

Make-Ps® DC/DC CONVERTER

Single & Dual Output DC/DC Converter

Series LCD15 15Watt | DC-DC Converter



FEATURES:

- 15W DIL PACKAGE
- 2:1 WIDE INPUT RANGE
- 100% BURNED IN
- HIGH EFFICIENCY
- UL94V-0 PACKAGE MATERIAL
- CUSTOM SOLUTIONS AVAILABLE
- RoHS COMPLIANT
- Remote Control:On/Off

APPLICATIONS:

- Wireless Network
- Telecom/Datacom
- Industry Control System
- Measurement Equipment
- Semiconductor Equipment

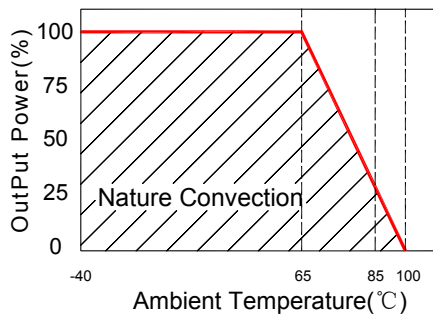


MODEL SELECTION CHART

| Part Number | Input Voltage Vdc | Input Current | | Output Voltage Vdc | Output Current Full Load (mA) | Efficiency %TYP |
|--------------|-------------------|------------------|--------------------|--------------------|-------------------------------|-----------------|
| | | No-Load (mA TYP) | Full Load (mA TYP) | | | |
| LCD15-12S3P3 | 9-18 | 120 | 1209 | 3.3 | 4000 | 84 |
| LCD15-12S05 | 9-18 | 90 | 1488 | 5 | 3000 | 84 |
| LCD15-12S12 | 9-18 | 40 | 1453 | 12 | 1250 | 86 |
| LCD15-12S15 | 9-18 | 40 | 1453 | 15 | 1000 | 86 |
| LCD15-12D12 | 9-18 | 40 | 1453 | ± 12 | ± 625 | 86 |
| LCD15-12D15 | 9-18 | 40 | 1453 | ± 15 | ± 500 | 86 |
| LCD15-24S3P3 | 18-36 | 50 | 654 | 3.3 | 4000 | 84 |
| LCD15-24S05 | 18-36 | 65 | 774 | 5 | 3000 | 84 |
| LCD15-24S12 | 18-36 | 20 | 710 | 12 | 1250 | 88 |
| LCD15-24S15 | 18-36 | 20 | 710 | 15 | 1000 | 88 |
| LCD15-24D12 | 18-36 | 20 | 718 | ± 12 | ± 625 | 87 |
| LCD15-24D15 | 18-36 | 20 | 726 | ± 15 | ± 500 | 86 |
| LCD15-48S3P3 | 36-75 | 40 | 327 | 3.3 | 4000 | 84 |
| LCD15-48S05 | 36-75 | 40 | 372 | 5 | 3000 | 84 |
| LCD15-48S12 | 36-75 | 15 | 363 | 12 | 1250 | 86 |
| LCD15-48S15 | 36-75 | 15 | 355 | 15 | 1000 | 88 |
| LCD15-48D12 | 36-75 | 15 | 359 | ± 12 | ± 625 | 87 |
| LCD15-48D15 | 36-75 | 15 | 363 | ± 15 | ± 500 | 86 |

NOTE: All specifications in this datasheet are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified.

Temperature Derating Graph



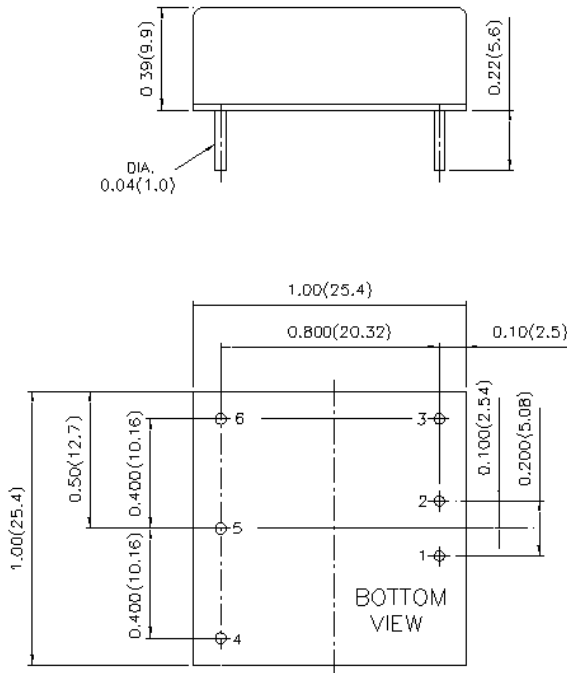
| Input Specifications | | | | | |
|---|------------------|-----|-------------|-----|-------|
| Parameters | Conditions | Min | Typ | Max | Units |
| Voltage Types | | | | 2:1 | |
| Start-up voltage / under voltage shut down | 12 Vin | | 9 / 8 | | VDC |
| | 24 Vin | | 17.0 / 16.5 | | VDC |
| | 48 Vin | | 33.0 / 30.5 | | VDC |
| Filter | Pi Network | | | | |
| Protection | Fuse Recommended | | | | |

