#### **Features**

- Low power consumption
- · Low voltage drop
- · Low temperature coefficient
- High input voltage (up to 30V)
- Quiescent current 2.5µA
- High output current: 100mA
- Output voltage accuracy: tolerance ±3%
- 3-pin TO92, 3-pin SOT89 and 5-pin SOT23 packages

# **Applications**

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

# **General Description**

The HT75xx-1 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 30V. They are available with several fixed output voltages ranging from 2.1V to 12.0V. 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**

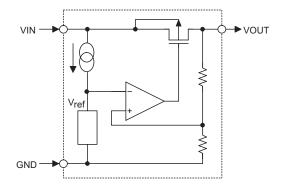
Part No.	Output Voltage	Package	Marking
HT7521-1	2.1V		
HT7523-1	2.3V		
HT7525-1	2.5V		
HT7527-1	2.7V		
HT7530-1	3.0V		
HT7533-1	3.3V		
HT7536-1	3.6V		
HT7540-1	4.0V	TO92 SOT89 SOT23-5	75xx-1 (for TO92)
HT7544-1	4.4V		75xx-1 (for SOT89) 5xx1 (for SOT23-5)
HT7550-1	5.0V		(101 00 100 0)
HT7560-1	6.0V		
HT7570-1	7.0V		
HT7580-1	8.0V		
HT7590-1	9.0V		
HT75A0-1	10.0V		
HT75C0-1	12.0V		

Note: "xx" stands for output voltages.

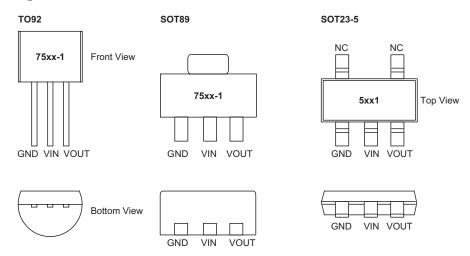
Rev. 2.50 1 March 19, 2019



# **Block Diagram**



# **Pin Assignment**



# **AbsolutemAximum Ratings**

Supply Voltage0.3V to 33V	Operating Temperature40°C to 85°C
Storage Temperature50°C to 125°C	Maximum Junction Temperature

Note: These are stress ratings only. Stresses exceeding the range specified under "AbsolutemAximum 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 conditionsmAy affect device reliability.

## **Thermal Information**

Symbol	Parameter	Package	Max.	Unit
		SOT23-5	500	°C/W
θЈΑ	Thermal Resistance (Junction to Ambient) (Assume no ambient airflow, no heat sink)	SOT89	200	°C/W
	(Assume no ambient aimow, no neat sink)	nt airflow, no heat sink)  TO92	200	°C/W
		SOT23-5	0.20	W
P□	Power Dissipation	SOT89	0.50	W
		TO92	0.50	W

Note: P<sub>D</sub> is measured at Ta=25°C

Rev. 2.50 2 March 19, 2019



# **Pin Descriptions**

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

## **Electrical Characteristics**

## HT7521-1, +2.1V Output Type

Ta=25°C

Cumbal	Parameter	Test Conditions	Min.	Tim	Max.	Unit
Symbol	Parameter	Conditions	IVIIII.	Тур.	IVIAX.	Unit
V <sub>IN</sub>	Input Voltage	_	_	_	30	V
V <sub>OUT</sub>	Output Voltage	V <sub>IN</sub> =4.1V, I <sub>OUT</sub> =10mA	2.037	2.100	2.163	V
Гоит	Output Current	V <sub>IN</sub> =4.1V	70	100	_	mA
$\Delta V_{OUT}$	Load Regulation	V <sub>IN</sub> =4.1V, 1mA≤I <sub>OUT</sub> ≤50mA	_	25	60	mV
V <sub>DIF</sub>	Dropout Voltage (Note)	Ι <sub>ουτ</sub> =1mA, ΔV <sub>ουτ</sub> =2%	_	30	100	mV
Iss	Quiescent Current	No load	_	2.5	4.0	μA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	3.1V≤V <sub>IN</sub> ≤30V, I <sub>OUT</sub> =1mA	_	_	0.2	%/V
$\Delta V$ OUT $\Delta T_a \times V$ OUT	Temperature Coefficient	I <sub>оит</sub> =10mA, -40°С<Т <sub>а</sub> <85°С	_	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.

