



**DESCRIPTION:** 3W 3KVDC Isolated Single And Dual Output DC/DC Converters

The PPK-3W series are miniature, isolated 3W DC/DC converters in a SIP package. They offer the ideal solution in many space critical applications for board level power distribution. The internal SMD construction makes it possible to offer a product with high performance at low cost. The series offers smaller size, improved efficiency, lower output ripple noise and 3KVDC isolation.

### FEATURES

|                                       |                            |  |
|---------------------------------------|----------------------------|--|
| RoHS compliant                        | Efficiency from 80%        | Input voltage: 3.3V, 5V,12V, 15V,24V                                   |
| Operating temperature: -40°C to 105°C | UL 94V-0 package material  | Output voltage: 3.3V,5V, 9V, 12V, 15V ,24V / ±5V, ±9V, ±12V, ±15V,±24V |
| Industry standard pinout              | 3KVDC isolation (1 minute) | CE certification   |

### SELECTION GUIDE

| Part Number  | Nominal Input Voltage | Output Voltage | Output Current (Max./Min) | Load Regulation (Max) | Efficiency (Typ.) | Package |
|--------------|-----------------------|----------------|---------------------------|-----------------------|-------------------|---------|
|              | V                     | V              | mA                        | %                     | %                 | Style   |
| PPK0303SA-3W | 3.3                   | 3.3            | 909/90.9                  | 7.2                   | 82                | SIP     |
| PPK0305SA-2W | 3.3                   | 5              | 600/60                    | 7.2                   | 82                | SIP     |
| PPK0503SA-3W | 5                     | 3.3            | 909/90.9                  | 7.2                   | 82                | SIP     |
| PPK0505SA-3W | 5                     | 5              | 600/60                    | 7.2                   | 82                | SIP     |
| PPK0509SA-3W | 5                     | 9              | 333/33.3                  | 5.8                   | 86                | SIP     |
| PPK0512SA-3W | 5                     | 12             | 250/25                    | 5.0                   | 86                | SIP     |
| PPK0515SA-3W | 5                     | 15             | 200/20                    | 4.6                   | 87                | SIP     |
| PPK1205SA-3W | 12                    | 5              | 600/60                    | 4.9                   | 82                | SIP     |
| PPK1209SA-3W | 12                    | 9              | 333/33.3                  | 3.0                   | 87                | SIP     |
| PPK1212SA-3W | 12                    | 12             | 250/25                    | 2.9                   | 87                | SIP     |
| PPK1215SA-3W | 12                    | 15             | 200/20                    | 2.5                   | 89                | SIP     |
| PPK1515SA-3W | 15                    | 15             | 200/20                    | 2.5                   | 84                | SIP     |
| PPK2405SA-3W | 24                    | 5              | 600/60                    | 4.9                   | 82                | SIP     |
| PPK2412SA-3W | 24                    | 12             | 250/25                    | 5.0                   | 84                | SIP     |
| PPK2415SA-3W | 24                    | 15             | 200/20                    | 2.5                   | 89                | SIP     |
| PPK2424SA-3W | 24                    | 24             | 125/12.5                  | 5.0                   | 83                | SIP     |
| PPK0505S-3W  | 5                     | ±5             | ±300/±30                  | 6.3                   | 82                | SIP     |
| PPK0509S-3W  | 5                     | ±9             | ±166.5/±16.65             | 5.4                   | 86                | SIP     |
| PPK0512S-3W  | 5                     | ±12            | ±125/±12.5                | 4.8                   | 86                | SIP     |
| PPK0515S-3W  | 5                     | ±15            | ±100/±10                  | 5.3                   | 87                | SIP     |
| PPK0524S-3W  | 5                     | ±24            | ±62.5/±6.25               | 5.0                   | 83                | SIP     |
| PPK1205S-3W  | 12                    | ±5             | ±300/±30                  | 3.9                   | 82                | SIP     |
| PPK1209S-3W  | 12                    | ±9             | ±166.5/±16.65             | 2.9                   | 86                | SIP     |
