HT75XX-2
100mA Low Power LDO

Features

- Low power consumption
- Low voltage drop
- Low temperature coefficient
- High input voltage (up to 24V)
- High output current : 100mA ($P_d \leq 250mW$)
- Output voltage accuracy: tolerance ±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.

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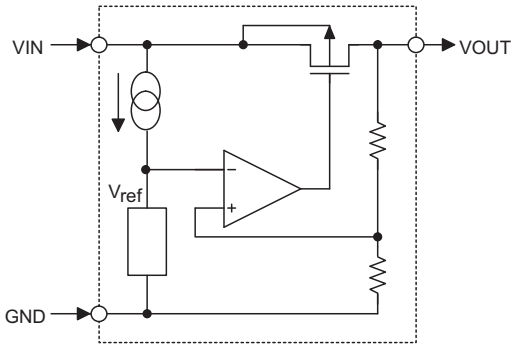
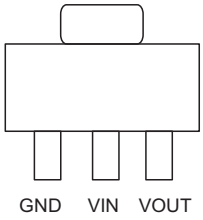
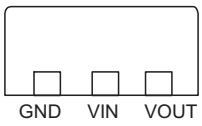
Block Diagram



Pin Assignment

SOT89





Absolute Maximum Ratings

Supply Voltage .....–0.3V to 26V

Power Consumption (*) 250mW

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

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

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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=10μF Ta=25°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≤V_{OUT}≤4.4V		70	100	—	mA
		V_{OUT}=5.0V		100	150	—	mA
ΔV_{OUT}	Load Regulation	3.0V≤V_{OUT}≤3.6V 1mA≤I_{OUT}≤50mA		—	10	45	mV
		4.0V≤V_{OUT}≤5.0V 1mA≤I_{OUT}≤50mA		—	13	65	mV
		V_{OUT}=5.0V 1mA≤I_{OUT}≤70mA		—	17	80	mV
V_{DIF}	Voltage Drop (Note)	I_{OUT}=10mA, ΔV_{OUT}=2%	3.0V≤V_{OUT}<3.6V	—	0.23	0.41	V
			V_{OUT}=3.6V		0.19	0.35	V
			4.0V≤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≤V_{IN}≤24V, I_{OUT}=1mA		—	0.1	0.2	%/V
$\frac{\Delta V_{OUT}}{\Delta T_a}$	Temperature Coefficient	I_{OUT}=10mA -40°C<Ta<85°C	3.0V≤V_{OUT}≤5.0V	—	100	—	ppm/°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.

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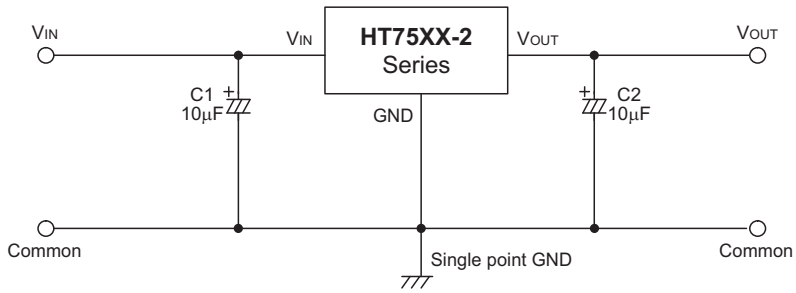
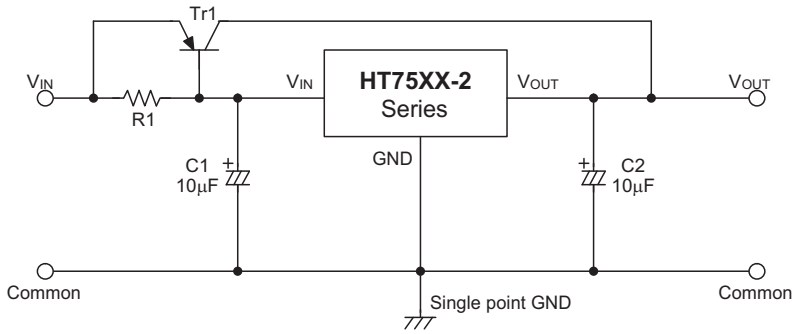
Application Circuits