# HT7523-1, +2.3V Output Type

Ta=25°C

Cymphol	Parameter	Test Conditions	Min.	Tim	Max.	Unit
Symbol	Parameter	Conditions	IVIIII.	Тур.	wax.	Unit
Vin	Input Voltage	_	_	_	30	V
V <sub>оит</sub>	Output Voltage Tolerance	V <sub>IN</sub> =4.3V, I <sub>OUT</sub> =10mA	2.231	2.300	2.369	V
Гоит	Output Current	V <sub>IN</sub> =4.3V	70	100	_	mA
$\Delta V_{\text{OUT}}$	Load Regulation	V <sub>IN</sub> =4.3V, 1mA≤I <sub>OUT</sub> ≤50mA	_	25	60	mV
V <sub>DIF</sub>	Dropout Voltage (Note)	Ι <sub>ΟυΤ</sub> =1mA, ΔV <sub>ΟυΤ</sub> =2%	_	30	100	mV
Iss	Quiescent Current	No load	_	2.5	4.0	μA
$\frac{\Delta V_{\text{OUT}}}{\Delta V_{\text{IN}} \times V_{\text{OUT}}}$	Line Regulation	3.3V≤V <sub>IN</sub> ≤30V, I <sub>OUT</sub> =1mA	_	_	0.2	%/V
$\frac{\Delta V_{OUT}}{\Delta T_{a} \times V_{OUT}}$	Temperature Coefficient	I <sub>оит</sub> =10mA, -40°С<Та<85°С	_	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.

Rev. 2.50 3 March 19, 2019



## HT7525-1, +2.5V Output Type

Ta=25°C

Ob. al	D	Test Conditions	B.41	T		1114
Symbol	Parameter	Conditions	Min.	Тур.	Max.	Unit
Vin	Input Voltage	_	_	_	30	V
V <sub>оит</sub>	Output Voltage	V <sub>IN</sub> =4.5V, I <sub>OUT</sub> =10mA	2.425	2.500	2.575	V
I <sub>OUT</sub>	Output Current	V <sub>IN</sub> =4.5V	70	100	_	mA
$\Delta V_{\text{OUT}}$	Load Regulation	V <sub>IN</sub> =4.5V, 1mA≤I <sub>OUT</sub> ≤50mA	_	25	60	mV
V <sub>DIF</sub>	Dropout Voltage (Note)	I <sub>OUT</sub> =1mA, ΔV <sub>OUT</sub> =2%	_	30	100	mV
I <sub>SS</sub>	Quiescent Current	No load	_	2.5	4.0	μA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	3.5V≤V <sub>IN</sub> ≤30V, I <sub>OUT</sub> =1mA	_	_	0.2	%/V
$\frac{\Delta V_{OUT}}{\Delta T_{a} \times V_{OUT}}$	Temperature Coefficient	І <sub>оит</sub> =10mA, -40°C<Т <sub>а</sub> <85°C	_	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.

# HT7527-1, +2.7V Output Type

Ta=25°C

Counch of	Downwoodow	Test Conditions	Min	T	Marr	11
Symbol	Parameter	Conditions	Min.	Тур.	Max.	Unit
Vin	Input Voltage	_	_	_	30	V
Vout	Output Voltage	V <sub>IN</sub> =4.7V, I <sub>OUT</sub> =10mA	2.619	2.700	2.781	V
I <sub>OUT</sub>	Output Current	V <sub>IN</sub> =4.7V	70	100	_	mA
ΔVουτ	Load Regulation	V <sub>IN</sub> =4.7V, 1mA≤I <sub>OUT</sub> ≤50mA	_	25	60	mV
V <sub>DIF</sub>	Dropout Voltage (Note)	I <sub>OUT</sub> =1mA, ΔV <sub>OUT</sub> =2%	_	30	100	mV
I <sub>SS</sub>	Quiescent Current	No load	_	2.5	4.0	μA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	3.7V≤V <sub>IN</sub> ≤30V, I <sub>OUT</sub> =1mA	_	_	0.2	%/V
$\Delta V$ OUT $\Delta T_a \times V$ OUT	Temperature Coefficient	I <sub>оит</sub> =10mA, -40°С<Т <sub>а</sub> <85°С	_	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  $V_{\text{IN}}=V_{\text{OUT}}+2V$  with a fixed load.

