



40V Input , 250mA , Low Current Consumption , CMOS LDO

Description

The AF75XXH is a CMOS-based low supply current voltage regulator featuring 250mA output current and 40V input voltage. This device consists of an output short-circuit protection circuit, an over current protection circuit, and a thermal shutdown circuit in addition to the basic regulator circuits.

The series are very suitable for the battery-powered equipment such as RF applications and other systems requiring a quiet voltage source.

Applications

- Portable consumer equipment
- Wireless handsets, Smart Phones
- Bluetooth, Digital cameras and Digital audio
- PDAs and other handheld products

Device Information

AF 75 XX H – M/P/N R/G

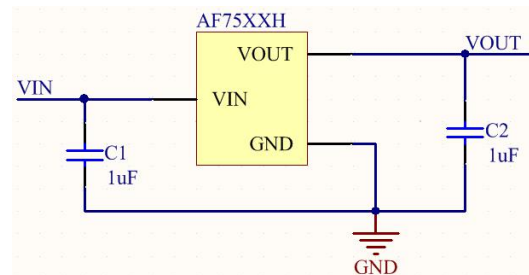
- ① ② ③ ④ ⑤ ⑥

| | |
|---|----------------------------------|
| ① | Standard |
| ② | Product Series |
| ③ | Output Voltage e.g. 33 = 3.3V |
| ④ | High Voltage |
| ⑤ | M: SOT-23-3 Package |
| | P: SOT-89-3 Package |
| | N: SOT-23 Package |
| ⑥ | R: RoHS / Pb Free |
| | G: Halogen Free |

Features

- Input Voltage Range: 2.5V~40V
- Output Voltage Range: 3V~5V
- Output Current: 250mA
- Quiescent Current: 2uA
- Dropout Voltage: 500mV@100mA
- Fixed Voltage Accuracy: ±2%(Typ.)
- PSRR: 70dB at 1kHz
- Low Output Noise
- Excellent Line and Load Transient Response
- Short-Circuit Protection, Built-in Current Limiter

Typical Application



Pin Configuration

| Symbol | Package Pin | |
|--------|------------------|---------|
| | SOT23 SOT23-3 | SOT89-3 |
| GND | 1 | 1 |
| OUT | 2 | 3 |
| VIN | 3 | 2 |



✚ Absolute Maximum Ratings⁽¹⁾

(Unless otherwise specified, all voltage are with respect to GND, TA=25°C)

| PARAMETER | | SYMBOL | RATINGS | UNITS |
|--------------------------------------|---------|------------------|---------|-------|
| Input Voltage | | V _{IN} | -0.3~50 | V |
| Output Voltage | | V _{OUT} | -0.3~13 | V |
| Power Dissipation | SOT23 | P _D | 0.25 | W |
| | SOT23-3 | | 0.3 | W |
| | SOT89-3 | | 0.5 | W |
| Operating Junction Temperature Range | | T _J | -40~125 | °C |
| Storage Temperature | | T _{STG} | -40~125 | °C |
| Lead Temperature(Soldering, 10 sec) | | T _L | 260 | °C |

(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 indicated under recommended operating conditions is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

