

100mA Low Power LDO

Features

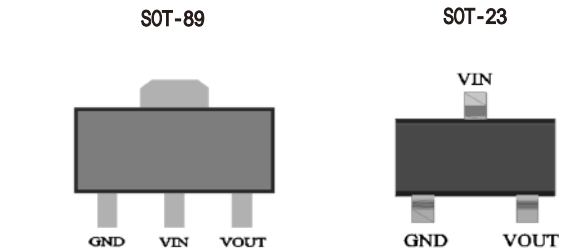
- ◆ Low power consumption
- ◆ Low voltage drop
- ◆ Low temperature coefficient
- ◆ High input voltage (up to 30V)
- ◆ High output current : 100mA
- ◆ Output voltage accuracy: tolerance $\pm 3\%$
- ◆ SOT-89 and SOT-23 packages

Applications

- ◆ Battery-powered equipment
- ◆ Communication equipment
- ◆ Audio/Video equipment

General Description

The HT71xx-1 series is a set of three-terminal high current low voltage regulator implemented in CMOS technology. They can deliver 100mA output current and allow an input voltage as high as 30V. They are available with several fixed output voltages ranging from



2.1V to 5.0V. CMOS technology ensures low voltage drop and low quiescent current.

Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain variable voltages and currents.

Selection Table

| Part No. | Output Voltage | Package | Marking |
|----------|----------------|------------------|--|
| HT7121-1 | 2.1V | SOT-89 SOT-23 | SOT-89 (for 71xx-1) SOT-23 (for HTXX) |
| HT7123-1 | 2.3V | | |
| HT7125-1 | 2.5V | | |
| HT7127-1 | 2.7V | | |
| HT7130-1 | 3.0V | | |
| HT7133-1 | 3.3V | | |
| HT7136-1 | 3.6V | | |
| HT7140-1 | 4.0V | | |
| HT7144-1 | 4.4V | | |
| HT7150-1 | 5.0V | | |

Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

| Parameter | Symbol | Value | Unit |
|---------------------------|-----------|---------------|------------------|
| Supply Voltage | V_{IN} | - 3 to + 30 | V |
| Power Dissipation | P_{tot} | 500 | mW |
| Operating Temperature | T_A | - 40 to + 85 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{stg} | - 50 to + 125 | $^\circ\text{C}$ |

Electrical Characteristics

HT7121-1, +2.1V Output Type

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

| Symbol | Parameter | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|-------------------------|-----------------|---|-------|-------|-------|-------|
| | | V _{IN} | Conditions | | | | |
| V _{OUT} | Output Voltage | 4.1V | I _{OUT} =10mA | 2.037 | 2.1 | 2.163 | V |
| I _{OUT} | Output Current | 4.1V | — | 60 | 100 | — | mA |
| ΔV _{OUT} | Load Regulation | 4.1V | 1mA ≤ I _{OUT} ≤ 50mA | — | 60 | 150 | mV |
| V _{DIF} | Voltage Drop (Note) | — | I _{OUT} =1mA, ΔV _{OUT} =2% | — | 100 | — | mV |
| I _{SS} | Current Consumption | 4.1V | No load | — | 2.5 | 5.0 | μA |
| $\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$ | Line Regulation | — | 3.1V ≤ V _{IN} ≤ 24V I _{OUT} =1mA | — | 0.2 | — | %/V |
| V _{IN} | Input Voltage | — | — | — | — | 28 | V |
| $\frac{\Delta V_{DET}}{\Delta T_a}$ | Temperature Coefficient | 4.1V | I _{OUT} =10mA -40°C < T _a < 85°C | — | ±0.37 | — | mV/°C |

Note: Dropout voltage is defined as the input voltage minus the output voltage that produces a 2% change in the output voltage from the value at V_{IN} = V_{OUT}+2V with a fixed load.

