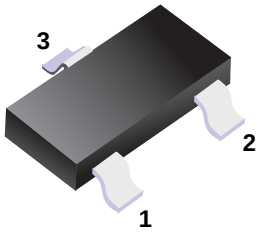
■Low Dropout Regulators

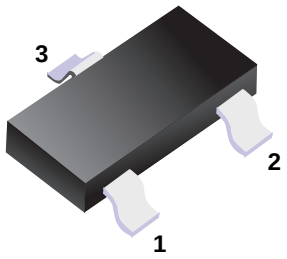


1.Gnd
2.Vout
3.Vin

■ Simplified outline(SOT-23)

■ Description

The HT75xx series is a set of three-terminal low power high voltage regulators implemented in CMOS technology. They allow input voltages as high as 36V. They are available with several fixed output voltages ranging from 2.8V to 5.0V. Because of the low power dissipation, HT75xx are widely used in a variety of equipment such as audio device, video device, communication device and so on.

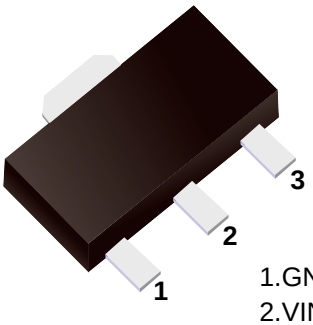


1.Gnd
2.Vout
3.Vin

■ Simplified outline(SOT23-3L)

■ Features

- Low power consumption
- Low voltage drop
- Low temperature coefficient
- High input voltage (up to 36V)
- Quiescent current : 2.5μA
- Output voltage tolerance: ±2%
- HAF(halogen and antimony free) is acquired



1.GND
2.VIN
3.VOUT

■ Simplified outline(SOT-89)

■ Selection Tablet

Designator	Symbol	Description
HT75xx	28	2.8V(output)
	30	3.0V
	33	3.3V
	36	3.6V
	40	4.0V
	44	4.4V
	50	5.0V

■ Absolute Maximum Ratings Ta = 25℃

Parameter	Limit	Unit
Supply voltage	-0.3 ~ +36	V
Storage temperature range	-50 ~ +125	℃
Operating temperature range	-40 ~ +85	℃

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	℃/W
Power Consumption	P_D	500	mW

■ Electrical Characteristics Ta = 25℃

HT7528

Parameter	Symbol	Test conditions	Min.	Typ.	Max	Unit
Output voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$	2.744	2.80	2.856	V
Output current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	70	100	—	mA
Load regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2.0V$ $1mA \le I_{OUT} \le 50mA$	—	25	60	mV
Voltage drop Note1	V_{DIF}	$I_{OUT}=1mA$, $\Delta V_{OUT}=2\%$	—	30	100	mV
Quiescent Current	I_Q	No Load	—	2.5	3.0	μA
Line regulation	$\Delta V_{OUT} / V_{OUT} \times \Delta V_{IN}$	$V_{OUT}+1.0V \le V_{IN} \le 30V$, $I_{OUT}=1mA$	—	—	0.2	%/V
Input voltage	V_{IN}	—	—	—	36	V
Temperature coefficient	$\Delta V_{OUT} / V_{OUT} \times \Delta T_A$	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$, $-40℃ \le T_A \le 85℃$	—	100	—	ppm/℃

HT7530

Parameter	Symbol	Test conditions	Min.	Typ.	Max	Unit
Output voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$	2.940	3.00	3.060	V
Output current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	70	100	—	mA
Load regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2.0V$ $1mA \le I_{OUT} \le 50mA$	—	25	60	mV
Voltage drop Note1	V_{DIF}	$I_{OUT}=1mA$, $\Delta V_{OUT}=2\%$	—	30	100	mV
Quiescent Current	I_Q	No Load	—	2.5	3.0	μA
Line regulation	$\Delta V_{OUT} / V_{OUT} \times \Delta V_{IN}$	$V_{OUT}+1.0V \le V_{IN} \le 30V$, $I_{OUT}=1mA$	—	—	0.2	%/V
Input voltage	V_{IN}	—	—	—	36	V
Temperature coefficient	$\Delta V_{OUT} / V_{OUT} \times \Delta T_A$	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$, $-40℃ \le T_A \le 85℃$	—	100	—	ppm/℃