✚ Electronics Characteristics

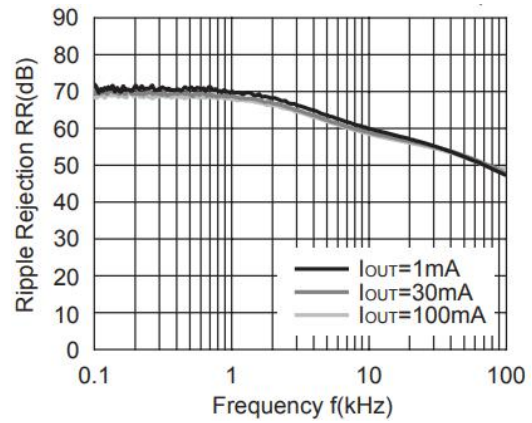
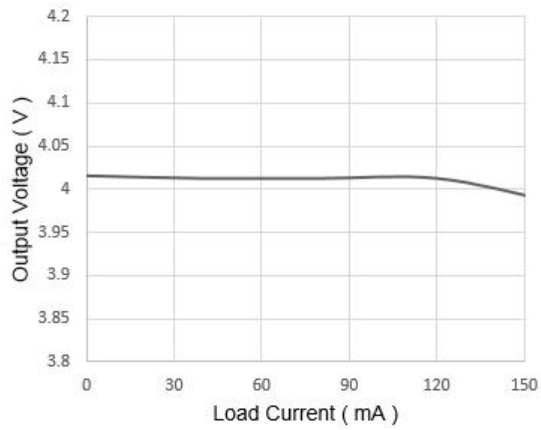
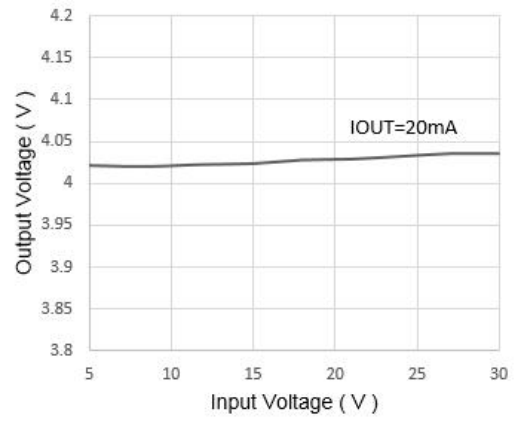
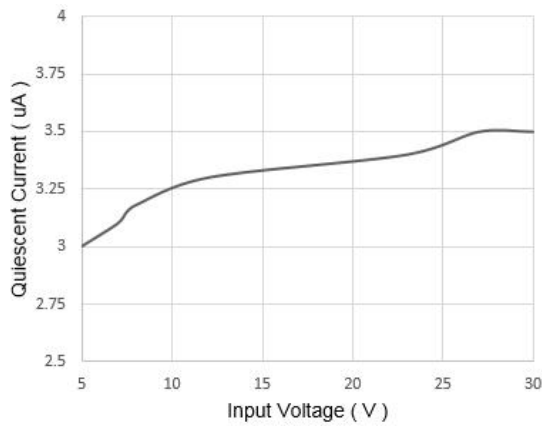
(Unless otherwise specified, V_{IN}=V_{OUT}+1V, C_{IN}=C_{OUT}=1uF, TA=25°C)

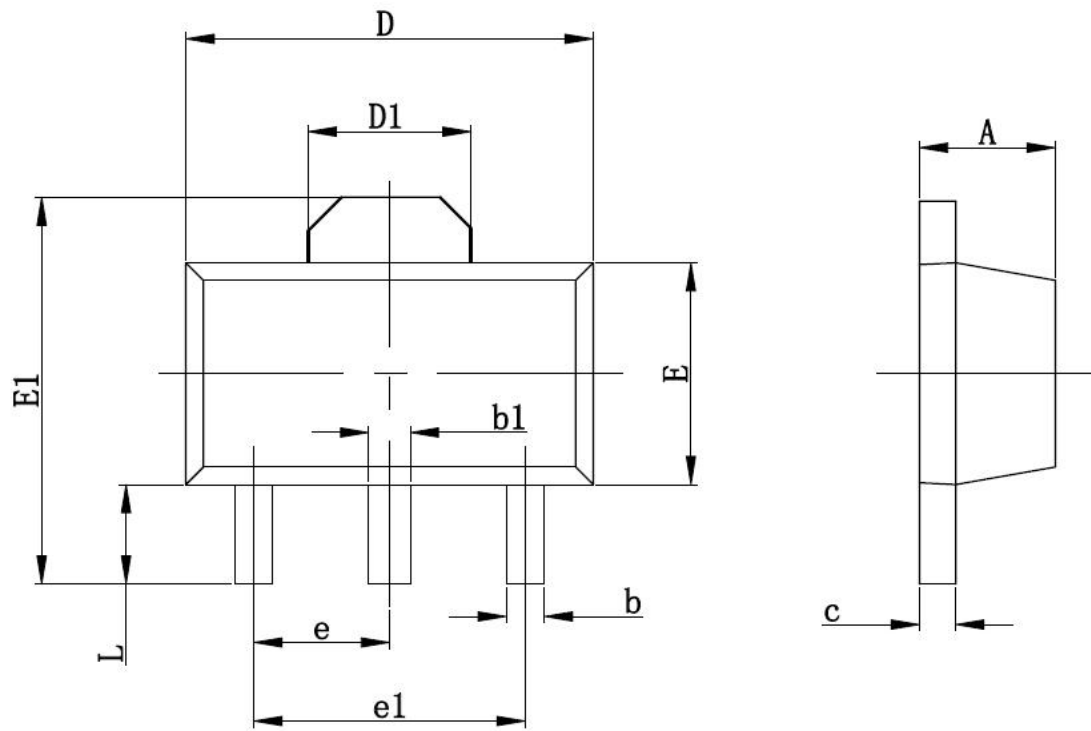
| PARAMETER | SYMBOL | CONDITIONS | MIN | TYP | MAX | UNIT |
|------------------------------|--------------------|--|--------------------------|--------------------|--------------------------|-------------------|
| Input Voltage | V _{IN} | | 2.5 | | 40 | V |
| Output Voltage | V _{OUT} | | 0.98 V _{OUT} | V _{OUT} | 1.02 V _{OUT} | V |
| Dropout Voltage | V _{DIF} | I _{OUT} =100mA | | 400 | | mV |
| Quiescent Current | I _Q | I _{OUT} =0 | | 2 | 5 | uA |
| Line Regulation | ΔV _{LINE} | I _{OUT} =10mA V _{OUT} +1V≤V _{IN} ≤36V | | 0.01 | 0.3 | %/V |
| Load Regulation | ΔV _{LOAD} | V _{IN} =V _{OUT} +1V 1mA≤I _{OUT} ≤100mA | | 10 | | mV |
| Temperature Coefficient | TC | I _{OUT} =10mA -40°C<T _A <85°C | | 50 | | ppm |
| Current Limit | I _{LIM} | V _{OUT} =0.5xV _{OUT} V _{IN} = 5V | | 350 | | mA |
| Short Current | I _{SHORT} | V _{OUT} =V _{SS} | | 25 | | mA |
| Power Supply Rejection Ratio | PSRR | I _{OUT} =50 mA | 1kHz | 70 | | dB |
| | | | 10kHz | 60 | | |
| Output Noise Voltage | V _{ON} | BW=10Hz to 100kHz | | 27V _{OUT} | | μV _{RMS} |