| PPK1212S-3W  | 12                    | ±12            | ±125/±12.5                | 2.8                   | 87                | SIP     |
| PPK1215S-3W  | 12                    | ±15            | ±100/±10                  | 2.5                   | 87                | SIP     |
| PPK1515S-3W  | 15                    | ±15            | ±100/±10                  | 2.5                   | 87                | SIP     |
| PPK2405S-3W  | 24                    | ±5             | ±300/±30                  | 3.9                   | 82                | SIP     |
| PPK2412S-3W  | 24                    | ±12            | ±125/±12.5                | 2.8                   | 87                | SIP     |
| PPK2415S-3W  | 24                    | ±15            | ±100/±10                  | 2.5                   | 87                | SIP     |
| PPK2424S-3W  | 24                    | ±24            | ±62.5/±6.25               | 5.0                   | 83                | SIP     |
| PPK0305DA-3W | 3.3                   | 5              | 600/60                    | 7.2                   | 82                | DIP     |
| PPK0505DA-3W | 5                     | 5              | 600/60                    | 7.2                   | 82                | DIP     |
| PPK0509DA-3W | 5                     | 9              | 333/33.3                  | 5.8                   | 86                | DIP     |
| PPK0512DA-3W | 5                     | 12             | 250/25                    | 5.0                   | 86                | DIP     |
| PPK0515DA-3W | 5                     | 15             | 200/20                    | 4.6                   | 87                | DIP     |
| PPK1205DA-3W | 12                    | 5              | 600/60                    | 4.9                   | 82                | DIP     |
| PPK1209DA-3W | 12                    | 9              | 333/33.3                  | 3.0                   | 87                | DIP     |
| PPK1212DA-3W | 12                    | 12             | 250/25                    | 2.9                   | 87                | DIP     |
| PPK1215DA-3W | 12                    | 15             | 200/20                    | 2.5                   | 89                | DIP     |
| PPK1515DA-3W | 15                    | 15             | 200/20                    | 2.5                   | 84                | DIP     |
| PPK2405DA-3W | 24                    | 5              | 600/60                    | 4.9                   | 82                | DIP     |
| PPK2412DA-3W | 24                    | 12             | 250/25                    | 5.0                   | 84                | DIP     |
| PPK2424DA-3W | 24                    | 24             | 125/12.5                  | 5.0                   | 83                | DIP     |
| PPK0505D-3W  | 5                     | ±5             | ±300/±30                  | 6.3                   | 82                | DIP     |
| PPK0509D-3W  | 5                     | ±9             | ±166.5/±16.65             | 5.4                   | 86                | DIP     |
| PPK0512D-3W  | 5                     | ±12            | ±125/±12.5                | 4.8                   | 86                | DIP     |
| PPK0515D-3W  | 5                     | ±15            | ±100/±10                  | 5.3                   | 87                | DIP     |
| PPK1205D-3W  | 12                    | ±5             | ±300/±30                  | 3.9                   | 82                | DIP     |
| PPK1209D-3W  | 12                    | ±9             | ±166.5/±16.65             | 2.9                   | 86                | DIP     |
| PPK1212D-3W  | 12                    | ±12            | ±125/±12.5                | 2.8                   | 87                | DIP     |
| PPK1215D-3W  | 12                    | ±15            | ±100/±10                  | 2.5                   | 87                | DIP     |
| PPK1515D-3W  | 15                    | ±15            | ±100/±10                  | 2.5                   | 87                | DIP     |
| PPK2405D-3W  | 24                    | ±5             | ±300/±30                  | 3.9                   | 82                | DIP     |
| PPK2412D-3W  | 24                    | ±12            | ±125/±12.5                | 2.8                   | 87                | DIP     |
| PPK2424D-3W  | 24                    | ±24            | ±62.5/±6.25               | 5.0                   | 83                | DIP     |

Add suffix "P" for continuous short circuit protection, for example PPK0505SP-3W.