HT7123-1, +2.3V Output Type

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

| Symbol | Parameter | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|-------------------------|-----------------|---|-------|-------|-------|-------|
| | | V _{IN} | Conditions | | | | |
| V _{OUT} | Output Voltage | 4.3V | I _{OUT} =10mA | 2.231 | 2.3 | 2.369 | V |
| I _{OUT} | Output Current | 4.3V | — | 60 | 100 | — | mA |
| ΔV _{OUT} | Load Regulation | 4.3V | 1mA ≤ I _{OUT} ≤ 50mA | — | 60 | 150 | mV |
| V _{DIF} | Voltage Drop (Note) | — | I _{OUT} =1mA, ΔV _{OUT} =2% | — | 100 | — | mV |
| I _{SS} | Current Consumption | 4.3V | No load | — | 2.5 | 5.0 | μA |
| $\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$ | Line Regulation | — | 3.3V ≤ V _{IN} ≤ 24V I _{OUT} =1mA | — | 0.2 | — | %/V |
| V _{IN} | Input Voltage | — | — | — | — | 28 | V |
| $\frac{\Delta V_{DET}}{\Delta T_a}$ | Temperature Coefficient | 4.3V | I _{OUT} =10mA -40°C < T _a < 85°C | — | ±0.39 | — | mV/°C |

Note: Dropout voltage is defined as the input voltage minus the output voltage that produces a 2% change in the output voltage from the value at V_{IN} = V_{OUT}+2V with a fixed load.

HT7125-1, +2.5V Output Type

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

| Symbol | Parameter | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|-------------------------|-----------------|---|-------|-------|-------|-------|
| | | V _{IN} | Conditions | | | | |
| V _{OUT} | Output Voltage | 4.5V | I _{OUT} =10mA | 2.425 | 2.5 | 2.575 | V |
| I _{OUT} | Output Current | 4.5V | — | 60 | 100 | — | mA |
| ΔV _{OUT} | Load Regulation | 4.5V | 1mA ≤ I _{OUT} ≤ 50mA | — | 60 | 150 | mV |
| V _{DIF} | Voltage Drop (Note) | — | I _{OUT} =1mA, ΔV _{OUT} =2% | — | 100 | — | mV |
| I _{SS} | Current Consumption | 4.5V | No load | — | 2.5 | 5.0 | μA |
| $\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$ | Line Regulation | — | 3.5V ≤ V _{IN} ≤ 24V I _{OUT} =1mA | — | 0.2 | — | %/V |
| V _{IN} | Input Voltage | — | — | — | — | 28 | V |
| $\frac{\Delta V_{DET}}{\Delta T_a}$ | Temperature Coefficient | 4.5V | I _{OUT} =10mA -40°C < T _a < 85°C | — | ±0.41 | — | mV/°C |

Note: Dropout voltage is defined as the input voltage minus the output voltage that produces a 2% change in the output voltage from the value at V_{IN} = V_{OUT}+2V with a fixed load.

HT7127-1, +2.7V Output Type

Ta=25°C

| Symbol | Parameter | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|-------------------------|-----------------|---|-------|-------|-------|-------|
| | | V _{IN} | Conditions | | | | |
| V _{OUT} | Output Voltage | 4.7V | I _{OUT} =10mA | 2.619 | 2.7 | 2.781 | V |
| I _{OUT} | Output Current | 4.7V | — | 60 | 100 | — | mA |
| ΔV _{OUT} | Load Regulation | 4.7V | 1mA ≤ I _{OUT} ≤ 50mA | — | 60 | 150 | mV |
| V _{DIF} | Voltage Drop (Note) | — | I _{OUT} =1mA, ΔV _{OUT} =2% | — | 100 | — | mV |
| I _{SS} | Current Consumption | 4.7V | No load | — | 2.5 | 5.0 | μA |
| $\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$ | Line Regulation | — | 3.7V ≤ V _{IN} ≤ 24V I _{OUT} =1mA | — | 0.2 | — | %/V |
| V _{IN} | Input Voltage | — | — | — | — | 28 | V |
| $\frac{\Delta V_{DET}}{\Delta T_a}$ | Temperature Coefficient | 4.7V | I _{OUT} =10mA -40°C < T _a < 85°C | — | ±0.43 | — | mV/°C |

Note: Dropout voltage is defined as the input voltage minus the output voltage that produces a 2% change in the output voltage from the value at V_{IN} = V_{OUT}+2V with a fixed load.

