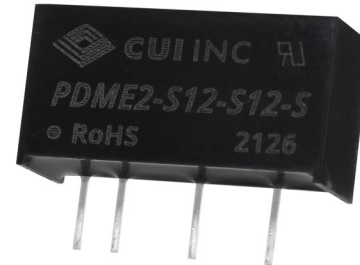


SERIES: PDME2-S | **DESCRIPTION:** DC-DC CONVERTER

FEATURES

- 2 W isolated output
- single/dual unregulated output
- 1500 Vdc isolation
- continuous short circuit protection
- extended temperature range (-40~105°C)
- no-load input current as low as 8mA
- efficiency up to 86%
- UL 62368-1 certified
- designed to meet EN/BS EN 62368



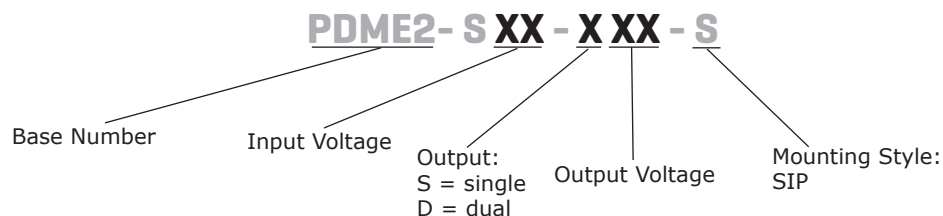
| MODEL | input voltage | | output voltage (Vdc) | output current | | output power max (W) | ripple & noise ¹ max (mVp-p) | efficiency ² typ (%) |
|------------------------------|---------------|----------------|-------------------------|----------------|-------------|----------------------------|---|---------------------------------------|
| | typ (Vdc) | range (Vdc) | | min (mA) | max (mA) | | | |
| PDME2-S5-D3-S ⁴ | 5 | 4.5~5.5 | ±3.3 | ±30 | ±303 | 2 | 200 | 75 |
| PDME2-S5-D5-S ⁴ | 5 | 4.5~5.5 | ±5 | ±20 | ±200 | 2 | 200 | 84 |
| PDME2-S5-D9-S ⁴ | 5 | 4.5~5.5 | ±9 | ±11 | ±111 | 2 | 200 | 85 |
| PDME2-S5-D12-S ⁴ | 5 | 4.5~5.5 | ±12 | ±8 | ±83 | 2 | 200 | 85 |
| PDME2-S5-D15-S ⁴ | 5 | 4.5~5.5 | ±15 | ±7 | ±67 | 2 | 200 | 86 |
| PDME2-S5-D24-S ⁴ | 5 | 4.5~5.5 | ±24 | ±4 | ±42 | 2 | 200 | 86 |
| PDME2-S5-S3-S ⁴ | 5 | 4.5~5.5 | 3.3 | 40 | 400 | 1.32 | 200 | 78 |
| PDME2-S5-S5-S ⁴ | 5 | 4.5~5.5 | 5 | 40 | 400 | 2 | 200 | 84 |
| PDME2-S5-S7-S ⁴ | 5 | 4.5~5.5 | 7.2 | 28 | 278 | 2 | 200 | 84 |
| PDME2-S5-S9-S ⁴ | 5 | 4.5~5.5 | 9 | 22 | 222 | 2 | 200 | 85 |
| PDME2-S5-S12-S ⁴ | 5 | 4.5~5.5 | 12 | 17 | 167 | 2 | 200 | 85 |
| PDME2-S5-S15-S ⁴ | 5 | 4.5~5.5 | 15 | 13 | 133 | 2 | 200 | 86 |
| PDME2-S5-S24-S ⁴ | 5 | 4.5~5.5 | 24 | 8 | 83 | 2 | 200 | 86 |
| PDME2-S12-D3-S | 12 | 10.8~13.2 | ±3.3 | ±30 | ±303 | 2 | 180 | 75 |
| PDME2-S12-D5-S | 12 | 10.8~13.2 | ±5 | ±20 | ±200 | 2 | 180 | 80 |
| PDME2-S12-D9-S ⁴ | 12 | 10.8~13.2 | ±9 | ±11 | ±111 | 2 | 180 | 82 |
| PDME2-S12-D12-S | 12 | 10.8~13.2 | ±12 | ±8 | ±83 | 2 | 180 | 83 |
| PDME2-S12-D15-S | 12 | 10.8~13.2 | ±15 | ±7 | ±67 | 2 | 180 | 83 |
| PDME2-S12-D24-S ⁴ | 12 | 10.8~13.2 | ±24 | ±4 | ±42 | 2 | 180 | 83 |
| PDME2-S12-S5-S | 12 | 10.8~13.2 | 5 | 40 | 400 | 2 | 180 | 82 |
| PDME2-S12-S9-S ⁴ | 12 | 10.8~13.2 | 9 | 22 | 222 | 2 | 180 | 82 |
| PDME2-S12-S12-S | 12 | 10.8~13.2 | 12 | 17 | 167 | 2 | 180 | 84 |
| PDME2-S12-S15-S | 12 | 10.8~13.2 | 15 | 13 | 133 | 2 | 180 | 85 |
| PDME2-S12-S24-S | 12 | 10.8~13.2 | 24 | 8 | 83 | 2 | 180 | 86 |
| PDME2-S15-D5-S ⁴ | 15 | 13.5~16.5 | ±5 | ±20 | ±200 | 2 | 180 | 80 |
| PDME2-S15-D15-S ⁴ | 15 | 13.5~16.5 | ±15 | ±7 | ±67 | 2 | 180 | 82 |
| PDME2-S15-S5-S ⁴ | 15 | 13.5~16.5 | 5 | 40 | 400 | 2 | 180 | 80 |

