



DESCRIPTION: 1W 3KVDC Isolated Single and Dual Output DC/DC Converters

The PKA series are miniature, isolated 1W DC/DC converters in a SIP and DIP 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, CE certification | Efficiency up to 83% | Operating temperature: -40°C to 105°C |
| UL 94V-0 package material | Internal SMD construction | Industry standard pinout |
| Power sharing on output | Input voltage :3.3V, 5V, 12V | Output voltage: 3.3V, 5V, 9V, 12V, 15V / $\pm 3.3V, \pm 5V, \pm 9V, \pm 12V, \pm 15V$ |

SELECTION GUIDE

| Part Number | Nominal Input Voltage | Output Voltage | Output Current (Max./Min) | Efficiency | Package Style |
|-------------|-----------------------|----------------|---------------------------|------------|---------------|
| | V | V | mA | % | |
| PKA0303DA | 3.3 | 3.3 | 303/30.3 | 75 | DIP |
| PKA0305DA | 3.3 | 5 | 200/20 | 80 | DIP |
| PKA0309DA | 3.3 | 9 | 111/11.1 | 75 | DIP |
| PKA0312DA | 3.3 | 12 | 83/8.3 | 80 | DIP |
| PKA0315DA | 3.3 | 15 | 67/6.7 | 80 | DIP |
| PKA0303SA | 3.3 | 3.3 | 303/30.3 | 74 | SIP |
| PKA0305SA | 3.3 | 5 | 200/20 | 80 | SIP |
| PKA0309SA | 3.3 | 9 | 111/11.1 | 76 | SIP |
| PKA0312SA | 3.3 | 12 | 83/8.3 | 77 | SIP |
| PKA0315SA | 3.3 | 15 | 67/6.7 | 80 | SIP |
| PKA0503DA | 5 | 3.3 | 303/30.3 | 78 | DIP |
| PKA0505DA | 5 | 5 | 200/20 | 72 | DIP |
| PKA0509DA | 5 | 9 | 111/11.1 | 75 | DIP |
| PKA0512DA | 5 | 12 | 83/8.3 | 78 | DIP |
| PKA0515DA | 5 | 15 | 67/6.7 | 80 | DIP |
| PKA0503SA | 5 | 3.3 | 303/30.3 | 78 | SIP |
| PKA0505SA | 5 | 5 | 200/20 | 72 | SIP |
| PKA0509SA | 5 | 9 | 111/11.1 | 77 | SIP |
| PKA0512SA | 5 | 12 | 83/8.3 | 78 | SIP |
| PKA0515SA | 5 | 15 | 67/6.7 | 80 | SIP |
| PKA1205DA | 12 | 5 | 200/20 | 75 | DIP |
| PKA1209DA | 12 | 9 | 111/11.1 | 82 | DIP |
| PKA1212DA | 12 | 12 | 83/8.3 | 82 | DIP |
| PKA1215DA | 12 | 15 | 67/6.7 | 82 | DIP |
| PKA1205SA | 12 | 5 | 200/20 | 74 | SIP |
| PKA1209SA | 12 | 9 | 111/11.1 | 79 | SIP |
| PKA1212SA | 12 | 12 | 83/8.3 | 81 | SIP |
| PKA1215SA | 12 | 15 | 67/6.7 | 81 | SIP |
| PKA0303D | 3.3 | ± 3.3 | $\pm 151/\pm 15.1$ | 75 | DIP |
| PKA0305D | 3.3 | ± 5 | $\pm 100/\pm 10$ | 80 | DIP |
| PKA0309D | 3.3 | ± 9 | $\pm 55/\pm 5.5$ | 74 | DIP |
| PKA0312D | 3.3 | ± 12 | $\pm 43/\pm 4.3$ | 79 | DIP |
| PKA0315D | 3.3 | ± 15 | $\pm 34/\pm 3.4$ | 80 | DIP |
| PKA0303S | 3.3 | ± 3.3 | $\pm 151/\pm 15.1$ | 73 | SIP |
| PKA0305S | 3.3 | ± 5 | $\pm 100/\pm 10$ | 80 | SIP |
| PKA0309S | 3.3 | ± 9 | $\pm 55/\pm 5.5$ | 76 | SIP |
| PKA0312S | 3.3 | ± 12 | $\pm 43/\pm 4.3$ | 77 | SIP |
| PKA0315S | 3.3 | ± 15 | $\pm 34/\pm 3.4$ | 80 | SIP |

