------------------------|---------------------------------------------------------------------------------|------------------------|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| PDS03 - 48 S 05 H | | | | |
| Series Name | Input Voltage (VDC) | Output Quantity | Output Voltage (VDC) | Isolation Option |
| PDS : SMD type PDH : DIP type | 05 : 4.5~9 12 : 9~18 24 : 18~36 48 : 36~75 | S : Single | 3P3 : 3.3 05 : 5 09 : 9 12 : 12 15 : 15 | □ : Standard type 1600 : 1600VDC isolation H : 3000VDC isolation |
| | | D : Dual | 05 : ± 5 12 : ± 12 15 : ± 15 | |

INPUT SPECIFICATIONS

| Parameter | Conditions | Min. | Typ. | Max. | Unit |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------------------|----------------------|-----------------------|----------------|
| Operating input voltage range | 05Vin(nom) 12Vin(nom) 24Vin(nom) 48Vin(nom) | 4.5 9 18 36 | 5 12 24 48 | 9 18 36 75 | VDC |
| Start up time | Constant resistive load Power up Remote ON/OFF | | 5 5 | | ms |
| Input surge voltage | 1 second, max. 05Vin(nom) 12Vin(nom) 24Vin(nom) 48Vin(nom) | | | 15 25 50 100 | VDC |
| Input reflected ripple current | 05Vin(nom) 12Vin(nom) 24Vin(nom) 48Vin(nom) | | 80 40 30 20 | | mAp-p |
| Input filter | | | | | Capacitor type |
| Remote ON/OFF | Ctrl pin applied current via 1kΩ DC-DC ON DC-DC OFF Remote off input current | 2 | 3 | 4 2.5 | mA mA |
| <p>Application circuit</p> <p>DC-DC ON</p>  <p>DC-DC OFF</p>  | | | | | |

OUTPUT SPECIFICATIONS

| Parameter | Conditions | Min. | Typ. | Max. | Unit |
|----------------------------------|------------------------------------|--------------|------|--------------|--------------------------------|
| Voltage accuracy | | -1.0 | | +1.0 | % |
| Line regulation | Low Line to High Line at Full Load | -0.2 | | +0.2 | % |
| Load regulation | No Load to Full Load | -1.0 | | +1.0 | % |
| | 10% Load to 100% Full Load | -0.5 -0.8 | | +0.5 +0.8 | % |
| Cross regulation | Asymmetrical load 25%/100% FL | -5.0 | | +5.0 | % |
| Ripple and noise | 20MHz bandwidth | | 30 | | mVp-p |
| Temperature coefficient | | -0.02 | | +0.02 | %/°C |
| Transient response recovery time | 25% load step change | | 250 | | μs |
| Short circuit protection | | | | | Continuous, automatic recovery |

GENERAL SPECIFICATIONS

| Parameter | Conditions | | | Min. | Typ. | Max. | Unit |
|-----------------------|---------------------------|-----------------|-----------------------------|--------------|------|----------|--------------------------------------|
| Isolation voltage | 1 minute | Input to Output | Standard Type Suffix "H" | 1600 3000 | | | VDC |
| Isolation resistance | 500VDC | | | 1 | | | GΩ |
| Isolation capacitance | | | Standard Type Suffix "H" | | | 50 50 | pF |
| Switching frequency | Full load to minimum load | | | 100 | | | kHz |
| Safety approvals | | | | | | | UL60950-1 EN60950-1 IEC60950-1 |
| Weight | | | | | | | 4.5g (0.16oz) |
| MTBF | MIL-HDBK-217F | | | | | | 6.263 x 10 ⁶ hrs |

ENVIRONMENTAL SPECIFICATIONS

| Parameter | Conditions | | | Min. | Typ. | Max. | Unit |
|---------------------------------|------------|-----------------------------------|--|------------|------|------------|-------------------------|
| Operating ambient temperature | | Without derating With derating | | -40 +71 | | +71 +85 | °C |
| Storage temperature range | | | | -55 | | +125 | °C |
| Thermal shock | | | | | | | MIL-STD-810F |
| Vibration | | | | | | | MIL-STD-810F |
| Relative humidity | | | | | | | 5% to 95% RH |
| Lead-free reflow solder process | | | | | | | IPC J-STD-020D |
| Moisture sensitivity level | MSL | | | | | | IPC J-STD-033B Level 2a |

