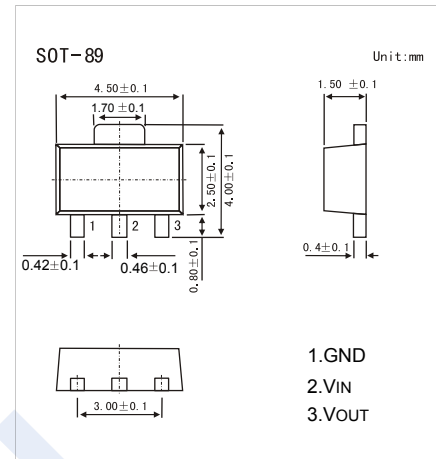
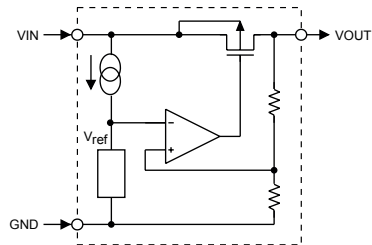


## High Voltage Regulator HT71XX

### ■ Features

- Low power consumption
- Low voltage drop
- Low temperature coefficient
- High input voltage (up to 24V)



### Selection Table

Part No.	Output Voltage	Tolerance
HT7130	3.0V	± 5%
HT7133	3.3V	± 5%
HT7136	3.6V	± 5%
HT7144	4.4V	± 5%
HT7150	5.0V	± 5%

### ■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Supply Voltage		-0.3 to 28	V
Power Consumption	$P_c$	200	mW
Junction Temperature	$T_J$	125	°C
Operating Temperature	$T_{op}$	0 to 70	
Storage Temperature range	$T_{stg}$	-50 to 125	

## High Voltage Regulator

### HT71XX

#### ■ Electrical Characteristics Ta = 25°C

HT7130, +3.0V output type

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
		V <sub>IN</sub>	Conditions				
Output Voltage Tolerance	V <sub>OUT</sub>	5V	I <sub>OUT</sub> =10mA	2.85	3	3.15	V
Input Voltage	V <sub>IN</sub>	-				24	
Load Regulation	ΔV <sub>OUT</sub>	5V	1mA ≤ I <sub>OUT</sub> ≤ 20mA		60	100	mV
Voltage Drop	V <sub>DIF</sub>	-	I <sub>OUT</sub> =1mA		100		
Output Current	I <sub>OUT</sub>	5V		20	30		mA
Current Consumption	I <sub>SS</sub>	5V	No load		4	6	μA
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	-	4V ≤ V <sub>IN</sub> ≤ 24V I <sub>OUT</sub> =1mA		0.2		%/V
Temperature Coefficient	$\frac{\Delta V_{OUT}}{\Delta T_a}$	5V	I <sub>OUT</sub> =10mA 0 °C < T <sub>a</sub> < 70 °C		±0.45		mV/°C

HT7133, +3.3V output type

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
		V <sub>IN</sub>	Conditions				
Output Voltage Tolerance	V <sub>OUT</sub>	5.5V	I <sub>OUT</sub> =10mA	3.135	3.3	3.465	V
Input Voltage	V <sub>IN</sub>	-				24	
Load Regulation	ΔV <sub>OUT</sub>	5.5V	1mA ≤ I <sub>OUT</sub> ≤ 30mA		60	100	mV
Voltage Drop	V <sub>DIF</sub>	-	I <sub>OUT</sub> =1mA		100		
Output Current	I <sub>OUT</sub>	5.5V		20	30		mA
Current Consumption	I <sub>SS</sub>	5.5V	No load		4	6	μA
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	-	4.5V ≤ V <sub>IN</sub> ≤ 24V I <sub>OUT</sub> =1mA		0.2		%/V
Temperature Coefficient	$\frac{\Delta V_{OUT}}{\Delta T_a}$	5.5V	I <sub>OUT</sub> =10mA 0 °C < T <sub>a</sub> < 70 °C		±0.5		mV/°C

