

Features

- Low power consumption
- Low voltage drop
- Low temperature coefficient
- High input voltage (up to 24V)
- High output current : 100mA ($P_d \leq 250\text{mW}$)
- Output voltage accuracy: tolerance $\pm 1\%$
- SOT89 package

Applications

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

General Description

The HT75XX-2 series is a set of three-terminal low power high voltage 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 3.0V to 5.0V.

CMOS technology ensures low voltage drop and low quiescent current.

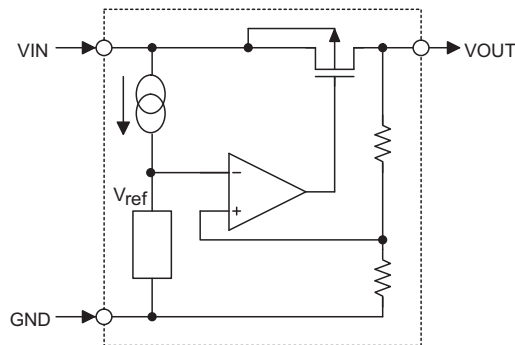
Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain variable voltages and currents.

Selection Table

Part No.	Output Voltage	Package	Marking
HT7530-2	3.0V	SOT89	75XX-2# (for SOT89)
HT7533-2	3.3V		
HT7536-2	3.6V		
HT7540-2	4.0V		
HT7544-2	4.4V		
HT7550-2	5.0V		

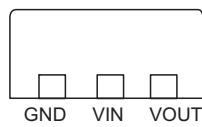
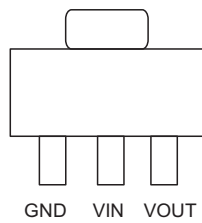
Note: "XX" stands for output voltages.
"#" stands for lead free devices.

Block Diagram



Pin Assignment

SOT89



Absolute Maximum Ratings

Supply Voltage	-0.3V to 26V	Storage Temperature	-50°C to 125°C
Power Consumption (*)	250mW	Operating Temperature	-40°C to 85°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.

*: applied to SOT89

Pin Descriptions

Pin No.	Pin Name	Pin Description
1	GND	Ground pin
2	VIN	Input pin
3	VOUT	Output pin

Electrical Characteristics

$V_{IN} = V_{OUT} + 2V, C_{IN} = C_{O} = 10\mu F$

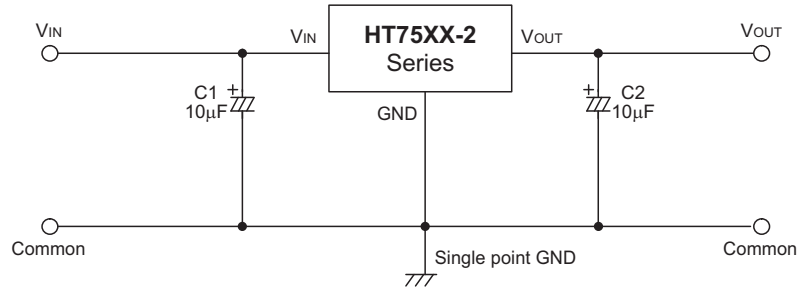
$T_a = 25^\circ C$

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit	
		Conditions					
V_{IN}	Input Voltage	—	—	—	24	V	
V_{OUT}	Output Voltage Tolerance	$I_{OUT} = 10mA$	-1%		+1%	V	
I_{OUT}	Output Current	$3.0V \leq V_{OUT} \leq 4.4V$	70	100	—	mA	
		$V_{OUT} = 5.0V$	100	150	—	mA	
ΔV_{OUT}	Load Regulation	$3.0V \leq V_{OUT} \leq 3.6V$ $1mA \leq I_{OUT} \leq 50mA$	—	10	45	mV	
		$4.0V \leq V_{OUT} \leq 5.0V$ $1mA \leq I_{OUT} \leq 50mA$	—	13	65	mV	
		$V_{OUT} = 5.0V$ $1mA \leq I_{OUT} \leq 70mA$	—	17	80	mV	
V_{DIF}	Voltage Drop (Note)	$I_{OUT} = 10mA,$ $\Delta V_{OUT} = 2\%$	$3.0V \leq V_{OUT} < 3.6V$	—	0.23	0.41	V
			$V_{OUT} = 3.6V$		0.19	0.35	V
			$4.0V \leq V_{OUT} < 5.0V$		0.16	0.30	V
			$V_{OUT} = 5.0V$		0.12	0.25	V
I_{SS}	Quiescent Current	No load	—	2.5	5.0	μA	
V_{IN}	Line Regulation	$V_{IN} = V_{OUT} + 1V \leq V_{IN} \leq 24V, I_{OUT} = 1mA$	—	0.1	0.2	%/V	
$\frac{\Delta V_{OUT}}{\Delta T_a}$	Temperature Coefficient	$I_{OUT} = 10mA$ $-40^\circ C < T_a < 85^\circ C$	$3.0V \leq V_{OUT} \leq 5.0V$	—	100	—	ppm/ $^\circ C$