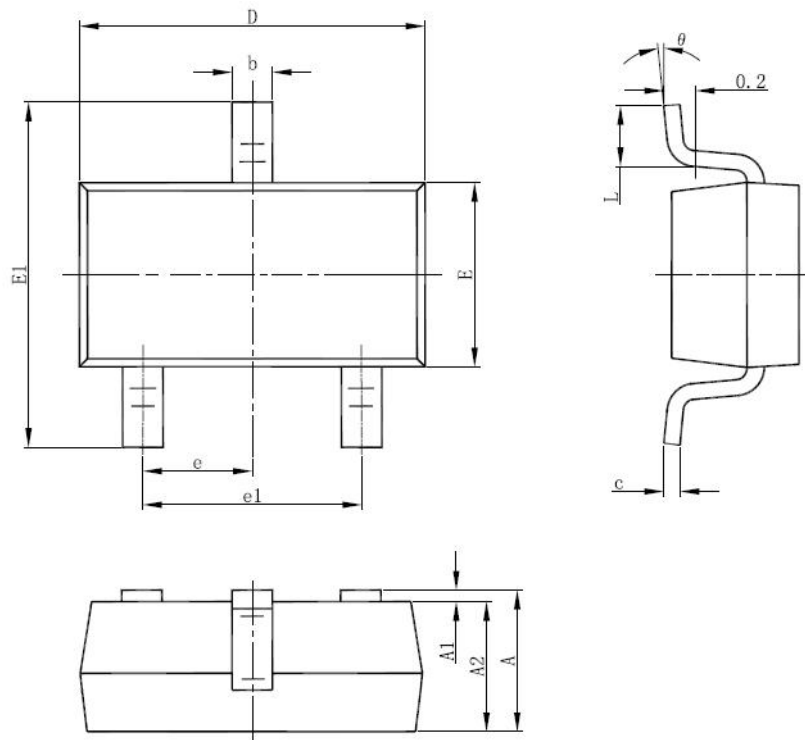
Typical Characteristics

(Unless otherwise specified, $V_{IN}=V_{OUT}+1V$, $C_{IN}=C_{OUT}=1\mu F$, $T_A=25^\circ C$)