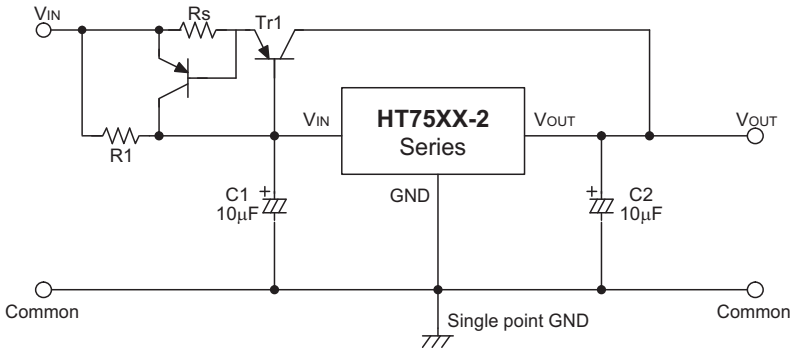
Basic Circuit



High Output Current Positive Voltage Regulator



Short-Circuit Protection for Tr1



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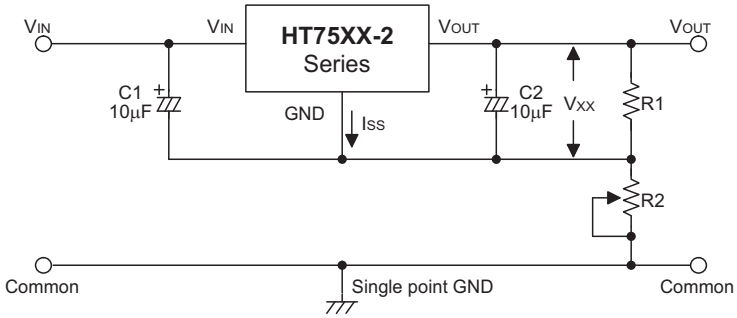
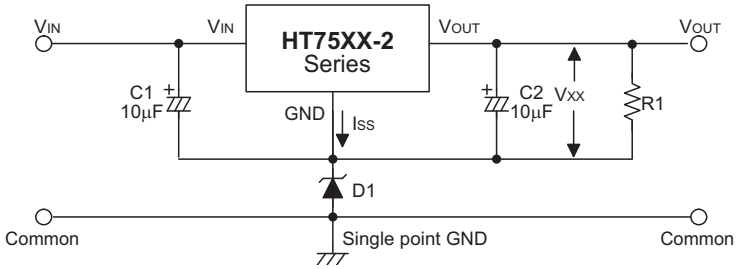
Circuit for Increasing Output Voltage



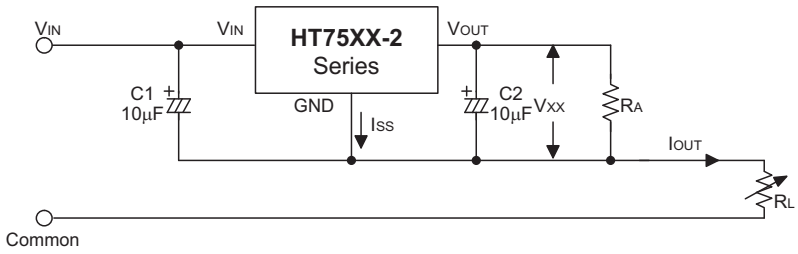
$$V_{OUT} = V_{XX} \left(1 + \frac{R2}{R1}\right) + I_{SS} R2$$

Circuit for Increasing Output Voltage



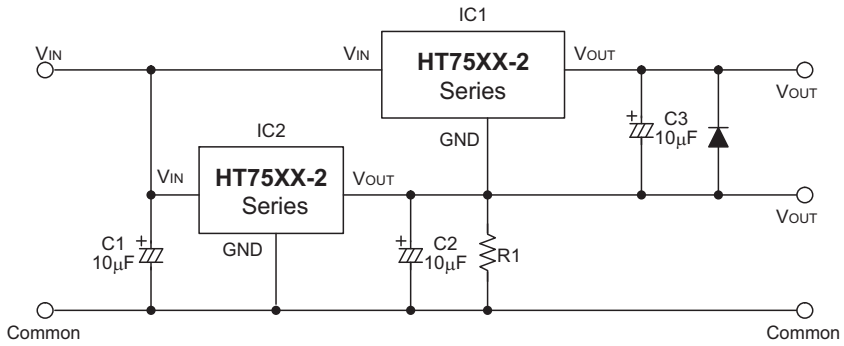
$$V_{OUT} = V_{XX} + V_{D1}$$

Constant Current Regulator



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

Dual Supply



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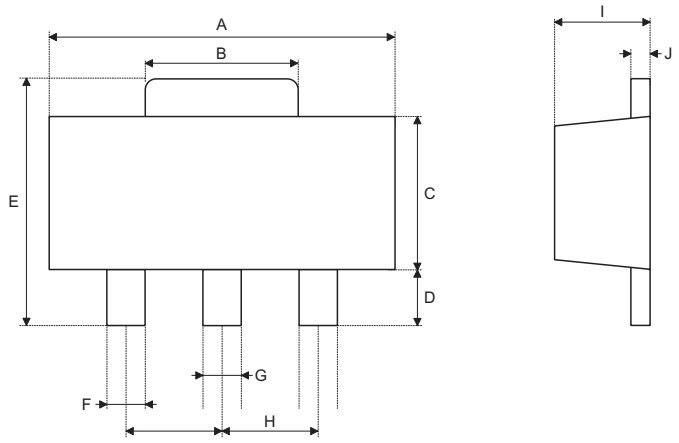
Package Information

