DESCRIPTION

A6201 series is a group of positive voltage output, low power consumption, low dropout voltage, three terminal regulator. It can provide 200mA output current when input / output voltage differential drops to 420mV (V_{OUT}= 3.3V), And it also provides foldback short-circuit protection and output current limit function. The very low power consumption of A6201 (I_Q=2.0uA) can greatly improve natural life of batteries.

A6201 can provide output value in the range of 1.1V~5.0V in 0.1V steps. It also can customized on command.

A6201 includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module.

A6201 has well load transient response and good temperature characteristic, And it uses trimming technique to guarantee output voltage accuracy within±2%.

The A6201 is available in SOT-23, SOT-25 and SOT-89-3 packages.

FEATURES

- Low Power Consumption: 2.0uA (Typ.)
- Maximum Output Current: 250mA
- Small Dropout Voltage
  210mV@100mA (V_{OUT}=3.3V)
  420mV@200mA (V_{OUT}=3.3V)
- Input Voltage Range: 2V~16V
- Output Voltage Range: 1.1V~5.0V
  (customized on command in 0.1V steps)
- Highly Accurate: ±2%(±1% customized)
- Output Current Limit
  330mA@V_{OUT}=3.3V
- Foldback Short-circuit Current
  56mA@V_{OUT}=3.3V
- Available in SOT-23, SOT-25 and SOT-89-3 Packages

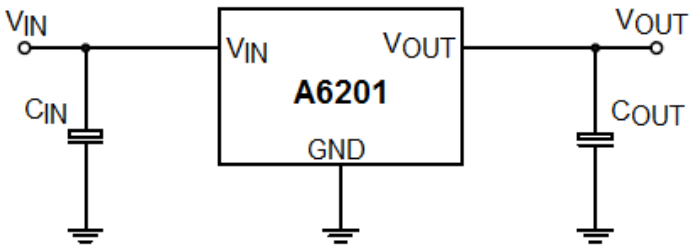
APPLICATION

- Battery Powered equipment
- Power Management of MP3、PDA、DSC、Mouse、PS2 Games
- Reference Voltage Source Regulation after Switching Power

ORDERING INFORMATION

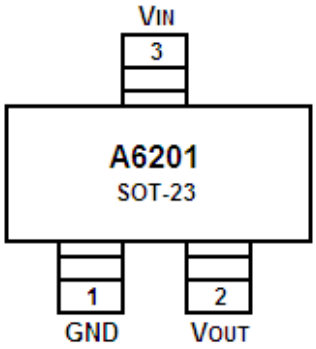
Package Type	Part Number	
SOT-23	E3	A6201E3R-XX
		A6201E3VR-XX
SOT-25	E5	A6201E5R-XX
		A6201E5VR-XX
SOT-89-3	K3	A6201K3R-XXZ
		A6201K3VR-XXZ
Note	XX: Output Voltage Z: Package Type V: Package Type R: Tape & Reel	
AiT provides all RoHS products Suffix " V " means Halogen Free Package		

TYPICAL APPLICATION

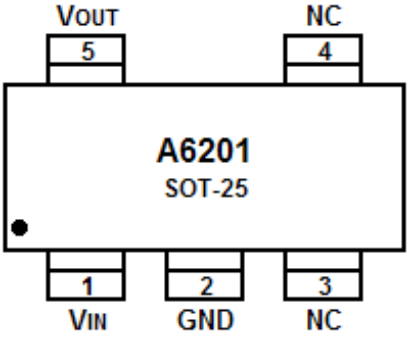


NOTE: Input capacitor (C_{IN}=1uF) and Output capacitor (C_{OUT}=1uF) are recommended in all application circuit. Ceramic capacitor is recommended.