HT7130-1, +3.0V Output Type

Ta=25°C

| Symbol | Parameter | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|-------------------------|-----------------|---|------|-------|------|-------|
| | | V _{IN} | Conditions | | | | |
| V _{OUT} | Output Voltage | 5.0V | I _{OUT} =10mA | 2.91 | 3.0 | 3.09 | V |
| I _{OUT} | Output Current | 5.0V | — | 60 | 100 | — | mA |
| ΔV _{OUT} | Load Regulation | 5.0V | 1mA ≤ I _{OUT} ≤ 50mA | — | 60 | 150 | mV |
| V _{DIF} | Voltage Drop (Note) | — | I _{OUT} =1mA, ΔV _{OUT} =2% | — | 100 | — | mV |
| I _{SS} | Current Consumption | 5.0V | No load | — | 2.5 | 5.0 | μA |
| $\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$ | Line Regulation | — | 4.0V ≤ V _{IN} ≤ 24V I _{OUT} =1mA | — | 0.2 | — | %/V |
| V _{IN} | Input Voltage | — | — | — | — | 28 | V |
| $\frac{\Delta V_{DET}}{\Delta T_a}$ | Temperature Coefficient | 5.0V | I _{OUT} =10mA -40°C < T _a < 85°C | — | ±0.45 | — | mV/°C |

Note: Dropout voltage is defined as the input voltage minus the output voltage that produces a 2% change in the output voltage from the value at V_{IN} = V_{OUT}+2V with a fixed load.

HT7133-1, +3.3V Output Type

Ta=25°C

| Symbol | Parameter | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|-------------------------|-----------------|---|-------|------|-------|-------|
| | | V _{IN} | Conditions | | | | |
| V _{OUT} | Output Voltage | 5.5V | I _{OUT} =10mA | 3.201 | 3.3 | 3.399 | V |
| I _{OUT} | Output Current | 5.5V | — | 60 | 100 | — | mA |
| ΔV _{OUT} | Load Regulation | 5.5V | 1mA ≤ I _{OUT} ≤ 50mA | — | 60 | 150 | mV |
| V _{DIF} | Voltage Drop (Note) | — | I _{OUT} =1mA, ΔV _{OUT} =2% | — | 100 | — | mV |
| I _{SS} | Current Consumption | 5.5V | No load | — | 2.5 | 5.0 | μA |
| $\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$ | Line Regulation | — | 4.5V ≤ V _{IN} ≤ 24V I _{OUT} =1mA | — | 0.2 | — | %/V |
| V _{IN} | Input Voltage | — | — | — | — | 28 | V |
| $\frac{\Delta V_{DET}}{\Delta T_a}$ | Temperature Coefficient | 5.5V | I _{OUT} =10mA -40°C < T _a < 85°C | — | ±0.5 | — | mV/°C |

Note: Dropout voltage is defined as the input voltage minus the output voltage that produces a 2% change in the output voltage from the value at V_{IN} = V_{OUT}+2V with a fixed load.

HT7136-1, +3.6V Output Type

Ta=25°C

| Symbol | Parameter | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|-------------------------|-----------------|---|-------|------|-------|-------|
| | | V _{IN} | Conditions | | | | |
| V _{OUT} | Output Voltage | 5.6V | I _{OUT} =10mA | 3.492 | 3.6 | 3.708 | V |
| I _{OUT} | Output Current | 5.6V | — | 60 | 100 | — | mA |
| ΔV _{OUT} | Load Regulation | 5.6V | 1mA ≤ I _{OUT} ≤ 50mA | — | 60 | 150 | mV |
| V _{DIF} | Voltage Drop (Note) | — | I _{OUT} =1mA, ΔV _{OUT} =2% | — | 100 | — | mV |
| I _{SS} | Current Consumption | 5.6V | No load | — | 2.5 | 5.0 | μA |
| $\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$ | Line Regulation | — | 4.6V ≤ V _{IN} ≤ 24V I _{OUT} =1mA | — | 0.2 | — | %/V |
| V _{IN} | Input Voltage | — | — | — | — | 28 | V |
| $\frac{\Delta V_{DET}}{\Delta T_a}$ | Temperature Coefficient | 5.6V | I _{OUT} =10mA -40°C < T _a < 85°C | — | ±0.6 | — | mV/°C |

Note: Dropout voltage is defined as the input voltage minus the output voltage that produces a 2% change in the output voltage from the value at V_{IN} = V_{OUT}+2V with a fixed load.

