

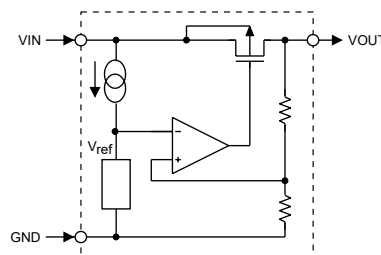
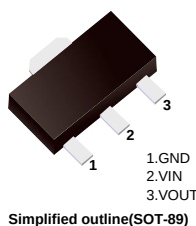
Description

The HT73xx series is a set of three-terminal low power high voltage regulators implemented in CMOS technology. They allow input voltages as high as 20V. They are available with several fixed output voltages ranging from 2.1V to 9.0V. Because of the low power dissipation, HT73xx are widely used in a variety of equipment such as audio device, video device, communication device and so on.

Features

- Low power consumption
- Low voltage drop
- Low temperature coefficient
- High input voltage (up to 20V)
- Quiescent current : 1.5 μ A
- Output voltage tolerance: $\pm 2\%$
- HAF(halogen and antimony free) is acquired

73xx-1



Absolute Maximum Ratings Ta = 25°C

Parameter	Limit	Unit
Supply voltage	-0.3 ~ +22	V
Storage temperature range	-50 ~ +125	°C
Operating temperature range	-40 ~ 85	°C

Note: 1.Stresses beyond those listed under absolute maximum ratings may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those conditions is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

Parameter	Symbol	Value	Unit
Junction-to-Ambient Thermal Resistance	$R_{\theta JA}$	200	°C/W
Power Consumption	P_D	500	mW

Electrical Characteristics

HT7321

Parameter	Symbol	Test conditions	Min.	Typ.	Max	Unit
Output voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$	2.058	2.10	2.142	V
Output current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	300	--	--	mA
Load regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2.0V$ $1mA \leq I_{OUT} \leq 300mA$	--	37	100	mV
Voltage drop ^{Note1}	V_{DIF}	$I_{OUT}=10mA$, $\Delta V_{OUT}=2\%$	--	45	55	mV
Quiescent Current	I_Q	No Load	--	1.5	3.0	μA
Line regulation	$\frac{\Delta V_{OUT}}{V_{OUT}} \times \Delta V_{IN}$	$V_{OUT}+1.0V \leq V_{IN} \leq 20V$, $I_{OUT}=1mA$	--	--	0.2	%/V
Input voltage	V_{IN}	--	--	--	20	V
Temperature coefficient	$\frac{\Delta V_{OUT}}{V_{OUT}} \times \Delta T_A$	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$, $-40^\circ C \leq T_A \leq 85^\circ C$	--	100	--	ppm/ $^\circ C$
Short Current	I_{Short}	$V_{OUT}=0V$	--	400	--	mA

HT7323

Parameter	Symbol	Test conditions	Min.	Typ.	Max	Unit
Output voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$	2.254	2.30	2.346	V
Output current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	300	--	--	mA
Load regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2.0V$ $1mA \leq I_{OUT} \leq 300mA$	--	37	100	mV
Voltage drop ^{Note1}	V_{DIF}	$I_{OUT}=10mA$, $\Delta V_{OUT}=2\%$	--	40	55	mV
Quiescent Current	I_Q	No Load	--	1.5	3.0	μA
Line regulation	$\frac{\Delta V_{OUT}}{V_{OUT}} \times \Delta V_{IN}$	$V_{OUT}+1.0V \leq V_{IN} \leq 20V$, $I_{OUT}=1mA$	--	--	0.2	%/V
Input voltage	V_{IN}	--	--	--	20	V
Temperature coefficient	$\frac{\Delta V_{OUT}}{V_{OUT}} \times \Delta T_A$	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$, $-40^\circ C \leq T_A \leq 85^\circ C$	--	100	--	ppm/ $^\circ C$
Short Current	I_{Short}	$V_{OUT}=0V$	--	400	--	mA