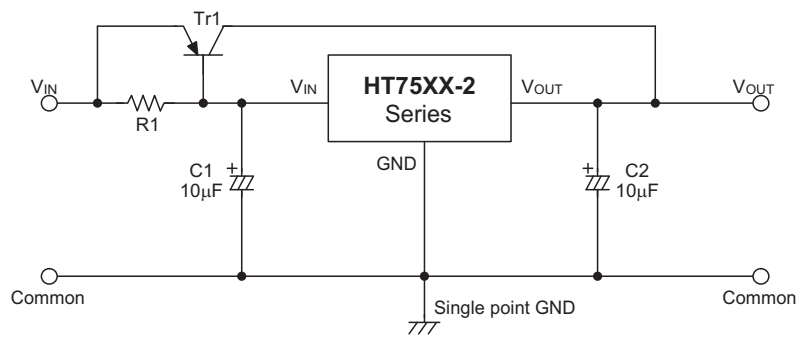
Note: Dropout voltage is defined as the input voltage minus the output voltage that produces a 2% change in the output voltage from the value at $V_{IN} = V_{OUT} + 2V$ with a fixed load.

Application Circuits

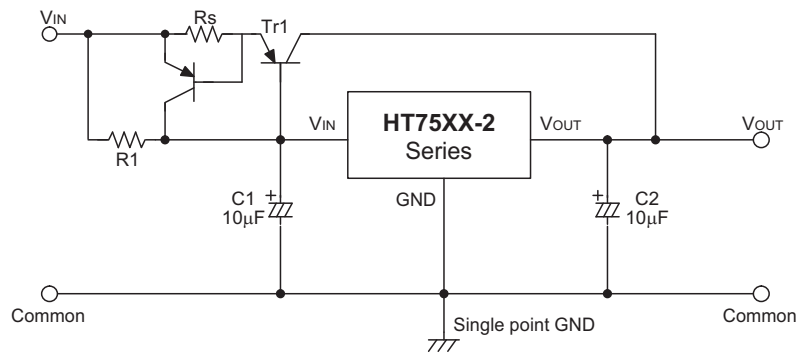
Basic Circuit



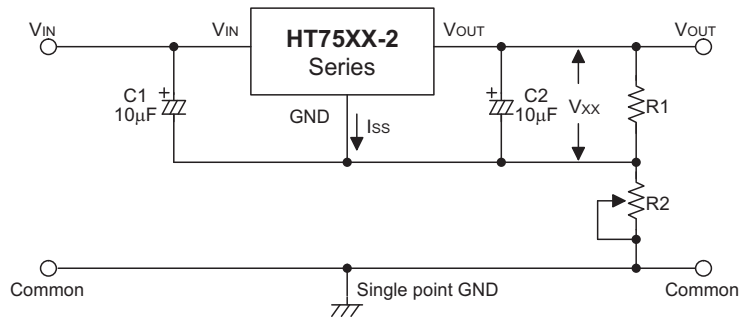
High Output Current Positive Voltage Regulator