HT7140-1, +4.0V Output Type

Ta=25°C

| Symbol | Parameter | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|-------------------------|-----------------|---|------|------|------|-------|
| | | V _{IN} | Conditions | | | | |
| V _{OUT} | Output Voltage | 6.0V | I _{OUT} =10mA | 3.88 | 4.0 | 4.12 | V |
| I _{OUT} | Output Current | 6.0V | — | 60 | 100 | — | mA |
| ΔV _{OUT} | Load Regulation | 6.0V | 1mA ≤ I _{OUT} ≤ 50mA | — | 60 | 150 | mV |
| V _{DIF} | Voltage Drop (Note) | — | I _{OUT} =1mA, ΔV _{OUT} =2% | — | 100 | — | mV |
| I _{SS} | Current Consumption | 6.0V | No load | — | 2.5 | 5.0 | μA |
| $\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$ | Line Regulation | — | 5.0V ≤ V _{IN} ≤ 24V I _{OUT} =1mA | — | 0.2 | — | %/V |
| V _{IN} | Input Voltage | — | — | — | — | 28 | V |
| $\frac{\Delta V_{DET}}{\Delta T_a}$ | Temperature Coefficient | 6.0V | I _{OUT} =10mA -40°C < T _a < 85°C | — | ±0.7 | — | mV/°C |

Note: Dropout voltage is defined as the input voltage minus the output voltage that produces a 2% change in the output voltage from the value at V_{IN} = V_{OUT}+2V with a fixed load.

HT7144-1, +4.4V Output Type

Ta=25°C

| Symbol | Parameter | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|-------------------------|-----------------|---|-------|------|-------|-------|
| | | V _{IN} | Conditions | | | | |
| V _{OUT} | Output Voltage | 6.4V | I _{OUT} =10mA | 4.268 | 4.4 | 4.532 | V |
| I _{OUT} | Output Current | 6.4V | — | 60 | 100 | — | mA |
| ΔV _{OUT} | Load Regulation | 6.4V | 1mA ≤ I _{OUT} ≤ 50mA | — | 60 | 150 | mV |
| V _{DIF} | Voltage Drop (Note) | — | I _{OUT} =1mA, ΔV _{OUT} =2% | — | 100 | — | mV |
| I _{SS} | Current Consumption | 6.4V | No load | — | 2.5 | 5.0 | μA |
| $\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$ | Line Regulation | — | 5.4V ≤ V _{IN} ≤ 24V I _{OUT} =1mA | — | 0.2 | — | %/V |
| V _{IN} | Input Voltage | — | — | — | — | 28 | V |
| $\frac{\Delta V_{DET}}{\Delta T_a}$ | Temperature Coefficient | 6.4V | I _{OUT} =10mA -40°C < T _a < 85°C | — | ±0.7 | — | mV/°C |

Note: Dropout voltage is defined as the input voltage minus the output voltage that produces a 2% change in the output voltage from the value at V_{IN} = V_{OUT}+2V with a fixed load.