HT7533

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}	$V_{IN}=V_{OUT}+2.0V$	70	100	—	mA
Load regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2.0V$ $1mA \le I_{OUT} \le 50mA$	—	25	60	mV
Voltage drop	V_{DIF}	$I_{OUT}=1mA$, $\Delta V_{OUT}=2\%$	—	25	55	mV
Quiescent Current	I_Q	No Load	—	2.5	3.0	μA
Line regulation	$\Delta V_{OUT} / V_{OUT} \times \Delta V_{IN}$	$V_{OUT}+1.0V \le V_{IN} \le 30V$, $I_{OUT}=1mA$	—	—	0.2	%/V
Input voltage	V_{IN}	—	—	—	36	V
Temperature coefficient	$\Delta V_{OUT} / V_{OUT} \times \Delta T_A$	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$, $-40℃ \le T_A \le 85℃$	—	100	—	ppm/℃

HT7536

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}	$V_{IN}=V_{OUT}+2.0V$	70	100	—	mA
Load regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2.0V$ $1mA \le I_{OUT} \le 50mA$	—	25	60	mV
Voltage drop Note1	V_{DIF}	$I_{OUT}=1mA$, $\Delta V_{OUT}=2\%$	—	25	55	mV
Quiescent Current	I_Q	No Load	—	2.5	3.0	μA
Line regulation	$\Delta V_{OUT} / V_{OUT} \times \Delta V_{IN}$	$V_{OUT}+1.0V \le V_{IN} \le 30V$, $I_{OUT}=1mA$	—	—	0.2	%/V
Input voltage	V_{IN}	—	—	—	36	V
Temperature coefficient	$\Delta V_{OUT} / V_{OUT} \times \Delta T_A$	$V_{IN}= V_{OUT}+2.0V$, $I_{OUT}=10mA$, $-40℃ \le T_A \le 85℃$	—	100	—	ppm/℃

HT7540

Parameter	Symbol	Test conditions	Min.	Typ.	Max	Unit
Output voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$	3.920	4.0	4.080	V
Output current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	70	100	—	mA
Load regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2.0V$ $1mA \le I_{OUT} \le 50mA$	—	25	60	mV
Voltage drop Note1	V_{DIF}	$I_{OUT}=1mA$, $\Delta V_{OUT}=2\%$	—	25	55	mV
Quiescent Current	I_Q	No Load	—	2.5	3.0	μA
Line regulation	$\Delta V_{OUT} / V_{OUT} \times \Delta V_{IN}$	$V_{OUT}+1.0V \le V_{IN} \le 30V$, $I_{OUT}=1mA$	—	—	0.2	%/V
Input voltage	V_{IN}	—	—	—	36	V
Temperature coefficient	$\Delta V_{OUT} / V_{OUT} \times \Delta T_A$	$V_{IN}= V_{OUT}+2.0V$, $I_{OUT}=10mA$, $-40℃ \le T_A \le 85℃$	—	100	—	ppm/℃

