



## LMO78\_3.0 Series

Wide Input Non-Isolated & Regulated, Single Positive/Negative Output

## Switching Regulator

- ⊕ High efficiency up to 95%
- ⊕ Operating temperature range: -40°C ~ +85°C
- ⊕ Wide input ranges: 4.5~14VDC and 10~30VDC
- ⊕ Short circuit protection (SCP)
- ⊕ Open frame packages
- ⊕ Non-isolated, no need for heatsink
- ⊕ Remote On/Off
- ⊕ CTRL-Pin

The LMO78\_3.0 series is a high efficiency switching regulator up to 95%. The product is featured with trim-pin, control-pin and short circuit protection and no heat sink is required. They are widely used in industrial control, instrumentation, and electric power applications.



| Common specifications        |  |
|------------------------------|--|
| Short circuit protection:    | Hiccup, automatic recovery                                     |
| No-load input current:       | 30mA TYP   |
| Input Filter:                | Capacitor Filter, 10μF TYP                                     |
| Cooling:                     | Free air convection  |
| Operation temperature range: | -40°C~+85°C<br>With derating                                   |
| Storage temperature range:   | -55°C ~+125°C  |
| Storage humidity range:      | < 95%RH  |
| Case material:               | Open frame   |
| MTBF (+25°C MIL-HDBK-217F):  | 4.4x106 hours  |
| Weight:                      | 2g   |
| Dimensions:                  | LMO78_1206: 15.5x9.4x6.0mm<br>LMO78_2406/2415: 16.5x10.4x6.0mm |

| Output specifications                 |                              |     |      |     |       |  |
|---------------------------------------|------------------------------|-----|------|-----|-------|--|
| Item                                  | Test conditions              | Min | Typ  | Max | Units |  |
| Voltage tolerance                     |                              |     | ±2   | ±3  | %     |  |
| Line regulation                       | Vin= min to max at full load |     | ±0.2 |     | %     |  |
| Load regulation                       | 0% To 100% F.L (Vo≥ 2.5V)    |     | ±0.8 |     | %     |  |
| Current limit                         |                              |     | 220  |     | %     |  |
| Ripple + Noise                        | 100% F.L BW=20MHz            | 60  | 75   | 150 | mVp-p |  |
| Switching frequency                   |                              | 270 | 300  | 330 | KHz   |  |
| Dynamic load response (recovery time) | 50% load step change         |     | 120  |     | μs    |  |
| Temperature coefficient               | -40 °C to +85 °C ambient     | -1  |      | +1  | %/°C  |  |

**Example:**  
LMO78\_1205-3.0  
LMO = Series; 12 = 12Vin; 05 = nom. 5Vout; pp =3.0A

| Part Number    | Input Voltage [VDC]<br>Nominal (Range) | Output Voltage [VDC] | Output Current [mA] | Efficiency [%/output voltage VDC] | Capacitive load [μF, max] |
|----------------|--|----------------------|---------------------|-----------------------------------|---------------------------|
| LMO78_1205-3.0 | 12 (4.5-14)                            | 0.59-6               | 3000                | 93/3.3                            | 500                       |
| LMO78_2405-3.0 | 24 (10-30)                             | 3-6                  | 3000                | 91/5                              | 500                       |
| LMO78_2412-3.0 | 24 (10-30)                             | 5-15                 | 3000                | 95/12                             | 500                       |

### Note:

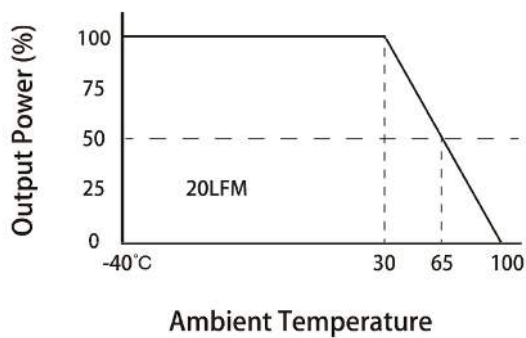
- The max. capacitive load should be tested within the input voltage range and under full load conditions;
- Without any special statement, all indexes are only specific to positive output application;
- Unless otherwise specified, data in this datasheet should be tested under the conditions of Ta = 25°C, humidity <75% when inputting nominal voltage and outputting rated load;
- All index testing methods in this datasheet are based on our Company's corporate standards;
- Specifications subject to change without prior notice.