HT7150-1, +5.0V Output Type

Ta=25°C

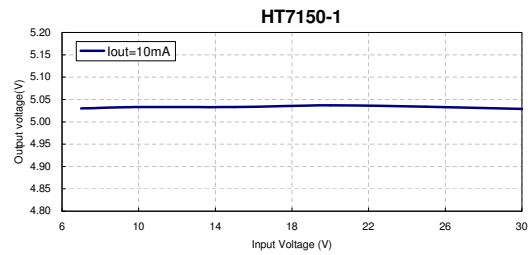
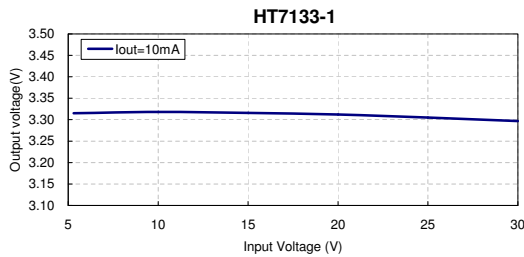
| Symbol | Parameter | Test Conditions | | Min. | Typ. | Max. | Unit |
|---|-------------------------|-----------------|---|------|-------|------|-------|
| | | V _{IN} | Conditions | | | | |
| V _{OUT} | Output Voltage | 7.0V | I _{OUT} =10mA | 4.85 | 5.0 | 5.15 | V |
| I _{OUT} | Output Current | 7.0V | — | 100 | 150 | — | mA |
| ΔV _{OUT} | Load Regulation | 7.0V | 1mA ≤ I _{OUT} ≤ 70mA | — | 60 | 150 | mV |
| V _{DIF} | Voltage Drop (Note) | — | I _{OUT} =1mA, ΔV _{OUT} =2% | — | 100 | — | mV |
| I _{SS} | Current Consumption | 7.0V | No load | — | 2.5 | 5.0 | μA |
| $\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$ | Line Regulation | — | 6.0V ≤ V _{IN} ≤ 24V I _{OUT} =1mA | — | 0.2 | — | %/V |
| V _{IN} | Input Voltage | — | — | — | — | 28 | V |
| $\frac{\Delta V_{DET}}{\Delta T_a}$ | Temperature Coefficient | 7.0V | I _{OUT} =10mA -40°C < T _a < 85°C | — | ±0.75 | — | mV/°C |

Note: Dropout voltage is defined as the input voltage minus the output voltage that produces a 2% change in the output voltage from the value at V_{IN} = V_{OUT}+2V with a fixed load.

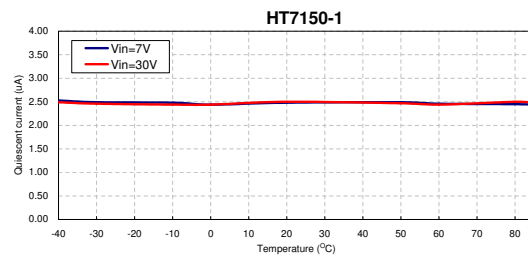
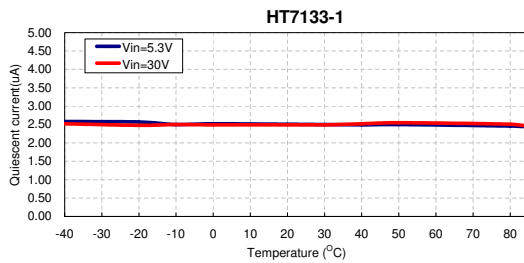
Typical Performance Characteristics

Test Condition: $V_{in}=V_{out}+2V$, $I_{OUT}=10mA$, $T_I=25^{\circ}C$, unless otherwise noted

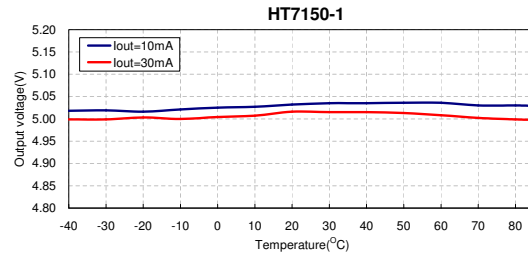
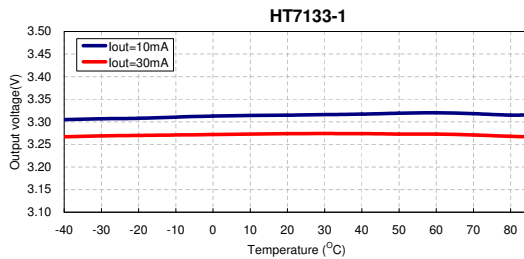
Output Voltage vs Input Voltage