HT7544

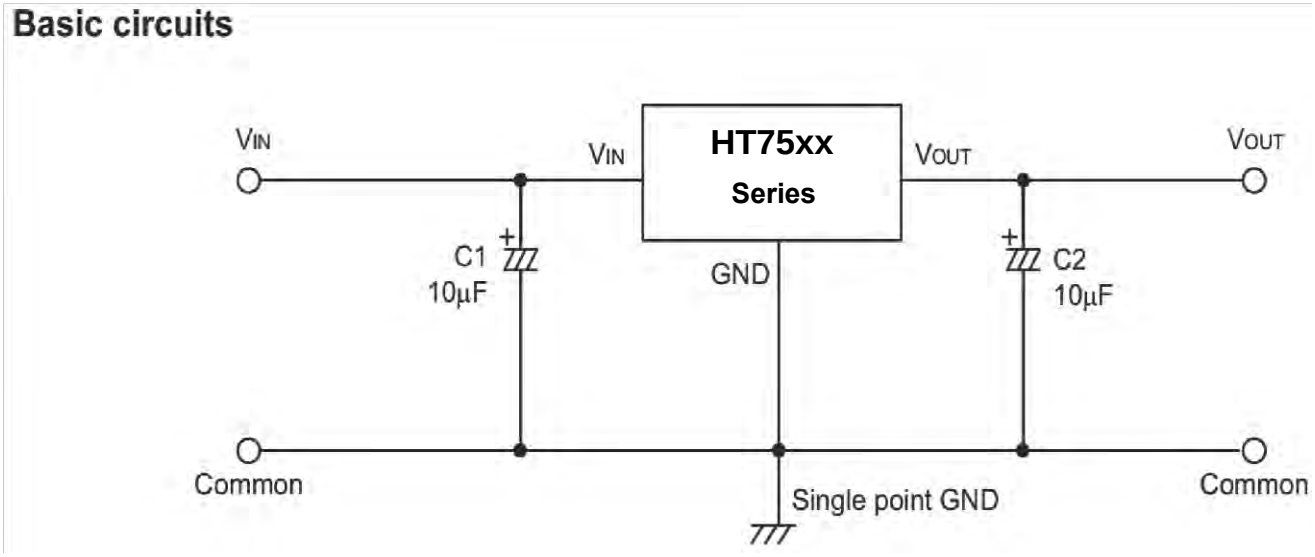
Parameter	Symbol	Test conditions	Min.	Typ.	Max	Unit
Output voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$	4.312	4.4	4.488	V
Output current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	70	100	—	mA
Load regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2.0V$ $1mA \le I_{OUT} \le 50mA$	—	25	60	mV
Voltage drop Note1	V_{DIF}	$I_{OUT}=1mA$, $\Delta V_{OUT}=2\%$	—	25	55	mV
Quiescent Current	I_Q	No Load	—	2.5	3.0	μA
Line regulation	$\Delta V_{OUT} / V_{OUT} \times \Delta V_{IN}$	$V_{OUT}+1.0V \le V_{IN} \le 30V$, $I_{OUT}=1mA$	—	—	0.2	%/V
Input voltage	V_{IN}	—	—	—	36	V
Temperature coefficient	$\Delta V_{OUT} / V_{OUT} \times \Delta T_A$	$V_{IN}= V_{OUT}+2.0V$, $I_{OUT}=10mA$, $-40℃ \le T_A \le 85℃$	—	100	—	ppm/℃

