

Low Noise PFM DC/DC Regulator

General Description

The LP6201 Series are PFM Step-up DC/DC ICs with ultra low supply current by CMOS process and suitable for use with battery-powered instruments. The LP6201 IC consists of an oscillator, a PFM control circuit, a driver transistor (LX switch), a reference voltage unit, an error amplifier, resistors for voltage detection, and a LX switch protection circuit. A low ripple and high efficiency step-up DC/DC converter can be constructed of this LP6201 IC with only three external components.

Ordering Information

LP6201 -	□	□	□	□	□
	F: Pb-Free				
	Package Type				
	B3: SOT23				
	B5: SOT23-5				
	X3: SOT-89				
	Output Voltage				
	30:3.0V				
	33:3.3V				
	36:3.6V				
	40: 4.0V				
	45:4.5V				
	50:5.0V				

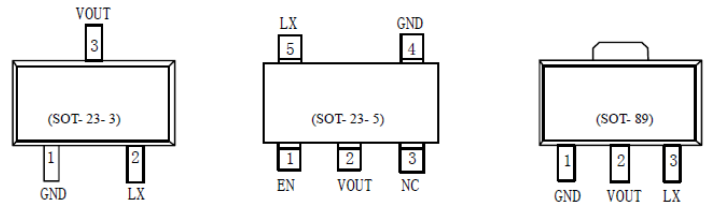
Features

- ◆ Up to 85% efficiency
- ◆ Low voltage start-up:0.9V
- ◆ Shut-down current:<1uA
- ◆ Output voltage:2.5-6.0V with 0.1V step
- ◆ High switch on current:800mA
- ◆ 260KHz frequency switching
- ◆ Available in SOT23,SOT23-5,SOT-89 Package

Applications

- ✧ AIK. Battery products

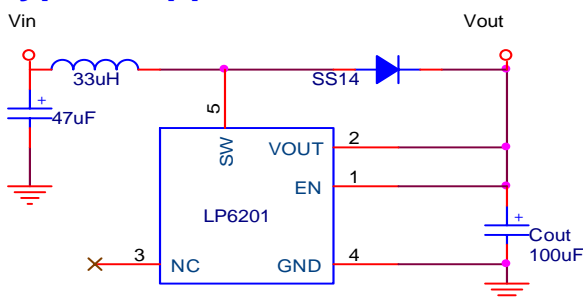
Pin Configurations



Marking Information

Please see website.

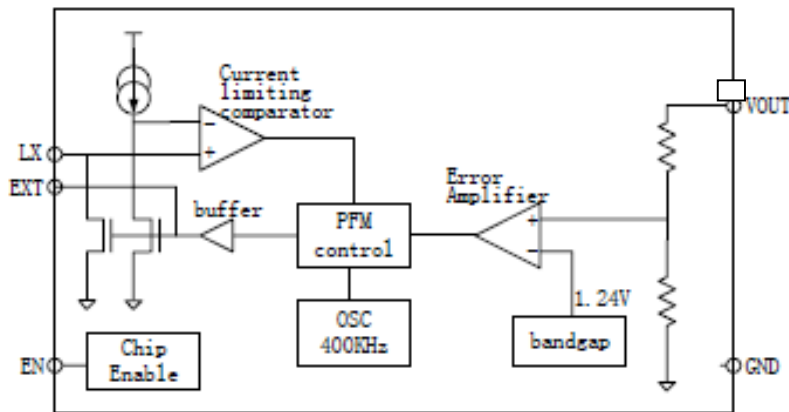
Typical Application Circuit



Functional Pin Description

Pin No.			Pin Name	Pin Function
SOT23-5	SOT23	SOT89		
1	X	X	EN	Chip EN(Active High)
2	3	2	Vout	Voltage output pin
3	X	X	NC	No connection
4	1	1	GND	Chip Power Ground
5	2	3	LX	Pin of switch