MODEL (CONTINUED)

| | input voltage | | output voltage (Vdc) | output current | | output power max (W) | ripple & noise ¹ max (mVp-p) | efficiency ² typ (%) |
|------------------------------|---------------|----------------|-------------------------|----------------|-------------|----------------------------|---|---------------------------------------|
| | typ (Vdc) | range (Vdc) | | min (mA) | max (mA) | | | |
| PDME2-S15-S15-S ⁴ | 15 | 13.5~16.5 | 15 | 13 | 133 | 2 | 180 | 81 |
| PDME2-S15-S24-S ⁴ | 15 | 13.5~16.5 | 24 | 8 | 83 | 2 | 180 | 81 |
| PDME2-S24-D3-S ⁴ | 24 | 21.6~26.4 | ±3.3 | ±30 | ±300 | 2 | 180 | 76 |
| PDME2-S24-D5-S | 24 | 21.6~26.4 | ±5 | ±20 | ±200 | 2 | 180 | 80 |
| PDME2-S24-D9-S ⁴ | 24 | 21.6~26.4 | ±9 | ±11 | ±111 | 2 | 180 | 81 |
| PDME2-S24-D12-S | 24 | 21.6~26.4 | ±12 | ±8 | ±83 | 2 | 180 | 83 |
| PDME2-S24-D15-S | 24 | 21.6~26.4 | ±15 | ±7 | ±67 | 2 | 180 | 83 |
| PDME2-S24-D24-S ⁴ | 24 | 21.6~26.4 | ±24 | ±4 | ±42 | 2 | 180 | 83 |
| PDME2-S24-S3-S ⁴ | 24 | 21.6~26.4 | 3.3 | 40 | 400 | 1.32 | 180 | 76 |
| PDME2-S24-S5-S | 24 | 21.6~26.4 | 5 | 40 | 400 | 2 | 180 | 80 |
| PDME2-S24-S9-S ⁴ | 24 | 21.6~26.4 | 9 | 22 | 222 | 2 | 180 | 81 |
| PDME2-S24-S12-S | 24 | 21.6~26.4 | 12 | 17 | 167 | 2 | 180 | 84 |
| PDME2-S24-S15-S | 24 | 21.6~26.4 | 15 | 13 | 133 | 2 | 180 | 86 |
| PDME2-S24-S24-S | 24 | 21.6~26.4 | 24 | 8 | 83 | 2 | 180 | 86 |

- Notes:
1. Measured at nominal input, 20 MHz bandwidth oscilloscope, with 10 µF tantalum and 1 µF ceramic capacitors on the output.
 2. Measured at nominal input voltage, full load.
 3. All specifications are measured at T_a=25°C, humidity < 75%, nominal input voltage, and rated output load unless otherwise specified.
 4. Model is not UL certified.