HT7136, +3.6V output type

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
		V <sub>IN</sub>	Conditions				
Output Voltage Tolerance	V <sub>OUT</sub>	5.6V	I <sub>OUT</sub> =10mA	3.42	3.6	3.78	V
Input Voltage	V <sub>IN</sub>	-				24	
Load Regulation	ΔV <sub>OUT</sub>	5.6V	1mA ≤ I <sub>OUT</sub> ≤ 30mA		60	100	mV
Voltage Drop	V <sub>DIF</sub>	-	I <sub>OUT</sub> =1mA		60		
Output Current	I <sub>OUT</sub>	5.6V		20	30		mA
Current Consumption	I <sub>SS</sub>	5.6V	No load		3	7	μA
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	-	4.6V ≤ V <sub>IN</sub> ≤ 12V I <sub>OUT</sub> =1mA		0.2		%/V
Temperature Coefficient	$\frac{\Delta V_{OUT}}{\Delta T_a}$	5.6V	I <sub>OUT</sub> =10mA 0 °C < T <sub>a</sub> < 70 °C		±0.6		mV/°C

## High Voltage Regulator

### HT71XX

#### ■ Electrical Characteristics Ta = 25°C

HT7144, +4.4V output type

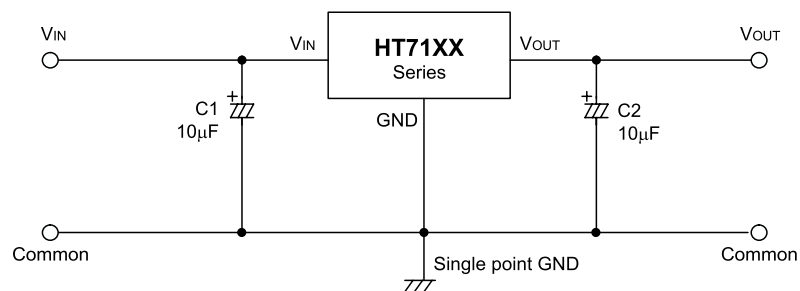
Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
		V <sub>IN</sub>	Conditions				
Output Voltage Tolerance	V <sub>OUT</sub>	6.4V	I <sub>OUT</sub> =10mA	4.18	4.4	4.62	V
Input Voltage	V <sub>IN</sub>	-				24	
Load Regulation	ΔV <sub>OUT</sub>	6.4V	1mA ≤ I <sub>OUT</sub> ≤ 30mA		60	100	mV
Voltage Drop	V <sub>DIF</sub>	-	I <sub>OUT</sub> =1mA		100		
Output Current	I <sub>OUT</sub>	6.4V		20	30		mA
Current Consumption	I <sub>SS</sub>	6.4V	No load		4	7.5	μA
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	-	5.4V ≤ V <sub>IN</sub> ≤ 24V I <sub>OUT</sub> =1mA		0.2		%/V
Temperature Coefficient	$\frac{\Delta V_{OUT}}{\Delta T_a}$	6.4V	I <sub>OUT</sub> =10mA 0 °C < T <sub>a</sub> < 70 °C		±0.7		mV/°C

HT7150, +5.0V output type

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
		V <sub>IN</sub>	Conditions				
Output Voltage Tolerance	V <sub>OUT</sub>	7V	I <sub>OUT</sub> =10mA	4.75	5	5.25	V
Input Voltage	V <sub>IN</sub>	-				24	
Load Regulation	ΔV <sub>OUT</sub>	7V	1mA ≤ I <sub>OUT</sub> ≤ 30mA		60	100	mV
Voltage Drop	V <sub>DIF</sub>	-	I <sub>OUT</sub> =1mA		100		
Output Current	I <sub>OUT</sub>	7V		20	30		mA
Current Consumption	I <sub>SS</sub>	7V	No load		5	9	μA
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	-	6V ≤ V <sub>IN</sub> ≤ 24V I <sub>OUT</sub> =1mA		0.2		%/V
Temperature Coefficient	$\frac{\Delta V_{OUT}}{\Delta T_a}$	7V	I <sub>OUT</sub> =10mA 0 °C < T <sub>a</sub> < 70 °C		±0.75		mV/°C

