Low Dropout Linear Regulator

1.Description

The FLD6205 is a high-accuracy, low-power, low-dropout CMOS step-down voltage regulator with short-circuit protection. The quiescent bias current is as low as 6.0μA.

The FLD6205 can provide 300mA output current while maintaining good load regulation even when the input-output voltage difference is very small. It is suitable for battery-powered and compact electronic products that require stable low-noise supply rails.

The FLD6205 is available in the SOT23, SOT23-3 package.

2.Features

- Output voltage accuracy: ±2%
- Low quiescent current: 6μA
- Low dropout voltage: 180mV@100mA, V_{OUT} = 3.3V
- Output current capability: 300mA@V_{OUT} = 3.3V
- Low output-voltage temperature coefficient
- Built-in over-current protection
- Package: SOT23, SOT23-3

3.Applications

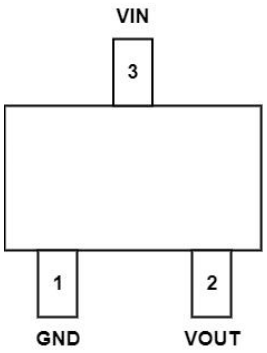
- Toys
- Keyboards and mice
- Small household appliances

4.Order information

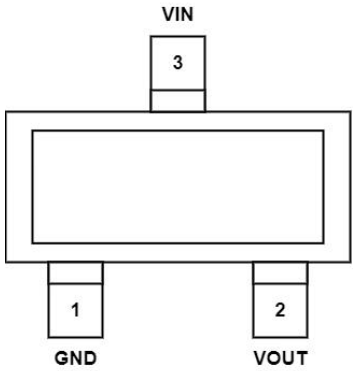
Mode	Vout（V）	Package	Ordering Number	Packing Option
FLD6205-2.8	2.8	SOT23	FLD6205-SAA28CT	Tape and Reel，3000
		SOT23-3	FLD6205-SBA28CT	Tape and Reel，3000
FLD6205-3.0	3.0	SOT23	FLD6205-SAA30CT	Tape and Reel，3000
		SOT23-3	FLD6205-SBA30CT	Tape and Reel，3000
FLD6205-3.3	3.3	SOT23	FLD6205-SAA33CT	Tape and Reel，3000
		SOT23-3	FLD6205-SBA33CT	Tape and Reel，3000

Note: Please contact our sales staff if other voltage options or package types are required.

5.Pin Configuration



SOT23



SOT23-3

Figure 1. Pin Configuration

6.Pin Description

SOT23	SOT23-3	Pin Name	Function
1	1	GND	Ground
2	2	VOUT	Output
3	3	VIN	Input

7.Function Diagram

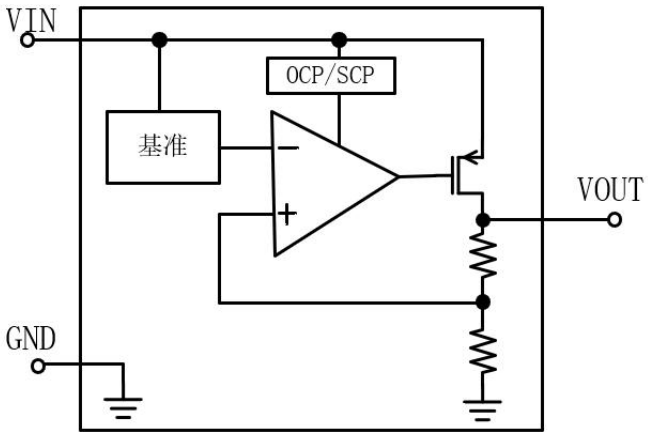


Figure 2. Function Diagram Circuit

8.Typical Application

Recommended capacitors: C_{IN} = 1μF, C_{OUT} = 1μF.

