100mA LOW POWER LDO

1. Description

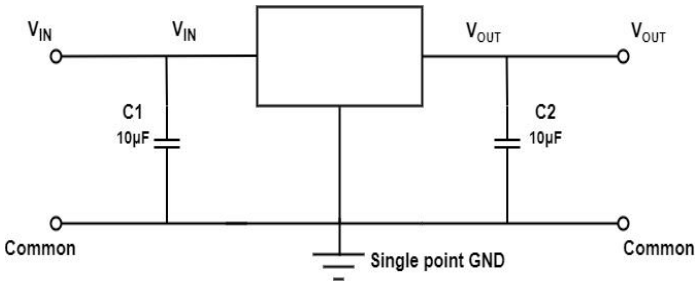
The FLD71XX is a low-dropout linear regulator based on CMOS technology, with a maximum output current of 100 mA and an allowable input voltage range of up to 36 V. It offers several fixed output voltages ranging from 2.5 V to 5.0 V. The CMOS architecture ensures low voltage drop and low quiescent current characteristics.

2. Features

- Low power consumption
- Low-pressure drop
- Lower temperature coefficient
- Maximum input voltage: 36V
- Typical quiescent current: 2 μA
- Maximum output current: 150 mA
- Output voltage accuracy: ±2%
- Packaging types: SOT23-3,SOT-89-3L,TO-92

3. Applications

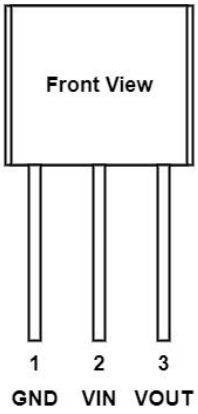
- Battery supply set
- Communication apparatus
- Audio/Video Devices



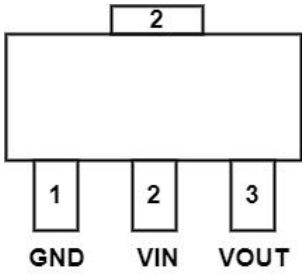
4. Order Information

Part Number	Output Voltage (V)	Package Description	Ordering Code	Packing Quantity
FLD7125	2.5	SOT23-3	FLD7125-SBA25CT	Tape and Reel,3000
	2.5	SOT-89-3L	FLD7125-SEA25CT	Tape and Reel,1000
	2.5	SOT-89-3L	FLD7125-SEB25CT	Tape and Reel,1000
	2.5	TO-92	FLD7125-TOA25CA	Bag,1000
FLD7130	3.0	SOT23-3	FLD7130-SBA30CT	Tape and Reel,3000
	3.0	SOT-89-3L	FLD7130-SEA30CT	Tape and Reel,1000
	3.0	SOT-89-3L	FLD7130-SEB30CT	Tape and Reel,1000
	3.0	TO-92	FLD7130-TOA30CA	Bag,1000
FLD7133	3.3	SOT23-3	FLD7133-SBA33CT	Tape and Reel,3000
	3.3	SOT-89-3L	FLD7133-SEA33CT	Tape and Reel,1000
	3.3	SOT-89-3L	FLD7133-SEB33CT	Tape and Reel,1000
	3.3	TO-92	FLD7133-TOA33CA	Bag,1000
FLD7136	3.6	SOT23-3	FLD7136-SBA36CT	Tape and Reel,3000
	3.6	SOT-89-3L	FLD7136-SEA36CT	Tape and Reel,1000
	3.6	SOT-89-3L	FLD7136-SEB36CT	Tape and Reel,1000
	3.6	TO-92	FLD7136-TOA36CA	Bag,1000
FLD7144	4.4	SOT23-3	FLD7136-SBA44CT	Tape and Reel,3000
	4.4	SOT-89-3L	FLD7144-SEA44CT	Tape and Reel,1000
	4.4	SOT-89-3L	FLD7144-SEB44CT	Tape and Reel,1000
	4.4	TO-92	FLD7144-TOA44CA	Bag,1000
FLD7150	5.0	SOT23-3	FLD7150-SBA50CT	Tape and Reel,3000
	5.0	SOT-89-3L	FLD7150-SEA50CT	Tape and Reel,1000
	5.0	SOT-89-3L	FLD7150-SEB50CT	Tape and Reel,1000
	5.0	TO-92	FLD7150-TOA50CA	Bag,1000

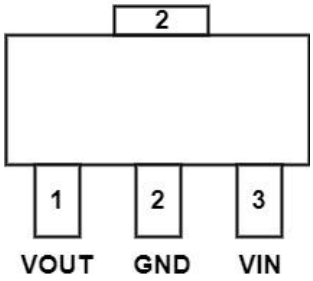
5. Pin Configuration and Functions



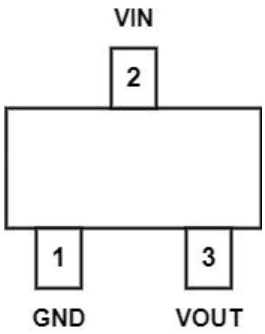
TO-92



SOT-89-3L(SEA)