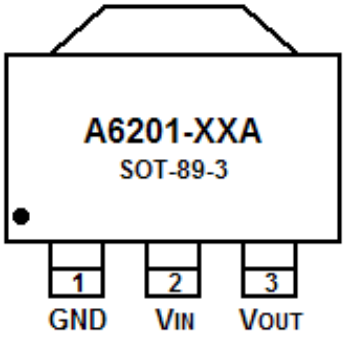
PIN DESCRIPTION



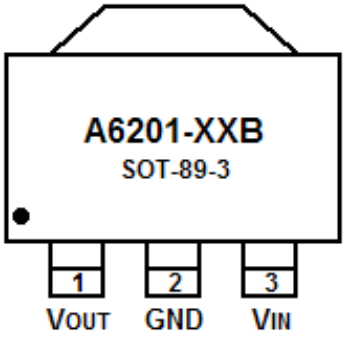
Top View



Top View



Top View



Top View

Pin #				Symbol	Function
SOT-23	SOT-25	SOT-89A	SOT-89B		
1	2	1	2	GND	Ground
2	5	3	1	V_{OUT}	Output Voltage
3	1	2	3	V_{IN}	Input Voltage
-	3, 4	-	-	NC	No Connect

ABSOLUTE MAXIMUM RATINGS

Max Input Voltage	20V
T_J, Operating Junction Temperature	125℃
T_A, Ambient Temperature	-40℃~85℃
Power Dissipation	
SOT-23	250mW
SOT-25	250mW
SOT89-3	500mW
T_S, Storage Temperature	-40℃~150℃
Lead Temperature & Time	260℃, 10S

Stresses above 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 in the Electrical Characteristics is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

RECOMMENDED OPERATION RANGE

Parameters	MIN	MAX	Unit
Input Voltage Range		16	V
Ambient Temperature	-40	85	°C

THERMAL RESISTANCE

Package	θ_{JA}	θ_{JC}
SOT-23	250°C/W	130°C/W
SOT-25	250°C/W	130°C/W

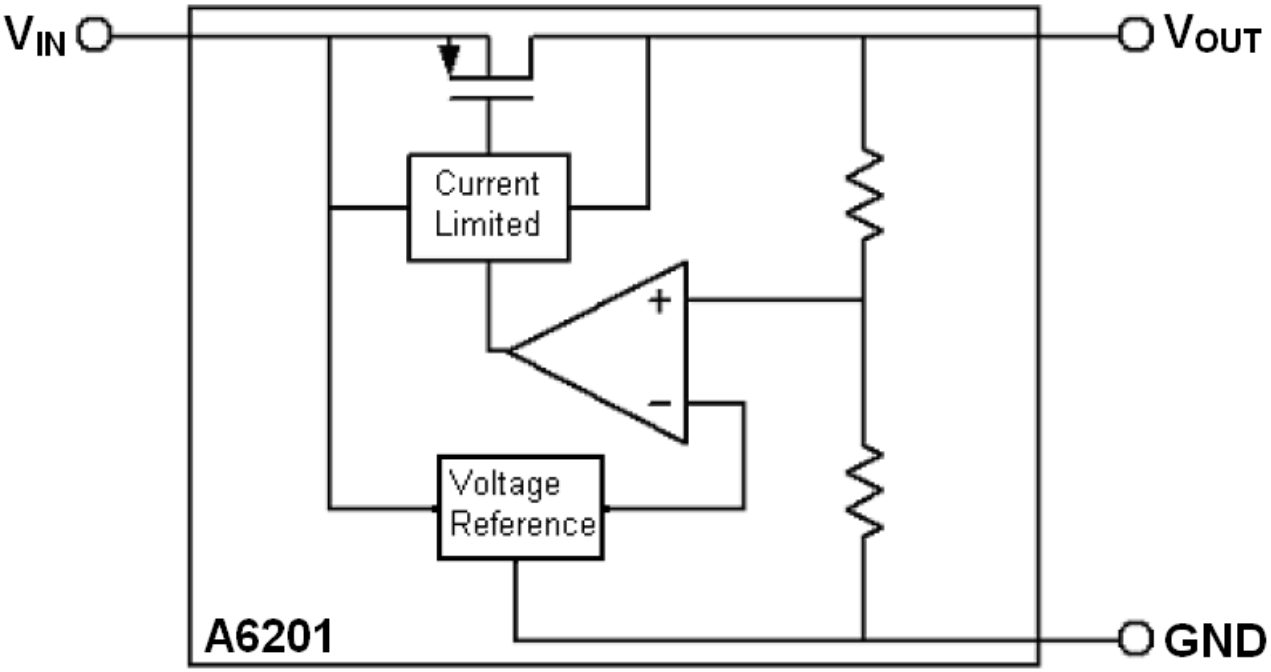
NOTE: Thermal Resistance is specified with approximately 1 square of 1 oz copper.