Function Block Diagram



Absolute Maximum Ratings

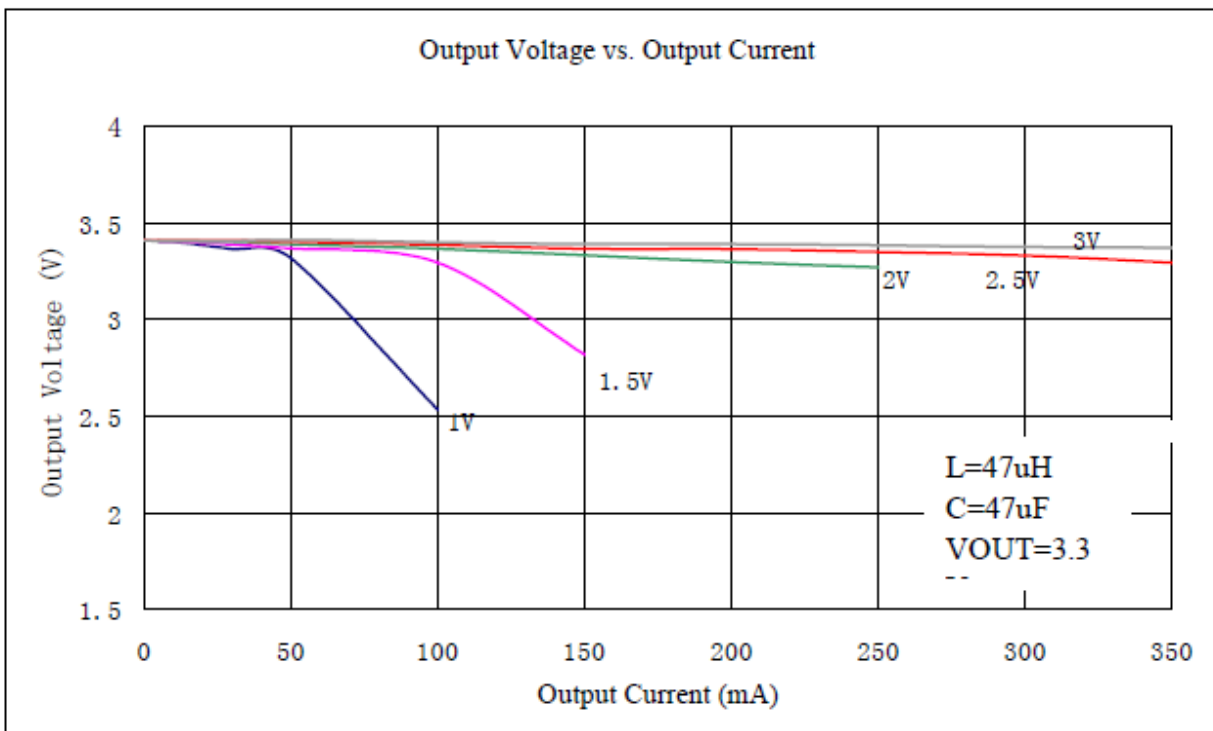
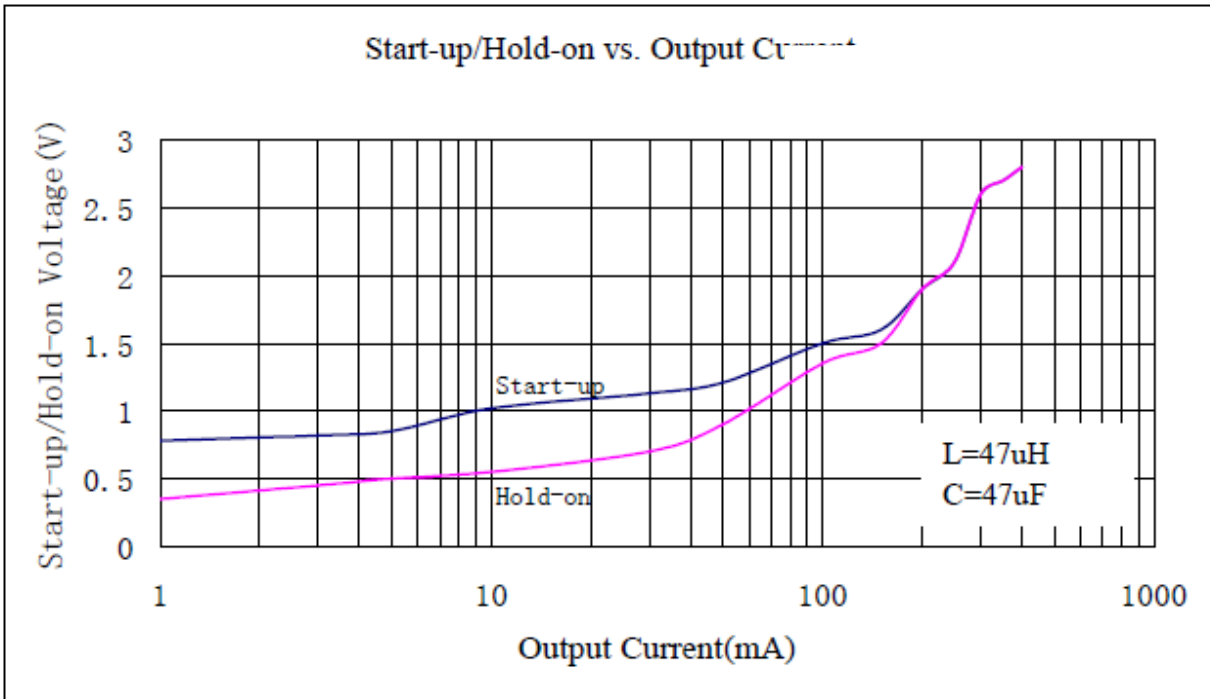


