

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 6.0 μ A.

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 and SOT23-3 package.

2.Features

- Output voltage accuracy: $\pm 2\%$
- Low quiescent current: 6 μ A
- 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

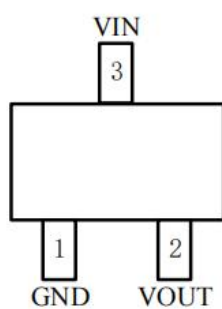
- Toys
- Keyboards and mice
- Small household appliances

4.Order information

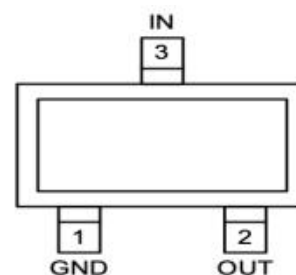
Mode	Vout (V)	Package	Ordering Number	Packing Option
FLD6205-2.8	2.8	SOT23	FLD6205-SAA28BT	Tape and Reel, 3000
		SOT23-3	FLD6205-SBA28BT	Tape and Reel, 3000
FLD6205-3.0	3.0	SOT23	FLD6205-SAA30BT	Tape and Reel, 3000
		SOT23-3	FLD6205-SBA30BT	Tape and Reel, 3000
FLD6205-3.3	3.3	SOT23	FLD6205-SAA33BT	Tape and Reel, 3000
		SOT23-3	FLD6205-SBA33BT	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

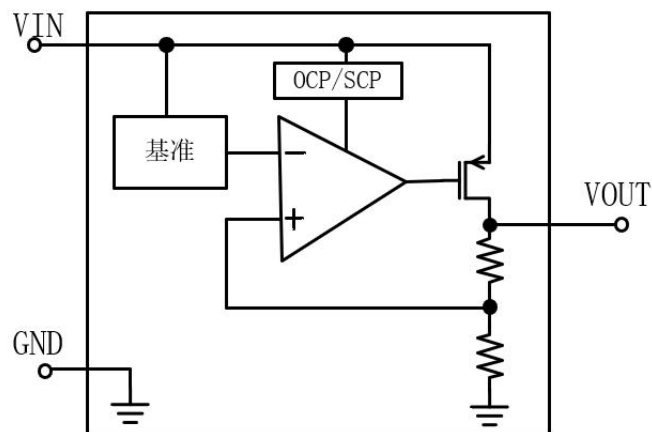


Figure 2. Function Diagram Circuit

8.Typical Application

Recommended capacitors: $C_{IN} = 1\mu F$, $C_{OUT} = 1\mu F$.

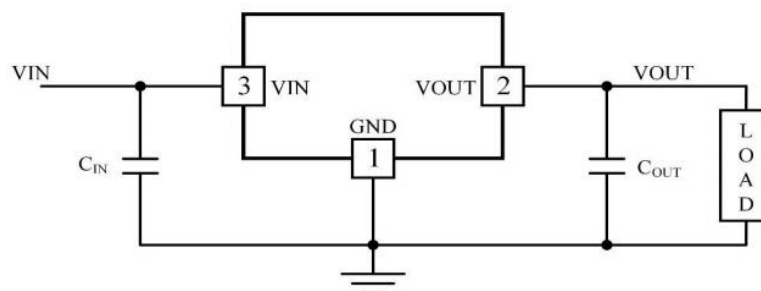


Figure 3. Typical Application Circuit

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

($V_{IN} = V_{OUT} + 1\text{ V}$, $C_{IN} = C_{OUT} = 1\text{ }\mu\text{F}$, $T_A = 25\text{ }^\circ\text{C}$, unless otherwise specified.)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Voltage	V_{IN}				5.5	V
Output Voltage Accuracy		$I_{OUT} = 10\text{mA}$	-2		+2	%
Maximum Output Current	$I_{OUT(MAX)}$			300		mA
Quiescent Current	I_Q	$V_{IN} = 6\text{ V}$		6		μA
Dropout Voltage	V_{DROP}	$I_{OUT} = 100\text{mA}$, $V_{OUT} \leq 1.5\text{ V}$		450	680	mV
		$I_{OUT} = 100\text{mA}$, $1.8\text{ V} \leq V_{OUT} \leq 2.0\text{ V}$		330	550	mV
		$I_{OUT} = 100\text{mA}$, $2.8\text{ V} \leq V_{OUT} \leq 5.0\text{ V}$		180	320	mV
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	$V_{OUT} + 1\text{ V} \leq V_{IN} \leq 6\text{ V}$, $I_{OUT} = 40\text{mA}$		0.05	0.2	%/V
Load Regulation	ΔV_{OUT}	$V_{IN} = V_{OUT} + 1\text{V}$, $1\text{mA} \leq I_{OUT} \leq 80\text{mA}$		10	30	mV
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT}}{\Delta T \times V_{OUT}}$	$I_{OUT} = 10\text{mA}$, $-40^\circ\text{C} \leq T_A \leq 85^\circ\text{C}$		± 100		ppm/ $^\circ\text{C}$
Power Supply Rejection Ratio	PSRR	$f = 1\text{ kHz}$, $I_{OUT} = 10\text{mA}$		62		dB
Overcurrent Protection Current	I_{OCP}	$V_{IN} = V_{OUT} + 1\text{V}$, V_{OUT} drops to 90%		470		mA
Short-Circuit Current	I_{SHORT}	$V_{OUT} = \text{GND}$		25		mA

