HT74XX
Negative Voltage Regulator

Features

- Low power consumption
- Low voltage drop
- Low temperature coefficient
- High input voltage (up to –24V)
- High output current : 100mA ($P_d \leq 250mW$)
- TO-92 and SOT-89 package

Applications

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

General Description

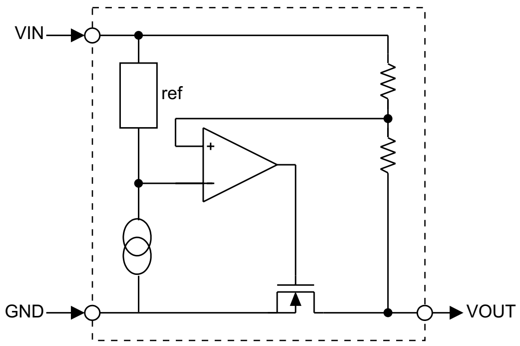
The HT74XX series is a set of three-terminal high current high voltage regulator implemented in CMOS technology. They can deliver 100mA output current and allow an input voltage as high as –24V. They are available with several fixed output voltages ranging from –2.4V to –15V. CMOS technology ensures 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.

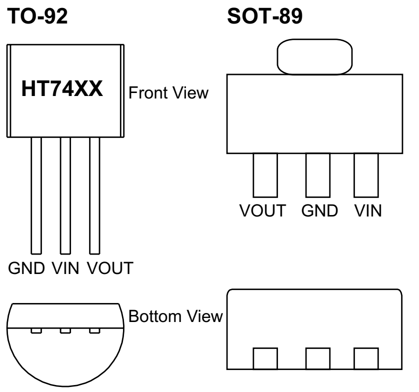
Selection Table

Part No.	Output Voltage	Tolerance
HT7430	–3.0V	±5%
HT7450	–5.0V	±5%

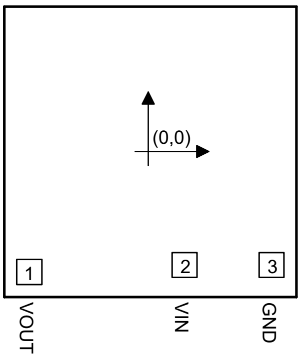
Block Diagram



Pin Assignment



Pad Assignment



Chip size: 1550 × 1562 $(\mu m)^2$

* The IC substrate should be connected to VDD in the PCB layout artwork.

Pad Coordinates

Unit: μm

Pad No.	X	Y
1	–571.75	–578.00
2	175.75	–545.50
3	592.25	–545.50

Absolute Maximum Ratings

Supply Voltage.............................+0.3V to –26V

Power Consumption............................. 250mW

Storage Temperature.................–50°C to 125°C

Operating Temperature ....0°C to 70°C

Note: These are stress ratings only. Stresses exceeding the range specified under "Absolute Maximum Ratings" may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.

Electrical Characteristics

HT7430, –3.0V output type

Ta=25°C

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
		V_{IN}	Conditions				
V_{OUT}	Output Voltage Tolerance	–5V	I_{OUT}=10mA	–2.85	–3.0	–3.15	V
I_{OUT}	Output Current	–5V	—	60	100	—	mA
ΔV_{OUT}	Load Regulation	–5V	1mA≤I_{OUT}≤50mA	—	60	120	mV
V_{DIF}	Voltage Drop	—	I_{OUT}=1mA	—	100	—	mV
I_{SS}	Current Consumption	–5V	No load	—	200	350	μA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	—	–4V≤V_{IN}≤–12V I_{OUT}=1mA	—	0.2	—	%/V
V_{IN}	Input Voltage	—	—	—	—	–24	V
$\frac{\Delta V_{OUT}}{\Delta T_a}$	Temperature Coefficient	–5V	I_{OUT}=10mA 0°C<Ta<70°C	—	±0.45	—	mV/°C

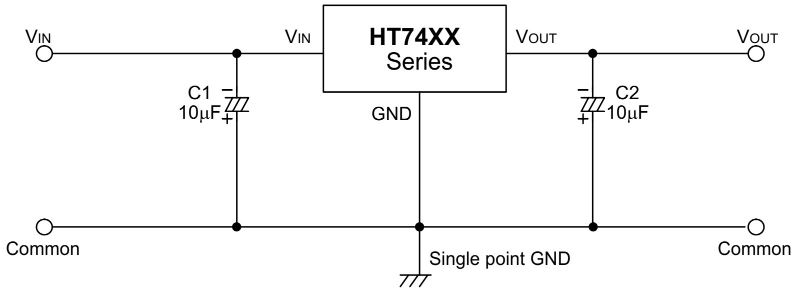
HT7450, –5.0V output type

Ta=25°C

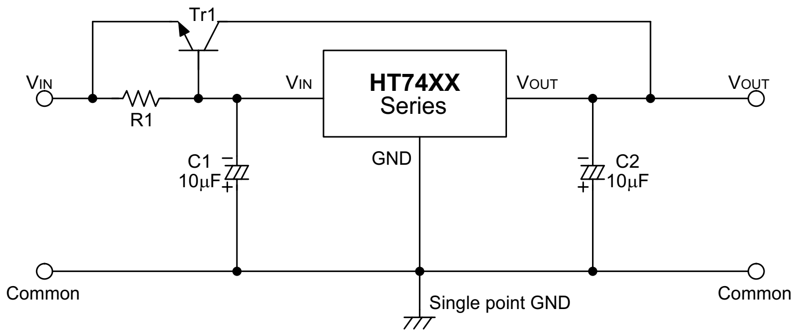
Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
		V_{IN}	Conditions				
V_{OUT}	Output Voltage	–7V	I_{OUT}=10mA	–4.75	–5.0	–5.25	V
I_{OUT}	Output Current	–7V	—	100	150	—	mA
ΔV_{OUT}	Load Regulation	–7V	1mA≤I_{OUT}≤30mA	—	60	150	mV
V_{DIF}	Voltage Drop	—	I_{OUT}=1mA	—	100	—	mV
I_{SS}	Current Consumption	–7V	No load	—	330	500	μA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	—	–6V≤V_{IN}≤–15V I_{OUT}=1mA	—	0.2	—	%/V
V_{IN}	Input Voltage	—	—	—	—	–24	V
$\frac{\Delta V_{OUT}}{\Delta T_a}$	Temperature Coefficient	–7V	I_{OUT}=10mA 0°C<Ta<70°C	—	±0.75	—	mV/°C

