



## General Description

The HSP6201EM5 series is a set of low voltage differential (LDO) converters with a wide voltage input range of 2.0V to 6.0V, low voltage differential, low power consumption, and miniaturized packaging. The output voltage range is 1.2-3.3V, and the HSP6201EM5 has low static current characteristics as low as 70uA. The circuit also has a CE enable control port, which can put the circuit into sleep mode. It is particularly suitable for battery powered and long-term standby system equipment applications, helping to reduce standby power consumption of system equipment, effectively extending standby time and battery life.

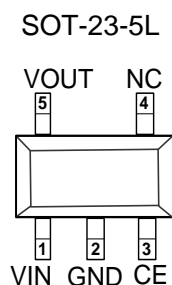
## Features

- Low Power Consumption
- Low Voltage Drop
- 1uA Typ IQ in Shutdown Mode
- Withstanding Voltage 6V
- Quiescent Current 70uA
- Output Voltage Accuracy: tolerance  $\pm 2\%$
- High output current: 300mA

## Application

- Battery-powered Equipments
- Communication Equipments
- Audio/Video Equipments

## Pin Configuration And Descriptions



PIN No.	Name	Functions Description
SOT-23-5L		
1	V <sub>IN</sub>	Input
2	GND	Ground
3	CE	ON/OFF Control
4	NC	No Connect
5	V <sub>OUT</sub>	Output

## Order Information

Orderable Device	Package	Output Voltage	Packing Option
HSP6201EM5-L-1-2/TR	SOT-23-5L	1.2V	3000/Reel
HSP6201EM5-L-1-5/TR	SOT-23-5L	1.5V	3000/Reel
HSP6201EM5-L-1-8/TR	SOT-23-5L	1.8V	3000/Reel
HSP6201EM5-L-2-5/TR	SOT-23-5L	2.5V	3000/Reel
HSP6201EM5-L-2-8/TR	SOT-23-5L	2.8V	3000/Reel
HSP6201EM5-L-3-0/TR	SOT-23-5L	3.0V	3000/Reel
HSP6201EM5-L-3-3/TR	SOT-23-5L	3.3V	3000/Reel
HSP6201EM5-L-3-6/TR	SOT-23-5L	3.6V	3000/Reel



## Absolute Maximum Ratings

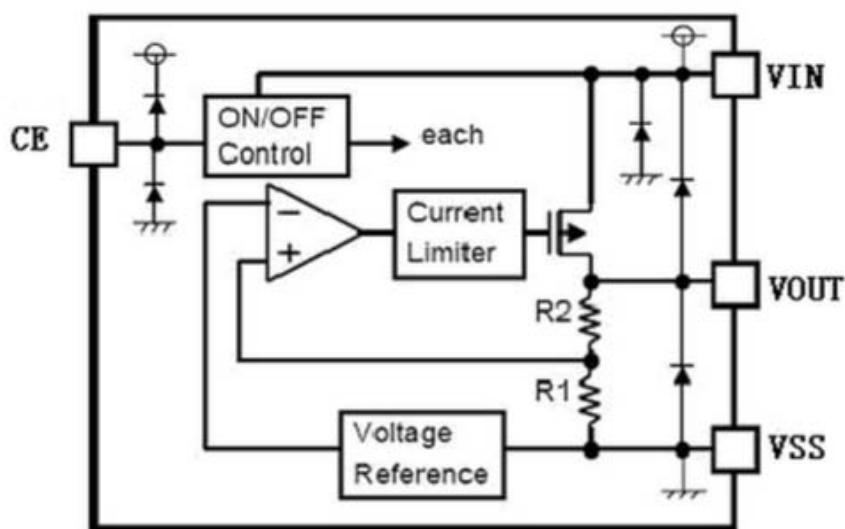
Description	Symbol	Value Range	Unit
Limit Power Voltage	$V_{IN}$	-0.3~+6	V
Storage Temperature Range	$T_{STG}$	-50~+125	°C
Operating Free-air Temperature Range	$T_A$	-40~+85	°C

Note: Stresses greater than those listed under “Absolute Maximum Ratings” 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 Ratings” for extended periods may affect device reliability.

## Heat Dissipation

Description	Symbol	Package	Value Range	Unit
Thermal resistance	$J_A$	SOT-23-5L	500	°C/W
Power dissipation	$P_W$	SOT-23-5L	200	mW

## Block Diagram





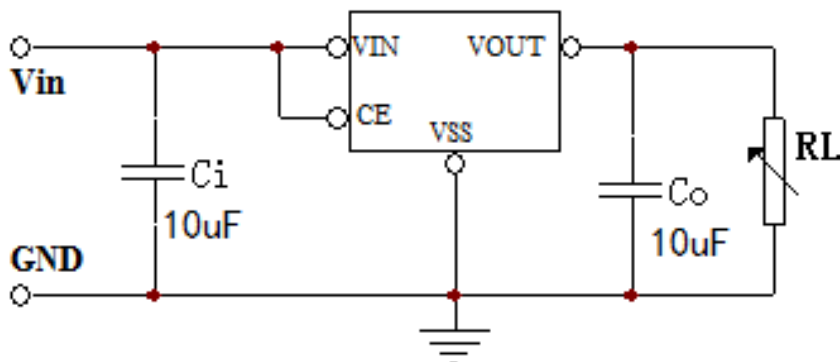
## DC Characteristics (unless otherwise noted $T_A = 25^\circ\text{C}$ )