ELECTRICAL CHARACTERISTICS

Test Conditions: C_{IN} = 1uF, C_{OUT} = 1uF, T_A = 25°C, Unless Otherwise Specified

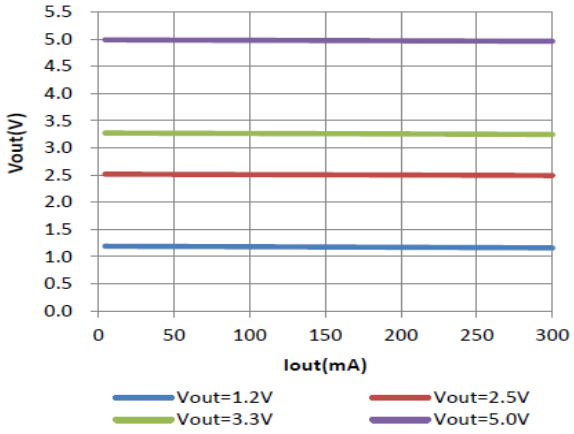
Parameter	Symbol	Conditions		MIN	TYP	MAX	Unit
Input Voltage	V_{IN}			-	-	16	V
Output Voltage	V_{OUT}			V_{OUT} x 0.98	-	V_{OUT} x 1.02	V
Maximum Output Current	I_{OUT}(Max.)	$V_{IN} - V_{OUT}$ = 1V		250	-	-	mA
Input-Output Voltage Differential	Dropout Voltage	I_{OUT} =100mA	$V_{OUT} \le 2.5V$	-	600	1000	mV
			$V_{OUT} \ge 2.5V$		300	600	
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	I_{OUT} = 10mA 2.0V ≤ V_{IN} ≤ 16V		-	0.2	0.3	%/V
Load Regulation	ΔV_{OUT}	V_{IN} = Set V_{OUT} + 1V 1mA ≤ I_{OUT} ≤ 100mA		-	20	40	mV
Quiescent Current	I_Q	V_{IN} = Set V_{OUT} + 1V		-	2.0	5.0	uA
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT}}{\Delta T \times V_{OUT}}$	I_{OUT} = 10mA		-	100	-	ppm/°C

