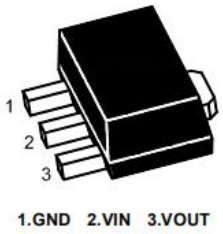
AT75BL Series

Low Dropout Regulator

Input Voltage: up to 36V Output: 2.8V~5.0V

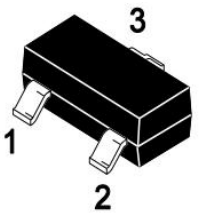
DESCRIPTION

The AT75BL 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, AT75BL Series are widely used in a variety of equipment such as audio device, video device, communication device and so on.



1.GND 2.VIN 3.VOUT

SOT-89
AT75BLXXSQ



1.GND 2.VOUT 3.VIN

SOT-23
AT75BLXXSA

1.GND 2.VOUT 3.VIN

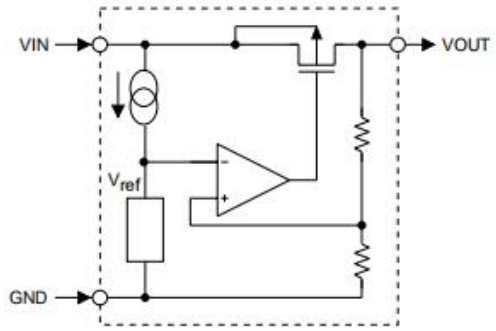
SOT23-3
AT75BLXXSC

FEATURES

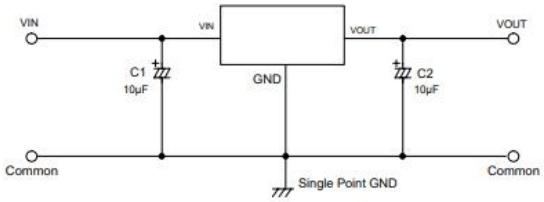
- Low power consumption
- Low voltage drop
- Low temperature coefficient
- High input voltage (up to 36V)
- Quiescent current : 2.5μA
- Output voltage tolerance: ±2%
- HAF(halogen and antimony free) is acquired

SELECTION TABLE

Designator	Symbol	Description
AT75BLXXSQ/SA/SC	28	2.8V(output)
	30	3.0V
	33	3.3V
	36	3.6V
	40	4.0V
	44	4.4V
	50	5.0V



Block Diagram



Typical Application Circuit

ABSOLUTE MAXIMUM RATINGS(NOTE1)

Ratings at 25℃ ambient temperature unless otherwise specified.

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

AT75BL28SQ/SA/SC(T_A=25℃)

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 , ΔV_{OUT}=2%	—	30	100	mV
Quiescent Current	I_{SS}	No Load	—	2.5	3.0	μA
Line regulation	$\Delta V_{OUT} / V_{OUT} \times \Delta V_{IN}$	$V_{OUT}+2.0V \le V_{IN} \le 30V$, 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℃≤T_A≤85℃	—	100	—	ppm/℃

AT75BL30SQ/SA/SC(T_A=25℃)

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≤I_{OUT}≤50mA	—	25	60	mV
Voltage drop Note1	V_{DIF}	I_{OUT}=1mA，ΔV_{OUT}=2%	—	30	100	mV
Quiescent Current	I_{SS}	No Load	—	2.5	3.0	μA
Line regulation	ΔV_{OUT} / V_{OUT} ×ΔV_{IN}	V_{OUT}+2.0V≤V_{IN}≤30V，I_{OUT}=1mA	—	—	0.2	%/V
Input voltage	V_{IN}	—	—	—	36	V
Temperature coefficient	ΔV_{OUT} /V_{OUT} ×ΔT_A	V_{IN}=V_{OUT}+2.0V, I_{OUT}=10mA， -40℃≤T_A≤85℃	—	100	—	ppm/℃

AT75BL33SQ/SA/SC(T_A=25℃)

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

AT75BL36SQ/SA/SC(T_A=25℃)

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

AT75BL40SQ/SA/SC(T_A=25℃)

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}	$V_{IN}=V_{OUT}+2.0V$	100	150	—	mA
Load regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2.0V$ 1mA≤I_{OUT}≤70mA	—	25	60	mV
Voltage drop Note1	V_{DIF}	I_{OUT}=1mA , ΔV_{OUT}=2%	—	25	55	mV
Quiescent Current	I_{SS}	No Load	—	3.5	4.0	μA
Line regulation	ΔV_{OUT} / V_{OUT} ×ΔV_{IN}	V_{OUT}+2.0 V≤V_{IN}≤30V , I_{OUT}=1mA	—	—	0.2	%/V
Input voltage	V_{IN}	—	—	—	36	V
Temperature coefficient	ΔV_{OUT} /V_{OUT} ×ΔT_A	V_{IN}= V_{OUT}+2.0V, I_{OUT}=10mA , -40℃≤T_A≤85℃	—	100	—	ppm/℃

AT75BL44SQ/SA/SC(T_A=25℃)

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}	$V_{IN}=V_{OUT}+2.0V$	100	150	—	mA
Load regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2.0V$ 1mA≤I_{OUT}≤70mA	—	25	60	mV
Voltage drop Note1	V_{DIF}	I_{OUT}=1mA , ΔV_{OUT}=2%	—	25	55	mV
Quiescent Current	I_{SS}	No Load	—	3.5	4.0	μA
Line regulation	ΔV_{OUT} / V_{OUT} ×ΔV_{IN}	V_{OUT}+2.0 V≤V_{IN}≤30V , I_{OUT}=1mA	—	—	0.2	%/V
Input voltage	V_{IN}	—	—	—	36	V
Temperature coefficient	ΔV_{OUT} /V_{OUT} ×ΔT_A	V_{IN}= V_{OUT}+2.0V, I_{OUT}=10mA , -40℃≤T_A≤85℃	—	100	—	ppm/℃