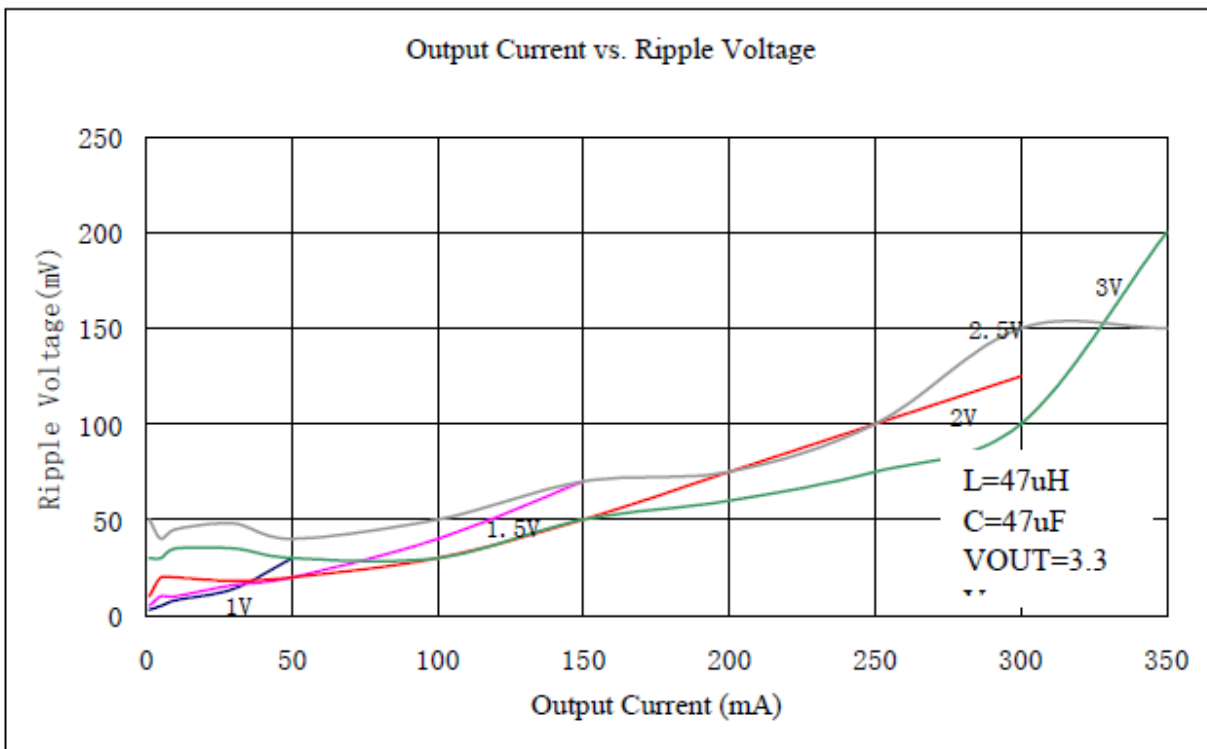
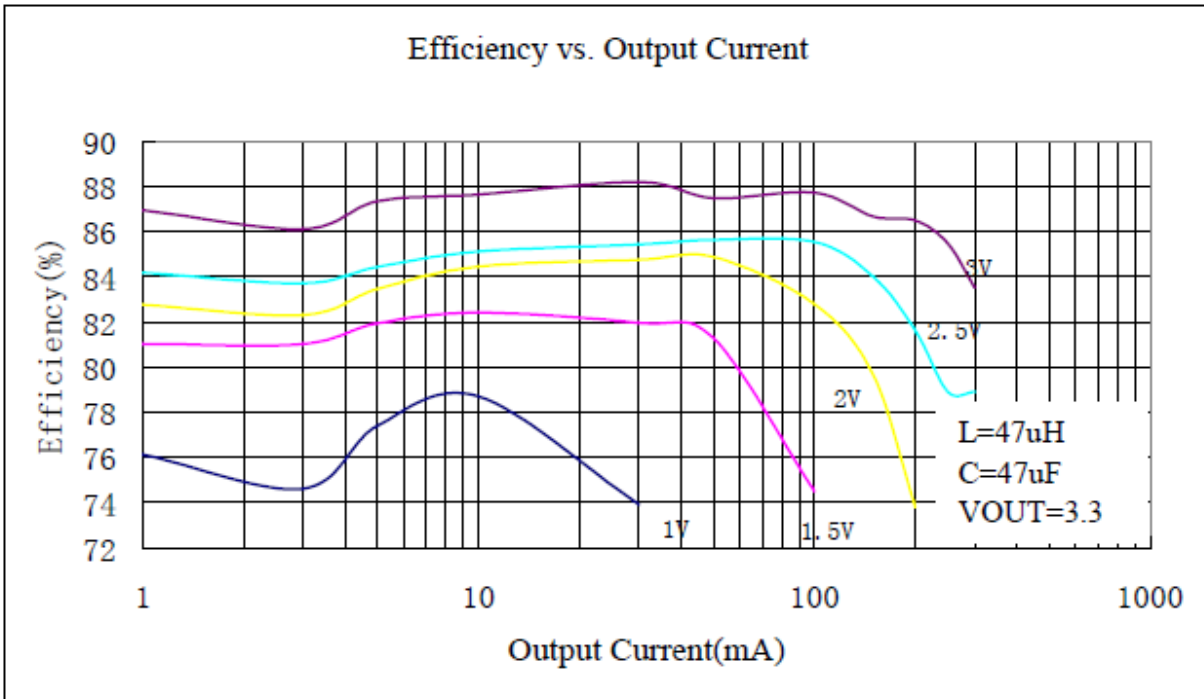
Type	Symbol	Description	Value	Unit
Voltage	Vmax	Maximum voltage on VOUT and VLX pins	8	V
	Vmin-max	Voltage range on EXT and EN pins	-0.3-VOUT+0.3	V
Current	ILXmax	Maximum current on LX pin	1000	mA
	IEXTmax	Maximum current on EXT pin	100	mA
Power dissipation	Psot-23-3	Maximum Power dissipation for SOT-23-3 package	0.25	W
	Psot-23-5	Maximum Power dissipation for SOT-23-5 package	0.25	W
	Psot-89	Maximum Power dissipation for SOT-89 package	0.5	W
Thermal	Tmin-max	Operation temperature range	-20-85	°C
	Tstorage	Storage temperature range	-40-165	°C
ESD	VESD	ESD voltage for human body mode	2000	V

