Features

- Ultra low quiescent current: 3.5μA (typ.)
- High input voltage (up to 12V)
- Output voltage: 1.8V, 2.5V, 2.7V, 3.0V, 3.3V, 3.5V, 4.15V, 5.0V
- Output voltage accuracy: tolerance ±3%
- Maximum output current: 250mA
- Low dropout voltage
- Low temperature coefficient
- 3-pin SOT89 package

Applications

- Battery-powered equipment
- Voltage regulator for microprocessor
- Voltage regulator for LAN cards
- Wireless Communication equipment
- Audio/Video equipment

General Description

The HT73xx series is a set of three-terminal, low power, high voltage regulators implemented in CMOS technology. The series features extremely low quiescent current which is typically 3.5μA . They allow input voltages as high as 12V. The device provides large current with a significantly small dropout voltage.

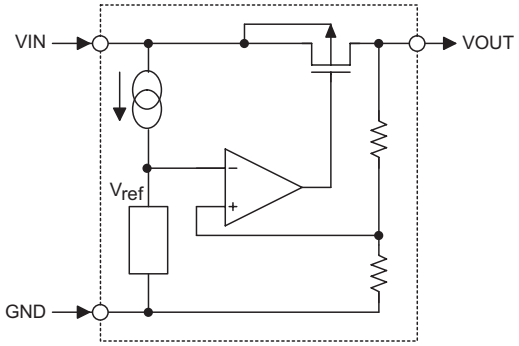
The HT73xx consists of a high-precision voltage reference, an error correction circuit, and a current limited output driver. They are available with several fixed output voltages ranging from 1.8V to 5.0V. CMOS technology ensures low dropout voltage and low current consumption. Although designed primarily as fixed voltage regulators, these devices can be used with external components to generate variable voltages and currents.

Selection Table

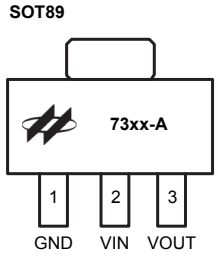
Part No.	Output Voltage	Package	Marking
HT7318	1.8V	SOT89	73xx-A (for SOT89)
HT7325	2.5V		
HT7327	2.7V		
HT7330	3.0V		
HT7333	3.3V		
HT7335	3.5V		
HT7341	4.15V		
HT7350	5.0V		

Note: "xx" stands for output voltages.

Block Diagram



Pin Assignment



Pin Description

Pin No. SOT89	Pin Name	Description
1	GND	Ground pin
2	VIN	Input pin
3	VOUT	Output pin

Absolute Maximum Ratings*

Supply Voltage ..... V_{SS}−0.3V to V_{SS}+14V
Storage Temperature .....−50°C to 125°C
Operating Temperature .....−40°C to 85°C
Power Consumption 500mW
Maximum Junction Temperature ..... 150°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.
The guaranteed specifications apply only for the test conditions listed.

Electrical Characteristics

HT7318, +1.8V Output Type

Ta=25°C

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
		VIN	Conditions				
V_{OUT}	Output Voltage	2.8V	I_{OUT}=40mA	1.746	1.800	1.854	V
$I_{OUT(MAX)}$	Maximum Output Current	2.8V	V_{OUT} ≥ 1.62V	150	—	—	mA
ΔV_{OUT}*	Load Regulation	2.8V	1mA ≤ I_{OUT} ≤ 60mA	—	45	90	mV
V_{DROP}**	Dropout Voltage	—	I_{OUT}=40mA	—	170	—	mV
I_{SS}	Quiescent Current	2.8V	No load	—	3.5	7	μA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	—	I_{OUT}=40mA 2.8V ≤ V_{IN} ≤ 12V	—	0.2	0.3	%/V
V_{IN}	Input Voltage	—	—	—	—	12	V
$\frac{\Delta V_{OUT}}{\Delta T_a}$	Temperature Coefficient	2.8V	I_{OUT}=40mA −40°C < Ta < 85°C	—	±0.7	—	mV/°C

HT7325, +2.5V Output Type

Ta=25°C

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
		VIN	Conditions				
V_{OUT}	Output Voltage	3.5V	I_{OUT}=40mA	2.425	2.500	2.575	V
$I_{OUT(MAX)}$	Maximum Output Current	3.5V	V_{OUT} ≥ 2.25V	180	—	—	mA
ΔV_{OUT}*	Load Regulation	3.5V	1mA ≤ I_{OUT} ≤ 60mA	—	45	90	mV
V_{DROP}**	Dropout Voltage	—	I_{OUT}=40mA	—	110	—	mV
I_{SS}	Quiescent Current	3.5V	No load	—	3.5	7.0	μA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	—	I_{OUT}=40mA 3.5V ≤ V_{IN} ≤ 12V	—	0.2	0.3	%/V
V_{IN}	Input Voltage	—	—	—	—	12	V
$\frac{\Delta V_{OUT}}{\Delta T_a}$	Temperature Coefficient	3.5V	I_{OUT}=40mA −40°C < Ta < 85°C	—	±0.7	—	mV/°C

