General Description

The HMIC5205 series is a set of low voltage differential (LDO converters) with a wide voltage input range of 3.0V to 22V, low voltage differential, low power consumption, and miniaturized packaging.The output voltage range is 3.0-5.0V, and the HMIC5205 has low static current characteristics as low as 4uA. 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

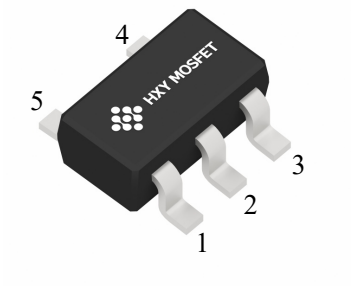
- Low Power Consumption
- Low Voltage Drop
- Low Temperature Coefficient
- Withstanding Voltage 22V
- Quiescent Current 2uA
- Output Voltage Accuracy: tolerance ±2%
- High output current: 350mA

Application

- Battery-powered Equipments
- Communication Equipments
- Audio/Video Equipments
- Smart Battery Packs
- Smoke Detectors
- CO2 DETECTORS

Pin Configuration And Descriptions

SOT-23-5L



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

Order Information

Orderable Device	Package	Output Voltage	Packing Option
HMIC5205-3.0YM5-TR	SOT-23-5L	3.0V	3000/Reel
HMIC5205-3.3YM5-TR	SOT-23-5L	3.3V	3000/Reel
HMIC5205-5.0YM5-TR	SOT-23-5L	5.0V	3000/Reel

Absolute Maximum Ratings

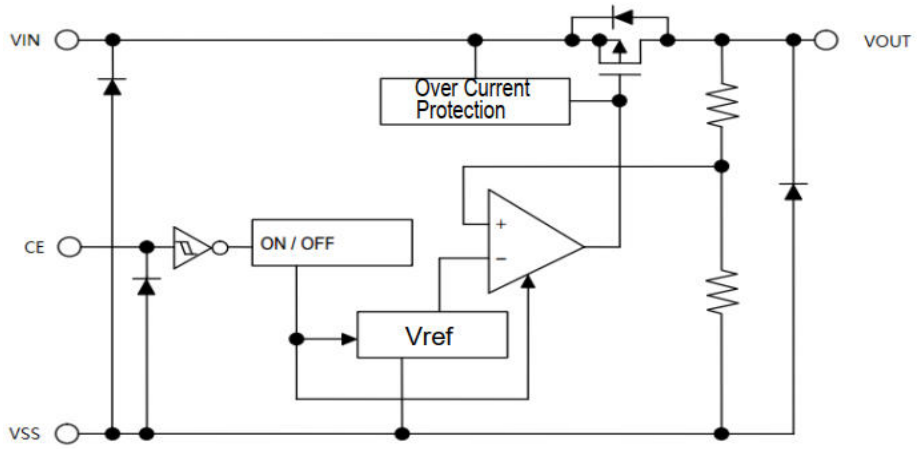
Description	Symbol	Value Range	Unit
Limit Power Voltage	V_{IN}	-0.3～+24	V
Storage Temperature Range	T_{STG}	-50～+125	°C
Operating Free-air Temperature Range	T_A	-40～+85	°C

Note:Stresses greater than those listed under "Absolute Maximum Ratingsmay" 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 Conditionsis" not implied. Exposure to "Absolute Maximum Ratings" for extended periods may affect device reliability.

Heat Dissipation

Description	Symbol	Package	Value Range	Unit
Thermal resistance	θ_{JA}	SOT-23-5L	500	°C/W
Power dissipation	P_W	SOT-23-5L	200	mW

Block Diagram



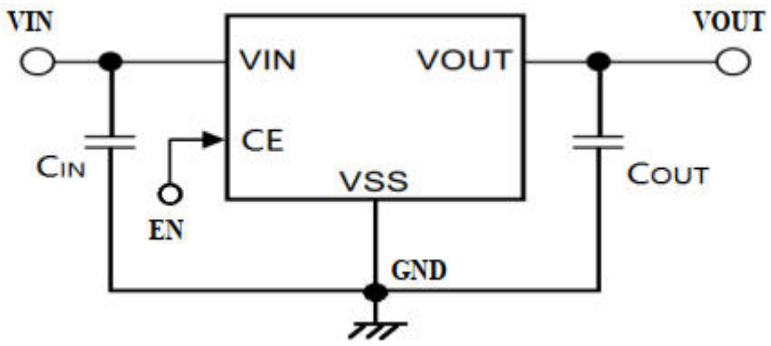
DC Characteristics (unless otherwise noted T_A= 25°C)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Input Voltage	V_{IN}		3.0		22	V
Output Voltage	V_{OUT}		3.0		5.0	V
Voltage Accuracy		I_{OUT}=1mA	-2		+2	%
Output Current	I_{OUT}	V_{IN}=V_{OUT}+2.0V		350		mA
Load Regulation	△V_{OUT}	V_{IN}=V_{OUT}+2.0V 1mA≤I_{OUT}≤150mA		20		mV
Line Regulation	△V_{OUT}/ V_{OUT}*△V_{IN}	V_{OUT}+1.0V≤V_{IN}≤22V I_{OUT}=10mA		0.015	0.2	%/V
Voltage Drop	V_{DIF}[1]	I_{OUT}=100mA,V_{OUT}=3.3V		200		mV
Quiescent Current	I_{SS}	V_{CE}=V_{IN}		2.0	4.0	μA
Standby Current	$I_{STANDBY}$	V_{CE}=V_{SS}			0.1	μA
	V_{CEH}	V_{IN}=V_{OUT}+2.0V	1.7		20	V
	V_{CEL}	V_{IN}=V_{OUT}+2.0V	0		0.3	V
short-circuit current	I_{SHORT}	V_{IN}=V_{OUT}+2.0V		400		mA
Temperature Coefficient	△V_{OUT}/ △T_A*V_{OUT}	V_{IN}=V_{OUT}+2.0V I_{OUT}=10mA -40°C≤T_A≤125°C		±100		ppm/°C
Discharge Resistor	R_{DIS}[2]	VCE<0.5V		300		Ω

Note: 1.WhenV_{IN}=V_{OUT}+2.0V,as the output voltage declined 2%,the V_{DIF}=V_{IN}-V_{OUT}.
2.Output active discharge resistor R_{DIS}, As the input voltage increases, it decreases.