SELECTION GUIDE

| Part Number | Nominal Input Voltage | Output Voltage | Output Current (Max./Min) | Efficiency | Package Style |
|-------------|-----------------------|----------------|---------------------------|------------|---------------|
| | V | V | mA | % | |
| PKA0503D | 5 | ±3.3 | ±151/±15.1 | 78 | DIP |
| PKA0505D | 5 | ±5 | ±100/±10 | 72 | DIP |
| PKA0509D | 5 | ±9 | ±55/±5.5 | 75 | DIP |
| PKA0512D | 5 | ±12 | ±43/±4.3 | 77 | DIP |
| PKA0515D | 5 | ±15 | ±34/±3.4 | 79 | DIP |
| PKA0503S | 5 | ±3.3 | ±151/±15.1 | 78 | SIP |
| PKA0505S | 5 | ±5 | ±100/±10 | 72 | SIP |
| PKA0509S | 5 | ±9 | ±55/±5.5 | 77 | SIP |
| PKA0512S | 5 | ±12 | ±43/±4.3 | 78 | SIP |
| PKA0515S | 5 | ±15 | ±34/±3.4 | 79 | SIP |
| PKA1205D | 12 | ±5 | ±100/±10 | 75 | DIP |
| PKA1209D | 12 | ±9 | ±55/5.5 | 79 | DIP |
| PKA1212D | 12 | ±12 | ±43/±4.3 | 82 | DIP |
| PKA1215D | 12 | ±15 | ±34/±3.4 | 82 | DIP |
| PKA1205S | 12 | ±5 | ±100/±10 | 73 | SIP |
| PKA1209S | 12 | ±9 | ±55/±5.5 | 79 | SIP |
| PKA1212S | 12 | ±12 | ±43/±4.3 | 81 | SIP |
| PKA1215S | 12 | ±15 | ±34/±3.4 | 81 | SIP |

Add suffix "P" for continuous short circuit protection, for example PKA0505SP.

INPUT CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|--------------------------|---------------------|------|------|------|--------|
| Voltage range | 3.3V input variants | 2.9 | 3.3 | 3.6 | V |
| Voltage range | 5V input variants | 4.5 | 5 | 5.6 | V |
| Voltage range | 12V input variants | 10.7 | 12 | 13.1 | V |
| Reflected ripple current | 3.3V input | | 30 | 60 | mA p-p |
| Reflected ripple current | All other | | 25 | 37 | mA p-p |

ABSOLUTE MAXIMUM RATINGS

| | |
|---|----------|
| Short-circuit protection | 1 second |
| Lead temperature 1.5mm from case for 12 seconds | 300 °C |
| Internal power dissipation | 540mW |
| Input voltage Vin, PKA03 | 5.5V |
| Input voltage Vin, PKA05 | 7V |
| Input voltage Vin, PKA12 | 15V |

ISOLATION CHARACTERISTICS

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

All specifications typical at TA=25°C, nominal input voltage and rated output current unless otherwise specified.

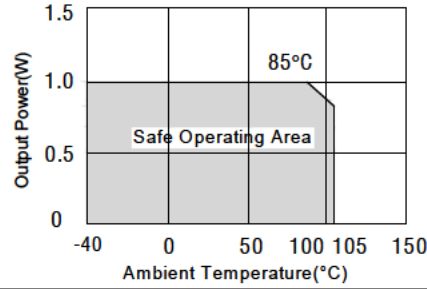
GENERAL CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|---------------------|-------------------|------|------|------|-------|
| Switching frequency | 3V input and 0503 | | 95 | | kHz |
| Switching frequency | All other types | | 120 | | kHz |

TEMPERATURE CHARACTERISTICS

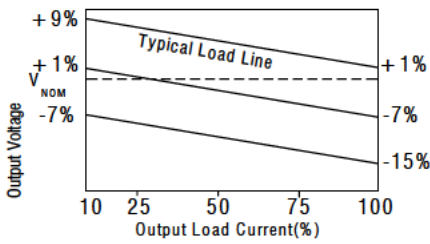
| Parameter | Conditions | Min. | Typ. | Max. | Units |
|-------------------------------------|-----------------------------------|------|------|------|-------|
| Specification | Derating if the temperature ≥85°C | -40 | | 105 | °C |
| Storage | | -50 | | 130 | °C |
| Case temperature rise above ambient | 5V output types | | 30 | | °C |
| Case temperature rise above ambient | All other types | | 21 | | °C |
| Cooling | Free air convection | | | | |