PART NUMBER KEY



INPUT

| parameter | conditions/description | min | typ | max | units |
|-------------------------|-------------------------|--------------------|-----|------|-------|
| operating input voltage | 5 Vdc input models | 4.5 | 5 | 5.5 | Vdc |
| | 12 Vdc input models | 10.8 | 12 | 13.2 | Vdc |
| | 15 Vdc input models | 13.5 | 15 | 16.5 | Vdc |
| | 24 Vdc input models | 21.6 | 24 | 26.4 | Vdc |
| surge voltage | for maximum of 1 second | | | | |
| | 5 Vdc input models | -0.7 | | 9 | Vdc |
| | 12 Vdc input models | -0.7 | | 18 | Vdc |
| | 15 Vdc input models | -0.7 | | 21 | Vdc |
| current | 5 Vdc input models | | | | |
| | | 3.3 Vdc output | | 564 | mA |
| | | 5 & 7.2 Vdc output | | 500 | mA |
| | | 9 & 12 Vdc output | | 494 | mA |
| | 15 & 24 Vdc output | | 488 | mA | |
| | 12 Vdc input models | | | 208 | mA |
| | 15 Vdc input models | | | 167 | mA |
| | 24 Vdc input models | | | 104 | mA |
| filter | filter capacitor | | | | |

OUTPUT

| parameter | conditions/description | min | typ | max | units |
|--------------------------------------|----------------------------------|-----|-------|-------|-------|
| maximum capacitive load ⁵ | 3.3, 5 Vdc output models | | | 2,400 | μF |
| | ±3.3, ±5 Vdc output models | | | 1,200 | μF |
| | 9 Vdc output models | | | 1,000 | μF |
| | 12, 15 Vdc output models | | | 560 | μF |
| | 24, ±12, ±15 Vdc output models | | | 220 | μF |
| | ±9 Vdc output models | | | 470 | μF |
| | ±24 Vdc output models | | | 100 | μF |
| voltage accuracy | see output regulation curves | | | | |
| line regulation | for Vin change of 1% | | | | |
| | 3.3 Vdc output models | | | ±1.5 | % |
| | all other output models | | | ±1.2 | % |
| load regulation | from 10% to full load | | | | |
| | 3.3 Vdc output models | | 10 | | % |
| | 5 Vdc output models | | 8 | | % |
| | 9, 12 & 15 Vdc output models | | 7 | | % |
| | 24 Vdc output models | | 5 | | % |
| switching frequency | from 10% to full load | | | | |
| | 3.3 Vdc output models | | 15 | | % |
| | 5 Vdc output models | | 7 | | % |
| | 9, 12 Vdc output models | | 5 | | % |
| | 15 Vdc output models | | 4 | | % |
| temperature coefficient | 100% load, nominal input voltage | | | | |
| | 5 Vdc input models | | 220 | | kHz |
| | all other input models | | 260 | | kHz |
| temperature coefficient | at full load | | ±0.02 | | %/°C |

Note: 5. Tested at input voltage range and full load.