## INPUT CHARACTERISTICS

| Parameter     | Conditions | Min. | Typ. | Max. | Units |
|---------------|------------|------|------|------|-------|
| Voltage range | 3.3V input | 2.9  | 3.3  | 3.6  | V     |
| Voltage range | 5V input   | 4.5  | 5    | 5.5  | V     |
| Voltage range | 12V input  | 11   | 12   | 13   | V     |
| Voltage range | 15V input  | 13.4 | 15   | 16.4 | V     |
| Voltage range | 24V input  | 22   | 24   | 26   | V     |

## OUTPUT CHARACTERISTICS

| Parameter                  | Conditions                                    | Min. | Typ. | Max. | Units |
|----------------------------|---|------|------|------|-------|
| Rated Power                | TA=-40°C to 85°C                              |      |      | 3    | W     |
| Voltage Set Point Accuracy | See tolerance envelope                        |      |      |      |       |
| Line regulation            | High VIN to low VIN (voltage variation +/-5%) |      | 1.0  | 1.2  | %/%   |

## ABSOLUTE MAXIMUM RATINGS

|   |       |
|---|-------|
| Lead temperature 1.5mm from case for 10 seconds | 300°C |
| Internal power dissipation                      | 650mW |
| Input voltage Vin, PPK03                        | 5.5V  |
| Input voltage Vin, PPK05                        | 7V    |
| Input voltage Vin, PPK12                        | 15V   |
| Input voltage Vin, PPK15                        | 18V   |
| Input voltage Vin, PPK24                        | 28V   |

## ISOLATION CHARACTERISTICS

| Parameter              | Conditions          | Min. | Typ. | Max. | Units |
|------------------------|---------------------|------|------|------|-------|
| Isolation test voltage | Tested for 1 minute | 3000 |      |      | VDC   |
| Resistance             | Viso= 1000VDC       | 1    |      |      | GΩ    |

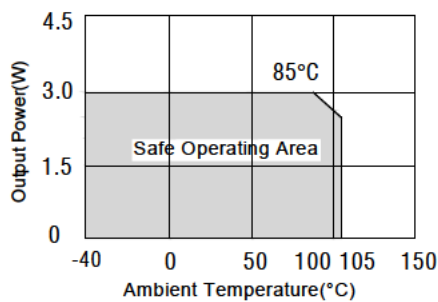
## GENERAL CHARACTERISTICS

| Parameter           | Conditions | Min. | Typ. | Max. | Units |
|---------------------|------------|------|------|------|-------|
| Switching frequency |            |      | 65   |      | kHz   |

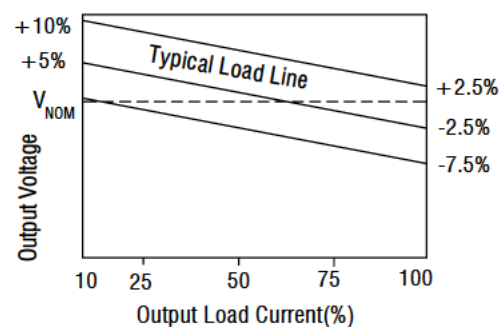
## TEMPERATURE CHARACTERISTICS

| Parameter                      | Conditions                        | Min. | Typ. | Max. | Units |
|--------------------------------|-----------------------------------|------|------|------|-------|
| Specification                  | Derating if the temperature ≥85°C | -40  |      | 105  | °C    |
| Storage                        |                                   | -50  |      | 150  | °C    |
| Case Temperature above ambient | 5V output                         |      |      | 30   | °C    |
| Case Temperature above ambient | All other output                  |      |      | 30   | °C    |
| Cooling                        | Free air convection               |      |      |      |       |