Electrical Characteristics

HT7330

Parameter	Symbol	Test conditions	Min.	Typ.	Max	Unit
Output voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$	2.94	3.0	3.06	V
Output current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	300	--	--	mA
Load regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2.0V$ $1mA \leq I_{OUT} \leq 300mA$	--	37	100	mV
Voltage drop ^{Note1}	V_{DIF}	$I_{OUT}=100mA$, $\Delta V_{OUT}=2\%$	--	210	300	mV
Quiescent Current	I_Q	No Load	--	1.5	3.0	μA
Line regulation	$\frac{\Delta V_{OUT}}{V_{OUT}} \times \frac{\Delta V_{IN}}{\Delta V_{IN}}$	$V_{OUT}+1.0V \leq V_{IN} \leq 20V$, $I_{OUT}=1mA$	--	--	0.2	%/V
Input voltage	V_{IN}	--	--	--	20	V
Temperature coefficient	$\frac{\Delta V_{OUT}}{V_{OUT}} \times \frac{\Delta T_A}{\Delta T_A}$	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$, $-40^\circ C \leq T_A \leq 85^\circ C$	--	100	--	ppm/ $^\circ C$
Short Current	I_{Short}	$V_{OUT}=0V$	--	400	--	mA

HT7333

Parameter	Symbol	Test conditions	Min.	Typ.	Max	Unit
Output voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$	3.234	3.30	3.366	V
Output current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	300	--	--	mA
Load regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2.0V$ $1mA \leq I_{OUT} \leq 300mA$	--	37	100	mV
Voltage drop ^{Note1}	V_{DIF}	$I_{OUT}=100mA$, $\Delta V_{OUT}=2\%$	--	195	300	mV
Quiescent Current	I_Q	No Load	--	1.5	3.0	μA
Line regulation	$\frac{\Delta V_{OUT}}{V_{OUT}} \times \frac{\Delta V_{IN}}{\Delta V_{IN}}$	$V_{OUT}+1.0V \leq V_{IN} \leq 20V$, $I_{OUT}=1mA$	--	--	0.2	%/V
Input voltage	V_{IN}	--	--	--	20	V
Temperature coefficient	$\frac{\Delta V_{OUT}}{V_{OUT}} \times \frac{\Delta T_A}{\Delta T_A}$	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$, $-40^\circ C \leq T_A \leq 85^\circ C$	--	100	--	ppm/ $^\circ C$
Short Current	I_{Short}	$V_{OUT}=0V$	--	400	--	mA

Electrical Characteristics

HT7336

Parameter	Symbol	Test conditions	Min.	Typ.	Max	Unit
Output voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$	3.528	3.60	3.672	V
Output current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	300	--	--	mA
Load regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2.0V$ $1mA \leq I_{OUT} \leq 300mA$	--	37	100	mV
Voltage drop ^{Note1}	V_{DIF}	$I_{OUT}=100mA$, $\Delta V_{OUT}=2\%$	--	180	300	mV
Quiescent Current	I_Q	No Load	--	1.5	3.0	μA
Line regulation	$\Delta V_{OUT} / V_{OUT} \times \Delta V_{IN}$	$V_{OUT}+1.0V \leq V_{IN} \leq 20V$, $I_{OUT}=1mA$	--	--	0.2	%/V
Input voltage	V_{IN}	--	--	--	20	V
Temperature coefficient	$\Delta V_{OUT} / V_{OUT} \times \Delta T_A$	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$, $-40^\circ C \leq T_A \leq 85^\circ C$	--	100	--	ppm/ $^\circ C$
Short Current	I_{Short}	$V_{OUT}=0V$	--	400	--	mA