PROTECTIONS

| parameter | conditions/description | min | typ | max | units |
|--------------------------|---------------------------|-----|-----|-----|-------|
| short circuit protection | continuous, auto recovery | | | | |

SAFETY AND COMPLIANCE

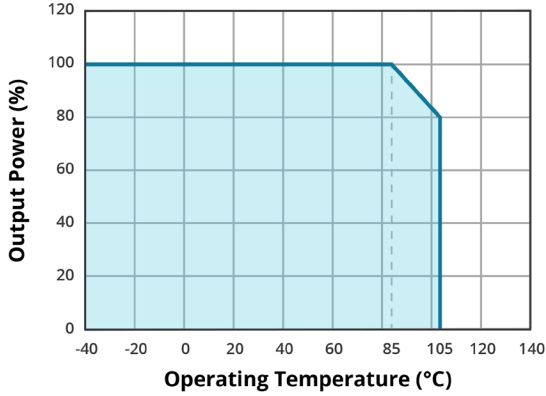
| parameter | conditions/description | min | typ | max | units |
|-----------------------|--|-----------|-----|-----|-------|
| isolation voltage | input to output for 1 minute at 1 mA | 1,500 | | | Vdc |
| isolation resistance | input to output at 500 Vdc | 1,000 | | | MΩ |
| isolation capacitance | input to output, 100 kHz / 0.1 V | | 20 | | pF |
| safety approvals | certified to 62368: UL designed to meet 62368: EN/BS EN | | | | |
| conducted emissions | CISPR 32/EN 55032 Class B | | | | |
| radiated emissions | CISPR 32/EN 55032 Class B | | | | |
| ESD | IEC/EN 61000-4-2 Air ±8kV, Contact ±6kV | | | | |
| MTBF | as per MIL-HDBK-217F, 25°C | 3,500,000 | | | hours |
| RoHS | yes | | | | |

ENVIRONMENTAL

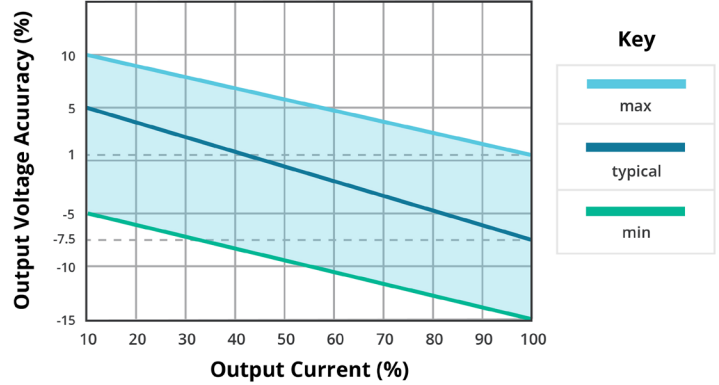
| parameter | conditions/description | min | typ | max | units |
|-----------------------|------------------------|-----|-----|-----|-------|
| operating temperature | see derating curves | -40 | | 105 | °C |
| storage temperature | | -55 | | 125 | °C |
| storage humidity | non-condensing | 5 | | 95 | % |
| case temperature rise | at 25°C | | 15 | | °C |