HT7327, +2.7V Output Type

Ta=25°C

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
		VIN	Conditions				
V_{OUT}	Output Voltage	3.7V	I_{OUT}=40mA	2.619	2.700	2.781	V
$I_{OUT(MAX)}$	Maximum Output Current	3.7V	V_{OUT} ≥ 2.43V	200	—	—	mA
ΔV_{OUT}*	Load Regulation	3.7V	1mA ≤ I_{OUT} ≤ 80mA	—	45	90	mV
V_{DROP}**	Dropout Voltage	—	I_{OUT}=40mA	—	100	—	mV
I_{SS}	Quiescent Current	3.7V	No load	—	3.5	7.0	μA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	—	I_{OUT}=40mA 3.7V ≤ V_{IN} ≤ 12V	—	0.2	0.3	%/V
V_{IN}	Input Voltage	—	—	—	—	12	V
$\frac{\Delta V_{OUT}}{\Delta T_a}$	Temperature Coefficient	3.7V	I_{OUT}=40mA −40°C < Ta < 85°C	—	±0.7	—	mV/°C

HT7330, +3.0V Output Type

Ta=25°C

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
		VIN	Conditions				
V_{OUT}	Output Voltage	4.0V	I_{OUT}=40mA	2.910	3.000	3.090	V
$I_{OUT(MAX)}$	Maximum Output Current	4.0V	V_{OUT} ≥ 2.70V	250	—	—	mA
ΔV_{OUT}*	Load Regulation	4.0V	1mA ≤ I_{OUT} ≤ 80mA	—	45	90	mV
V_{DROP}**	Dropout Voltage	—	I_{OUT}=40mA	—	95	—	mV
I_{SS}	Quiescent Current	4.0V	No load	—	3.5	7.0	μA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	—	I_{OUT}=40mA 4.0V ≤ V_{IN} ≤ 12V	—	0.2	0.3	%/V
V_{IN}	Input Voltage	—	—	—	—	12	V
$\frac{\Delta V_{OUT}}{\Delta T_a}$	Temperature Coefficient	4.0V	I_{OUT}=40mA −40°C < Ta < 85°C	—	±0.7	—	mV/°C

HT7333, +3.3V Output Type

Ta=25°C

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
		VIN	Conditions				
V_{OUT}	Output Voltage	4.3V	I_{OUT}=40mA	3.201	3.300	3.399	V
$I_{OUT(MAX)}$	Maximum Output Current	4.3V	V_{OUT} ≥ 2.97V	250	—	—	mA
ΔV_{OUT}*	Load Regulation	4.3V	1mA ≤ I_{OUT} ≤ 80mA	—	45	90	mV
V_{DROP}**	Dropout Voltage	—	I_{OUT}=40mA	—	90	—	mV
I_{SS}	Quiescent Current	4.3V	No load	—	3.5	7.0	μA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	—	I_{OUT}=40mA 4.3V ≤ V_{IN} ≤ 12V	—	0.2	0.3	%/V
V_{IN}	Input Voltage	—	—	—	—	12	V
$\frac{\Delta V_{OUT}}{\Delta T_a}$	Temperature Coefficient	4.3V	I_{OUT}=40mA −40°C < Ta < 85°C	—	±0.7	—	mV/°C

HT7335, +3.5V Output Type

Ta=25°C

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
		VIN	Conditions				
V_{OUT}	Output Voltage	4.5V	I_{OUT}=40mA	3.395	3.500	3.605	V
$I_{OUT(MAX)}$	Maximum Output Current	4.5V	V_{OUT} ≥ 3.15V	250	—	—	mA
ΔV_{OUT}*	Load Regulation	4.5V	1mA ≤ I_{OUT} ≤ 80mA	—	45	90	mV
V_{DROP}**	Dropout Voltage	—	I_{OUT}=40mA	—	80	—	mV
I_{SS}	Quiescent Current	4.5V	No load	—	3.5	7.0	μA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	—	I_{OUT}=40mA 4.5V ≤ V_{IN} ≤ 12V	—	0.2	0.3	%/V
V_{IN}	Input Voltage	—	—	—	—	12	V
$\frac{\Delta V_{OUT}}{\Delta T_a}$	Temperature Coefficient	4.5V	I_{OUT}=80mA −40°C < Ta < 85°C	—	±0.7	—	mV/°C

