

## LPD10 SERIES

Single, dual and triple output

- **4:1 wide input voltage range**
- **16 models available including 3.3V outputs**
- **Input reflected ripple according to CEPT**
- **Continuous short circuit protection**
- **EN55022 conducted emissions level B**
- **Designed to meet EN60950 and IEC950**



The LPD10 series of DC/DC converters offer 10 Watts output power in a 2 x 2 inch package. 3.3V single outputs are available along with standard single, dual and triple outputs. All models feature short circuit protection as standard. The dual and triple output models of the LPD series provide undervoltage lockout. The LPD10 series complies with the rigorous EN55022 level B conducted emissions. The optimized thermal design and the copper case allow operation in ambient temperatures up to +70°C without derating or an additional heatsink.

[ 2 YEAR WARRANTY ]

### SPECIFICATION All specifications are typical at nominal input, full load at 25°C unless otherwise stated

| OUTPUT SPECIFICATIONS                    |  |                                  |
|--|--|----------------------------------|
| Line regulation                          | LL to HL, singles and duals<br>LL to HL, triple output                                     | ±0.1%<br>±1.0%                   |
| Load regulation                          | Singles and duals:<br>10% to 100% FL<br>Triples: 10% to 100% FL                            | ±0.1%<br>±3.0%                   |
| Cross regulation<br>(See Note 1)         | Duals: asymmetrical load<br>10% to 100% FL<br>Triples: asymmetrical load<br>10% to 100% FL | 4.0% max.<br>5.0% max.           |
| Voltage accuracy                         | Singles<br>Duals   | ±2.0%<br>±3.0%                   |
| Minimum load                             | 3.3V, 5V<br>Single 12V, 15V<br>Duals & triples, each output                                | 50mA max.<br>20mA max.<br>10% FL |
| Overshoot                                | At start-up  | 3.0% max.                        |
| Ripple and noise                         | 20MHz bandwidth  | 1.0% pk-pk, max.<br>20mV rms     |
| Temperature coefficient                  |  | ±0.02%/°C                        |
| Short circuit protection<br>(See Note 2) | Hiccup mode  | Continuous<br>automatic recovery |
| INPUT SPECIFICATIONS                     |  |                                  |
| Input voltage range                      | 24VDC nominal, FL<br>48VDC nominal, FL   | 10 to 36VDC<br>20 to 72VDC       |
| Input current                            |  | See table                        |
| Undervoltage lockout                     | Dual and triple outputs<br>24V nominal<br>48V nominal                                      | 9.5VDC max.<br>18.5VDC max.      |
| Start-up time                            |  | 200ms                            |

| EMC CHARACTERISTICS               |  |  |
|-----------------------------------|--|--|
| Conducted noise                   | EN55022, FCC part 15   | Level B  |
| Radiated noise                    | EN55022, FCC part 15   | Level B  |
| GENERAL SPECIFICATIONS            |  |  |
| Efficiency                        |  | See table  |
| Isolation voltage                 | Input/output   | 500VDC   |
| Isolation resistance              | Input/output   | 10 <sup>9</sup> Ω  |
| Isolation capacitance             | Input/output   | 1nF  |
| Switching frequency               | Fixed  | 180 to 220kHz  |
| Approvals and standards (pending) | Safety   | VDE0805, EN60950, IEC950<br>UL1950, CSA C22.2 No. 950  |
| Case material                     |  | Black coated, metal case   |
| Material flammability             |  | UL94V-0  |
| Weight                            |  | 65g (2.29oz)   |
| MTBF                              | MIL-HDBK-217F  | 300,000 hours  |
| ENVIRONMENTAL SPECIFICATIONS      |  |  |
| Thermal performance               | Operating ambient<br>(See derating curve)<br>Non-operating amb.<br>Case<br>Derating<br>Cooling | -10°C to +70°C<br>-25°C to +95°C<br>+95°C max.<br>See derating curve<br>Free air convection cooled |
| Relative humidity                 | Non-condensing   | 30% to 95%   |
| Altitude                          | Operating<br>Non operating   | 10,000 feet max.<br>40,000 feet max.   |
| Vibration                         | 5Hz to 500Hz   | 2.5G rms (approx.)   |