DERATING CURVES

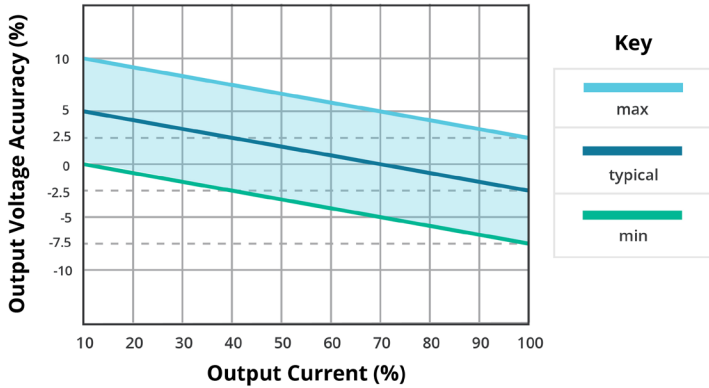
TEMPERATURE DERATING CURVE



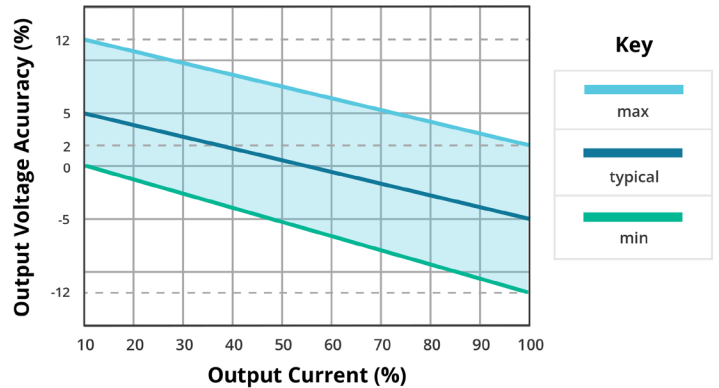
**OUTPUT REGULATION CURVE
5 Vdc input / 3.3 Vdc output
(nominal input)**



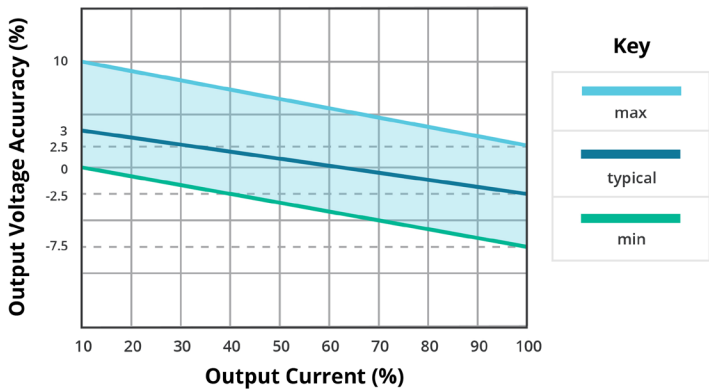
**OUTPUT REGULATION CURVE
5 Vdc input / all other output models
(nominal input)**



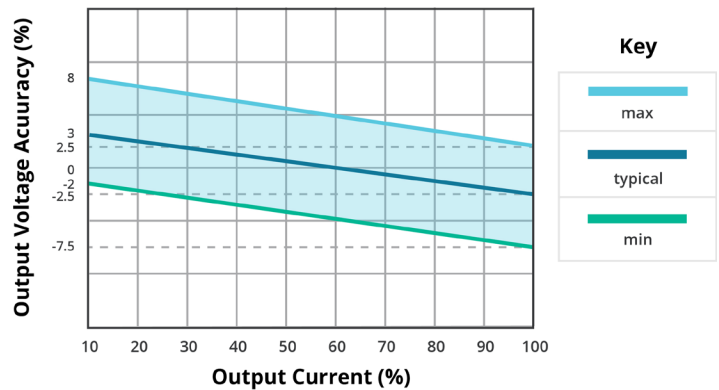
**OUTPUT REGULATION CURVE
all other input models / 3.3 Vdc output models
(nominal input)**



**OUTPUT REGULATION CURVE
all other input models / 5 Vdc output models
(nominal input)**



**OUTPUT REGULATION CURVE
all other input models / all other output models
(nominal input)**



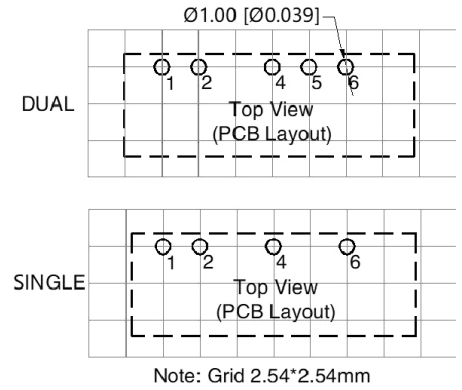
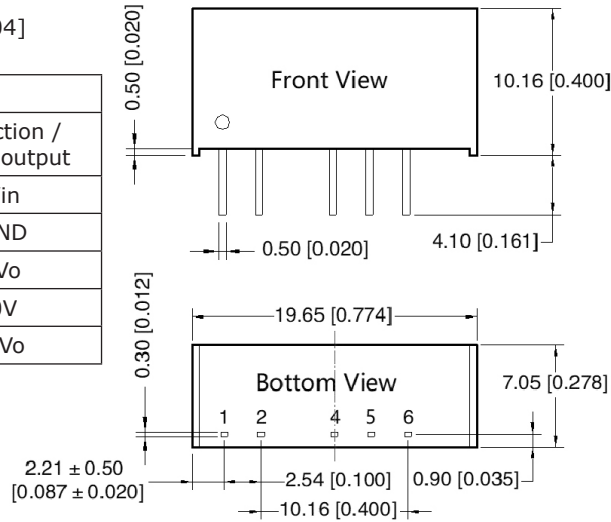
MECHANICAL