BLOCK DIAGRAM

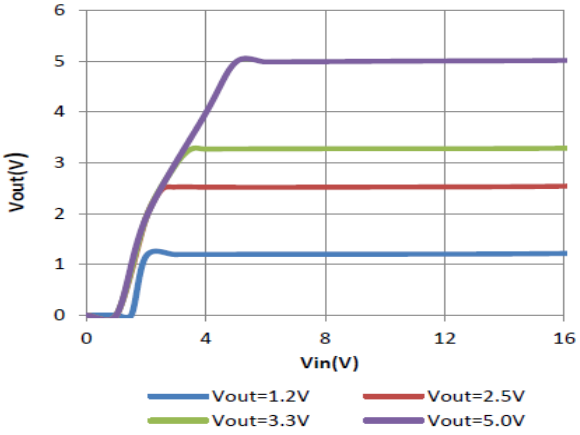


TYPICAL PERFORMANCE CHARACTERISTICS

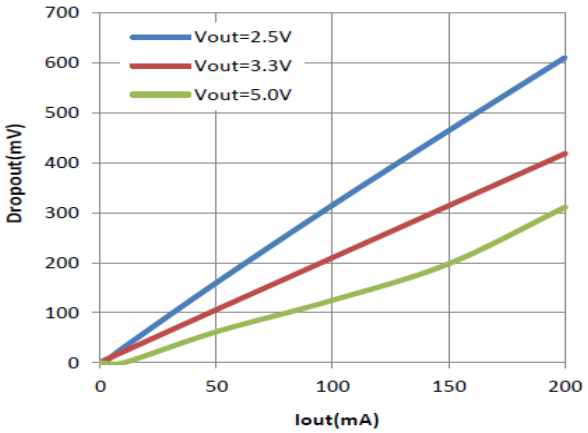
1. V_{OUT} Voltage vs. Load Current



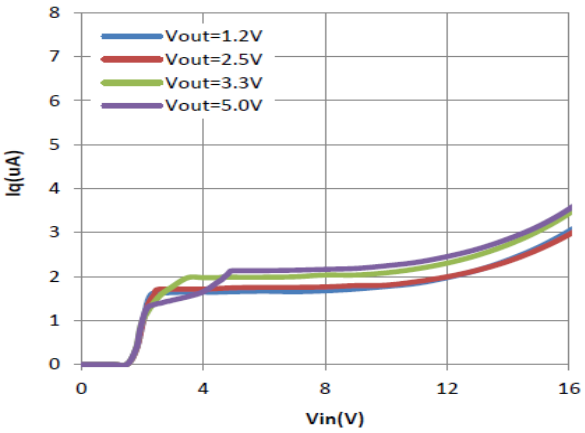
2. Line Regulation



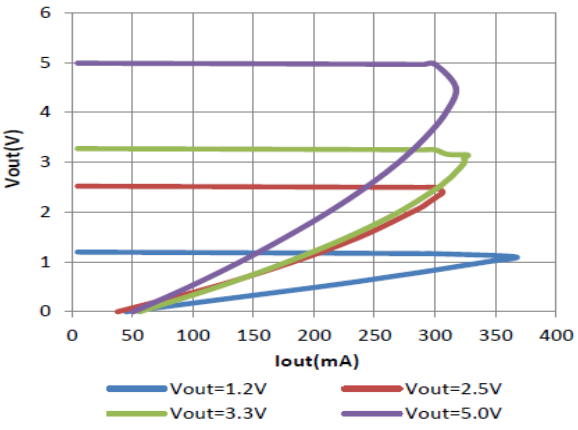
3. Dropout Voltage vs. Load Current



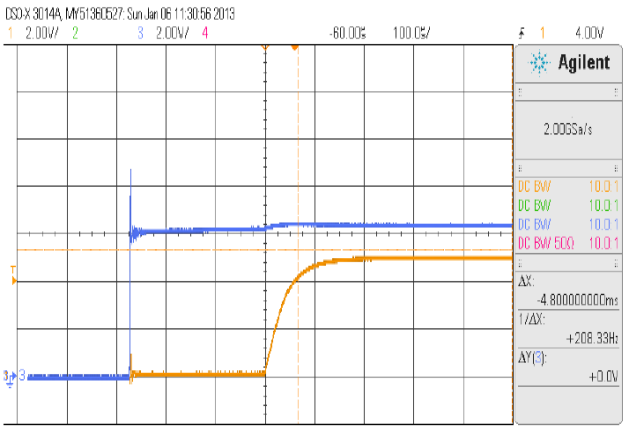
4. I_Q



5. Current Limit

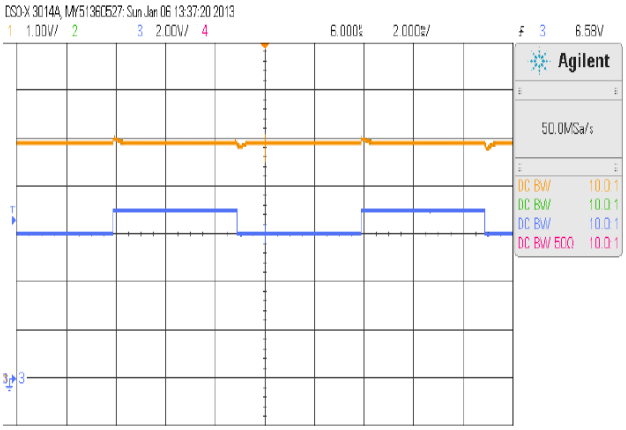


6. Start up Ch1=V_{OUT}, Ch3=V_{IN}



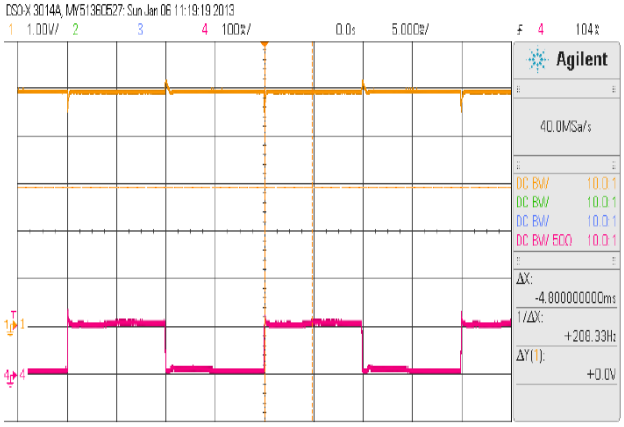
7. Line transient response

V^{IN}=6V~7V, Ch1=V_{OUT}, Ch3=V_{IN}