Rev. 2.50 4 March 19, 2019



## HT7530-1, +3.0V Output Type

Ta=25°C

0	Barranadara	Test Conditions	Min	T		1114
Symbol	Parameter	Conditions	Min.	Тур.	Max.	Unit
Vin	Input Voltage	_	_	_	30	V
V <sub>оит</sub>	Output Voltage	V <sub>IN</sub> =5.0V, I <sub>OUT</sub> =10mA	2.910	3.000	3.090	V
I <sub>OUT</sub>	Output Current	V <sub>IN</sub> =5.0V	70	100	_	mA
ΔVουτ	Load Regulation	V <sub>IN</sub> =5.0V, 1mA≤I <sub>OUT</sub> ≤50mA	_	25	60	mV
V <sub>DIF</sub>	Dropout Voltage (Note)	Ι <sub>ουτ</sub> =1mA, ΔV <sub>ουτ</sub> =2%	_	30	100	mV
I <sub>SS</sub>	Quiescent Current	No load	_	2.5	4.0	μA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	4.0V≤V <sub>IN</sub> ≤30V, I <sub>OUT</sub> =1mA	_	_	0.2	%/V
$\Delta V$ OUT $\Delta T_a \times V$ OUT	Temperature Coefficient	І <sub>оит</sub> =10mA, -40°C<Т <sub>а</sub> <85°C	_	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.

# HT7533-1, +3.3V Output Type

Ta=25°C

Comple ed	Downwater	Test Conditions	B.d.i.e	T	Mass	11:014
Symbol	Parameter	Conditions	Min.	Тур.	Max.	Unit
V <sub>IN</sub>	Input Voltage	_	_	_	30	V
V <sub>OUT</sub>	Output Voltage	V <sub>IN</sub> =5.3V, I <sub>OUT</sub> =10mA	3.201	3.300	3.399	V
I <sub>OUT</sub>	Output Current	V <sub>IN</sub> =5.3V	70	100	_	mA
ΔVουτ	Load Regulation	V <sub>IN</sub> =5.3V, 1mA≤I <sub>OUT</sub> ≤50mA	_	25	60	mV
V <sub>DIF</sub>	Dropout Voltage (Note)	I <sub>OUT</sub> =1mA, ΔV <sub>OUT</sub> =2%	_	25	55	mV
I <sub>SS</sub>	Quiescent Current	No load	_	2.5	4.0	μA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	4.3V≤V <sub>IN</sub> ≤30V, I <sub>OUT</sub> =1mA	_	_	0.2	%/V
$\Delta V$ OUT $\Delta T_a \times V$ OUT	Temperature Coefficient	I <sub>оит</sub> =10mA, -40°С<Т <sub>а</sub> <85°С	_	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.

Rev. 2.50 5 March 19, 2019



## HT7536-1, +3.6V Output Type

Ta=25°C

Ob. al	D	Test Conditions	B.41	T		1114
Symbol	Parameter	Conditions	Min.	Тур.	Max.	Unit
Vin	Input Voltage	_	_	_	30	V
Vout	Output Voltage	V <sub>IN</sub> =5.6V, I <sub>OUT</sub> =10mA	3.492	3.600	3.708	V
I <sub>OUT</sub>	Output Current	V <sub>IN</sub> =5.6V	70	100	_	mA
ΔV <sub>OUT</sub>	Load Regulation	V <sub>IN</sub> =5.6V, 1mA≤I <sub>OUT</sub> ≤50mA	_	25	60	mV
V <sub>DIF</sub>	Dropout Voltage (Note)	I <sub>OUT</sub> =1mA, ΔV <sub>OUT</sub> =2%	_	25	55	mV
I <sub>SS</sub>	Quiescent Current	No load	_	2.5	4.0	μA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	4.6V≤V <sub>IN</sub> ≤30V, I <sub>OUT</sub> =1mA	_	_	0.2	%/V
$\Delta V$ OUT $\Delta T_a \times V$ OUT	Temperature Coefficient	І <sub>оит</sub> =10mA, -40°C<Т <sub>а</sub> <85°C	_	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.