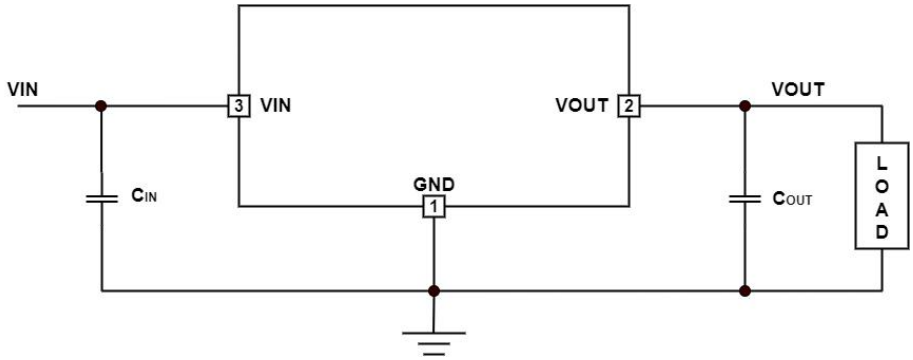


Figure 3. Typical Application Circuit

9.Absolute Maximum Ratings

(TA = +25 °C, unless otherwise specified.)

Parameter		Rating	Unit
Input Voltage (V_{IN})		-0.3 to 7	V
Output Voltage (V_{OUT})		-0.3 to V_{IN} + 0.3	V
Output Current (I_{OUT})		300	mA
Storage Temperature Range		-55 to +125	°C
Junction Temperature		150	°C
Soldering Temperature		260	°C
Electrostatic Discharge (ESD)	HBM (Human Body Model)	±2000	V

10.Recommended Operating Conditions

Parameter	Rating	Unit
Operating Junction Temperature	-40 to 125	°C
Operating Ambient Temperature	-40 to 85	°C
Input Voltage	V_{OUT} + 1 to 5.5	V

11.Electrical Characteristics

(V_{IN} = V_{OUT} + 1 V, C_{IN} = C_{OUT} = 1 μF, T_A = 25 °C, unless otherwise specified.)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Voltage	V_{IN}		-	-	5.5	V
Output Voltage Accuracy	V_{OUT}	I_{OUT} = 10mA	-2	-	+2	%
Maximum Output Current	$I_{OUT(MAX)}$		-	300	-	mA
Current Limit	I_{LIMIT}		-	500	-	mA
Quiescent Current	I_Q	V_{IN} = 6 V	-	4.8	-	μA
Dropout Voltage	V_{DROP}	I_{OUT} = 100mA, V_{OUT} ≤ 1.5 V	-	450	680	mV
		I_{OUT} = 100mA, 1.8 V ≤ V_{OUT} ≤ 2.0 V	-	330	550	mV
		I_{OUT} = 100mA, 2.8 V ≤ V_{OUT} ≤ 5.0 V	-	180	320	mV
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	V_{OUT} + 1 V ≤ V_{IN} ≤ 6 V, I_{OUT} = 40mA	-	0.05	0.2	%/V
Load Regulation	ΔV_{OUT}	V_{IN}=V_{OUT}+1V,1mA ≤ I_{OUT} ≤ 80mA	-	10	30	mV
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT}}{\Delta T \times V_{OUT}}$	I_{OUT} = 10mA,-40℃ ≤ T_A ≤ 85℃	-	±100	-	ppm/°C
Power Supply Rejection Ratio	PSRR	f = 1 kHz, I_{OUT} = 10mA	-	62	-	dB
Short-Circuit Current	I_{SHORT}	V_{OUT} = GND	-	35	-	mA

Note:
1. $V_{OUT(T)}$: specified output voltage.
2. $V_{OUT(E)}$: effective output voltage, measured when I_{OUT} is held constant and V_{IN} = $V_{OUT(T)}$ + 1.0V.
3. V_{DROP} = V_{IN1} - $V_{OUT(E)}$'. V_{IN1} is the input voltage at which the output voltage drops to 98% of $V_{OUT(E)}$ while V_{IN} is gradually reduced.
4. $V_{OUT(E)'}$ = $V_{OUT(E)}$ × 98%.