HT7340

Parameter	Symbol	Test conditions	Min.	Typ.	Max	Unit
Output voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$	3.92	4.0	4.08	V
Output current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	300	--	--	mA
Load regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2.0V$ $1mA \leq I_{OUT} \leq 300mA$	--	37	100	mV
Voltage drop ^{Note1}	V_{DIF}	$I_{OUT}=100mA$, $\Delta V_{OUT}=2\%$	--	170	300	mV
Quiescent Current	I_Q	No Load	--	1.5	3.0	μA
Line regulation	$\Delta V_{OUT} / V_{OUT} \times \Delta V_{IN}$	$V_{OUT}+1.0V \leq V_{IN} \leq 20V$, $I_{OUT}=1mA$	--	--	0.2	%/V
Input voltage	V_{IN}	--	--	--	20	V
Temperature coefficient	$\Delta V_{OUT} / V_{OUT} \times \Delta T_A$	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$, $-40^\circ C \leq T_A \leq 85^\circ C$	--	100	--	ppm/ $^\circ C$
Short Current	I_{Short}	$V_{OUT}=0V$	--	400	--	mA

Electrical Characteristics

HT7344

Parameter	Symbol	Test conditions	Min.	Typ.	Max	Unit
Output voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$	4.312	4.4	4.488	V
Output current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	300	--	--	mA
Load regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2.0V$ $1mA \leq I_{OUT} \leq 300mA$	--	37	100	mV
Voltage drop ^{Note1}	V_{DIF}	$I_{OUT}=100mA$, $\Delta V_{OUT}=2\%$	--	160	300	mV
Quiescent Current	I_Q	No Load	--	1.5	3.0	μA
Line regulation	$\frac{\Delta V_{OUT}}{V_{OUT}} \times \Delta V_{IN}$	$V_{OUT}+1.0V \leq V_{IN} \leq 20V$, $I_{OUT}=1mA$	--	--	0.2	%/V
Input voltage	V_{IN}	--	--	--	20	V
Temperature coefficient	$\frac{\Delta V_{OUT}}{V_{OUT}} \times \Delta T_A$	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$, $-40^\circ C \leq T_A \leq 85^\circ C$	--	100	--	ppm/ $^\circ C$
Short Current	I_{Short}	$V_{OUT}=0V$	--	400	--	mA

HT7350

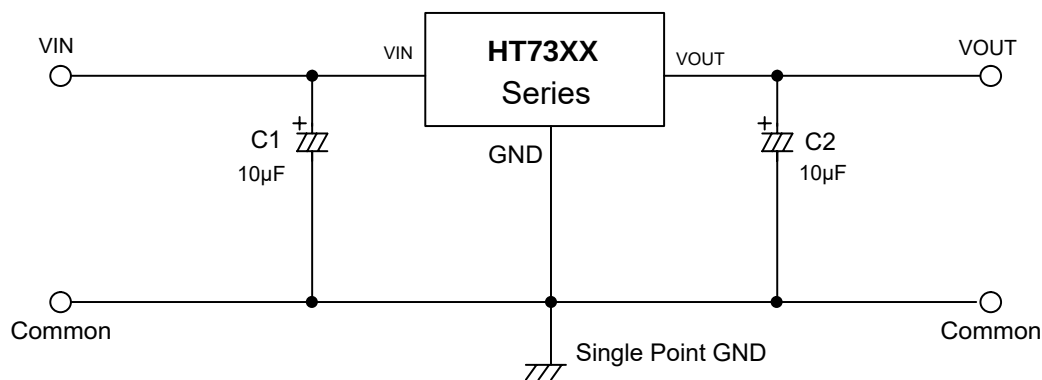
Parameter	Symbol	Test conditions	Min.	Typ.	Max	Unit
Output voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$	4.90	5.0	5.10	V
Output current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	300	--	--	mA
Load regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2.0V$ $1mA \leq I_{OUT} \leq 300mA$	--	37	100	mV
Voltage drop ^{Note1}	V_{DIF}	$I_{OUT}=100mA$, $\Delta V_{OUT}=2\%$	--	150	300	mV
Quiescent Current	I_Q	No Load	--	1.5	3.0	μA
Line regulation	$\frac{\Delta V_{OUT}}{V_{OUT}} \times \Delta V_{IN}$	$V_{OUT}+1.0V \leq V_{IN} \leq 20V$, $I_{OUT}=1mA$	--	--	0.2	%/V
Input voltage	V_{IN}	--	--	--	20	V
Temperature coefficient	$\frac{\Delta V_{OUT}}{V_{OUT}} \times \Delta T_A$	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$, $-40^\circ C \leq T_A \leq 85^\circ C$	--	100	--	ppm/ $^\circ C$
Short Current	I_{Short}	$V_{OUT}=0V$	--	400	--	mA