# HT7540-1, +4.0V Output Type

Ta=25°C

Cumah al	Downwater	Test Conditions	Min	T	Mass	11:0:4
Symbol	Parameter	Conditions	Min.	Тур.	Max.	Unit
Vin	Input Voltage	_	_	_	30	V
Vout	Output Voltage	V <sub>IN</sub> =6.0V, I <sub>OUT</sub> =10mA	3.880	4.000	4.120	V
I <sub>OUT</sub>	Output Current	V <sub>IN</sub> =6.0V	70	100	_	mA
$\Delta V_OUT$	Load Regulation	V <sub>IN</sub> =6.0V, 1mA≤I <sub>OUT</sub> ≤50mA	_	25	60	mV
V <sub>DIF</sub>	Dropout Voltage (Note)	I <sub>OUT</sub> =1mA, ΔV <sub>OUT</sub> =2%	_	25	55	mV
I <sub>SS</sub>	Quiescent Current	No load	_	2.5	4.0	μA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	5.0V≤V <sub>IN</sub> ≤30V, I <sub>OUT</sub> =1mA	_	_	0.2	%/V
$\frac{\Delta V_{OUT}}{\Delta T_{a} \times V_{OUT}}$	Temperature Coefficient	I <sub>о∪т</sub> =10mA, -40°C <t<sub>a&lt;85°C</t<sub>	_	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  $V_{\rm IN}=V_{\rm OUT}+2V$  with a fixed load.

Rev. 2.50 6 March 19, 2019



## HT7544-1, +4.4V Output Type

Ta=25°C

Ob. al	D	Test Conditions	Min Tun			1114
Symbol	Parameter	Conditions	Min.	Тур.	Max.	Unit
V <sub>IN</sub>	Input Voltage	_	_	_	30	V
Vout	Output Voltage	V <sub>IN</sub> =6.4V, I <sub>OUT</sub> =10mA	4.268	4.400	4.532	V
I <sub>OUT</sub>	Output Current	V <sub>IN</sub> =6.4V	70	100	_	mA
ΔV <sub>OUT</sub>	Load Regulation	V <sub>IN</sub> =6.4V, 1mA≤I <sub>OUT</sub> ≤50mA	_	25	60	mV
V <sub>DIF</sub>	Dropout Voltage (Note)	Ι <sub>ΟυΤ</sub> =1mA, ΔV <sub>ΟυΤ</sub> =2%	_	25	55	mV
I <sub>SS</sub>	Quiescent Current	No load	_	2.5	4.0	μA
$\frac{\Delta V_{\text{OUT}}}{\Delta V_{\text{IN}} \times V_{\text{OUT}}}$	Line Regulation	5.4V≤V <sub>IN</sub> ≤30V, I <sub>OUT</sub> =1mA	_	_	0.2	%/V
$\Delta V$ OUT $\Delta T_a \times V$ OUT	Temperature Coefficient	І <sub>оит</sub> =10mA, -40°C <t<sub>a&lt;85°C</t<sub>	_	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.

# HT7550-1, +5.0V Output Type

Ta=25°C

Ob. al	Down and an	Test Conditions	B.41	T	M	1114
Symbol	Parameter	Conditions	Min.	Тур.	Max.	Unit
V <sub>IN</sub>	Input Voltage	_	_	_	30	V
V <sub>OUT</sub>	Output Voltage	V <sub>IN</sub> =7.0V, I <sub>OUT</sub> =10mA	4.850	5.000	5.150	V
I <sub>OUT</sub>	Output Current	V <sub>IN</sub> =7.0V	100	150	_	mA
ΔVουτ	Load Regulation	V <sub>IN</sub> =7.0V, 1mA≤I <sub>OUT</sub> ≤70mA	_	25	60	mV
V <sub>DIF</sub>	Dropout Voltage (Note)	I <sub>OUT</sub> =1mA, ΔV <sub>OUT</sub> =2%	_	25	55	mV
I <sub>SS</sub>	Quiescent Current	No load	_	2.5	4.0	μA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	6.0V≤V <sub>IN</sub> ≤30V, I <sub>OUT</sub> =1mA	_	_	0.2	%/V
$\Delta V$ OUT $\Delta T$ a $\times$ $V$ OUT	Temperature Coefficient	I <sub>о∪т</sub> =10mA, -40°C <t<sub>a&lt;85°C</t<sub>	_	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  $V_{\text{IN}} = V_{\text{OUT}} + 2V$  with a fixed load.