#### ■ Application Circuits

Basic circuits

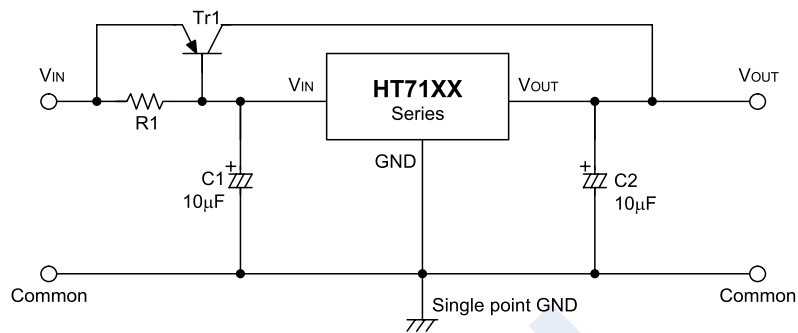
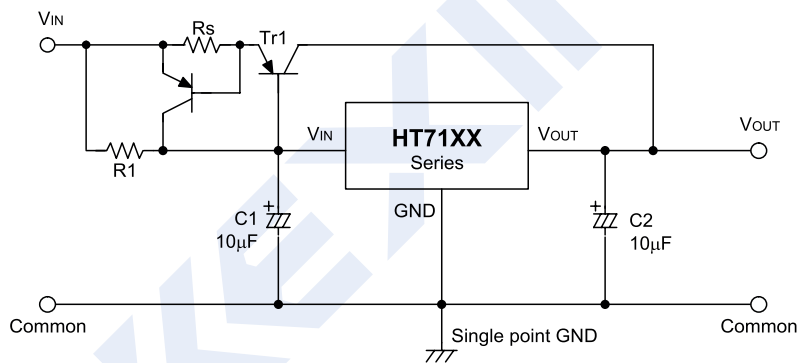


## High Voltage Regulator

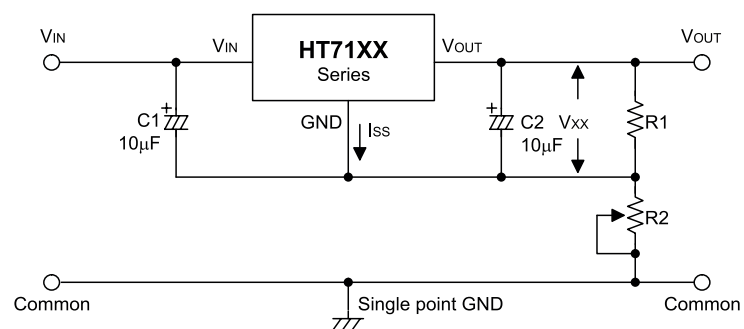
## HT71XX

## ■ Application Circuits

High output current positive voltage regulator

Short-Circuit protection by  $Tr1$ 

Circuit for increasing output voltage

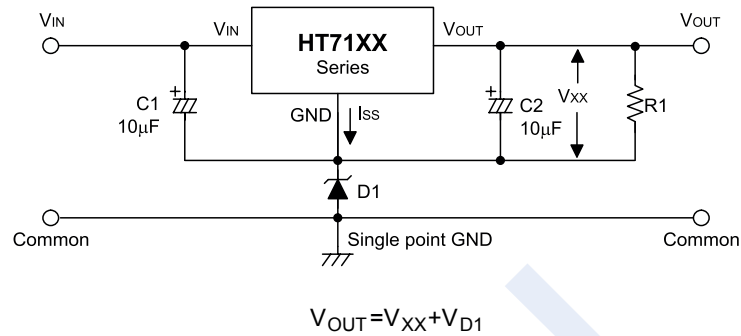


$$V_{OUT} = V_{XX} \left(1 + \frac{R2}{R1}\right) + I_{SS} R2$$

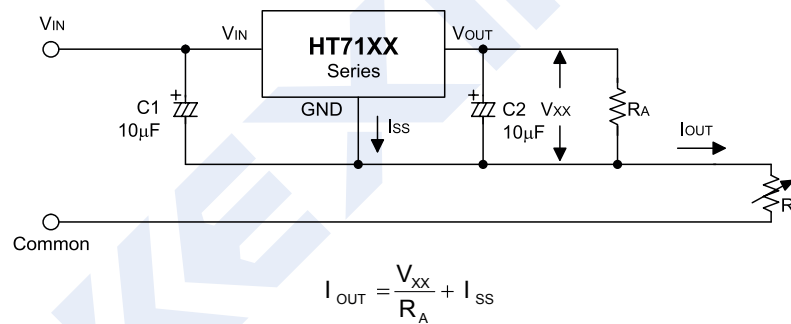
# High Voltage Regulator HT71XX

■ Application Circuits

Circuit for increasing output voltage



Constant current regulator



Dual supply