Application Circuits

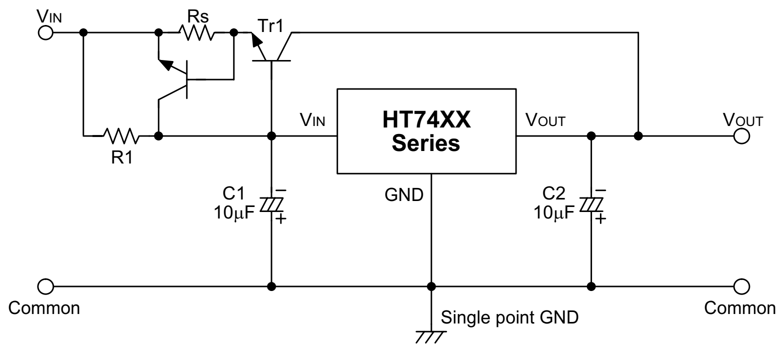
Basic circuit



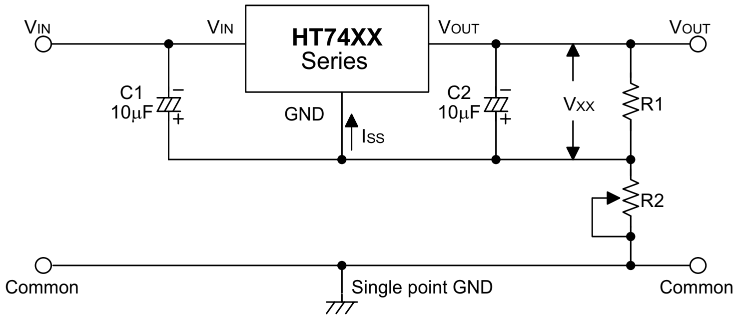
High output current positive voltage regulator



Short-Circuit protection by Tr1

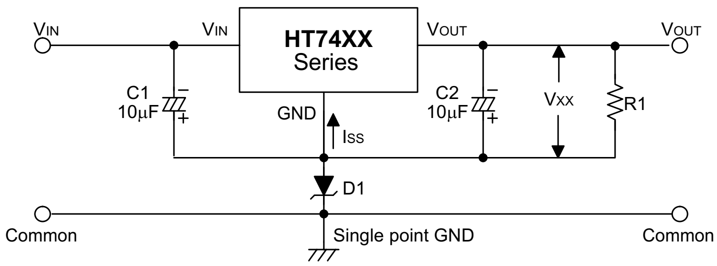


Circuit for increasing output voltage



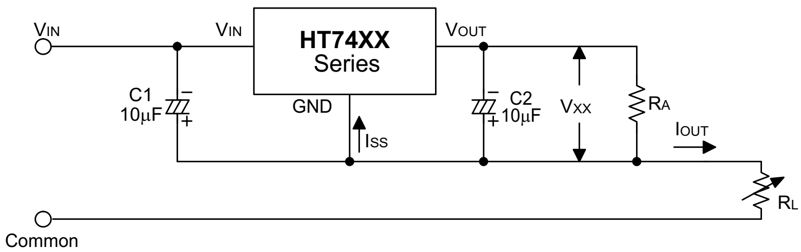
$$V_{OUT} = V_{XX}\left(1+\frac{R2}{R1}\right)+I_{SS}\,R2$$

Circuit for increasing output voltage



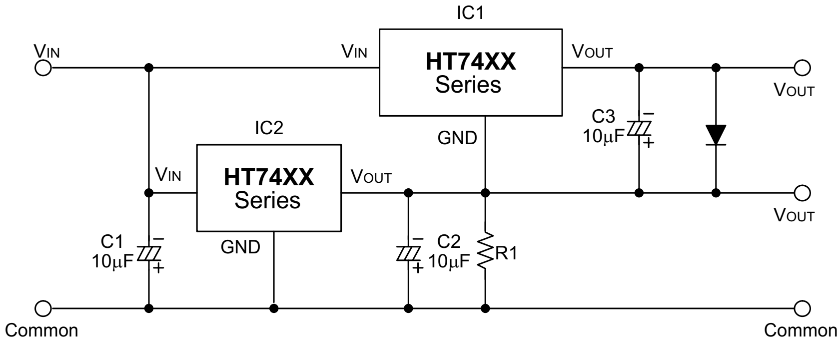
$$V_{OUT} = V_{XX} + V_{D1}$$

Constant current regulator



$$I_{OUT} = \frac{V_{XX}}{R_A} + I_{SS}$$

Dual supply


IC1
VIN
VIN
HT74XX
Series
VOUT
VOUT
GND
C3
10μF
IC2
VIN
HT74XX
Series
VOUT
VOUT
C1
10μF
GND
C2
10μF
R1
Common
Common

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