BM 75xx Series 100mA Low Power LDO

Features

- Low power consumption
- Low voltage drop
- Low temperature coefficient
- High input voltage (up to +18)
- High output current : 100mA ($P_d \leq 250mW$)
- Output voltage accuracy: tolerance ±3%
- TO-92, SOT-89 and SOT-23, SOT25 package

能输出 300mA，当 5V 输入 3.3V 输出.
能输出 100mA，当 12V 输入 5.0V 输出.

Applications

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

General Description

The 75XX series is a set of three-terminal high current low voltage regulator implemented in CMOS technology. They can deliver 100mA output current and allow an input voltage as high as 18V. 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.

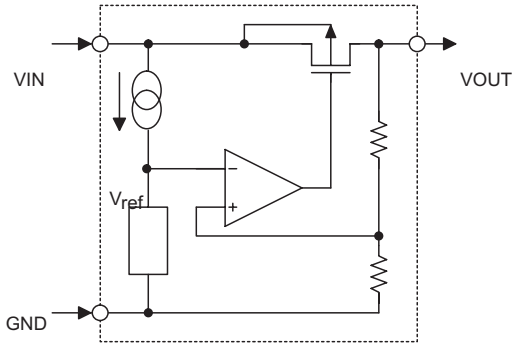
Selection Table

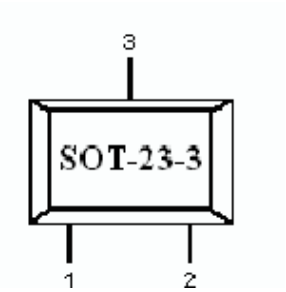
Part No.	Output Voltage	Package	Marking
7530	3.0V	TO-92 SOT-89 SOT-25 SOT23-3	75XX (for TO-92) 75XX (for SOT-89) 5XX (for SOT-25) HT33(for SOT23-3)
7533	3.3V		
7536	3.6V		
7544	4.4V		
7550	5.0V		

Note: ″XX″ stands for output voltages.

For lead free devices, TO-92 package will add a ″#″ mark at the end of the date code, whereas SOT-89 & SOT-25 packages will add a ″#″ mark at the end of the marking.

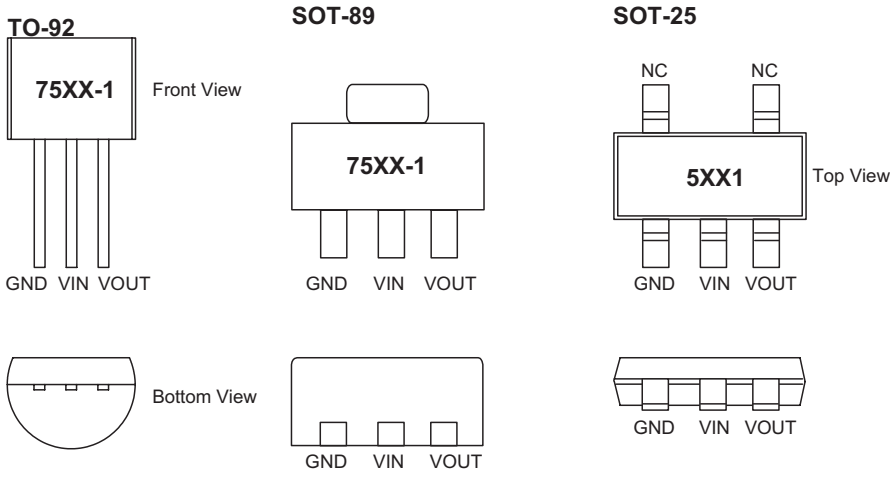
Block Diagram





Pin 1	Gnd
Pin 2	Vout
Pin 3	Vin

Pin Assignment



Absolute Maximum Ratings

Supply Voltage .....–0.3V to 18V

Power Consumption (*1) 250mW

Power Consumption (*2) 150mW

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.
*1: applied to SOT89 and TO-92
*2: applied to SOT-25

Electrical Characteristics

+3.0V Output Type Ta=25°C

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
		V_{IN}	Conditions				
V_{OUT}	Output Voltage Tolerance	5V	I_{OUT}=10mA	2.91	3.0	3.09	V
I_{OUT}	Output Current	5V	—	60	100	—	mA
ΔV_{OUT}	Load Regulation	5V	1mA≤I_{OUT}≤50mA		60	150	mV
V_{DIF}	Voltage Drop	—	I_{OUT}=1mA	—	100	—	mV
I_{SS}	Current Consumption	5V	No load	—	2.5	5	μA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	—	4V≤V_{IN}≤24V I_{OUT}=1mA	—	0.2	—	%/V
V_{IN}	Input Voltage	—	—	—	—	20	V
$\frac{\Delta V_{OUT}}{\Delta T_a}$	Temperature Coefficient	5V	I_{OUT}=10mA 0°C<Ta<70°C	—	±0.45	—	mV/°C

+3.3V Output Type Ta=25°C

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
		V_{IN}	Conditions				
V_{OUT}	Output Voltage Tolerance	5.5V	I_{OUT}=10mA	3.201	3.3	3.399	V
I_{OUT}	Output Current	5.5V	—	60	100	—	mA
ΔV_{OUT}	Load Regulation	5.5V	1mA≤I_{OUT}≤50mA	—	60	150	mV
V_{DIF}	Voltage Drop	—	I_{OUT}=1mA	—	100	—	mV
I_{SS}	Current Consumption	5.5V	No load	—	2.5	5	μA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	—	4.5V≤V_{IN}≤24V I_{OUT}=1mA	—	0.2	—	%/V
V_{IN}	Input Voltage	—	—	—	—	20	V
$\frac{\Delta V_{OUT}}{\Delta T_a}$	Temperature Coefficient	5.5V	I_{OUT}=10mA 0°C<Ta<70°C	—	±0.5	—	mV/°C