EMC SPECIFICATIONS

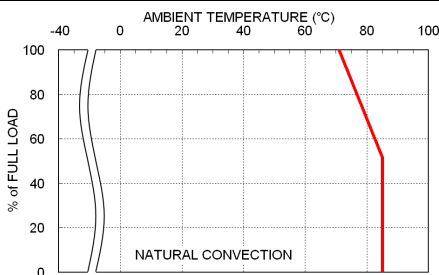
| Parameter | Conditions | | Level |
|-------------------------------|-------------|-----------------------------|-------------------|
| EMI ⁽¹⁾ | EN55022 | | Class A · Class B |
| ESD | EN61000-4-2 | Air ± 8kV and Contact ± 6kV | Perf. Criteria A |
| Radiated immunity | EN61000-4-3 | 10 V/m | Perf.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

Note:

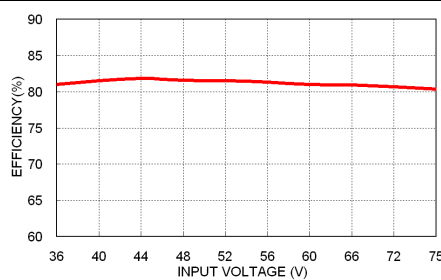
- The standard modules meet EMI Class A or Class B with external components. For further information, please contact with P-DUKE.
- An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5.
The filter capacitor Power Mate suggest: Nippon chemi-con KY series, 220μF/100V.

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

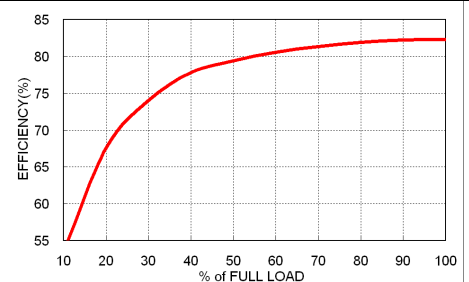
CHARACTERISTIC CURVE



PDS03-48S05 Derating Curve



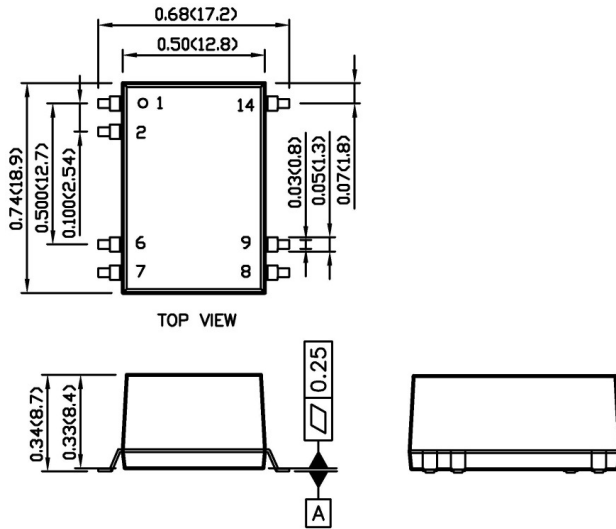
PDS03-48S05 Efficiency vs. Input Voltage



PDS03-48S05 Efficiency vs. Output Load

MECHANICAL DRAWING

PDS03



PIN CONNECTION

| PIN | SINGLE | DUAL |
|-----|--------|--------|
| 1 | -Vin | -Vin |
| 2 | Ctrl | Ctrl |
| 6 | NC | Common |
| 7 | NC | -Vout |
| 8 | +Vout | +Vout |
| 9 | -Vout | Common |
| 14 | +Vin | +Vin |

1. All dimensions in inch (mm)
2. Tolerance :x.xx±0.02 (x.x±0.5)
x.xxx±0.01 (x.xx±0.25)
3. Pin pitch tolerance ±0.01 (0.25)
4. Pin dimension tolerance ±0.004(0.1)

PDH03