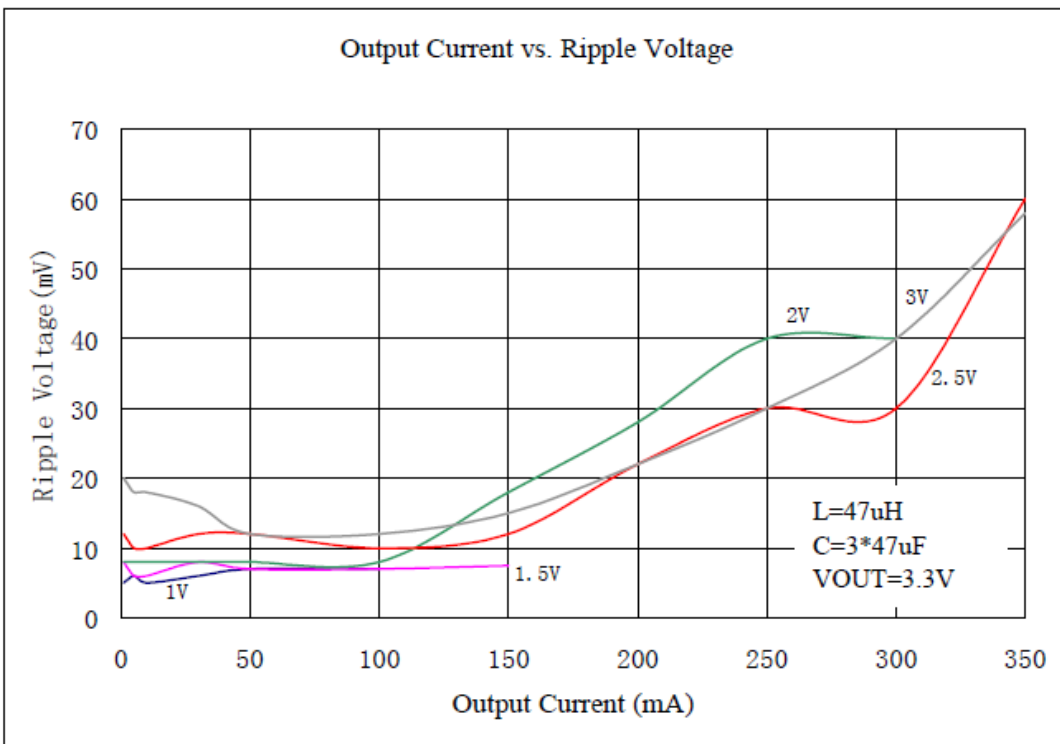
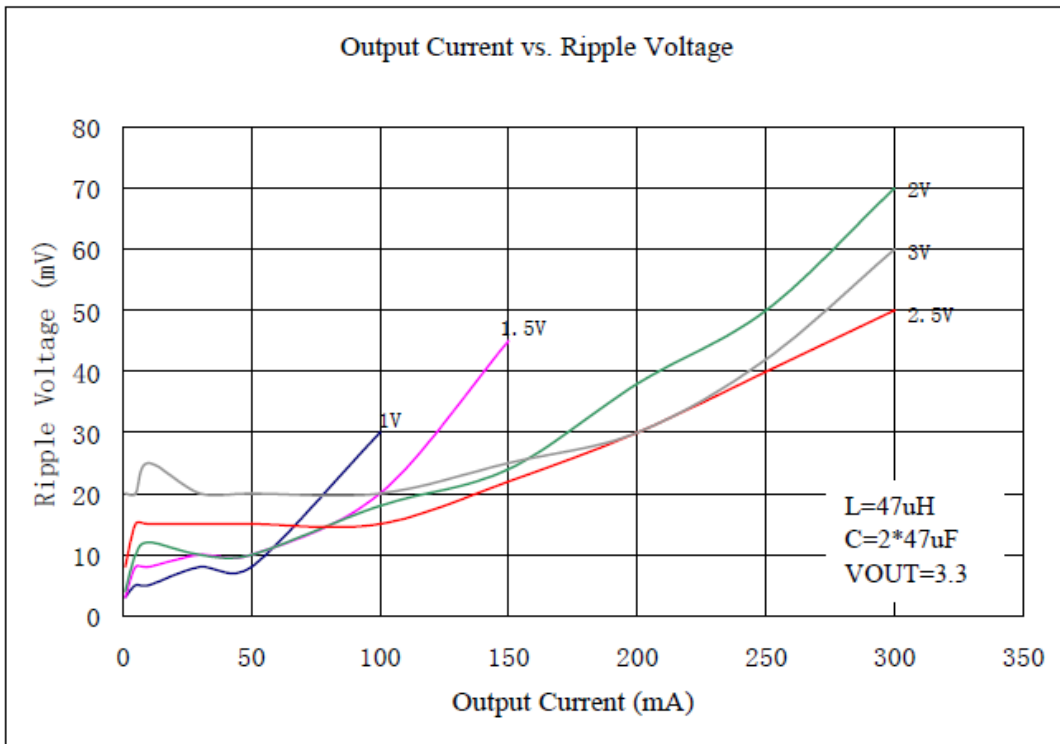
Electrical Characteristics