Electrical Characteristics

HT7390

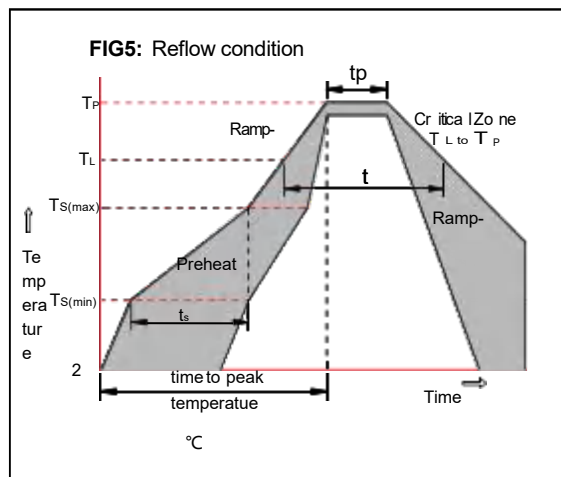
Parameter	Symbol	Test conditions	Min.	Typ.	Max	Unit
Output voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$	8.82	9.0	9.18	V
Output current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	300	--	--	mA
Load regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2.0V$ $1mA \leq I_{OUT} \leq 300mA$	--	37	100	mV
Voltage drop ^{Note1}	V_{DIF}	$I_{OUT}=100mA$, $\Delta V_{OUT}=2\%$	--	130	300	mV
Quiescent Current	I_Q	No Load	--	1.5	3.0	μA
Line regulation	$\frac{\Delta V_{OUT}}{V_{OUT}} \times \frac{\Delta V_{IN}}{\Delta V_{IN}}$	$V_{OUT}+1.0V \leq V_{IN} \leq 20V$, $I_{OUT}=1mA$	--	--	0.2	%/V
Input voltage	V_{IN}	--	--	--	20	V
Temperature coefficient	$\frac{\Delta V_{OUT}}{V_{OUT}} \times \frac{\Delta T_A}{\Delta T_A}$	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$, $-40^\circ C \leq T_A \leq 85^\circ C$	--	100	--	ppm/ $^\circ C$
Short Current	I_{Short}	$V_{OUT}=0V$	--	400	--	mA

Basic Circuits

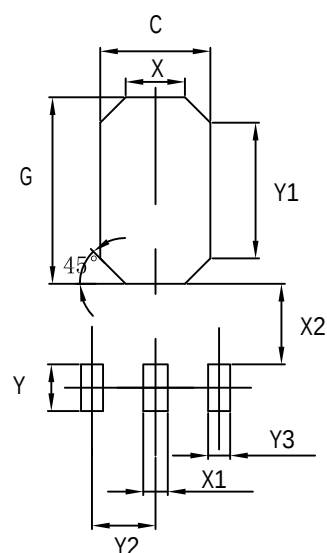
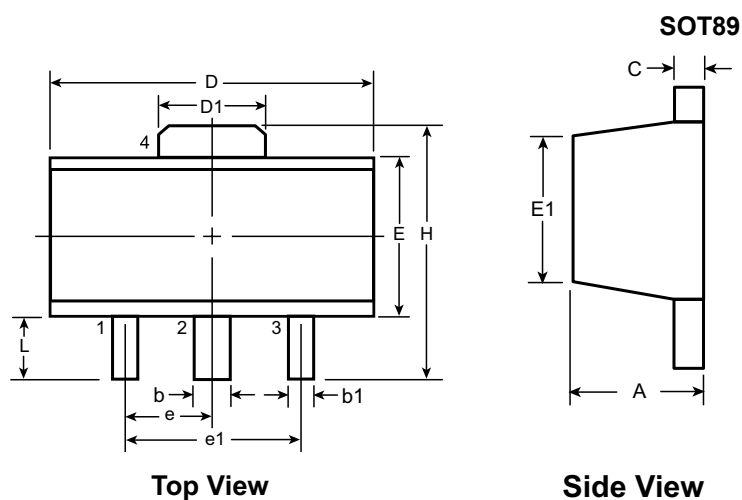