12.Package Outline

(1)Package Type : SOT-23

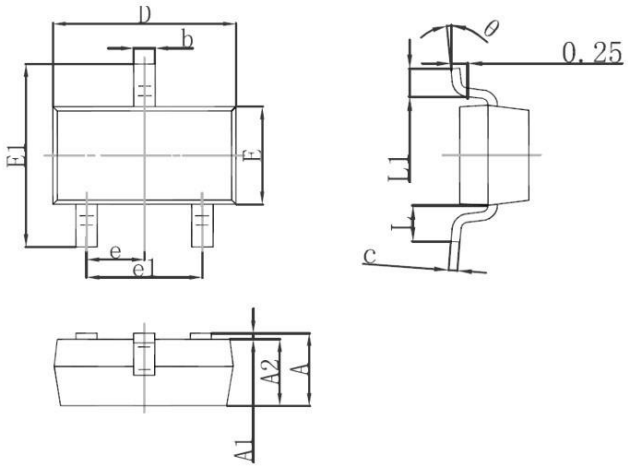
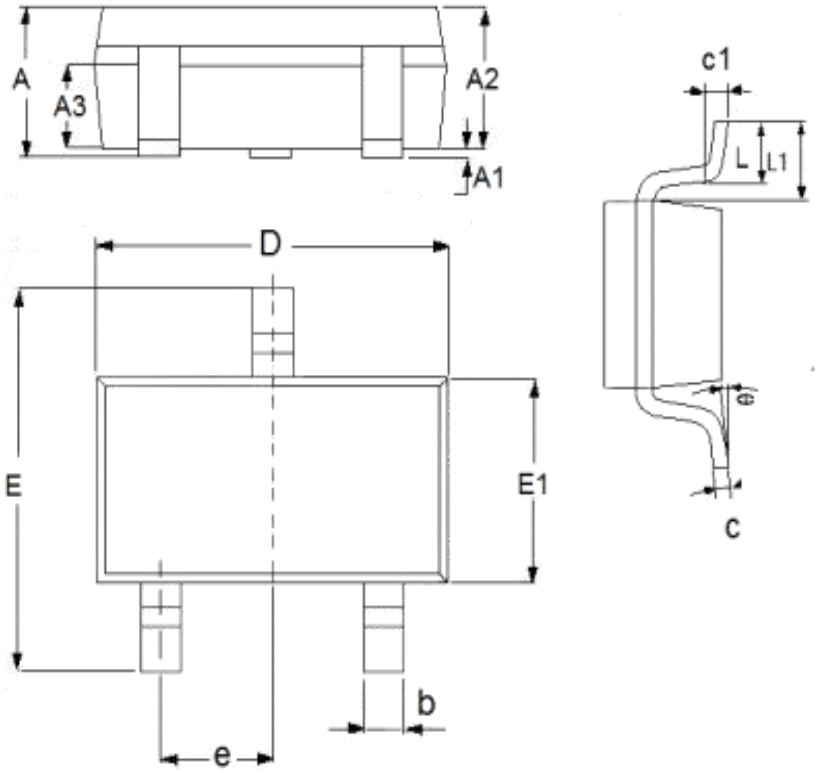


Figure 4. SOT23 Package Mechanical Drawing

Symbol	Min. (mm)	Max. (mm)
A	0.90	1.15
A1	0.00	0.15
A2	0.90	1.05
b	0.30	0.50
c	0.08	0.15
D	2.80	3.00
E	1.20	1.40
E1	2.25	2.55
e	0.95 TYP.	
e1	1.80	2.20
L	0.55 REF.	
L1	0.30	0.50
θ	0°	8°

(2)Package Type : SOT-23-3



Symbol	Dimensions (mm)		Dimensions (Inch)	
	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	0.25	0.0039	0.0098
D	2.8	3.1	0.1102	0.1220
E	2.6	3.1	0.1023	0.1220
E1	1.5	1.8	0.0591	0.0709
e	0.95(typical.)		0.0374(typical.)	
L	0.25	0.6	0.0098	0.0236
L1	0.59(typical.)		0.0232(typical.)	
θ	0	8°	0.0000	8°
c1	0.2(typical.)		0.0079(typical.)	

Figure 5. SOT23-3 Package Mechanical Drawing

13.Important Notice And Disclaimer

- We reserve the right to change this datasheet without prior notice.
- Any semiconductor product has a certain possibility of failure or malfunction under specific conditions. The buyer is responsible for complying with safety standards and for implementing appropriate safeguards.
- Product quality improvement is continuous, and our company is dedicated to providing customers with better products.

14.Version Modification Record

Version Number	Revision
first edition	
V1.0	1. Update the Electrical Characteristics on page 5.
V1.1	1. Update the Oder Information on page 2. 2. Update the Typical Application on page 3.