TEMPERATURE DERATING GRAPHS

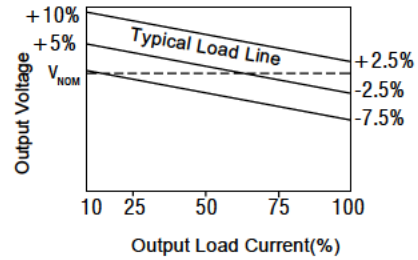


TOLERANCE ENVELOPES

3.3V output types

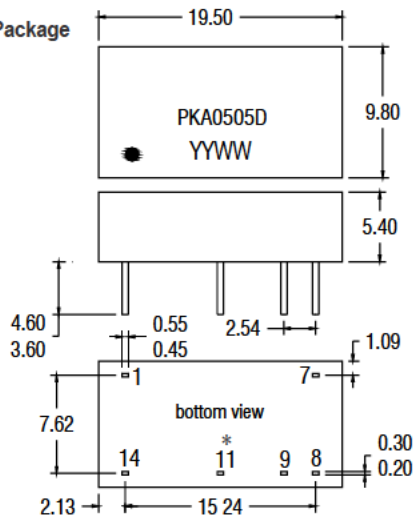


All other types

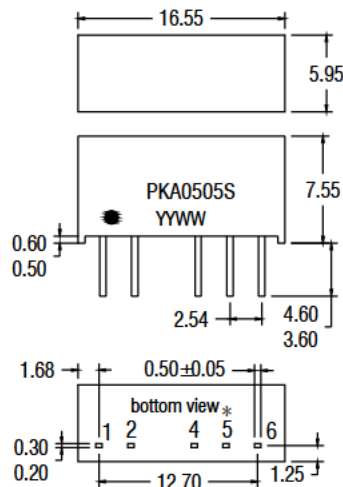


MECHANICAL DIMENSIONS

DIP Package



SIP Package



All dimensions in $\pm 0.25\text{mm}$. All pins on a 2.54 mm pitch and within $\pm 0.25\text{mm}$ of true position weight: 1.4g(SIP) 1.9g(DIP) * Pin not fitted on single output variants.

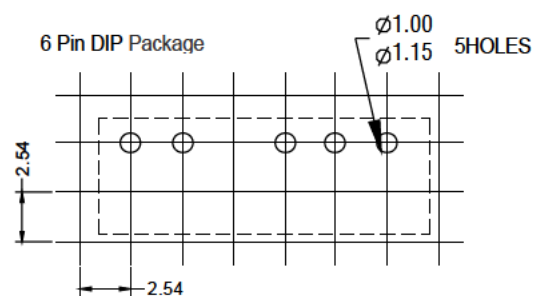
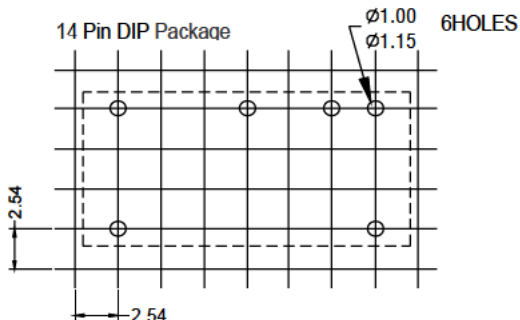
PIN CONNECTIONS

| 14 PIN DIP | |
|------------|----------|
| Pin | Function |
| 1 | -Vin |
| 7 | NC |
| 8 | OV |
| 9 | +Vout |
| *11 | -Vout |
| 14 | +Vin |

| 6 PIN SIP | |
|-----------|----------|
| Pin | Function |
| 1 | +Vin |
| 2 | -Vin |
| 4 | -Vout |
| *5 | OV |
| 6 | +Vout |

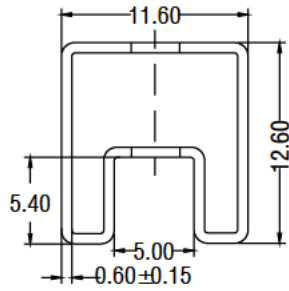
* Pin not fitted on single output variants.

RECOMMENDED FOOTPRINT DETAILS

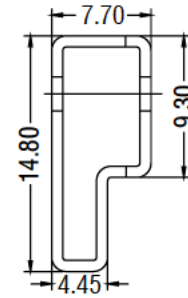


TUBE OUTLINE DIMENSIONS

14 Pin DIP Tube



6 Pin SIP Tube



Unless otherwise stated all dimensions in mm ± 0.5 mm

Tube length(14 Pin DIP): 520mm ± 2 mm

Tube length(6 Pin SIP): 525mm ± 2 mm

DIP Tube Quantity:30PCS

SIP Tube Quantity:30PCS

SOLDERING INFORMATION

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