

General Description

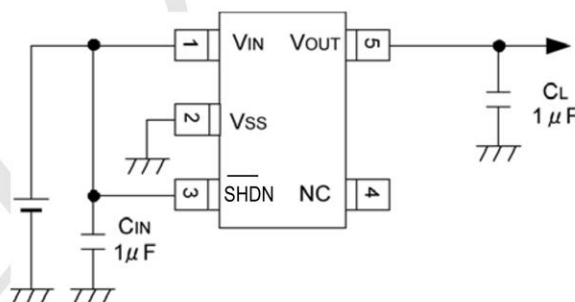
The MCP1802 is a family of CMOS low dropout (LDO) voltage regulators that can deliver up to 150 mA of current while consuming only 25 μ A of quiescent current (typical). The input operating range is specified from 2.0V to 10.0V, making it an ideal choice for two to six primary cell battery-powered applications, 9V alkaline and one or two cell Li-Ion-powered applications.

The MCP1802 is capable of delivering 100 mA with only 200 mV (typical) of input to output voltage differential ($V_{OUT} = 3.3V$). The output voltage tolerance of the MCP1802 at +25°C is typically $\pm 0.4\%$ with a maximum of $\pm 2\%$. Line regulation is $\pm 0.01\%$ typical at +25°C.

Features

- **CMOS Low Power Consumption**
- **Dropout Voltage: 60mV @ 30mA,**
- **200mV @ 100mA**
- **Maximum Output Current: 300mA**
- **Highly Accurate: 1.2V ~ 1.95V $\pm 3\%$**
- **2.0V ~ 6.00V $\pm 2\%$**
- **Output Voltage Range: 1.5V ~ 6.0V**
- **Low ESR capacitor compatible**
- **Output Voltage Options: 1.2V, 1.8V, 2.5V, 3.3V, 5.0V**
- **Package: SOT23-5**

Typical Application Circuit



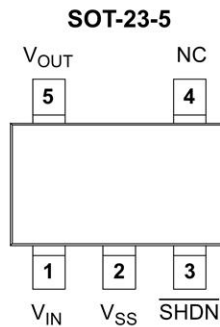
The LDO output is stable with a minimum of 1 μ F of output capacitance. Ceramic, tantalum, or aluminum electrolytic capacitors can all be used for input and output. Overcurrent limit with current foldback provides short-circuit protection. A shutdown (\overline{SHDN}) function allows the output to be enabled or disabled. When disabled, the MCP1802 draws only 0.01 μ A of current (typical).

The MCP1801 is available in a SOT-23-5 package.

Applications

- **Mobile phones**
- **Cordless phones**
- **Cameras, video recorders**
- **Portable games**
- **Portable AV equipment**
- **Reference voltage**
- **Battery-powered equipment**

PIN CONFIGURATION



| Pin No. SOT-23-5 | Name | Function |
|---------------------|------------------|----------------------------|
| 1 | V _{IN} | Unregulated Supply Voltage |
| 2 | GND | Ground Terminal |
| 3 | SHDN | Shutdown Input |
| 4 | NC | No Connection |
| 5 | V _{OUT} | Regulated Voltage Output |

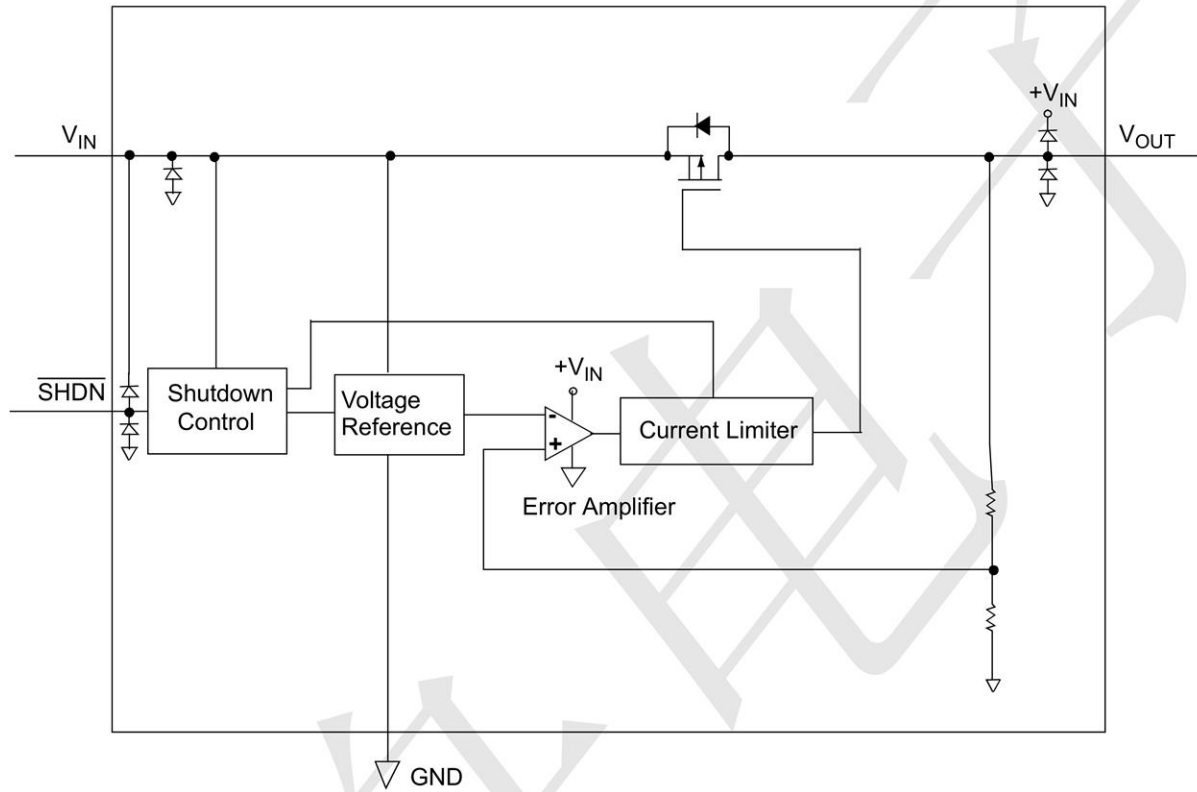
ABSOLUTE MAXIMUM RATINGS (T = 25°C unless otherwise noted)