8. Load transient response

I_{OUT}=1mA~100mA, Ch1=V_{OUT}, Ch4=I_{OUT}



DETAILED INFORMATION

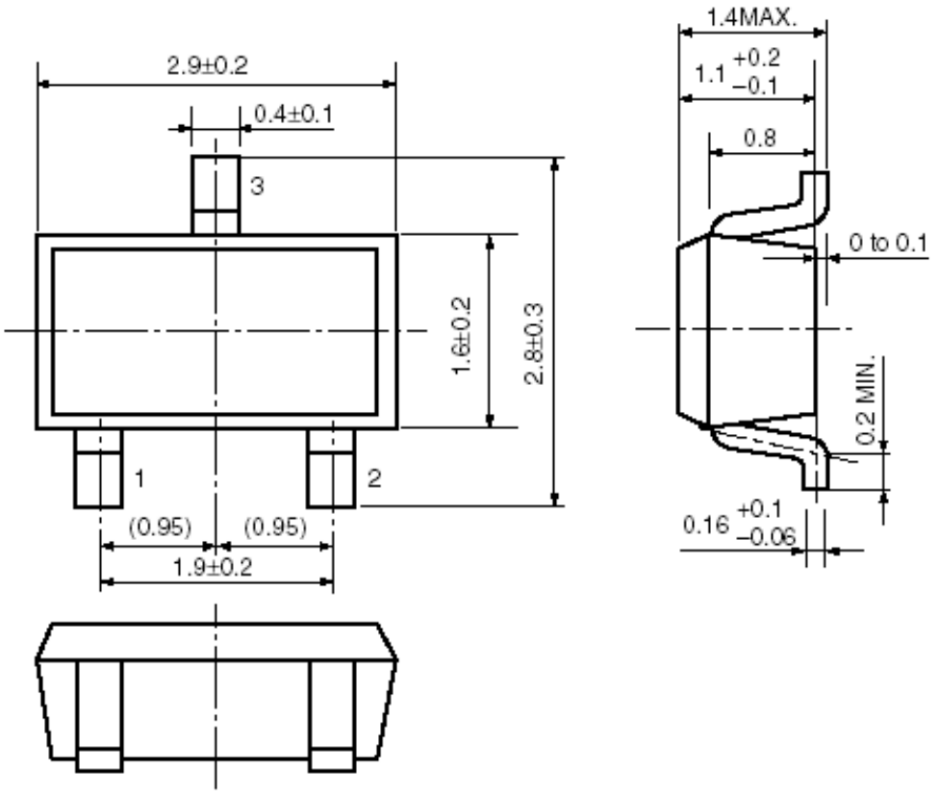
A6201 is a series of low dropout voltage and low power consumption three pins regulator. Its application circuit is very simple, which only needs two outside capacitors. It is composed of these modules: high accuracy voltage reference, current limit circuit, error amplifier, output driver and power transistor.

Current Limit module can keep chip and power system away from danger when load current is more than 250mA.