AT75BL50SQ/SA/SC(T_A=25℃)

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≤I_{OUT}≤70mA	—	25	60	mV
Voltage drop Note1	V_{DIF}	I_{OUT}=1mA , ΔV_{OUT}=2%	—	25	55	mV
Quiescent Current	I_{SS}	No Load	—	3.5	4.0	μA
Line regulation	ΔV_{OUT} / V_{OUT} ×ΔV_{IN}	V_{OUT}+2.0 V≤V_{IN}≤30V , I_{OUT}=1mA	—	—	0.2	%/V
Input voltage	V_{IN}	—	—	—	36	V
Temperature coefficient	ΔV_{OUT} /V_{OUT} ×ΔT_A	V_{IN}= V_{OUT}+2.0V, I_{OUT}=10mA , -40℃≤T_A≤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 VOUT .

PACKAGE OUTLINE

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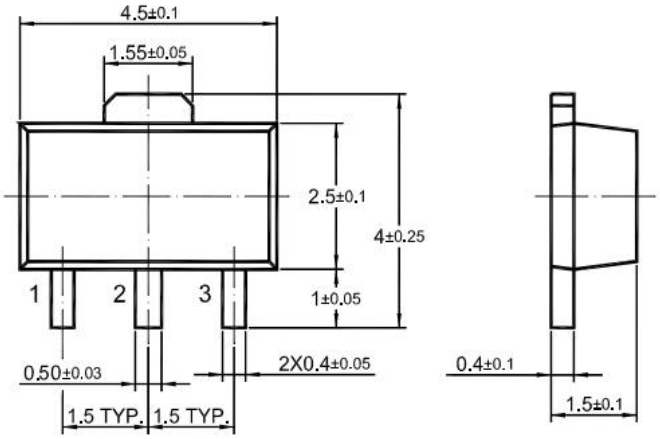

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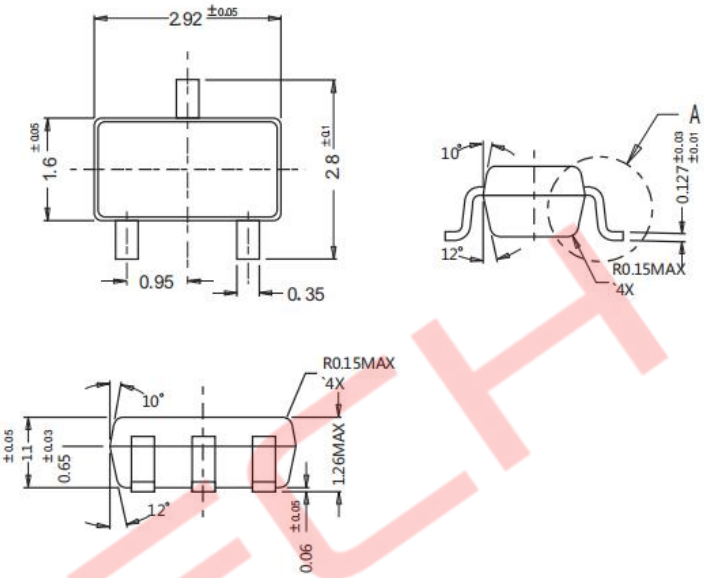

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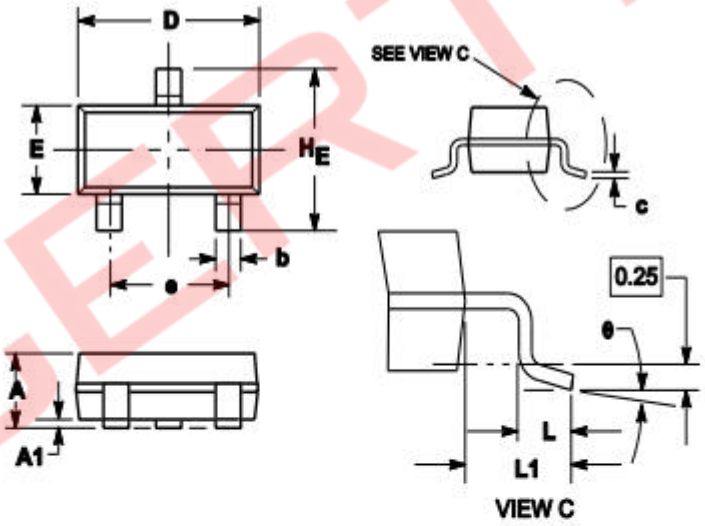
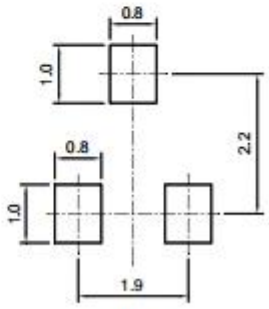


Symbol	Dimensions in millimeter		
	Min.	Typ.	Max.
A	0.900	1.025	1.150
A1	0.000	0.050	0.100
b	0.300	0.400	0.500
c	0.080	0.115	0.150
D	2.800	2.900	3.000
E	1.200	1.300	1.400
HE	2.250	2.400	2.550
e	1.800	1.900	2.000
L1	0.550REF		
L	0.300		0.500
θ	0°		8°



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Recommended soldering pad