| Parameter | Symbol | Ratings | Units |
|-------------------------------|------------------|---|-------|
| Input Voltage | V _{IN} | 12 | V |
| Output Current | I _{OUT} | 500 | mA |
| Output Voltage | V _{OUT} | V _{SS} -0.3 ~ V _{IN} +0.3 | V |
| Power Dissipation SOT25 | P _d | 250 | mW |
| Operation Ambient Temperature | T _{opr} | -40 ~ +85 | °C |
| Storage Temperature | T _{stg} | -55 ~ +85 | °C |

Electrical Characteristics (T =25 C unless otherwise noted)

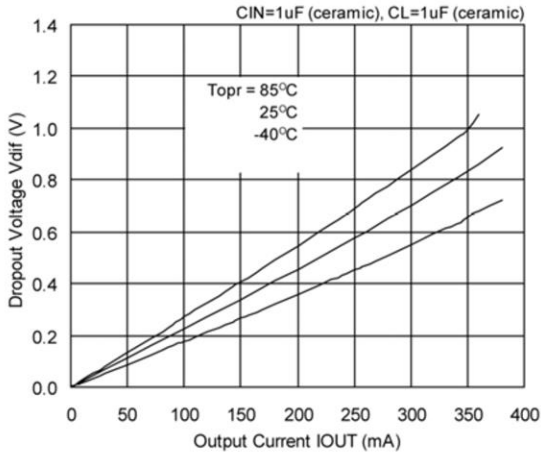
| PARAMETER | SYMBOL | CONDITIONS | MIN. | TYP. | MAX. | UNITS |
|--|---|--|--|------------------------------------|--|--------|
| Output Voltage (2%) ⁽⁵⁾ | V _{OUT(E)} ⁽³⁾ | I _{OUT} =30mA | V _{OUT(T)} ⁽²⁾ ×0.98 | V _{OUT(T)} ⁽²⁾ | V _{OUT(T)} ⁽²⁾ ×1.02 | V |
| Output Voltage (1%) ⁽⁶⁾ | | | V _{OUT(T)} ⁽²⁾ ×0.99 | | V _{OUT(T)} ⁽²⁾ ×1.01 | |
| Maximum Output Current | I _{OUTMAX} | V _{IN} =E-3 ⁽⁷⁾ | E-4 | - | - | mA |
| Load Regulation | ΔV _{OUT} | 1mA ≤ I _{OUT} ≤ 100mA | - | 15 | 50 | mV |
| Load Regulation 2 | ΔV _{OUT2} | 1mA ≤ I _{OUT} ≤ 300mA | - | - | 100 | mV |
| Dropout Voltage ⁽⁴⁾ | V _{dif1} | I _{OUT} =30mA | E-1 | | | mV |
| | V _{dif2} | I _{OUT} =100mA | E-2 | | | mV |
| Supply Current (Type E) | I _{DD} | V _{CE} =V _{IN} =V _{OUT(T)} +1.0V | - | 28 | 55 | μA |
| Supply Current (Type F) | | When V _{OUT} ≤ 0.95V, V _{CE} =V _{IN} =2.0V | | 25 | 50 | |
| Stand-by Current | I _{STB} | V _{IN} =V _{OUT(T)} +1.0V, V _{CE} =V _{SS} When V _{OUT} ≤ 0.95V, V _{CE} =V _{IN} =2.0V | - | 0.01 | 0.10 | μA |
| Line Regulation | ΔV _{OUT} / (ΔV _{IN} ·V _{OUT}) | V _{OUT(T)} +1.0V ≤ V _{IN} ≤ 10V When V _{OUT} ≤ 0.95V, 2.0V ≤ V _{IN} ≤ 10V I _{OUT} =30mA V _{OUT} ≤ 1.75V, I _{OUT} =10mA | - | 0.01 | 0.20 | %/V |
| Input Voltage | V _{IN} | - | 2 | - | 10 | V - |
| Output Voltage Temperature Characteristics | ΔV _{OUT} / (ΔT _{opr} ·V _{OUT}) | I _{OUT} =30mA -40°C ≤ T _{opr} ≤ 85°C | - | 100 | - | ppm/°C |
| Power Supply Rejection Ratio | PSRR | V _{IN} ={V _{OUT(T)} +1.0}V+1.0V _{p-pAC} , When V _{OUT} ≤ 1.5V, V _{IN} =2.5V+1.0V _{p-pAC} , I _{OUT} =50mA, f=10kHz | - | 70 | - | dB |
| Current Limit | I _{lim} | V _{IN} =V _{OUT(T)} +1.0V, V _{CE} =V _{IN} , When V _{OUT} ≤ 1.75V, V _{IN} =V _{OUT(T)} +2.0V | - | 380 | - | mA |
| Short Current | I _{SHORT} | V _{IN} =V _{OUT(T)} +1.0V, V _{CE} =V _{IN} , When V _{OUT} < 1.75V, V _{IN} =V _{OUT(T)} +2.0V | - | 50 | - | mA |
| Logic High Input | V _{SHDN-HIGH} | - 1.6 - | | | | V |
| Logic Low Input | V _{SHDN-LOW} | - | | | 0.25 | V |