Rev. 2.50 7 March 19, 2019



# HT7560-1, +6.0V Output Type

Ta=25°C

Counch of	Downwoodow	Test Conditions	Min	T	Mari	11::4
Symbol	Parameter	Conditions	Min.	Тур.	Max.	Unit
V <sub>IN</sub>	Input Voltage	_	_	_	30	V
Vout	Output Voltage	V <sub>IN</sub> =8.0V, I <sub>OUT</sub> =10mA	5.820	6.000	6.180	V
Гоит	Output Current	V <sub>IN</sub> =8.0V	150	_	_	mA
$\Delta V_{\text{OUT}}$	Load Regulation	V <sub>IN</sub> =8.0V, 1mA≤I <sub>OUT</sub> ≤70mA	_	25	60	mV
V <sub>DIF</sub>	Dropout Voltage (Note)	Ι <sub>ΟυΤ</sub> =1mA, ΔV <sub>ΟυΤ</sub> =2%	_	25	55	mV
Iss	Quiescent Current	No load	_	2.5	4.0	μΑ
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	7.0V≤V <sub>IN</sub> ≤30V, I <sub>OUT</sub> =1mA	_	0.2	_	%/V
$\Delta V$ OUT $\Delta T_a \times V$ OUT	Temperature Coefficient	I <sub>оит</sub> =10mA, -40°С<Т <sub>а</sub> <85°С	_	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.

# HT7570-1, +7.0V Output Type

Ta=25°C

Compleal	Davamatan	Test Conditions	Min	T	May	11
Symbol	Parameter	Conditions	Min.	Тур.	Max.	Unit
V <sub>IN</sub>	Input Voltage	_	_	_	30	V
V <sub>оит</sub>	Output Voltage	V <sub>IN</sub> =9.0V, I <sub>OUT</sub> =10mA	6.790	7.000	7.210	V
Гоит	Output Current	V <sub>IN</sub> =9.0V	150	_	_	mA
ΔVоυт	Load Regulation	V <sub>IN</sub> =9.0V, 1mA≤I <sub>OUT</sub> ≤70mA	_	25	60	mV
V <sub>DIF</sub>	Dropout Voltage (Note)	Ι <sub>ΟυΤ</sub> =1mA, ΔV <sub>ΟυΤ</sub> =2%	_	25	55	mV
Iss	Quiescent Current	No load	_	2.5	4.0	μA
$\frac{\Delta V_{\text{OUT}}}{\Delta V_{\text{IN}} \times V_{\text{OUT}}}$	Line Regulation	8.0V≤V <sub>IN</sub> ≤30V, I <sub>OUT</sub> =1mA	_	0.2	_	%/V
$\Delta V$ OUT $\Delta T_a \times V$ OUT	Temperature Coefficient	I <sub>о∪т</sub> =10mA, -40°C <t<sub>a&lt;85°C</t<sub>	_	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.

Rev. 2.50 8 March 19, 2019



## HT7580-1, +8.0V Output Type

Ta=25°C

Cumbal	Parameter	Test Conditions	Min.	Tim	Max.	Unit
Symbol	Parameter	Conditions	IVIIII.	Тур.	IVIAX.	Unit
V <sub>IN</sub>	Input Voltage	_	_	_	30	V
V <sub>оит</sub>	Output Voltage	V <sub>IN</sub> =10.0V, I <sub>OUT</sub> =10mA	7.760	8.000	8.240	V
Гоит	Output Current	V <sub>IN</sub> =10.0V	150	_	_	mA
$\Delta V_{OUT}$	Load Regulation	V <sub>IN</sub> =10.0V, 1mA≤I <sub>OUT</sub> ≤70mA	_	25	60	mV
V <sub>DIF</sub>	Dropout Voltage (Note)	Ι <sub>ΟυΤ</sub> =1mA, ΔV <sub>ΟυΤ</sub> =2%	_	25	55	mV
Iss	Quiescent Current	No load	_	2.5	4.0	μΑ
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	9.0V≤V <sub>IN</sub> ≤30V, I <sub>OUT</sub> =1mA	_	0.2	_	%/V
$\frac{\Delta V_{OUT}}{\Delta T_{a} \times V_{OUT}}$	Temperature Coefficient	І <sub>оит</sub> =10mA, -40°С<Т <sub>а</sub> <85°С	_	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.