Application Circuit

Basic Circuits

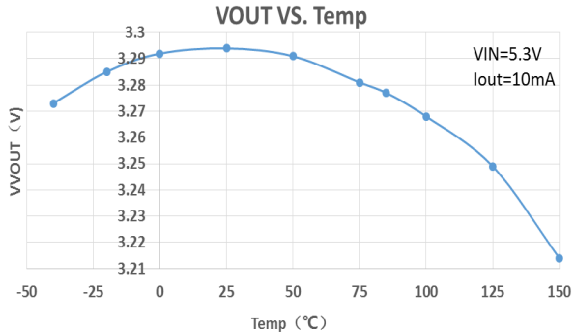


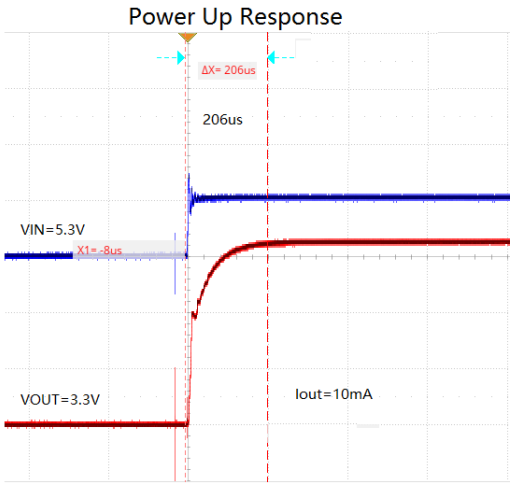
1. C_{IN} is used to stabilize the input capacitor.
2. C_{IN} eramic capacitors greater than or equal to 1pF can be used for COUT.

Function Description

HMIC5205 series are linear voltage regulator ICs withstanding 22V voltage. The series IC consists of a voltage reference, an error amplifier, a current limiter and a phase compensation circuit plus a driver transistor. The output stabilization capacitor is also compatible with low ESR ceramic capacitors.The over current protection circuit and the over voltage protection circuit are built-in. The protection circuit will operate wheb the output current or input voltage reaches limit level.

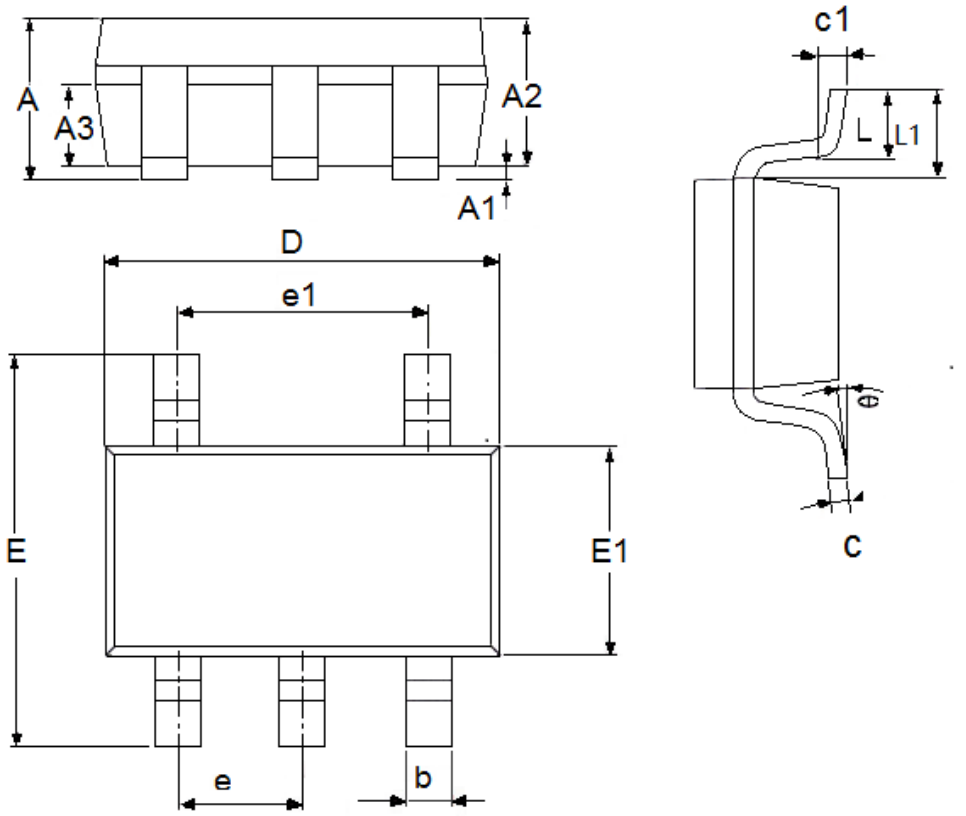
Typical Characteristics





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)	
θ	0	8°	0.0000	8°
c1	0.2(TYP)		0.0079(TYP)	

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