Short-Circuit Protection for Tr1

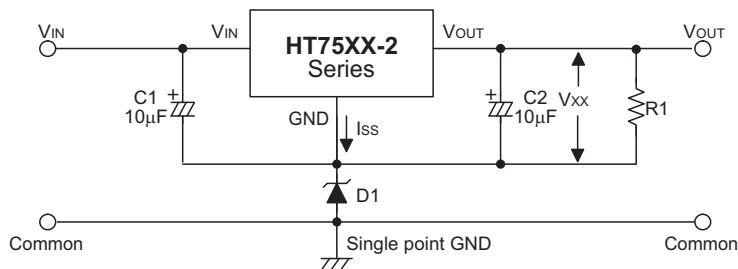


Circuit for Increasing Output Voltage



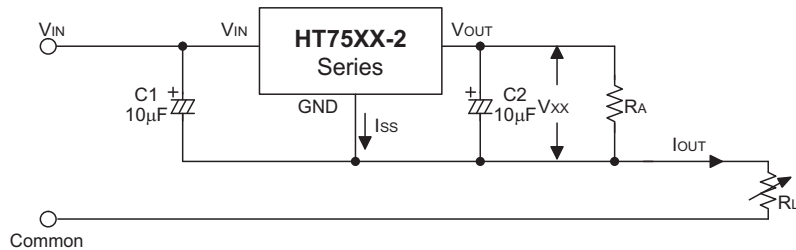
$$V_{OUT} = V_{xx} \left(1 + \frac{R2}{R1} \right) + I_{ss} R2$$