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Output voltage accuracy	ΔV_{OUT}		-2		2	%
Maximum input voltage	$V_{IN_{MAX}}$		0.7		V_{OUT}	V
Start-up voltage	V_{START}	$I_{LOAD}=1mA, V_{IN}:0 \rightarrow 2V$			0.85	V
Hold-on voltage	V_{HOLD}	$I_{LOAD}=1mA, V_{IN}:2 \rightarrow 0V$	0.6			V
Maximum oscillation frequency	F_{MAX}		220	260	280	KHz
Oscillator duty cycle	DC_{OSC}		75	80	85	%
Efficiency	η			85	88	%
Current limit	I_{LIMIT}		600	800	1000	mA
Input current at no load	I_{IN0}	$V_{IN}=1.8V, V_{OUT}=3.0V$		20		μA
		$V_{IN}=1.8V, V_{OUT}=5.0V$		25		μA
Input standby current	I_{INQ}	No load, EN="low"			1	μA
EN "High" voltage level			$0.4 * V_{OUT}$			V
EN "low" level					0.2	V
EN "high" input current					0.1	μA
EN "low" input current			-0.1			μA
EXT output current			-5		5	mA

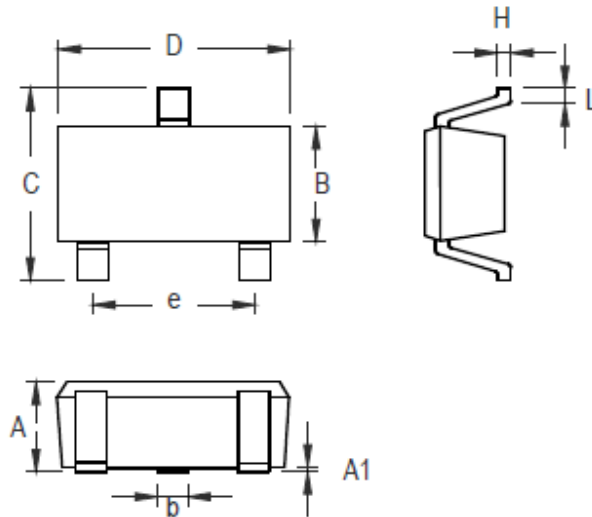
Typical Operating Characteristics





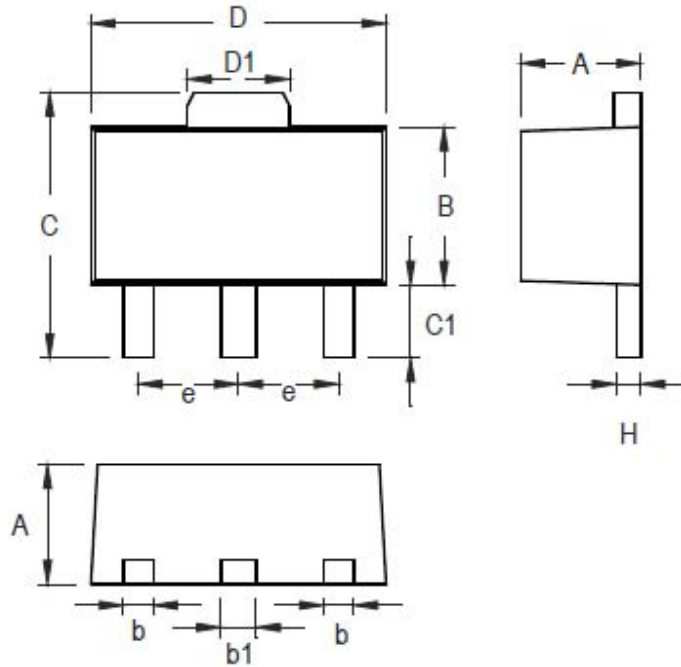


Packaging Information



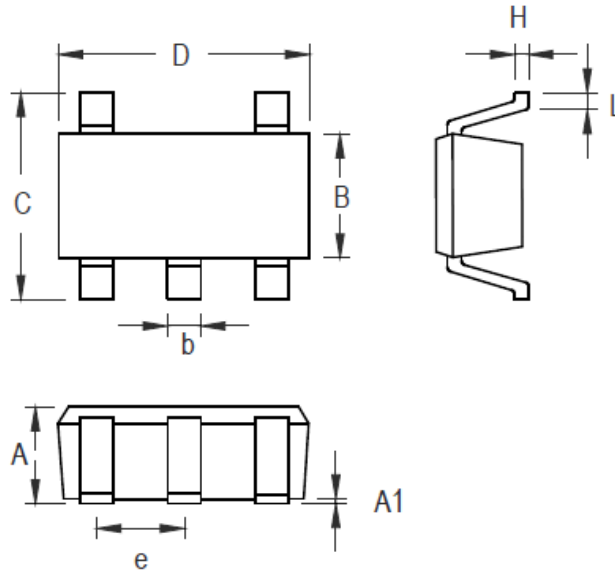