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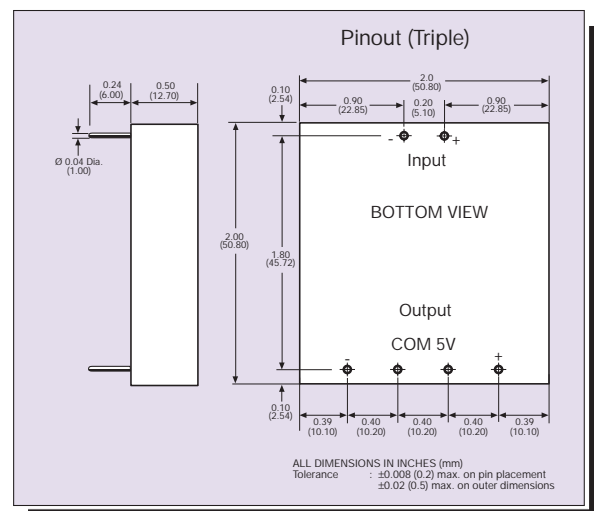
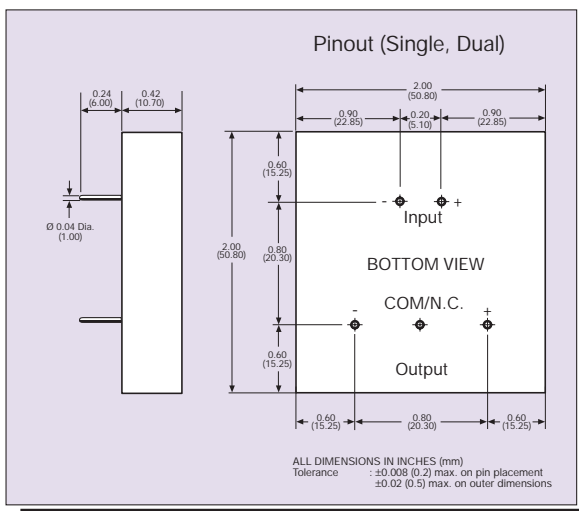
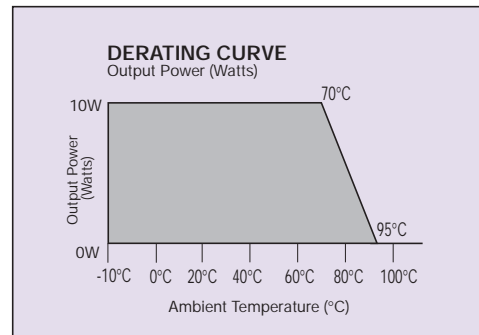
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# 10 Watt Wide input DC/DC converters

| INPUT VOLTAGE | OUTPUT VOLTAGE | OUTPUT CURRENT | INPUT CURRENT | TYPICAL EFFICIENCY | REGULATION (TYP.) |       | MODEL NUMBER   |
|---------------|----------------|----------------|---------------|--------------------|-------------------|-------|----------------|
|               |                |                |               |                    | LINE              | LOAD  |                |
| 10-36VDC      | 3.3V           | 2000mA         | 381mA         | 72%                | ±0.1%             | ±0.2% | LPD10-24S3V3-C |
| 10-36VDC      | 5.0V           | 2000mA         | 540mA         | 77%                | ±0.1%             | ±0.1% | LPD10-24S05-C  |
| 10-36VDC      | 12V            | 800mA          | 512mA         | 78%                | ±0.1%             | ±0.1% | LPD10-24S12-C  |
| 10-36VDC      | 15V            | 660mA          | 512mA         | 78%                | ±0.1%             | ±0.1% | LPD10-24S15-C  |
| 10-36VDC      | ±12V           | ±400mA         | 512mA         | 78%                | ±0.1%             | ±0.1% | LPD10-24D12-C  |
| 10-36VDC      | ±15V           | ±300mA         | 512mA         | 78%                | ±0.1%             | ±0.1% | LPD10-24D15-C  |
| 10-36VDC      | 5V/±12V        | 1000mA/±200mA  | 510mA         | 80%                | ±1.0%             | ±3.0% | LPD10-24T05-12 |
| 10-36VDC      | 5V/±15V        | 1000mA/±160mA  | 510mA         | 80%                | ±1.0%             | ±3.0% | LPD10-24T05-15 |
| 20-72VDC      | 3.3V           | 2000mA         | 190mA         | 72%                | ±0.1%             | ±0.1% | LPD10-48S3V3-C |
| 20-72VDC      | 5.0V           | 2000mA         | 267mA         | 78%                | ±0.1%             | ±0.1% | LPD10-48S05-C  |
| 20-72VDC      | 12V            | 800mA          | 253mA         | 79%                | ±0.1%             | ±0.1% | LPD10-48S12-C  |
| 20-72VDC      | 15V            | 660mA          | 253mA         | 79%                | ±0.1%             | ±0.1% | LPD10-48S15-C  |
| 20-72VDC      | ±12V           | ±400mA         | 253mA         | 79%                | ±0.1%             | ±0.1% | LPD10-48D12-C  |
| 20-72VDC      | ±15V           | ±300mA         | 253mA         | 79%                | ±0.1%             | ±0.1% | LPD10-48D15-C  |
| 20-72VDC      | 5V/±12V        | 1000mA/±200mA  | 255mA         | 80%                | ±1.0%             | ±3.0% | LPD10-48T05-12 |
| 20-72VDC      | 5V/±15V        | 1000mA/±160mA  | 255mA         | 80%                | ±1.0%             | ±3.0% | LPD10-48T05-15 |

## Notes

- Cross regulation:  
 Duals: output 1, full load, 4.0%; output 2, minimum load, 4.0%.  
 Triples: output 1, full load, 2.0%; output 2 vs. output 3, 2.0%;  
 Triples: outputs 2 and 3 vs. output 1, 5.0%.
- All 3V3 outputs, 1 minute max.



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