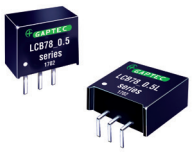
# LCB78_0.5 series

Wide Input Range, Non-Isolated & Regulated, Single Output



## Switching Regulator

- Low profile 11.6 x 6.0 x 10.2mm
- Wide operating input range (4.5V to 55V)
- Efficiency up to 95%
- Compatible with LM78 pinout
- Short circuit protection (SCP)
- No heatsink required
- Low ripple and noise
- Low quiescent current (no load) 200uA typ.

Introducing our new compact, high-efficiency LCB78_0.5 series. Engineered with a slim profile of just 11.6 x 6.0 x 10.2mm, this converter fits effortlessly into space-sensitive applications. Its wide operating input range of 4.5V to 55V and efficiency of up to 95% make it a versatile and powerful choice. Compatible with LM78 pinout, it integrates easily into existing systems while providing robust short-circuit protection (SCP) for added reliability. Designed with low ripple and noise, this converter operates smoothly without the need for a heatsink, and its low quiescent current of just 200µA at no load further optimizes efficiency. Maximize performance and minimize space with our new power converter—compact, efficient, and ready to enhance your power solutions!

| Common specifications | |
|---|---|
| Short circut protection: | Continuous, automatic recovery |
| Temperature rise at full load: | 25°C max, 15°C typ. |
| Cooling: | Free air convection |
| Operation temperature range: | -40°C~+85°C (with derating) |
| Storage temperature range: | -55°C ~+125°C |
| Lead temperature: | 300°C max. (1.5mm from case for 10 sec) |
| Operating case temperature: | 100°C max. |
| Temperature coefficient: | -40°C to +85°C ambient 0.015%/°C typ. |
| Storage humidity range: | < 95% |
| MTBF (using MIL-HDBK-217F): | @+25°C = 2805 x $10^3$ hours<br>@+70°C = 2054 x $10^3$ hours |
| Packing quantities: | 42pcs per tube |
| Case material: | Non conductive black plastic UL94-V0 |
| Potting material: | Epoxy UL94-V0 |
| Weight: | 1.3g |

**Note:**
1. All specifications measured at TA = 25°C, humidity <75%, nominal input voltage and rated output load unless otherwise specified.

2. Only typical models listed. If you need other model, please confirm the power, input voltage and output voltage, and then phone us.

| Output specifications | | | | | |
|---|---|---|---|---|---|
| Item | Test conditions | Min | Typ | Max | Units |
| Output voltage accuracy | Vin = min. to max. at full load | | | ±3 | % |
| Line voltage regulation | Vin = min. to max. at full load | | | 0.4 | % |
| Load regulation | 0% to 100% load | | | 0.6 | % |
| Ripple + Noise | Vo = 5.0VDC at 20MHz bandwidth | | | 30 | mVp-p |
| Dynamic load stability | 100%-50% load | | | ±100 | mV |
| Switching frequency | | | 400 | | KHz |
| No load input current | | | | 250 | uA |
| Thermal shutdown | Internal IC junction | | 150 | | °C |
| Max capacitance load | | | | 220 | µF |

**Example:**
**LCB78_05-0.5**
LCB78 = Series; 05 = 5Vout; 0.5 = 0.5A

## Product Selection Guide

| Part Number | Input Voltage Range [VDC] | Output Voltage [VDC] | Output Current [A] | Efficiency [Vin. min] | Efficiency [Vin. max] |
|---|---|---|---|---|---|
| LCB78_03-0.5 | 4.5-55 | 3.3 | 0.5 | 92 | 75 |
| LCB78_05-0.5 | 6.5-55 | 5.0 | 0.5 | 95 | 82 |