Note:

1. $V_{OUT(T)}$: specified output voltage.
2. $V_{OUT(E)}$: effective output voltage, measured when I_{OUT} is held constant and $V_{IN} = V_{OUT(T)} + 1.0\text{V}$.
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. $V_{OUT(E)} = V_{OUT(E)} \times 98\%$.

12.Package Outline

(1)Package Type : SOT-23

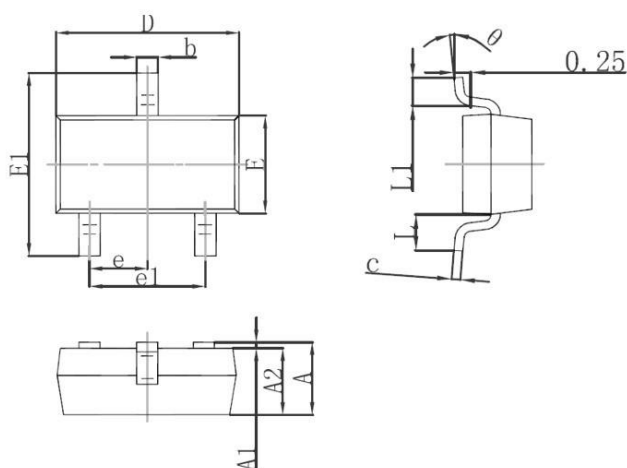
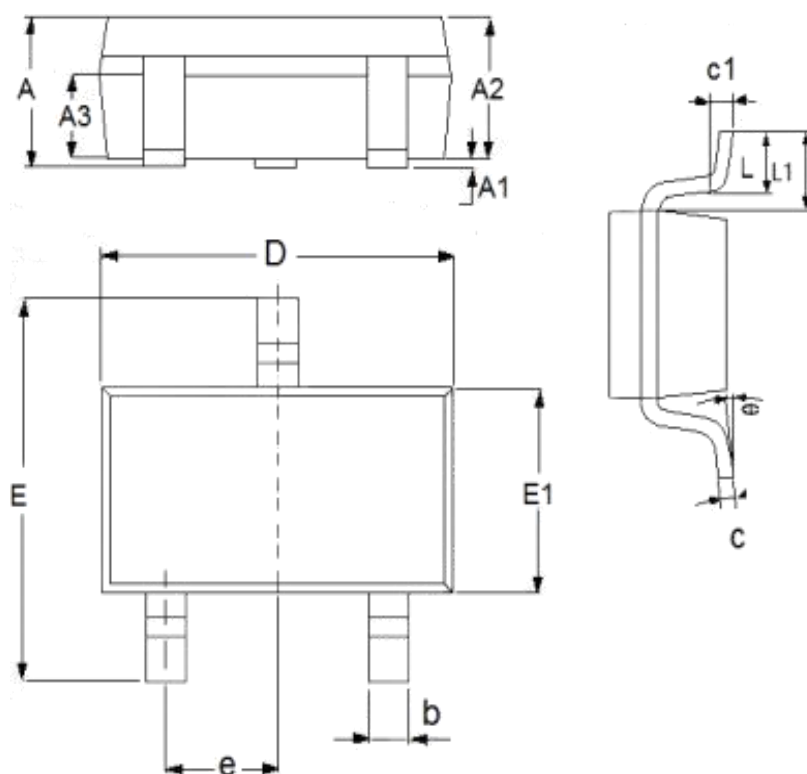


Figure 4. SOT23 Package Mechanical Drawing

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.