## TEMPERATURE DERATING GRAPHS

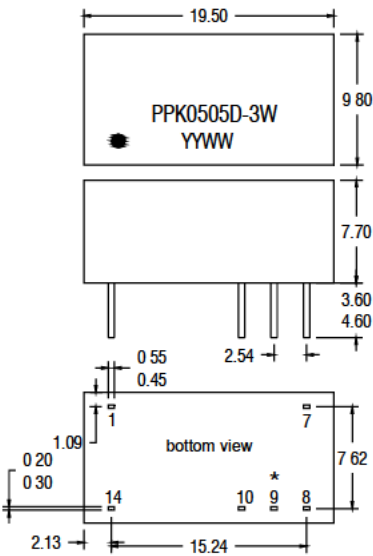


## TOLERANCE ENVELOPES

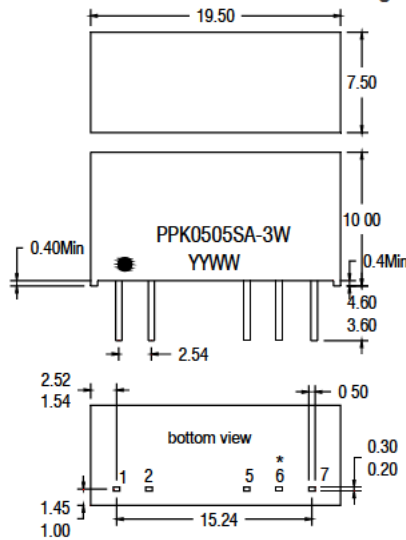


## MECHANICAL DIMENSIONS

DIP Package



SIP Package



All dimensions in mm  $\pm 0.25$ mm.  
 All pins on a 2.54mm pitch and within  $\pm 0.25$ mm of true position. Weight: 2.8g  
 \* Pin not fitted on single output variants

## PIN CONNECTIONS

Dual Output Variants  
14 PIN DIP

| Pin | Function |
|-----|----------|
| 1   | -Vin     |
| 7   | NC       |
| 8   | +Vout    |
| 9   | 0V       |
| 10  | -Vout    |
| 14  | +Vin     |

Single output variants  
14 PIN DIP

| Pin | Function |
|-----|----------|
| 1   | -Vin     |
| 7   | NC       |
| 8   | +Vout    |
| 10  | -Vout    |
| 14  | +Vin     |

7 PIN SIP

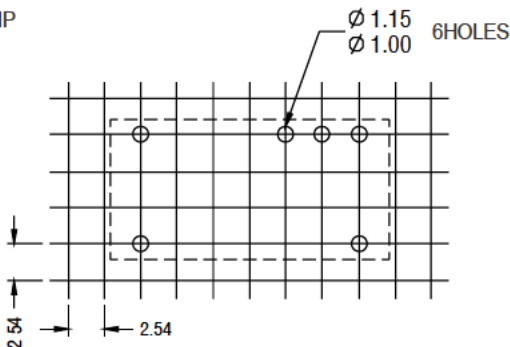
| Pin | Function |
|-----|----------|
| 1   | +Vin     |
| 2   | -Vin     |
| 5   | -Vout    |
| 6   | 0V       |
| 7   | +Vout    |

7 PIN SIP

| Pin | Function |
|-----|----------|
| 1   | +Vin     |
| 2   | -Vin     |
| 5   | -Vout    |
| 7   | +Vout    |

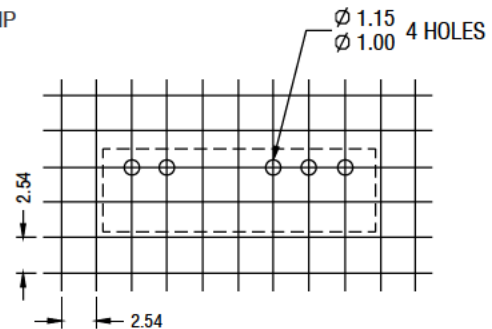
## RECOMMENDED FOOTPRINT DETAILS

14Pin DIP



Unless otherwise stated all dimensions in mm  $\pm 0.5$ mm.

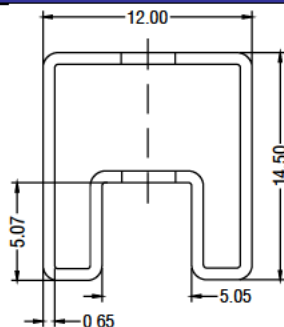
7Pin SIP



Unless otherwise stated all dimensions in mm  $\pm 0.5$ mm.

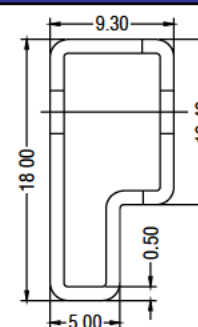
## TUBE OUTLINE DIMENSIONS

14Pin DIP



Unless otherwise stated all dimensions in mm  $\pm 0.5$ mm.  
 Tube length : 520mm  $\pm 2$ mm. Tube Quantity : 25PCS

7Pin SIP



Unless otherwise stated all dimensions in mm  $\pm 0.5$ mm.  
 Tube length : 520mm  $\pm 2$ mm. Tube Quantity : 25PCS

## SOLDERING INFORMATION

This series is compatible with RoHS soldering systems with a peak wave solder temperature of 300°C for 10 seconds. The series is backward compatible with Sn/Pb soldering systems