Soldering parameters

Reflow Condition		Pb-Free assembly (see as below)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150 °C
	-Temperature Max($T_{s(max)}$)	+200 °C
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3 °C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3 °C/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217 °C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_P)		+260(+0/-5) °C
Time within 5 °C of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6 °C/sec. Max
Time 25 °C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260 °C



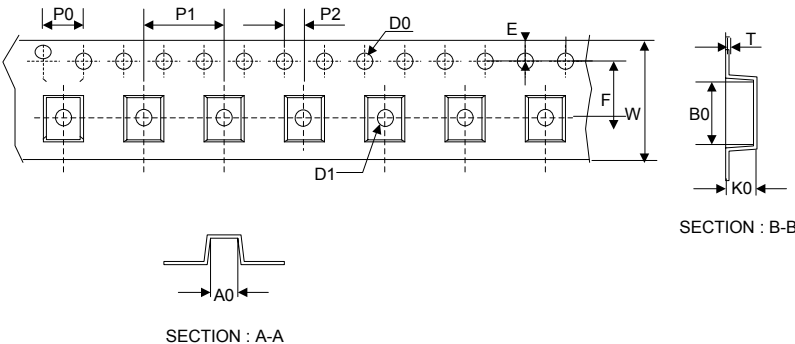
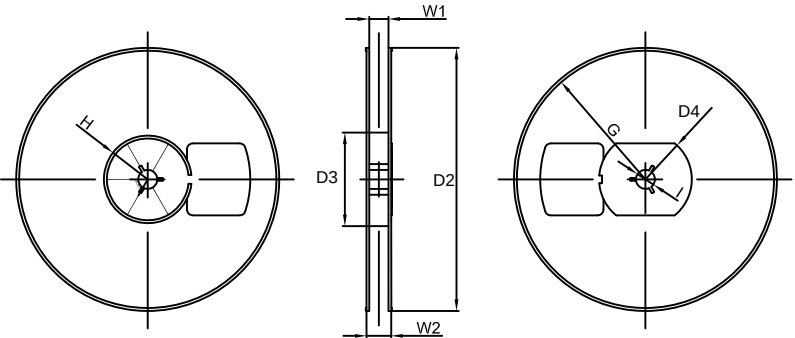
Package Dimensions & Suggested Pad Layout



Symbol	A	b	b1	C	D	D1	E	E1	e	e1	H	L
Dimensions (mm)	MIN	1.40	0.44	0.36	0.3	4.40	1.50	2.29	2.00†		3.94	0.89
	NOM	-	-	-	-	-	-	-	1.50	3.00	-	-
	MAX	1.60	0.56	0.48	0.5	4.60	1.75	2.60	2.29		4.25	1.20

Dimensions	Value (in mm)
C	2.50
G	3.60
X	1.40
X1	0.90
X2	0.90
Y	1.40
Y1	2.60
Y2	1.50
Y3	0.90

Soldering parameters

Tape		Symbol	Dimension (mm)
		P0	4.00±0.20
		P1	8.00±0.20
		P2	2.00±0.20
		D0	1.60±0.20
		D1	1.60±0.20
		E	1.75±0.20
		F	7.50±0.15
		W	16.00±0.20
		A0	6.30±0.20
		B0	8.25±0.20
		K0	2.60±0.20
		T	0.23±0.10
13" Reel			
		D2	180.0±5.0
		D3	60Min.
		D4	R32.0±2.0
		G	R86.5±2.0
		H	R30.0±2.0
		I	13.0±2.0
		W1	13.20±2.0
		W2	16.50±2.0
		Quantity: 1000PCS	