BLOCK DIAGRAM

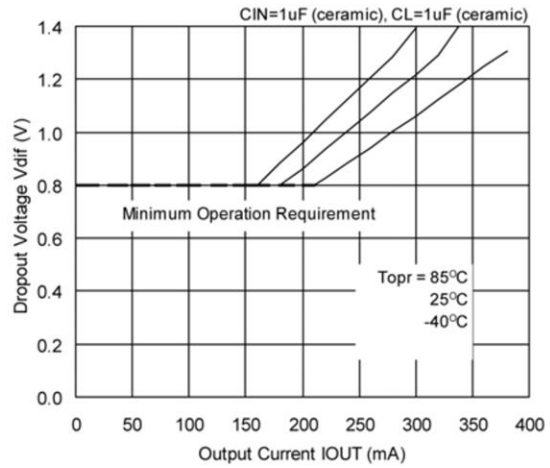


Dropout Voltage vs. Output Current

MCP1802T-3002I/OT

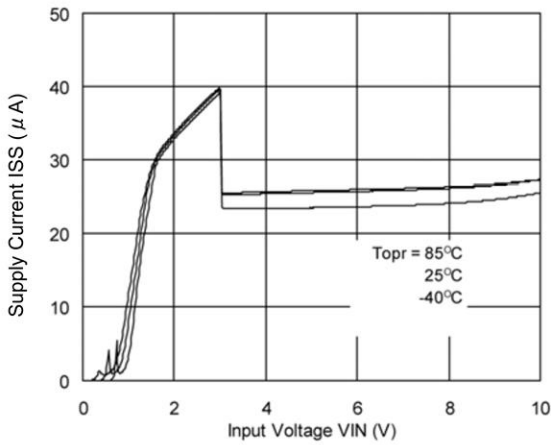


MCP1802T-1202I/OT

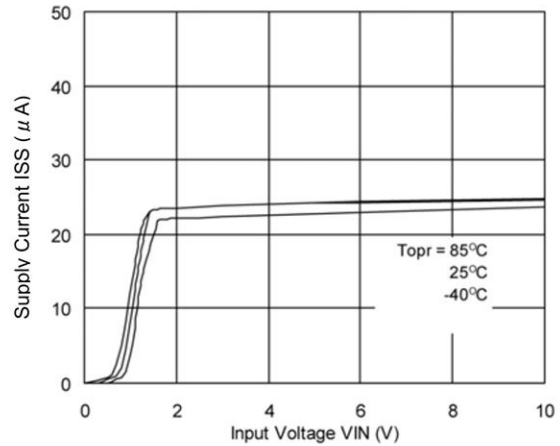


(4) Supply Current vs. Input Voltage

MCP1802T-3002I/OT

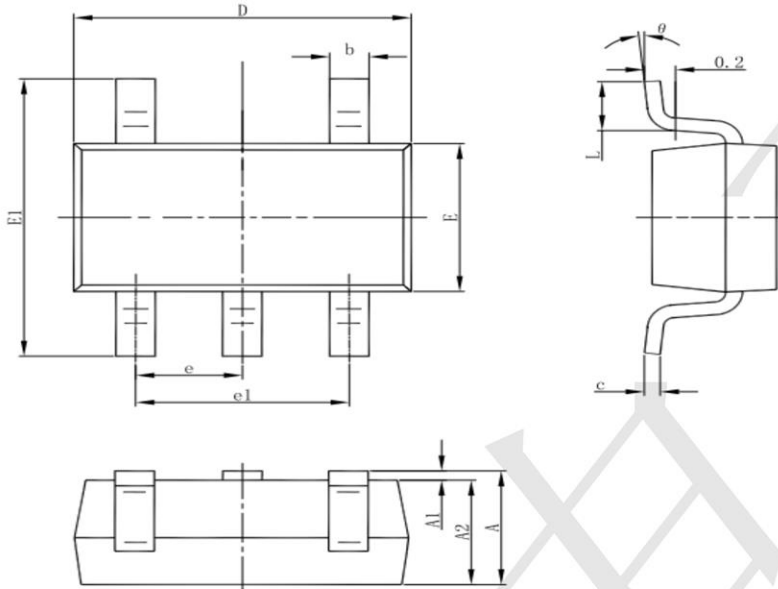


MCP1802T-1202I/OT



Package information

3-pin SOT23-5 Outline Dimensions



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 1.050 | 1.250 | 0.041 | 0.049 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 1.050 | 1.150 | 0.041 | 0.045 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.100 | 0.200 | 0.004 | 0.008 |
| D | 2.820 | 3.020 | 0.111 | 0.119 |
| E | 1.500 | 1.700 | 0.059 | 0.067 |
| E1 | 2.650 | 2.950 | 0.104 | 0.116 |
| e | 0.950(BSC) | | 0.037(BSC) | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.300 | 0.600 | 0.012 | 0.024 |
| θ | 0° | 8° | 0° | 8° |

Ordering information

| Order code | Package | Baseqty | Delivery mode |
|----------------------|---------|---------|---------------|
| TP MCP1802T-3302I/OT | SOT23-5 | 3000 | Tape and reel |

| Order code | Package | Baseqty | Delivery mode |
|----------------------|---------|---------|---------------|
| TP MCP1802T-5002I/OT | SOT23-5 | 3000 | Tape and reel |