HT7550

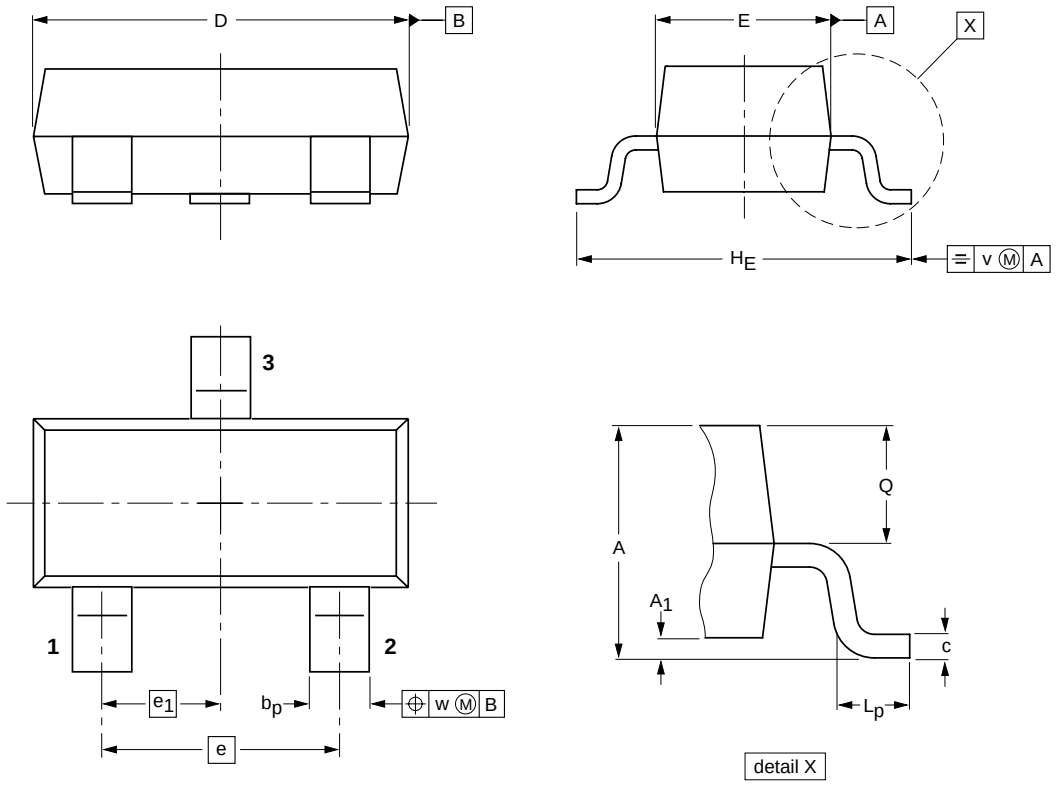
Parameter	Symbol	Test conditions	Min.	Typ.	Max	Unit
Output voltage	V_{OUT}	$V_{IN}=V_{OUT}+2.0V$, $I_{OUT}=10mA$	4.900	5.0	5.100	V
Output current	I_{OUT}	$V_{IN}=V_{OUT}+2.0V$	100	150	—	mA
Load regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2.0V$ $1mA \le I_{OUT} \le 70mA$	—	25	60	mV
Voltage drop Note1	V_{DIF}	$I_{OUT}=1mA$, $\Delta V_{OUT}=2\%$	—	25	55	mV
Quiescent Current	I_Q	No Load	—	3.5	4.0	μA
Line regulation	$\Delta V_{OUT} / V_{OUT} \times \Delta V_{IN}$	$V_{OUT}+1.0\ V \le V_{IN} \le 30V$, $I_{OUT}=1mA$	—	—	0.2	%/V
Input voltage	V_{IN}	—	—	—	36	V
Temperature coefficient	$\Delta V_{OUT} / V_{OUT} \times \Delta T_A$	$V_{IN}= V_{OUT}+2.0V$, $I_{OUT}=10mA$, $-40℃ \le T_A \le 85℃$	—	100	—	ppm/℃

NOTE: 1.The difference of input voltage and output voltage when input voltage falls down gradually till output voltage equals to 98% of rating V_{OUT} .

Application Circuit



Package Outline SOT-23



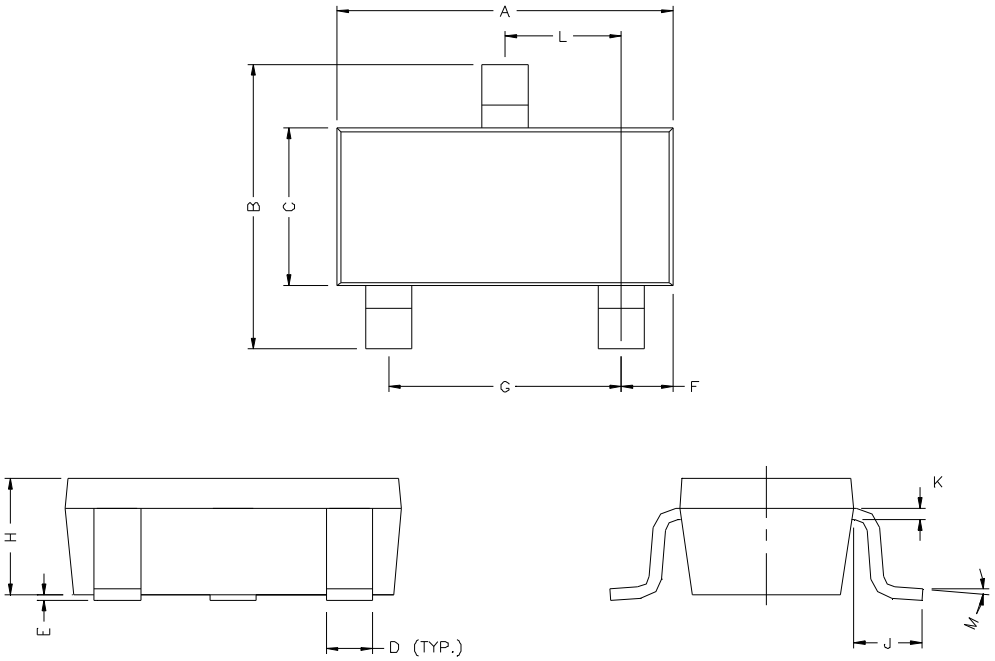
DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max.	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

