



LM7805CT - LM7812CT- LM7824CT

Positive Voltage Regulators

GENERAL DESCRIPTION

This series of fixed-voltage integrated-circuit voltage regulators is designed for a wide range of applications. These applications include on-card regulation for elimination of noise and distribution problems associated with single-point regulation. Each of these regulators can deliver up to 1.5A of output current. The internal current-limiting and thermal-shutdown features of these regulators essentially make them immune to overload. In addition to use as fixed-voltage regulators, these devices can be used with external components to obtain adjustable output voltages and currents, and also can be used as the power-pass element in precision regulators. Compliance to RoHS.

FEATURES

- 3-Terminal Regulators
- Output Current up to 1.5A
- Internal Thermal-Overload Protection
- Output Transistor Safe-Area Compensation
- With TO220 package

ABSOLUTE MAXIMUM RATINGS

| Symbol | Ratings | Value | Unit |
|------------------|--------------------------------|-----------------------------|------|
| V _I | Input Voltage DC | V _o = 5 V to 18V | 35 |
| | | V _o = 20 V & 24V | 40 |
| I _o | Output Current | Internally Limited | |
| P _D | Power Dissipation | Internally Limited | |
| T _{OP} | Operating Junction Temperature | 0° to 150 | °C |
| T _{STG} | Storage Temperature | -55° to 150 | °C |

THERMAL DATA

| Symbol | Ratings | Value | Unit |
|-------------------|--|-------|------|
| R _{thJC} | From Junction to Case Thermal Resistance | 5 | °C/W |
| R _{thJA} | From Junction to Free-Air Thermal Resistance | 50 | |



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ELECTRICAL CHARACTERISTICS OF LM7805CT

$T_C = 25^\circ\text{C}$

| Symbol | Ratings | Test Condition(s) | Min | Typ | Max | Unit |
|-----------------|--------------------------|---|------|-----|------|---------------|
| V_O | Output Voltage | $V_i = 20\text{ V}; I_o = 500\text{ mA}$ | 4.75 | 5 | 5.25 | V |
| ΔV_V | Line Regulation | $8\text{ V} \leq V_i \leq 20\text{ V}; I_o = 500\text{ mA}$ | - | - | 100 | mV |
| ΔV_I | Load Regulation | $V_i = 14\text{ V}; 5\text{ mA} \leq I_o \leq 1\text{ A}$ | - | - | 100 | mV |
| I_B | Quiescent Current | $V_i = 14\text{ V}; I_o = 1\text{ A}$ | - | - | 8 | mA |
| ΔI_{B1} | Quiescent Current Change | $V_i = 14\text{ V}; 5\text{ mA} \leq I_o \leq 1\text{ A}$ | - | - | 1.43 | μA |
| ΔI_{B2} | Quiescent Current Change | $8\text{ V} \leq V_i \leq 20\text{ V}; I_o = 500\text{ mA}$ | - | - | 0.45 | μA |

ELECTRICAL CHARACTERISTICS OF LM7812CT

$T_C = 25^\circ\text{C}$

| Symbol | Ratings | Test Condition(s) | Min | Typ | Max | Unit |
|-----------------|--------------------------|--|-------|-----|-------|---------------|
| V_O | Output Voltage | $V_i = 19\text{ V}; I_o = 500\text{ mA}$ | 11.75 | 12 | 12.25 | V |
| ΔV_V | Line Regulation | $14.8\text{ V} \leq V_i \leq 30\text{ V}$ $I_o = 500\text{ mA}$ | - | - | 120 | mV |
| ΔV_I | Load Regulation | $V_i = 19\text{ V}; 5\text{ mA} \leq I_o \leq 1\text{ A}$ | - | - | 100 | mV |
| I_B | Quiescent Current | $V_i = 19\text{ V}; I_o = 1\text{ A}$ | - | - | 6 | mA |
| ΔI_{B1} | Quiescent Current Change | $V_i = 19\text{ V}; 5\text{ mA} \leq I_o \leq 1\text{ A}$ | - | - | 0.5 | μA |
| ΔI_{B2} | Quiescent Current Change | $15\text{ V} \leq V_i \leq 30\text{ V}$ $I_o = 500\text{ mA}$ | - | - | 0.8 | μA |

ELECTRICAL CHARACTERISTICS OF LM7824CT

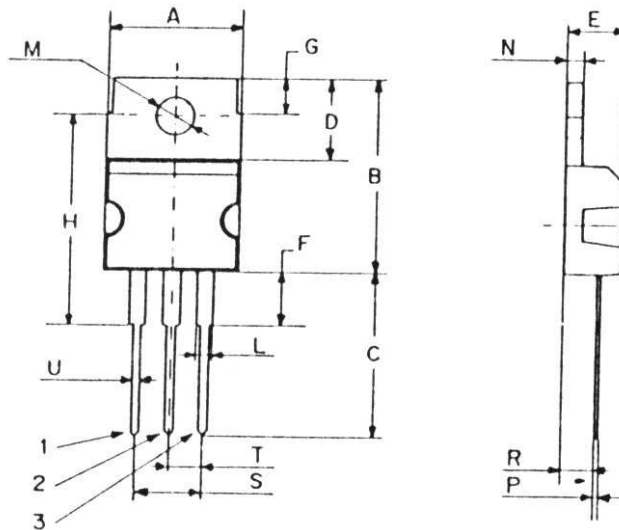
$T_C = 25^\circ\text{C}$

| Symbol | Ratings | Test Condition(s) | Min | Typ | Max | Unit |
|-----------------|--------------------------|---|------|-----|------|---------------|
| V_O | Output Voltage | $V_i = 33\text{ V}; I_o = 1\text{ A}$ | 23.5 | 24 | 24.5 | V |
| ΔV_V | Line Regulation | $26.7\text{ V} \leq V_i \leq 38\text{ V}$ $I_o = 1\text{ A}$ | - | - | 240 | mV |
| ΔV_I | Load Regulation | $5\text{ mA} \leq I_o \leq 1.5\text{ A}$ | - | - | 100 | mV |
| I_B | Quiescent Current | | - | - | 6 | mA |
| ΔI_{B1} | Quiescent Current Change | $V_i = 33\text{ V}; 5\text{ mA} \leq I_o \leq 1\text{ A}$ | - | - | 0.5 | μA |
| ΔI_{B2} | Quiescent Current Change | $27.3\text{ V} \leq V_i \leq 38\text{ V}; I_o = 1\text{ A}$ | - | - | 0.8 | μA |

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MECHANICAL DATA CASE TO-220

| DIMENSIONS (mm) | | |
|-----------------|-------|-------|
| | Min. | Max. |
| A | 9,90 | 10,30 |
| B | 15,65 | 15,90 |
| C | 13,20 | 13,40 |
| D | 6,45 | 6,65 |
| E | 4,30 | 4,50 |
| F | 2,70 | 3,15 |
| G | 2,60 | 3,00 |
| H | 15,75 | 17,15 |
| L | 1,15 | 1,40 |
| M | 3,50 | 3,70 |
| N | - | 1,37 |
| P | 0,46 | 0,55 |
| R | 2,50 | 2,70 |
| S | 4,98 | 5,08 |
| T | 2,49 | 2,54 |
| U | 0,70 | 0,90 |



| | |
|---------|--------|
| Pin 1 : | Input |
| Pin 2 : | Ground |
| Pin 3 : | Output |

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