## HT7590-1, +9.0V Output Type

Ta=25°C

Compleal	Downwater	Test Conditions	Min	T	Mass	I I m i 4
Symbol	Parameter	Conditions	Min.	Тур.	Max.	Unit
V <sub>IN</sub>	Input Voltage	_	_	_	30	V
Vout	Output Voltage	V <sub>IN</sub> =11.0V, I <sub>OUT</sub> =10mA	8.730	9.000	9.270	V
Гоит	Output Current	V <sub>IN</sub> =11.0V	150	_	_	mA
ΔVουτ	Load Regulation	V <sub>IN</sub> =11.0V, 1mA≤I <sub>OUT</sub> ≤70mA	_	25	70	mV
V <sub>DIF</sub>	Dropout Voltage (Note)	I <sub>OUT</sub> =1mA, ΔV <sub>OUT</sub> =2%	_	25	55	mV
Iss	Quiescent Current	No load	_	2.5	4.0	μA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	10.0V≤V <sub>IN</sub> ≤30V, I <sub>OUT</sub> =1mA	_	0.2	_	%/V
$\Delta V$ OUT $\Delta T_a \times V$ OUT	Temperature Coefficient	І <sub>оит</sub> =10mA, -40°C <t<sub>a&lt;85°C</t<sub>	_	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.

Rev. 2.50 9 March 19, 2019



# HT75A0-1, +10.0V Output Type

Ta=25°C

0	D	Test Conditions	N41	T	N4	1114
Symbol	Parameter	Conditions	Min.	Тур.	Max.	Unit
Vin	Input Voltage	_	_	_	30	V
V <sub>OUT</sub>	Output Voltage	V <sub>IN</sub> =12.0V, I <sub>OUT</sub> =10mA	9.700	10.000	10.300	V
Гоит	Output Current	V <sub>IN</sub> =12.0V	150	_	_	mA
$\Delta V_OUT$	Load Regulation	V <sub>IN</sub> =12.0V, 1mA≤I <sub>OUT</sub> ≤70mA	_	25	70	mV
V <sub>DIF</sub>	Dropout Voltage (Note)	I <sub>OUT</sub> =1mA, ΔV <sub>OUT</sub> =2%	_	25	55	mV
Iss	Quiescent Current	No load	_	2.5	4.0	μΑ
$\frac{\Delta V_{\text{OUT}}}{\Delta V_{\text{IN}} \times V_{\text{OUT}}}$	Line Regulation	11.0V≤V <sub>IN</sub> ≤30V, I <sub>OUT</sub> =1mA	_	0.2	_	%/V
$\Delta V$ OUT $\Delta T$ a $\times$ $V$ OUT	Temperature Coefficient	I <sub>оит</sub> =10mA, -40°С<Т <sub>а</sub> <85°С	_	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.

## HT75C0-1, +12.0V Output Type

Ta=25°C

Cymhal	Parameter	Test Conditions	Min.	Turn	Max.	Unit
Symbol	Parameter	Conditions	IVIIII.	Тур.	IVIAX.	Unit
Vin	Input Voltage	_	_	_	30	V
V <sub>OUT</sub>	Output Voltage	V <sub>IN</sub> =14.0V, I <sub>OUT</sub> =10mA	11.640	12.000	12.360	V
Іоит	Output Current	V <sub>IN</sub> =14.0V	150	_	_	mA
ΔVουτ	Load Regulation	V <sub>IN</sub> =14.0V, 1mA≤I <sub>OUT</sub> ≤70mA	_	25	70	mV
V <sub>DIF</sub>	Dropout Voltage (Note)	I <sub>OUT</sub> =1mA, ΔV <sub>OUT</sub> =2%	_	25	55	mV
Iss	Quiescent Current	No load	_	2.5	4.0	μΑ
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	13.0V≤V <sub>IN</sub> ≤30V, I <sub>OUT</sub> =1mA	_	0.2	_	%/V
$\Delta V$ OUT $\Delta T_a \times V$ OUT	Temperature Coefficient	I <sub>оит</sub> =10mA, -40°С<Т <sub>а</sub> <85°С	_	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  $V_{\rm IN}=V_{\rm OUT}+2V$  with a fixed load.