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

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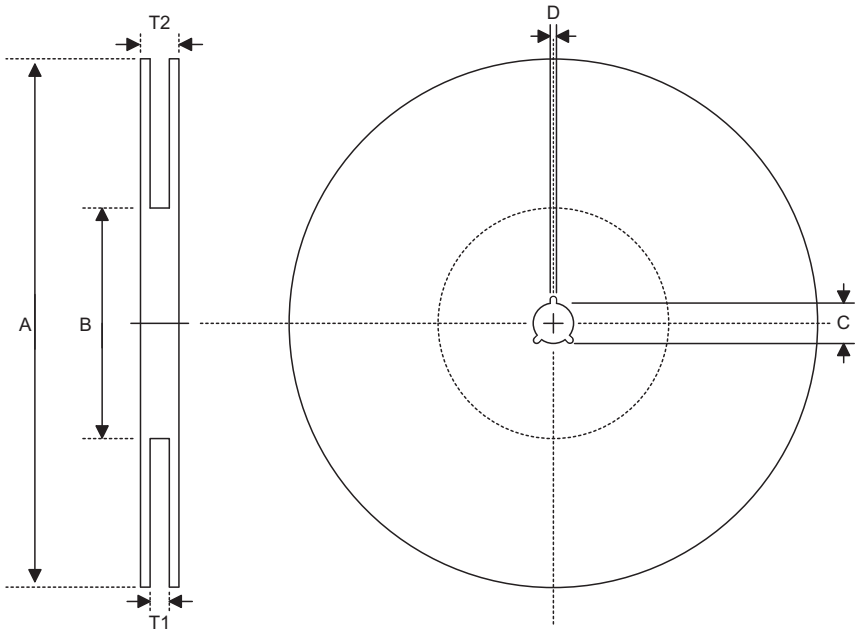
Product Tape and Reel Specifications

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

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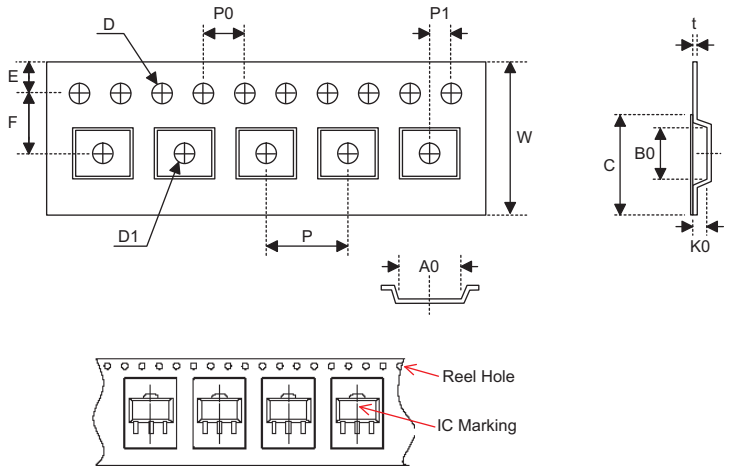
Carrier Tape Dimensions



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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胜特力电子(上海) 86-21-34970699
胜特力电子(深圳) 86-755-83298787
Http://www.100y.com.tw

Holtek Semiconductor Inc. (Headquarters)
No.3, Creation Rd. II, Science Park, Hsinchu, Taiwan
Tel: 886-3-563-1999
Fax: 886-3-563-1189
http://www.holtek.com.tw

Holtek Semiconductor Inc. (Taipei Sales Office)
4F-2, No. 3-2, YuanQu St., Nankang Software Park, Taipei 115, Taiwan
Tel: 886-2-2655-7070
Fax: 886-2-2655-7373
Fax: 886-2-2655-7383 (International sales hotline)

Holtek Semiconductor Inc. (Shenzhen Sales Office)
5F, Unit A, Productivity Building, Gaoxin M 2nd, Middle Zone Of High-Tech Industrial Park, ShenZhen, China 518057
Tel: 86-755-8616-9908, 86-755-8616-9308
Fax: 86-755-8616-9722

Holtek Semiconductor (USA), Inc. (North America Sales Office)
46729 Fremont Blvd., Fremont, CA 94538
Tel: 1-510-252-9880
Fax: 1-510-252-9885
http://www.holtek.com

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