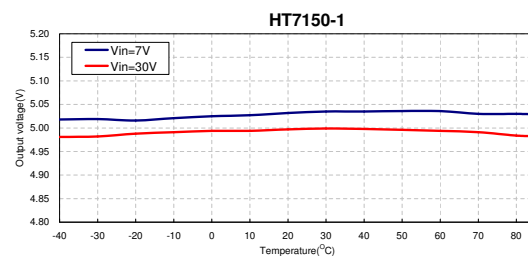
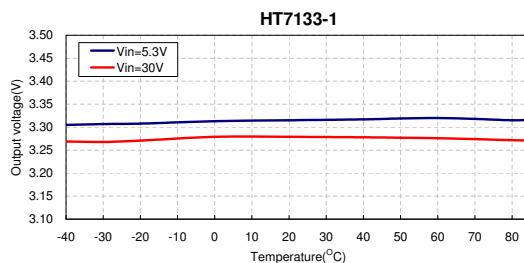
Quiescent current (I_{out}=0mA) vs Temperature



Output Voltage vs Temperature (Vin=Vout+2V)

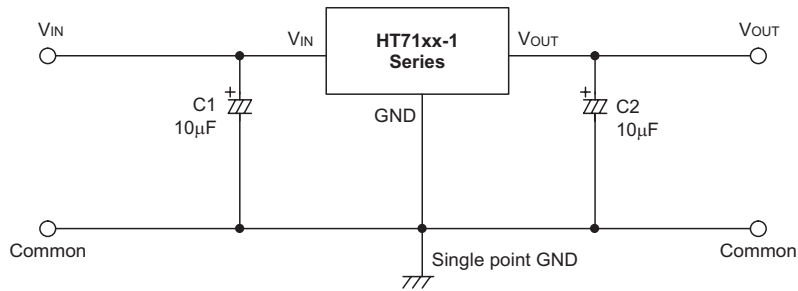


Output Voltage vs Temperature

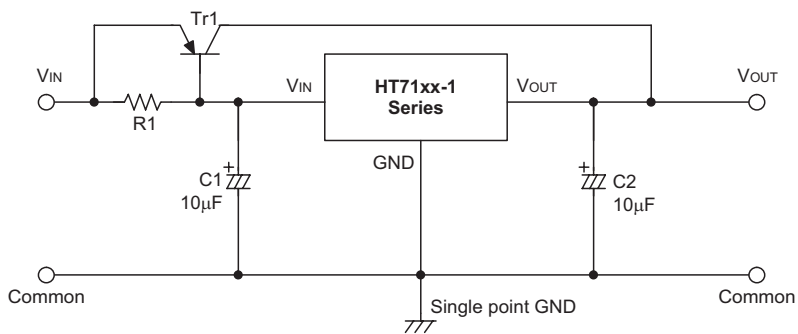


Application Circuits

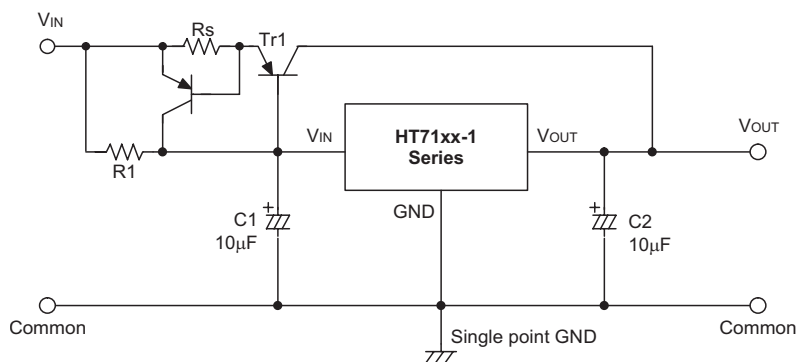
Basic Circuit



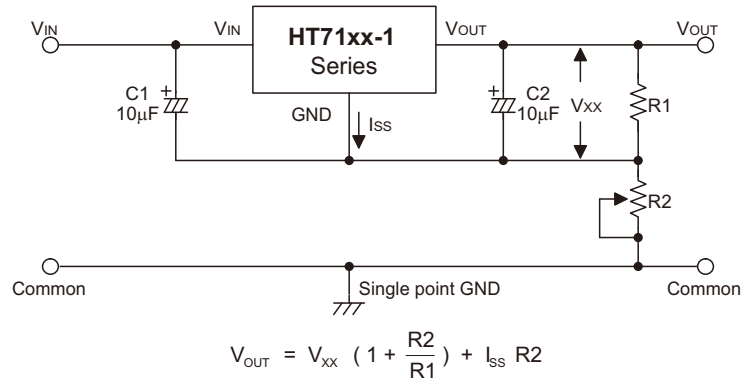
High Output Current Positive Voltage Regulator