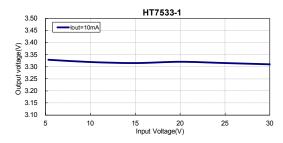
Rev. 2.50 10 March 19, 2019

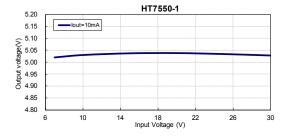


# **Typical Performance Characteristics**

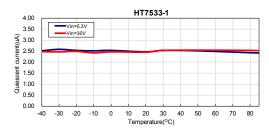
Test Condition: Vin=Vout+2V, I<sub>OUT</sub>=10mA, T<sub>J</sub>=25°C, unless otherwise noted

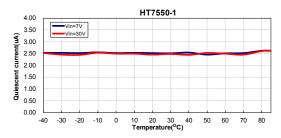
## **Output Voltage vs Input Voltage**



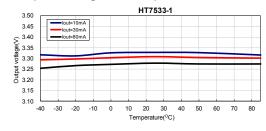


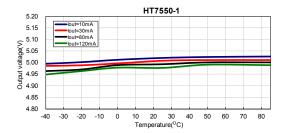
# Quiescent current (lout=0mA) vs Temperature



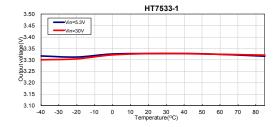


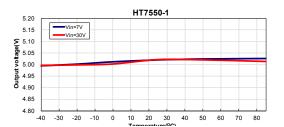
## **Output Voltage vs Temperature**





#### **Output Voltage vs Temperature**

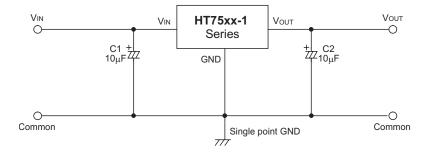




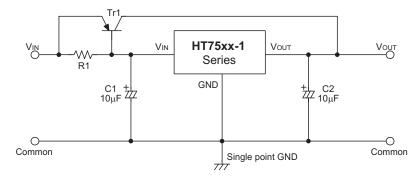


# **Application Circuits**

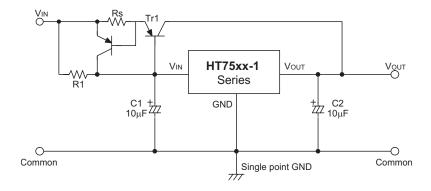
## **Basic Circuit**



# **High Output Current Positive Voltage Regulator**



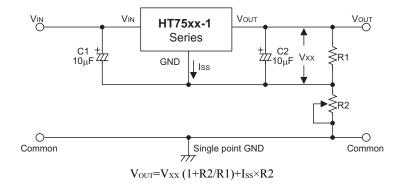
# **Short-Circuit Protection for Tr1**



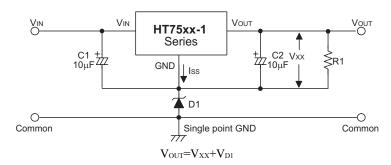
Rev. 2.50 12 March 19, 2019



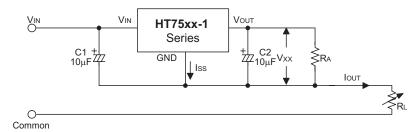
## **Circuit for Increasing Output Voltage**



# **Circuit for Increasing Output Voltage**

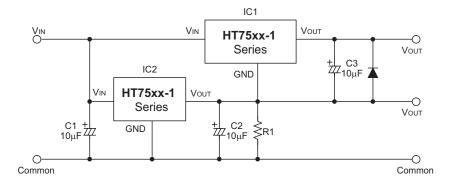


## **Constant Current Regulator**



 $I_{\text{OUT}} \!\!=\!\! V_{\text{XX}} \!/ R_{\text{A}} \!\!+\!\! I_{\text{SS}}$ 

## **Dual Supply**



Rev. 2.50 13 March 19, 2019



# **Package Information**

Note that the package information provided here is for consultation purposes only. As this information may be updated at regular intervals users are reminded to consult the <u>Holtek website</u> for the latest version of the <u>Package/Carton Information</u>.

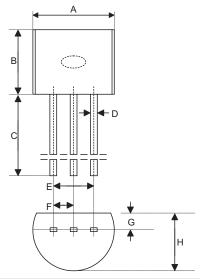
Additional supplementary information with regard to packaging is listed below. Click on the relevant section to be transferred to the relevant website page.