Circuit for Increasing Output Voltage



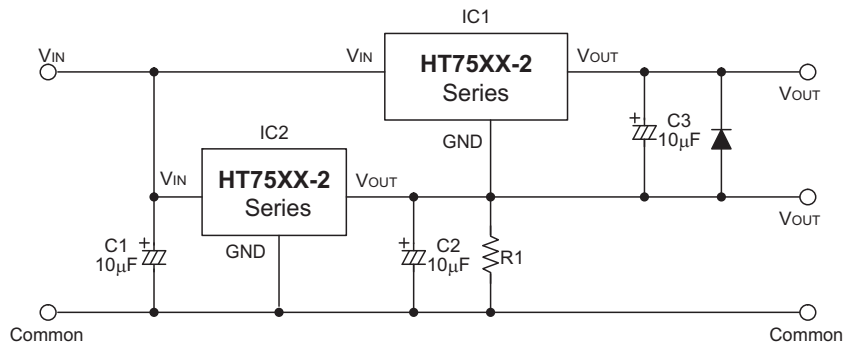
$$V_{OUT} = V_{xx} + V_{D1}$$

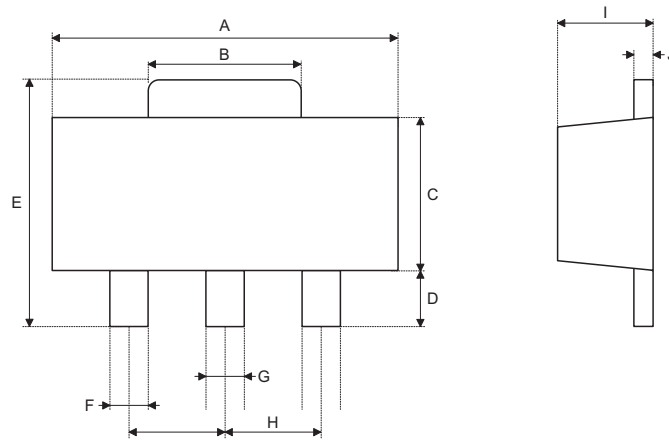
Constant Current Regulator



$$I_{OUT} = \frac{V_{xx}}{R_A} + I_{ss}$$

Dual Supply



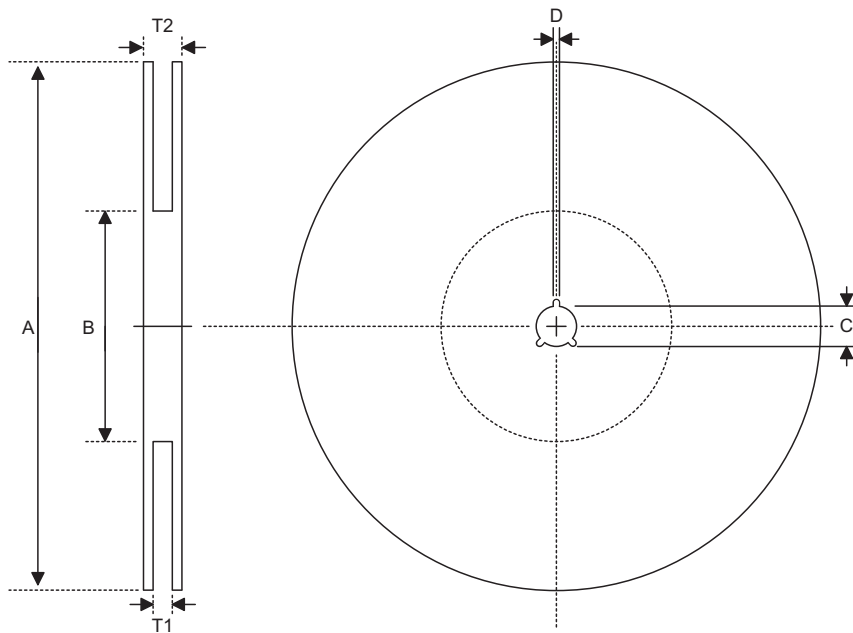
Package Information
3-pin SOT89 Outline Dimensions


Symbol	Dimensions in inch		
	Min.	Nom.	Max.
A	0.173	—	0.181
B	0.059	—	0.072
C	0.090	—	0.102
D	0.035	—	0.047
E	0.155	—	0.167
F	0.014	—	0.019
G	0.017	—	0.022
H	—	0.059	—
I	55	—	63
J	14	—	17

Symbol	Dimensions in mm		
	Min.	Nom.	Max.
A	4.39	—	4.60
B	1.50	—	1.83
C	2.29	—	2.59
D	0.89	—	1.19
E	3.94	—	4.24
F	0.36	—	0.48
G	0.43	—	0.56
H	—	1.50	—
I	1.40	—	1.60
J	0.36	—	0.43

Product Tape and Reel Specifications

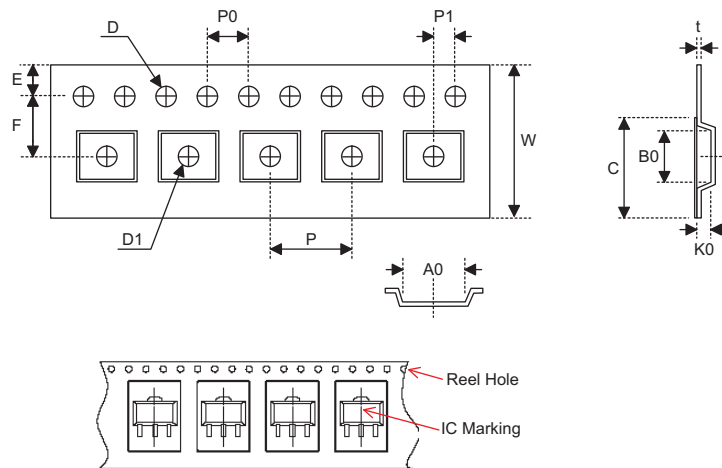
Reel Dimensions



SOT89-3

Symbol	Description	Dimensions in mm
A	Reel Outer Diameter	180±1
B	Reel Inner Diameter	62±1.5
C	Spindle Hole Diameter	12.75+0.15
D	Key Slit Width	1.9±0.15
T1	Space Between Flange	12.4+0.2
T2	Reel Thickness	17-0.4

Carrier Tape Dimensions



SOT89-3

Symbol	Description	Dimensions in mm
W	Carrier Tape Width	12.0 ^{+0.3/-0.1}
P	Cavity Pitch	8.0±0.1
E	Perforation Position	1.75±0.10
F	Cavity to Perforation (Width Direction)	5.50±0.05
D	Perforation Diameter	1.5+0.1
D1	Cavity Hole Diameter	1.5+0.1
P0	Perforation Pitch	4.0±0.1
P1	Cavity to Perforation (Length Direction)	2.0±0.1
A0	Cavity Length	4.8±0.1
B0	Cavity Width	4.5±0.1
K0	Cavity Depth	1.8±0.1
t	Carrier Tape Thickness	0.300±0.013
C	Cover Tape Width	9.3

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