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.889	1.295	0.035	0.051
A1	0.000	0.152	0.000	0.006
B	1.397	1.803	0.055	0.071
b	0.356	0.508	0.014	0.020
C	2.591	2.997	0.102	0.118
D	2.692	3.099	0.106	0.122
e	1.803	2.007	0.071	0.079
H	0.080	0.254	0.003	0.010
L	0.300	0.610	0.012	0.024

SOT-23 Surface Mount Package



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.397	1.600	0.055	0.063
b	0.356	0.483	0.014	0.019
B	2.388	2.591	0.094	0.102
b1	0.406	0.533	0.016	0.021
C	3.937	4.242	0.155	0.167
C1	0.787	1.194	0.031	0.047
D	4.394	4.597	0.173	0.181
D1	1.397	1.753	0.055	0.069
e	1.448	1.549	0.057	0.061
H	0.356	0.432	0.014	0.017

3-Lead SOT-89 Surface Mount Package



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.889	1.295	0.035	0.051
A1	0.000	0.152	0.000	0.006
B	1.397	1.803	0.055	0.071
b	0.356	0.559	0.014	0.022
C	2.591	2.997	0.102	0.118
D	2.692	3.099	0.106	0.122
e	0.838	1.041	0.033	0.041
H	0.080	0.254	0.003	0.010
L	0.300	0.610	0.012	0.024

SOT- 25 Surface Mount Package