## LMO78\_3.0 Series

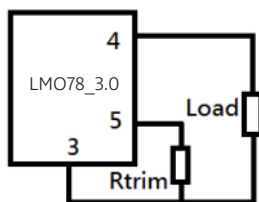
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### Typical characteristics

Temperature derating graph



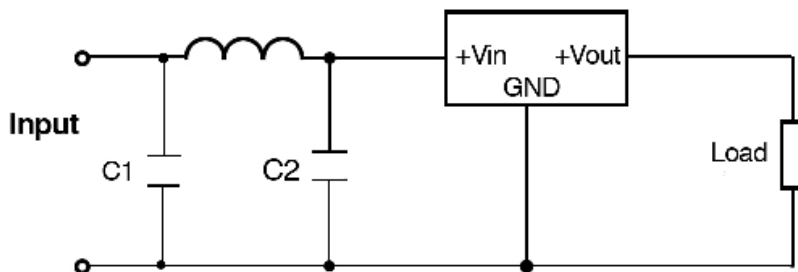
### Trim applications



| Part number    | R Trim [KΩ]       |
|----------------|-------------------|
| LMO78_1205-3.0 | $1.18/(V_o-0.59)$ |
| LMO78_2405-3.0 | $11.2/(V_o-3)$    |
| LMO78_2412-3.0 | $8.4/(V_o-5)$     |

|                                       |             |                 |
|---------------------------------------|-------------|-----------------|
| <b>Remote ON/OFF</b>                  | DC-DC ON    | Open or 1~12Vdc |
|                                       | DC-DC OFF   | 0~0.3Vdc        |
| <b>Remote off state input current</b> | Nominal Vin | 6mA Typ         |

### Typical application circuit



C1=220uF,ESR<0.1Ω ;C2=150uF/50V;L1=8.2uH

### PIN Assignment

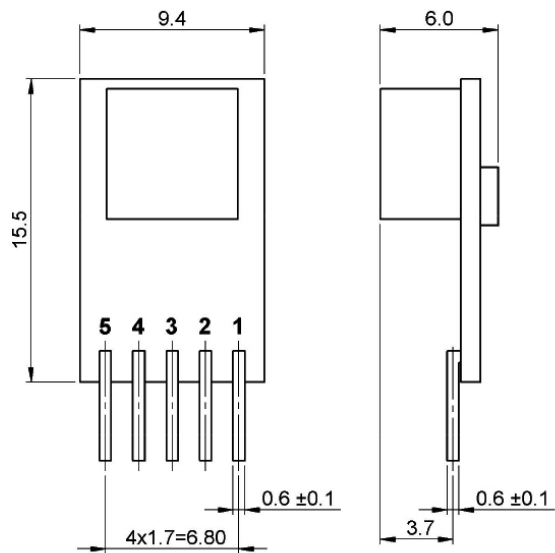
| Pin      | 1             | 2    | 3   | 4     | 5    |
|----------|---------------|------|-----|-------|------|
| Function | Remote On/Off | +Vin | GND | +Vout | Trim |

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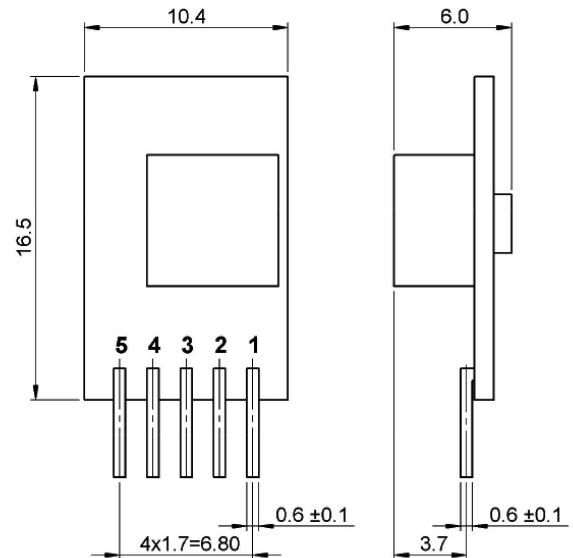
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### Mechanical dimensions

LMO78\_1205-3.0



LMO78\_2405-3.0 / LMO78\_2412-3.0



| PIN      | 1             | 2    | 3   | 4     | 5    |
|----------|---------------|------|-----|-------|------|
| Function | Remote On/Off | +Vin | GND | +Vout | Trim |

**Note:**  
Unit: mm  
Tolerance: XX.X ± 0.5, XX.XX ± 0.25