HT7341, +4.15V Output Type

Ta=25°C

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
		VIN	Conditions				
V_{OUT}	Output Voltage	5.15V	I_{OUT}=40mA	4.025	4.150	4.275	V
$I_{OUT(MAX)}$	Maximum Output Current	5.15V	$V_{OUT} \geq 3.74V$	250	—	—	mA
ΔV_{OUT}*	Load Regulation	5.15V	$1mA \leq I_{OUT} \leq 80mA$	—	45	90	mV
V_{DROP}**	Dropout Voltage	—	I_{OUT}=40mA	—	60	—	mV
I_{SS}	Quiescent Current	5.15V	No load	—	3.5	7.0	μA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	—	I_{OUT}=40mA $6.0V \leq V_{IN} \leq 12.0V$	—	0.2	0.3	%/V
V_{IN}	Input Voltage	—	—	—	—	12	V
$\frac{\Delta V_{OUT}}{\Delta T_a}$	Temperature Coefficient	5.15V	I_{OUT}=80mA −40°C < Ta < 85°C	—	±0.7	—	mV/°C

HT7350, +5.0V Output Type

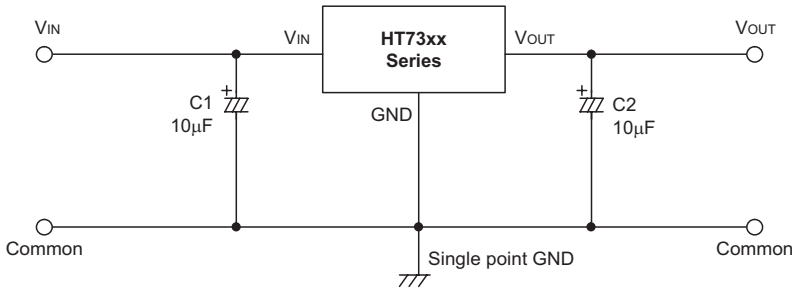
Ta=25°C

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
		VIN	Conditions				
V_{OUT}	Output Voltage	6.0V	I_{OUT}=40mA	4.850	5.000	5.150	V
$I_{OUT(MAX)}$	Maximum Output Current	6.0V	$V_{OUT} \geq 4.50V$	250	—	—	mA
ΔV_{OUT}*	Load Regulation	6.0V	$1mA \leq I_{OUT} \leq 100mA$	—	45	90	mV
V_{DROP}**	Dropout Voltage	—	I_{OUT}=40mA	—	60	—	mV
I_{SS}	Quiescent Current	6.0V	No load	—	3.5	7.0	μA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	—	I_{OUT}=40mA $6.0V \leq V_{IN} \leq 12.0V$	—	0.2	0.3	%/V
V_{IN}	Input Voltage	—	—	—	—	12	V
$\frac{\Delta V_{OUT}}{\Delta T_a}$	Temperature Coefficient	6.0V	I_{OUT}=80mA −40°C < Ta < 85°C	—	±0.7	—	mV/°C

Note: "*" Regulation is measured at constant junction temperature, using pulsed ON time.

"**" Dropout is measured at constant junction temperature, using pulsed ON time, and the criterion is V_{OUT} inside target value ±2%.

Application Circuits



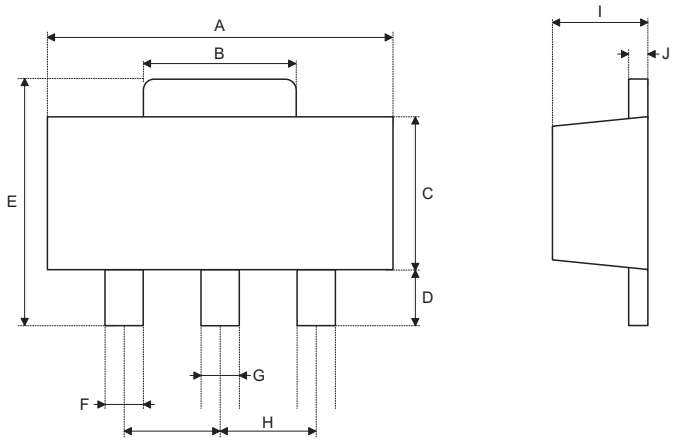
Package Information

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 Holtek website for the latest version of the Package/Carton Information.

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

- Package Information (include Outline Dimensions, Product Tape and Reel Specifications)
- The Operation Instruction of Packing Materials
- Carton information

3-pin SOT89 Outline Dimensions



Symbol	Dimensions in inch		
	Min.	Nom.	Max.
A	0.173	—	0.185
B	0.053	—	0.072
C	0.090	—	0.106
D	0.031	—	0.047
E	0.155	—	0.173
F	0.014	—	0.019
G	0.017	—	0.022
H	—	0.059 BSC	—
I	0.055	—	0.063
J	0.014	—	0.017

Symbol	Dimensions in mm		
	Min.	Nom.	Max.
A	4.40	—	4.70
B	1.35	—	1.83
C	2.29	—	2.70
D	0.80	—	1.20
E	3.94	—	4.40
F	0.36	—	0.48
G	0.44	—	0.56
H	—	1.50 BSC	—
I	1.40	—	1.60
J	0.35	—	0.44