| Output Specifications | | | | | |
|--|---|------|-----------|---|-------|
| Temperature Coefficient: $\pm 0.05\%/^{\circ}\text{C}$ | | | | | |
| Parameters | Conditions | Min | Typ | Max | Units |
| Voltage Tolerance | | | | ± 2 | % |
| Output voltage adj. range | only for single output models | | | ± 10 | % |
| Line Regulation (Vmin – Vmax) | single output | | | 0.5 | % |
| | dual output | | | 0.5 | % |
| Load Regulation (25 %F.L– 100%F.L) | single output | | | 0.5 | % |
| | dual output models balanced load | | | 1.0 | % |
| Minimum load | required | 0 | | 10 | % |
| Ripple and noise(20 MHz bandwidth) | with external capacitor see application note. | | | 100 | mVp-p |
| Output current limitation | | | | at 150 % typ.of lout max., constant current | |
| Short circuit protection | | | | automatic recovery | |
| Over voltage protection | 3.3VDC | 3.7 | | 5.4 | Vout |
| | 5VDC | 5.6 | | 7.0 | Vout |
| | 12VDC | 13.5 | | 19.6 | Vout |
| | 15VDC | 16.8 | | 20.5 | Vout |
| Start up time | nominal Vin and constant resistive load | | 450 | | ms |
| Transient response setting time | 25% load step change | | 250 | | us |
| Max. capacitive load | 3.3 & 5 VDC | | 1000 | | uF |
| | 12 VDC | | 330 | | uF |
| | 15 VDC | | 220 | | uF |
| | ± 12 VDC | | ± 150 | | uF |
| | ± 15 VDC | | ± 100 | | uF |

| General Specifications | | | | | |
|-------------------------------------|--|--------|--|------|--------------------|
| Parameters | Conditions | Min | Typ | Max | Units |
| Temperature ranges | Operating(with derating) | -40 | | +85 | $^{\circ}\text{C}$ |
| | Case temperature | | | +100 | $^{\circ}\text{C}$ |
| | Storage | -55 | | +125 | $^{\circ}\text{C}$ |
| Humidity | non condensing | 5 | | 95 | % |
| Reliability, calculated MTBF | MIL-HDBK-217F, @ +25 $^{\circ}$ C, ground benign | 560000 | | | Hours |
| Isolation voltage | For 60 seconds(Input/Output) | | | 1500 | VDC |
| Isolation capacity | Input/Output | | 1000 | | pF |
| Isolation resistance | Input/Output (500 VDC) | 1000 | | | M Ω |
| Remote On/Off | On | | 3.0 ... 12 VDC or open circuit | | |
| | Off | | 0 ... 1.2 VDC or short circuit pin 6 and pin 2 | | |
| | Off idle current: | | 2.5 | | mA |
| Switching frequency (fixed) | pulse width modulation PWM | | 400 | | KHz |
| Case material | | | nickel coated copper | | |
| Baseplate | | | non conductive FR4 | | |
| Potting material | | | epoxy (UL 94V-0 rated) | | |
| Weight | | | 15 g (0.53 oz) | | |
| Soldering temperature | | | max. 265 $^{\circ}\text{C}$ / 10sec | | |

OUTLINE DRAWING

Package Style and Pinning (mm)



1. All dimensions in Inches (mm)
Tolerance: X.XX±0.02 (X.X±0.5)
X.XXX±0.01 (X.XX±0.25)
2. Pin pitch tolerance ±0.01(0.25)
3. Pin dimension tolerance ±0.004 (0.1)

| PIN CONNECTION | | |
|----------------|---------|---------|
| PIN | SINGLE | DUAL |
| 1 | + INPUT | + INPUT |
| 2 | - INPUT | - INPUT |
| 3 | ON/OFF | ON/OFF |
| 4 | +VOUT | +VOUT |
| 5 | TRIM | COMMON |
| 6 | -VOUT | -VOUT |

All specifications are typical at nominal input, nominal load and 25° C unless otherwise specified.
External, low ESR, 10 microfarad (minimum) capacitor across output is recommended for operation.

Make Power world-class design, development and manufacturing team stands ready to work with you to deliver the exact power converter you need for your demanding, large volume, OEM applications. And ... we ll do it on time and within budget

Our experienced applications and design staffs; quick-turn prototype capability; highly automated, SMT assembly facilities; and in-line SPC quality-control techniques combine to give us the unique ability to design and deliver any quantity of power converters to the highest standards of quality and reliability.

We have compiled a large library of DC/DC designs that are currently used in a variety of telecom, medical, computer, railway, aerospace and industrial applications. We may already have the converter you need.

Contact us. Our goal is to provide you the highest-quality, most cost-effective power converters available.

CUSTOM CAPABILITIES