| parameter | conditions/description | min | typ | max | units |
|---------------|--|-----|-----|-----|-------|
| dimensions | 19.65 x 7.05 x 10.16 [0.773 x 0.277 x 0.400 inch] | | | | mm |
| case material | black flame-retardant and heat-resistant plastic (UL94V-0) | | | | |
| weight | | | 2.4 | | g |

MECHANICAL DRAWING

units: mm [inch]
 tolerance: $\pm 0.25[\pm 0.010]$
 pin section tolerance: $\pm 0.10[\pm 0.004]$

| PIN CONNECTIONS | | |
|-----------------|--------------------------|------------------------|
| PIN | Function / Single output | Function / Dual output |
| 1 | Vin | Vin |
| 2 | GND | GND |
| 4 | 0V | -Vo |
| 5 | No pin | 0V |
| 6 | +Vo | +Vo |



APPLICATION CIRCUIT

If you want to further reduce the input and output ripple, a filter capacitor may be connected to the input and output terminals (Figures 1 & 2) provided that the capacitance is less than the maximum capacitive load of the model, otherwise start-up problems may be caused if the capacitance is too large.

Figure 1
Single Output Models

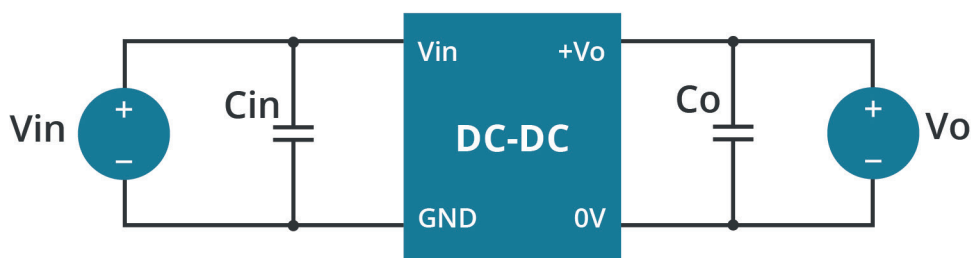


Table 1

| Vin (Vdc) | Cin (μF / V) | Vo (Vdc) | Co (μF / V) |
|-----------|--------------|----------|-------------|
| 5 | 10 / 16 | 3.3 | 10 / 16 |
| -- | -- | 5 | 10 / 16 |
| -- | -- | 7.2 | 10 / 16 |
| -- | -- | 9 | 2.2 / 25 |
| -- | -- | 12 | 2.2 / 25 |
| -- | -- | 15 | 1 / 25 |
| -- | -- | 24 | 1 / 50 |
| 12 | 2.2 / 25 | 3.3 | 10 / 16 |
| 15 | 2.2 / 25 | 5 | 10 / 16 |
| 24 | 1 / 50 | 9 | 2.2 / 25 |
| -- | -- | 12 | 2.2 / 25 |
| -- | -- | 15 | 1 / 25 |
| -- | -- | 24 | 1 / 50 |