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Input Voltage	$V_{IN}$				6.0	V
Output Voltage	$V_{OUT}$	$I_{OUT}=40\text{mA}$ , $V_{IN} = V_{OUT} + 1\text{V}$				V
Voltage Accuracy		$I_{OUT}=1\text{mA}$	-2		+2	%
Output Current	$I_{OUT}$	$V_{IN}=V_{OUT}+1.0\text{V}$		300		mA
Load Regulation	$\Delta V_{OUT}$	$V_{IN}=V_{OUT}+1.0\text{V}$ $1\text{mA} \leq I_{OUT} \leq 100\text{mA}$		50		mV
Line Regulation	$\frac{\Delta V_{OUT}}{V_{OUT} \cdot \Delta V_{IN}}$	$V_{OUT}+1.0\text{V} \leq V_{IN} \leq 8\text{V}$ $I_{OUT}=40\text{mA}$		0.05		%/V
Voltage Drop	$V_{DIF}^1$	$I_{OUT}=100\text{mA}$		100		mV
Quiescent Current	$I_{SS}$	$V_{IN} = V_{IN} + 1\text{V}$		75		$\mu\text{A}$
Turn-off Current	$I_{CEL}$	$V_{CE}=0\text{V}$		1.0		$\mu\text{A}$
PSRR	PSRR	$V_{IN} = (V_{OUT}+1\text{V})+1\text{Vp-pAC}$ , $I_{OUT}=40\text{mA}$ , $f=1\text{kHz}$		70		dB
Short-circuit current	$I_{SHORT}$	$V_{IN}=V_{OUT}+2.0\text{V}$		500		mA
Output noise Resistor	$V_{en}$	$I_{OUT}=40\text{mA}$ , 300Hz ~ 50kHz		50		$\mu\text{Vrms}$

**Note:** 1. When  $V_{IN}=V_{OUT}+2.0\text{V}$ , as the output voltage declined 2%, the  $V_{DIF}=V_{IN}-V_{OUT}$ .

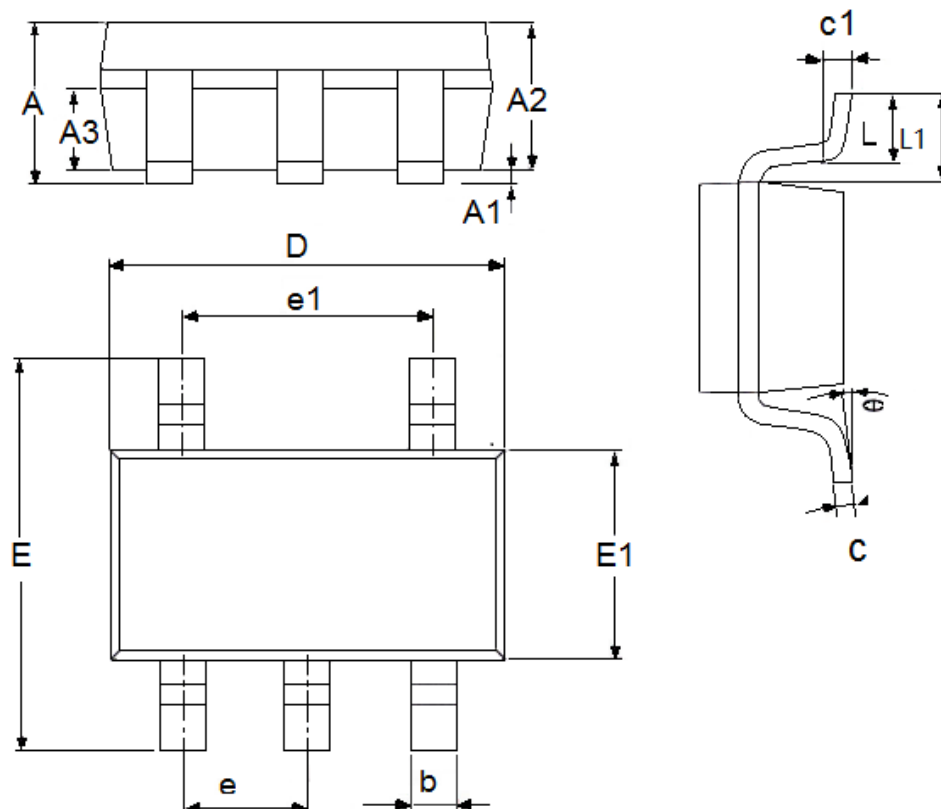
## Application Circuit

### Basic Circuits





Package Outline Dimensions  
SOT-23-5L



Symbol	Dimensions in Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.05	1.45	0.0413	0.0571
A1	0	0.15	0.0000	0.0059
A2	0.9	1.3	0.0354	0.0512
A3	0.6	0.7	0.0236	0.0276
b	0.25	0.5	0.0098	0.0197
c	0.1	0.23	0.0039	0.0091
D	2.82	3.05	0.1110	0.1201
e1	1.9(TYP)		0.0748(TYP)	
E	2.6	3.05	0.1024	0.1201
E1	1.5	1.75	0.0512	0.0689
e	0.95(TYP)		0.0374(TYP)	
L	0.25	0.6	0.0098	0.0236
L1	0.59(TYP)		0.0232(TYP)	
$\theta$	0	8°	0.0000	8°
c1	0.2(TYP)		0.0079(TYP)	



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