| Order code | Package | Baseqty | Delivery mode |
|----------------------|---------|---------|---------------|
| TP MCP1802T-XX02I/OT | SOT23-5 | 3000 | Tape and reel |

XX=iout voltage

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [Linear Voltage Regulators](#) category:

Click to view products by [TECH PUBLIC](#) manufacturer:

Other Similar products are found below :

[LV56831P-E](#) [LV5684PVD-XH](#) [MCDTSA6-2R](#) [L7815ACV-DG](#) [PQ3DZ53U](#) [LV56801P-E](#) [TLE42794G](#) [L78L05CZ/1SX](#) [L78LR05DL-MA-E](#) [636416C](#) [714954EB](#) [BA033LBSG2-TR](#) [LV5680P-E](#) [L78M15CV-DG](#) [L79M05T-E](#) [TLS202A1MBVHTSA1](#) [L78LR05D-MA-E](#) [NCV317MBTG](#) [NTE7227](#) [LV5680NPVC-XH](#) [LT1054CN8](#) [MP2018GZD-5-Z](#) [MP2018GZD-33-Z](#) [MIC5281-3.3YMM](#) [MC78L06BP-AP](#) [TA48LS05F\(TE85L,F\)](#) [TA78L12F\(TE12L,F\)](#) [TC47BR5003ECT](#) [TCR2LN12,LF\(S](#) [TCR2LN28,LF\(S](#) [TCR2LN30,LF\(S](#) [TCR3DF295,LM\(CT](#) [TCR3DF40,LM\(CT](#) [BA178M20CP-E2](#) [L78M12ABDT](#) [LM7812SX/NOPB](#) [LR645N3-G-P003](#) [LR645N3-G-P013](#) [ZXTR2005P5-13](#) [SCD7812BTG](#) [TCR3DF335,LM\(CT](#) [ZXTR2012K-13](#) [TLE42994E V33](#) [ZXTR2008K-13](#) [ZXTR2005K-13](#) [L88R05DL-E](#) [ADP3300ARTZ-2.7RL7](#) [LM120K-15/883](#) [IFX54441LDVXUMA1](#) [LM317D2T-TR](#)