Figure 2
Dual Output Models

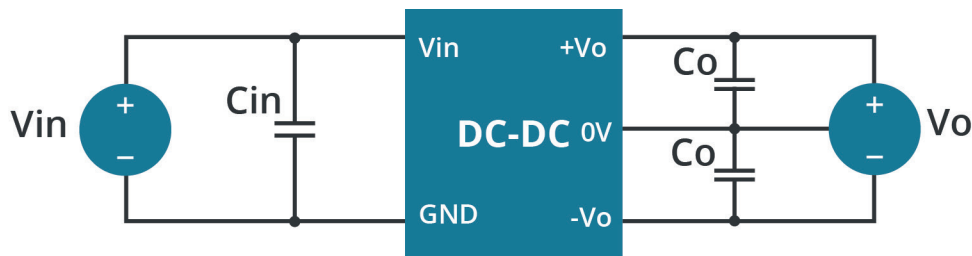


Table 2

| Vin (Vdc) | Cin (μF / V) | Vo (Vdc) | Co ⁶ (μF / V) |
|-----------|--------------|----------|--------------------------|
| 5 | 10 / 16 | ±3.3 | 4.7 / 16 |
| -- | -- | ±5 | 4.7 / 16 |
| -- | -- | ±9 | 1 / 25 |
| -- | -- | ±12 | 1 / 25 |
| -- | -- | ±15 | 0.47 / 25 |
| -- | -- | ±24 | 0.47 / 50 |
| 12 | 2.2 / 25 | ±3.3 | 4.7 / 16 |
| 15 | 2.2 / 25 | ±5 | 4.7 / 16 |
| 24 | 1 / 50 | ±9 | 2.2 / 25 |
| -- | -- | ±12 | 1 / 25 |
| -- | -- | ±15 | 1 / 25 |
| -- | -- | ±24 | 0.47 / 50 |

Note: 6. The capacitor value of the positive and the negative output is identical.

EMC RECOMMENDED CIRCUIT

Figure 3
Single Output Models

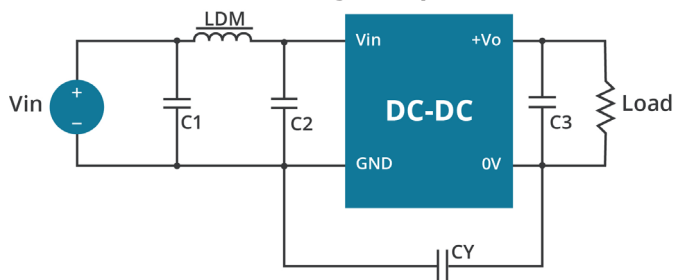


Figure 4
Dual Output Models

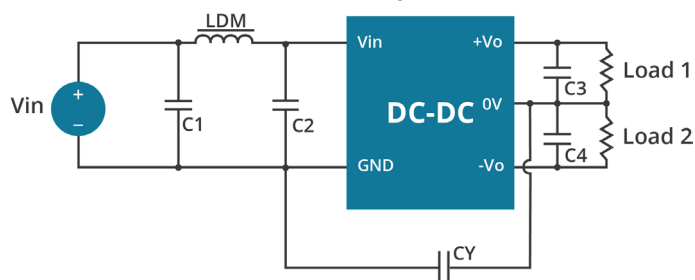


Table 3

| Recommended External Circuit Components | | | |
|---|--------------------------------|---------------|---------------|
| Vin (Vdc) | 5 | 12, 15, 24 | |
| Vo (Vdc) | all output models | 12, 15, 24 | ±12, ±15, ±24 |
| C1 / C2 | 4.7 μF / 16 V | 4.7 μF / 50 V | 4.7 μF / 50 V |
| CY | 270 pF / 2 kV | 270 pF / 2 kV | 270 pF / 2 kV |
| C3 / C4 | refer to the Co in Tables 1, 2 | | |
| LDM | 6.8 μH | 6.8 μH | 6.8 μH |

REVISION HISTORY

| rev. | description | date |
|------|---|------------|
| 1.0 | initial release | 07/26/2021 |
| 1.01 | series expanded with 5 Vdc input models | 05/24/2022 |
| 1.02 | CE removed | 11/04/2022 |

The revision history provided is for informational purposes only and is believed to be accurate.



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