+3.6V Output Type Ta=25°C

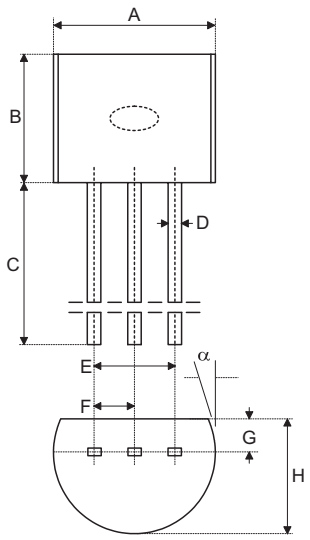
Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
		V_{IN}	Conditions				
V_{OUT}	Output Voltage Tolerance	5.6V	I_{OUT}=10mA	3.492	3.6	3.708	V
I_{OUT}	Output Current	5.6V	—	60	100	—	mA
ΔV_{OUT}	Load Regulation	5.6V	1mA≤I_{OUT}≤50mA	—	60	150	mV
V_{DIF}	Voltage Drop	—	I_{OUT}=1mA	—	100	—	mV
I_{SS}	Current Consumption	5.6V	No load	—	2.5	5	μA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	—	4.6V≤V_{IN}≤24V I_{OUT}=1mA	—	0.2	—	%/V
V_{IN}	Input Voltage	—	—	—	—	20	V
$\frac{\Delta V_{OUT}}{\Delta T_a}$	Temperature Coefficient	5.6V	I_{OUT}=10mA 0°C<Ta<70°C	—	±0.6	—	mV/°C

+4.4V Output Type Ta=25°C

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
		V_{IN}	Conditions				
V_{OUT}	Output Voltage Tolerance	6.4V	I_{OUT}=10mA	4.268	4.4	4.532	V
I_{OUT}	Output Current	6.4V	—	60	100	—	mA
ΔV_{OUT}	Load Regulation	6.4V	1mA≤I_{OUT}≤50mA	—	60	150	mV
V_{DIF}	Voltage Drop	—	I_{OUT}=1mA	—	100	—	mV
I_{SS}	Current Consumption	6.4V	No load	—	2.5	5	μA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation	—	5.4V≤V_{IN}≤24V I_{OUT}=1mA	—	0.2	—	%/V
V_{IN}	Input Voltage	—	—	—	—	20	V
$\frac{\Delta V_{OUT}}{\Delta T_a}$	Temperature Coefficient	6.4V	I_{OUT}=10mA 0°C<Ta<70°C	—	±0.7	—	mV/°C

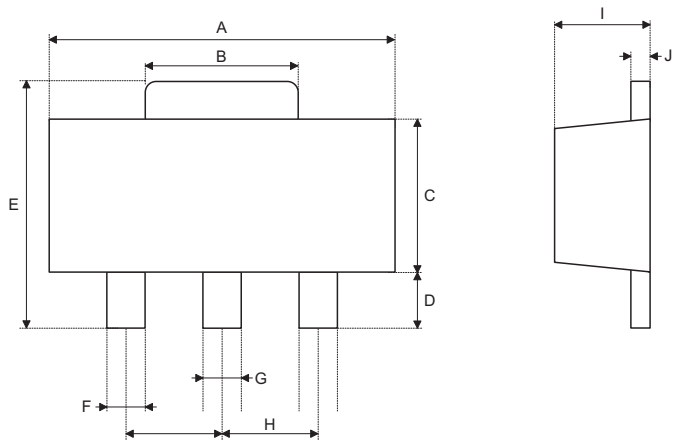
Package Information

3-pin TO-92 Outline Dimensions



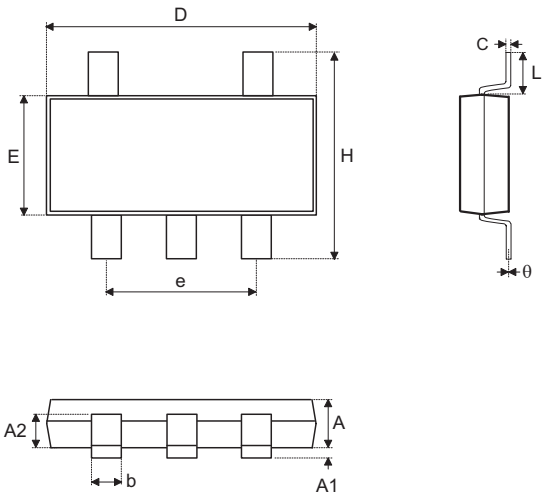
Symbol	Dimensions in mil		
	Min.	Nom.	Max.
A	170	—	200
B	170	—	200
C	500	—	—
D	11	—	20
E	90	—	110
F	45	—	55
G	45	—	65
H	130	—	160
I	8	—	18
α	4°	—	6°

3-pin SOT-89 Outline Dimensions



Symbol	Dimensions in mil		
	Min.	Nom.	Max.
A	173	—	181
B	64	—	72
C	90	—	102
D	35	—	47
E	155	—	167
F	14	—	19
G	17	—	22
H	—	59	—
I	55	—	63
J	14	—	17

5-pin SOT-25 Outline Dimensions



Symbol	Dimensions in mm		
	Min.	Nom.	Max.
A	1.00	—	1.30
A1	—	—	0.10
A2	0.70	—	0.90
b	0.35	—	0.50
C	0.10	—	0.25
D	2.70	—	3.10
E	1.40	—	1.80
e	—	1.90	—
H	2.60	—	3
L	0.37	—	—
θ	1°	—	9°