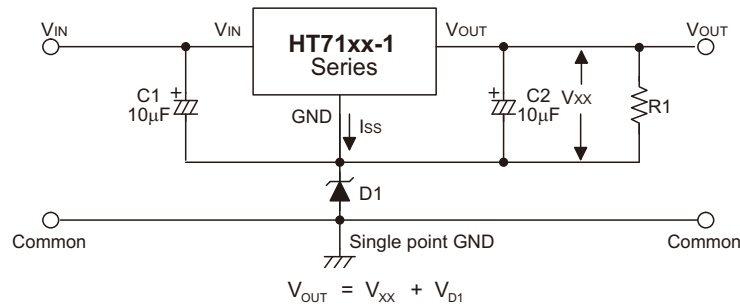
Short-Circuit Protection for Tr1



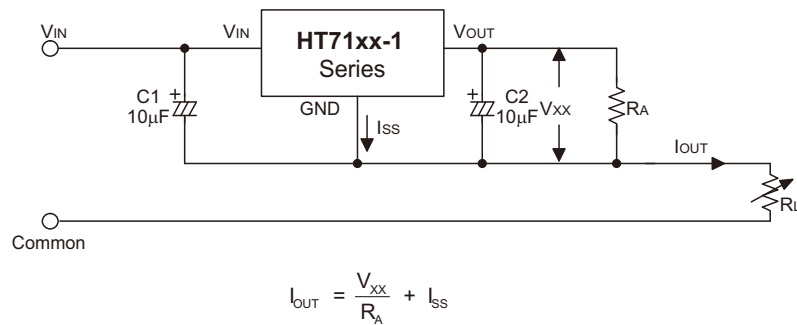
Circuit for Increasing Output Voltage



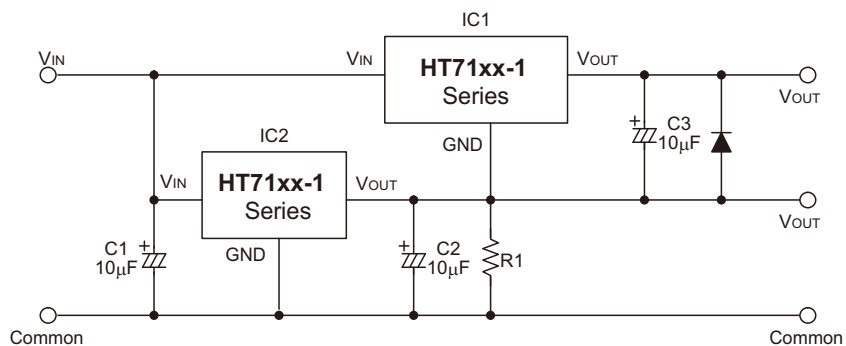
Circuit for Increasing Output Voltage



Constant Current Regulator

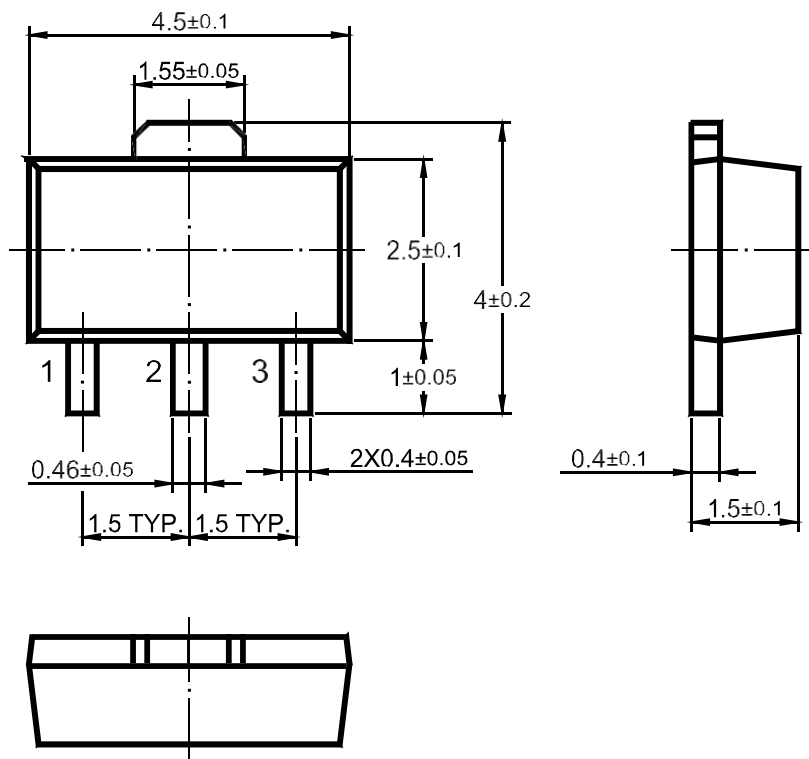


Dual Supply



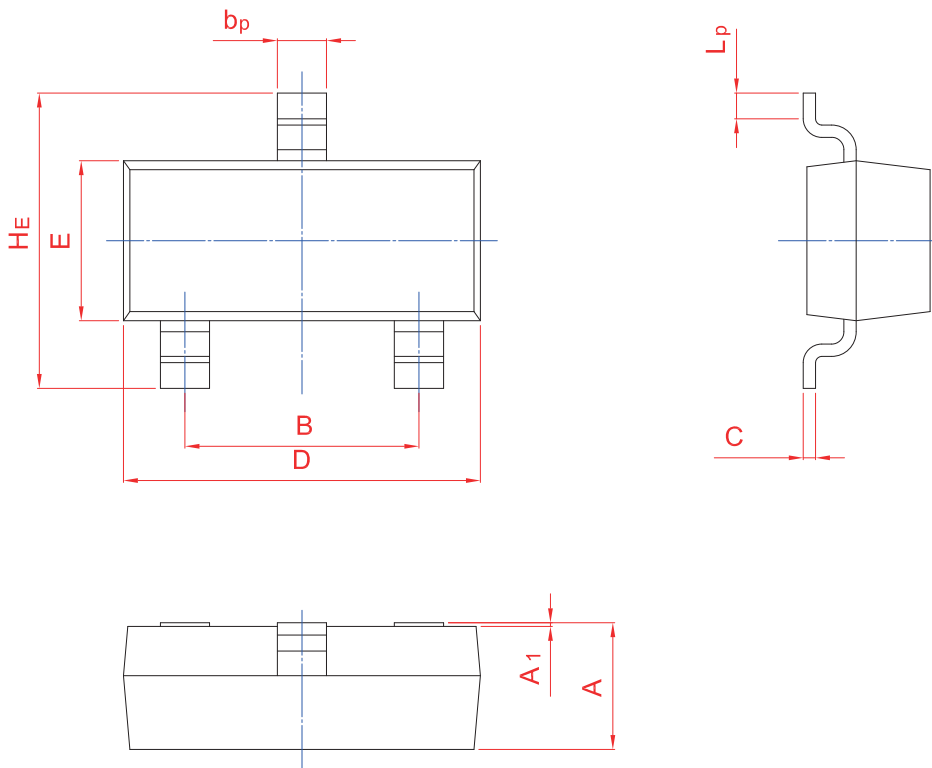
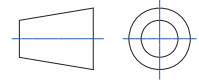
Physical Dimensions

SOT-89



Dimensions in mm

SOT-23



| UNIT | A | B | b _p | C | D | E | H _E | A ₁ | L _p |
|------|------|------|----------------|------|------|------|----------------|----------------|----------------|
| mm | 1.40 | 2.04 | 0.50 | 0.19 | 3.10 | 1.65 | 3.00 | 0.100 | 0.50 |
| | 0.95 | 1.78 | 0.35 | 0.08 | 2.70 | 1.20 | 2.20 | 0.013 | 0.20 |

单击下面可查看定价，库存，交付和生命周期等信息

[>>TWGMC\(台湾迪嘉\)](#)