Summary of Packing Options

Package	Packing Description	Packing Quantity	Industry Standard
SOT-23	Tape/Reel,7"reel	3000	EIA-481-1

Package Outline SOT23-3L



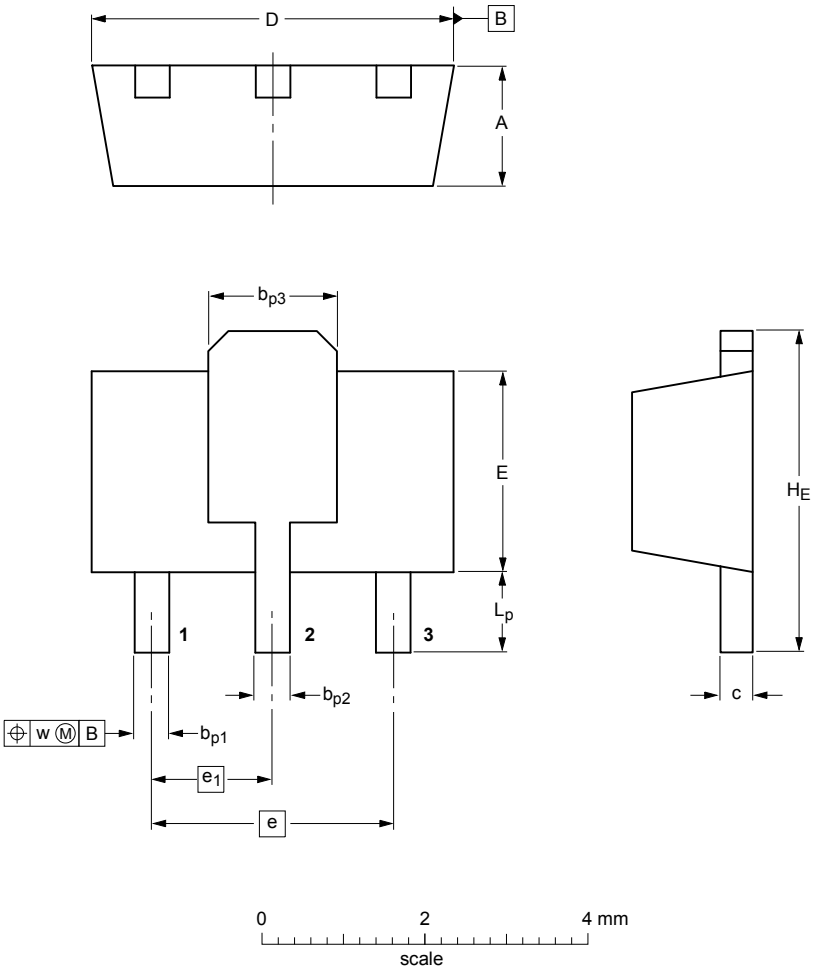
DIMENSIONS (mm are the original dimensions)

UNIT	A	B	C	D	E	F	G	H	K	J	L	M
mm	2.70 3.10	2.65 2.95	1.50 1.70	0.35 0.50	0 0.10	0.45 0.55	1.9	1.00 1.30	0.10 0.20	0.40 -	0.85 1.15	0° 10°

Summary of Packing Options

Package	Package Description	Packing Quantity	Industry Standard
SOT23-3L	Tape/Reel,7"reel	3000	EIA-481-1

Package Outline SOT-89



DIMENSIONS (mm are the original dimensions)

UNIT	A	b_{p1}	b_{p2}	b_{p3}	c	D	E	e	e_1	H_E	L_p	w
mm	1.6 1.4	0.48 0.35	0.53 0.40	1.8 1.4	0.44 0.23	4.6 4.4	2.6 2.4	3.0	1.5	4.25 3.75	1.2 0.8	0.13

Summary of Packing Options

Package	Package Description	Packing Quantity	Industry Standard
SOT-89	Tape/Reel,7"reel	1000	EIA-481-1