- Further Package Information (include Outline Dimensions, Product Tape and Reel Specifications)
- Packing Meterials Information
- Carton information

Rev. 2.50 14 March 19, 2019



# 3-pin TO92 Outline Dimensions



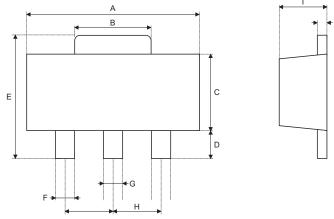
Symbol	Dimensions in inch				
Symbol	Min.	Nom.	Max.		
A	0.173	0.180	0.205		
В	0.170	_	0.210		
С	0.500	0.580	_		
D	_	0.015 BSC	_		
Е	_	0.010 BSC	_		
F	_	0.050 BSC	_		
G	_	0.035 BSC	_		
Н	0.125	0.142	0.165		

Symbol	Dimensions in mm				
Symbol	Min.	Nom.	Max.		
A	4.39	4.57	5.21		
В	4.32	_	5.33		
С	12.70	14.73	_		
D	_	0.38 BSC	_		
E	_	2.54 BSC	_		
F	_	1.27 BSC	_		
G	_	0.89 BSC	_		
Н	3.18	3.61	4.19		

Rev. 2.50 15 March 19, 2019



# 3-pin SOT89 Outline Dimensions



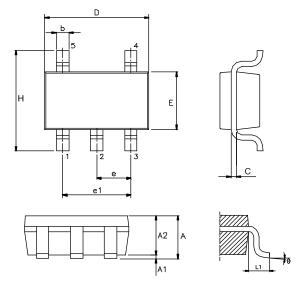
Cumbal	Dimensions in inch					
Symbol	Min.	Nom.	Max.			
A	0.173	_	0.185			
В	0.053	_	0.072			
С	0.090	_	0.106			
D	0.031	_	0.047			
E	0.155	_	0.173			
F	0.014	_	0.019			
G	0.017	_	0.022			
Н	_	0.059 BSC	_			
I	0.055	_	0.063			
J	0.014	_	0.017			

Cumhal	Dimensions in mm					
Symbol	Min.	Nom.	Max.			
A	4.40	_	4.70			
В	1.35	_	1.83			
С	2.29	_	2.70			
D	0.89	_	1.20			
E	3.94	_	4.40			
F	0.36	_	0.48			
G	0.44	_	0.56			
Н	_	1.50 BSC	_			
I	1.40	_	1.60			
J	0.35	_	0.44			

Rev. 2.50 16 March 19, 2019



# 5-pin SOT23 Outline Dimensions



Symbol	Dimensions in inch		
	Min.	Nom.	Max.
А	_	_	0.057
A1	_	_	0.006
A2	0.035	0.045	0.051
b	0.012	_	0.020
С	0.003	_	0.009
D	_	0.114 BSC	_
E	_	0.063 BSC	_
е	_	0.037 BSC	_
e1	_	0.075 BSC	_
Н	_	0.110 BSC	_
L1	_	0.024 BSC	_
θ	0°	_	8°

Symbol	Dimensions in mm		
	Min.	Nom.	Max.
А	_	_	1.45
A1	_	_	0.15
A2	0.90	1.15	1.30
b	0.30	_	0.50
С	0.08	_	0.22
D	_	2.90 BSC	_
Е	_	1.60 BSC	_
е	_	0.95 BSC	_
e1	_	1.90 BSC	_
Н	_	2.80 BSC	_
L1	_	0.60 BSC	_
θ	0°	_	8°

Rev. 2.50 17 March 19, 2019



## Copyright<sup>©</sup> 2019 by HOLTEK SEMICONDUCTOR INC.

The information appearing in this Data Sheet is believed to be accurate at the time of publication. However, Holtek assumes no responsibility arising from the use of the specifications described. The applications mentioned herein are used solely for the purpose of illustration and Holtek makes no warranty or representation that such applications will be suitable without further modification, nor recommends the use of its products for application that may present a risk to human life due to malfunction or otherwise. Holtek's products are not authorized for use as critical components in life support devices or systems. Holtek reserves the right to alter its products without prior notification. For the most up-to-date information, please visit our web site at http://www.holtek.com.

Rev. 2.50 18 March 19, 2019