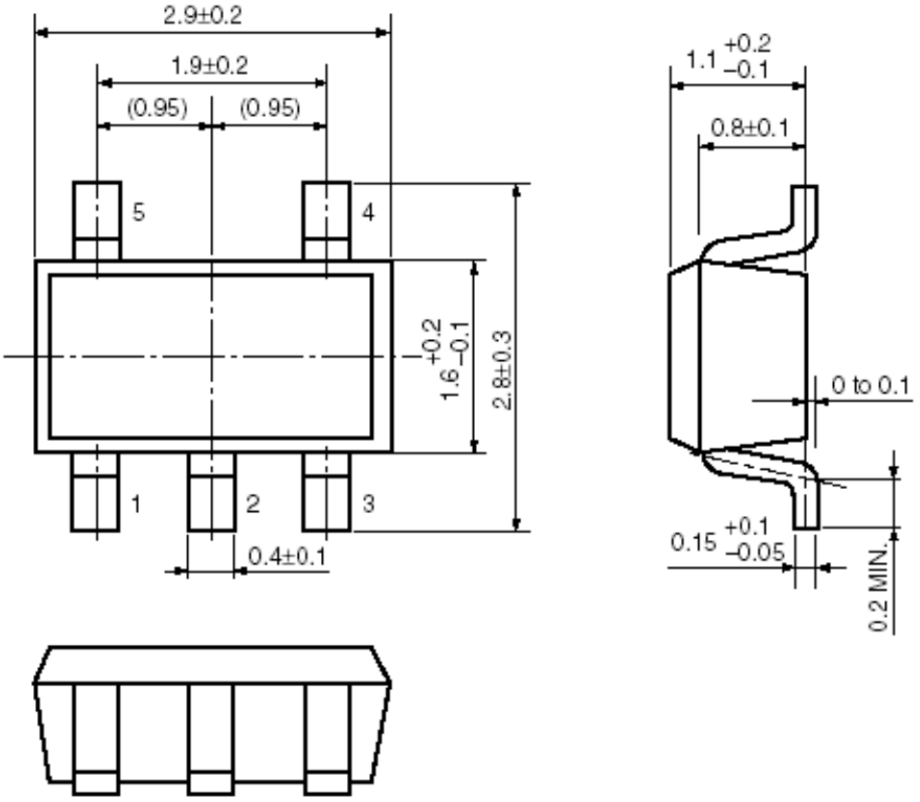
A6201 uses trimming technique to assure the accuracy of output value within±2%, at the same time, temperature compensation is elaborately considered in this chip, which makes A6201's temperature coefficient within 100ppm/°C。

PACKAGE INFORMATION

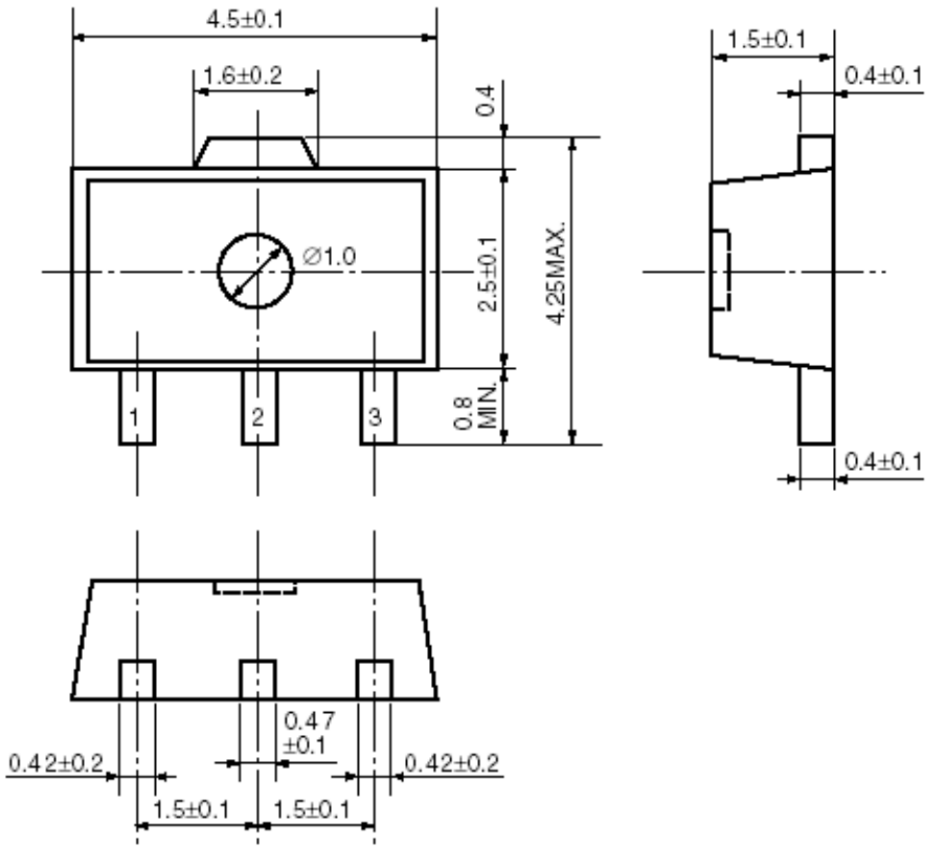
Dimension in SOT-23 Package (Unit: mm)



Dimension in SOT-25 (Unit: mm)



Dimension in SOT-89-3 (Unit: mm)



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