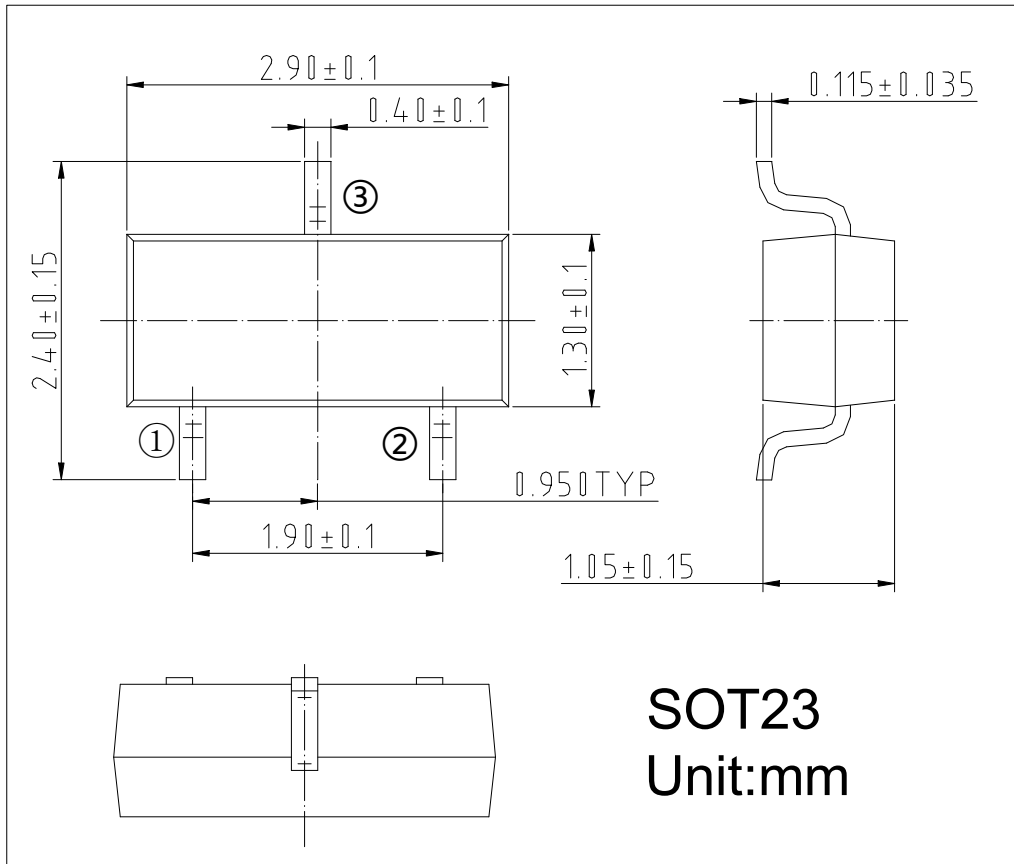
 **Package Information**

SOT89-3

| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 1.400 | 1.600 | 0.055 | 0.063 |
| b | 0.350 | 0.520 | 0.013 | 0.197 |
| b1 | 0.400 | 0.580 | 0.016 | 0.023 |
| c | 0.350 | 0.440 | 0.014 | 0.017 |
| D | 4.400 | 4.600 | 0.173 | 0.181 |
| D1 | 1.550 REF | | 0.061 REF | |
| E | 2.350 | 2.550 | 0.091 | 0.102 |
| E1 | 3.940 | 4.250 | 0.155 | 0.167 |
| e | 1.500 TYP | | 0.060TYP | |
| e1 | 3.000 TYP | | 0.118TYP | |
| L | 0.900 | 1.100 | 0.035 | 0.047 |



SOT23-3

| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|----------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 1.050 | 1.250 | 0.041 | 0.049 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 1.050 | 1.150 | 0.041 | 0.045 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.100 | 0.200 | 0.004 | 0.008 |
| D | 2.820 | 3.020 | 0.111 | 0.119 |
| E | 1.500 | 1.700 | 0.059 | 0.067 |
| E1 | 2.650 | 2.950 | 0.104 | 0.116 |
| e | 0.950(BSC) | | 0.037(BSC) | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.300 | 0.600 | 0.012 | 0.024 |
| θ | 0° | 8° | 0° | 8° |





Order Information

| Voltage | SOT89-3 | Marking | SOT23-3 | Marking | SOT23 | Marking |
|---------|---------|---------|---------|---------|-------|---------|
| 3 | √ | 7530 | | | | |
| 3.3 | √ | 7533P | √ | 7533 | | |
| 3.6 | | | | | | |
| 4.0 | √ | 7540-H# | | | √ | 7540N |
| 5.0 | √ | 7550P | √ | 7550 | | |

| Package | Packing | Shipping |
|---------|---------------|----------|
| SOT23 | Tape and Reel | 3K/Reel |
| SOT23-3 | | 3K/Reel |
| SOT89-3 | | 1K/Reel |

Revision History

| Document ID | Change Notice | Release date |
|-------------|--|--------------|
| AF75XXH | AF7550H marking change from 7550-H# to 7550P | 2020-11-24 |

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