Add suffix "L" at the end of the part number for 90° bent pins, for example: LCB78_03-0.5L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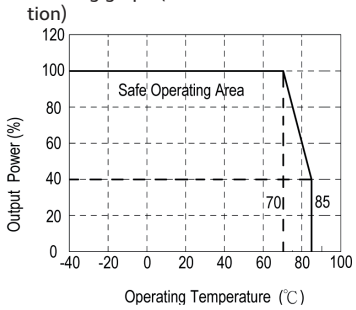
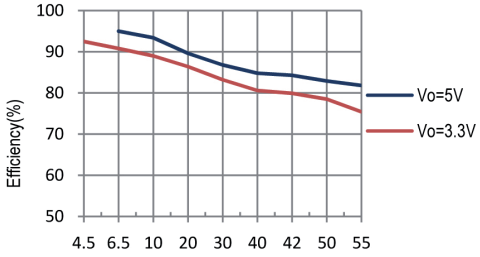
## Typical characteristics

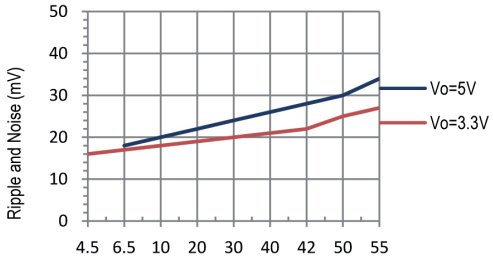
Derating graph (natural convection)



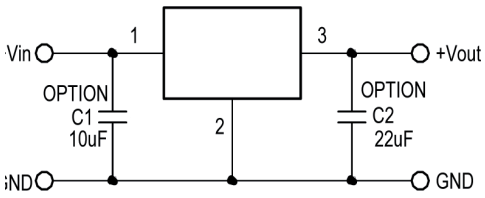

Efficiency Vs Vin (Full Load)



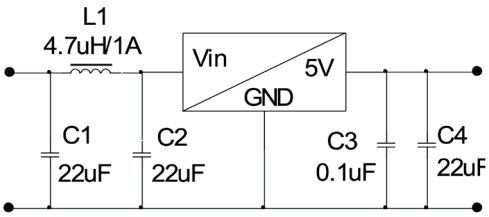

Ripple Vs Vin (Full Load)



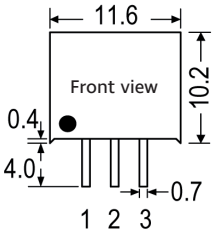

## Standard application circuit

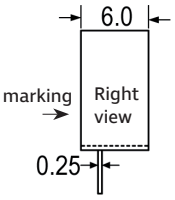


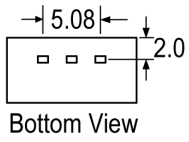

## EMC filtering circuit




## Mechanical dimensions



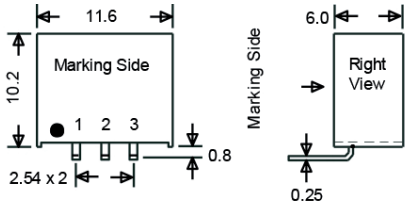



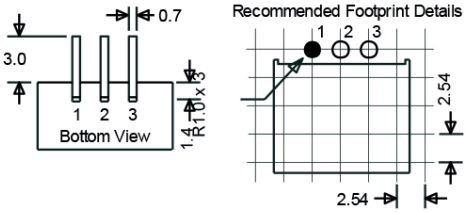




**Pin Connection**

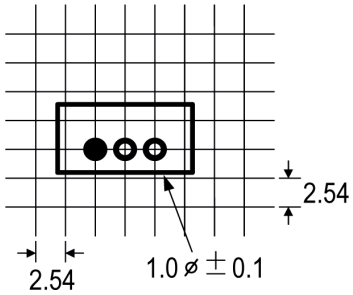
| Pin# | Out |
|---|---|
| 1 | +Vin |
| 2 | GND |
| 3 | +Vout |

Bent pins:



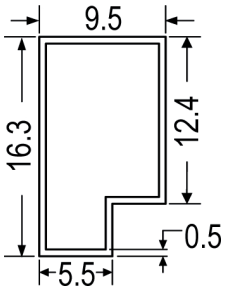

## Footprint details




Top view

Note:
Tolerance
XX.X ± 0.25 mm
XX.XX ± 0.15 mm

## Tube outline dimensions




Note:
L = 520 ±2 mm
Devices per tube quantity: 42 PCS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