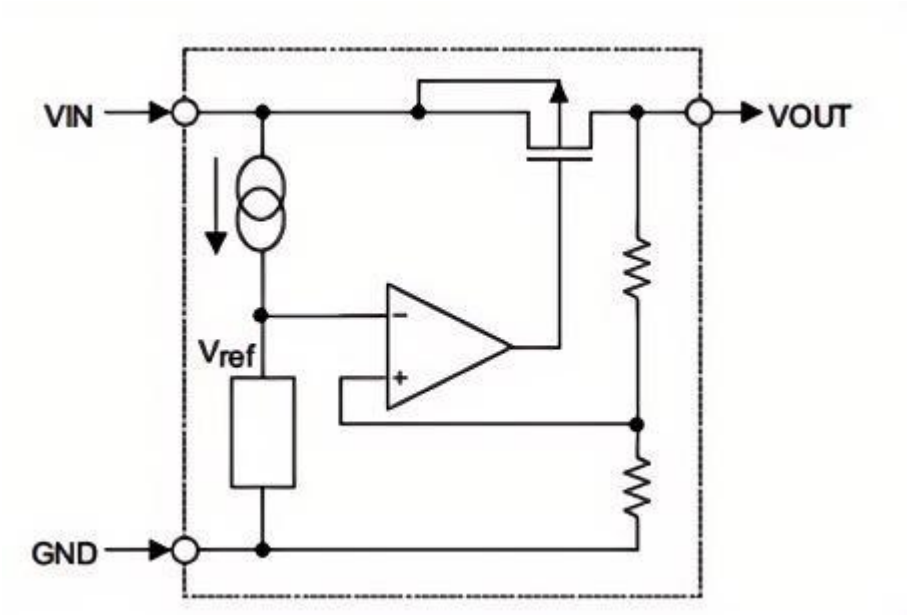
SOT-89-3L(SEB)



SOT23-3

Pin Number	Pin Name	Description
1	GND	Ground
2	VIN	Voltage Input
3	VOUT	Voltage Output

6.Functional block diagram



7. Absolute Maximum Ratings

Description	Range	Unit
Supply Voltage (V_{IN})	-0.3~+36	V
Storage Temperature Range(T_{STG})	-45~+140	°C
Working Temperature(T_{wk})	-40~+85	°C

Note: Operating beyond the limits specified in the parameters may damage the chip. The chip's performance outside these marked ranges cannot be anticipated, and prolonged operation outside these ranges may compromise its reliability.

8. Thermal Information

Symbol	Parameter	Packaging Type	Maximum	Unit
θ_{JA}	Thermal resistance (when connected to the environment) (assuming no ambient airflow and no heat sink)	SOT23-3	500	°C/W
		SOT89	200	°C/W
		TO-92	200	°C/W
P_D	Power dissipation	SOT23-3	0.2	W
		SOT89	0.5	W
		TO-92	0.5	W

Note: The PD value was measured at Ta = 25°C

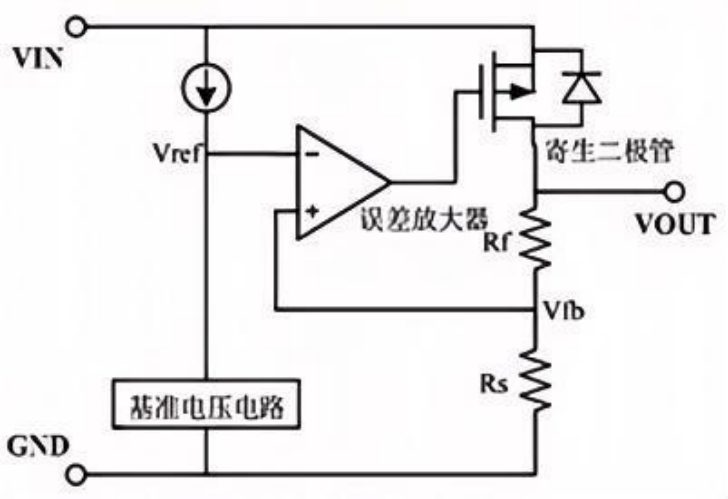
9. Electrical Characteristics

Parameter	Symbol	Test Condition		Min	Typ	Max	Unit
Input Voltage	V_{IN}	-		-	-	36	V
Output Voltage	V_{OUT}	$V_{IN}=V_{OUT}+2V$ $I_{OUT}=10mA$	V_{OUT}=2.5V	2.450	2.500	2.550	V
			V_{OUT}=3.0V	2.940	3.000	3.060	
			V_{OUT}=3.3V	3.234	3.300	3.366	
			V_{OUT}=3.6V	3.528	3.600	3.672	
			V_{OUT}=4.4V	4.312	4.400	4.488	
			V_{OUT}=5.0V	4.900	5.000	5.100	
Output Current	I_{LOAD}	$V_{IN}=V_{OUT}+2V$	V_{OUT}=2.5/3.0/3.3/3.6/4.4V	70	100	-	mA
			V_{OUT}=5.0V	100	150	-	
Load Regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+2V$, 1mA ≤I_{OUT}≤50mA		-	25	60	mV
Quiescent Current	I_Q	I_{OUT}=0mA		-	2	3	μA
Dropout Voltage	V_{DROP}	I_{OUT}=1mA, △Vo=2%		-	2	4	mV
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \bullet V_{OUT}}$	Vo+1V≤V_{IN}≤36V, I_{OUT}=1mA		-	-	0.2	%/V
Temperature Coefficient	$\frac{\Delta V_{OUT}}{\Delta Ta \bullet V_{OUT}}$	I_{OUT}=10mA, -40℃<T_a<85℃		-	100	-	ppm/℃

Note: The dropout voltage is defined as V_{IN} - V_{OUT} = 2V, when V_{OUT} = 98%*$V_{OUT(NOM)}$.

10. Function Description

The error amplifier compares the input voltage V_{fb} from the voltage divider resistor formed by feedback resistors Rs and Rf with the reference voltage V_{ref}. Through this amplifier, the necessary gate voltage is supplied to the output transistor, ensuring that the output voltage remains stable regardless of variations in input voltage or temperature.



Notes:

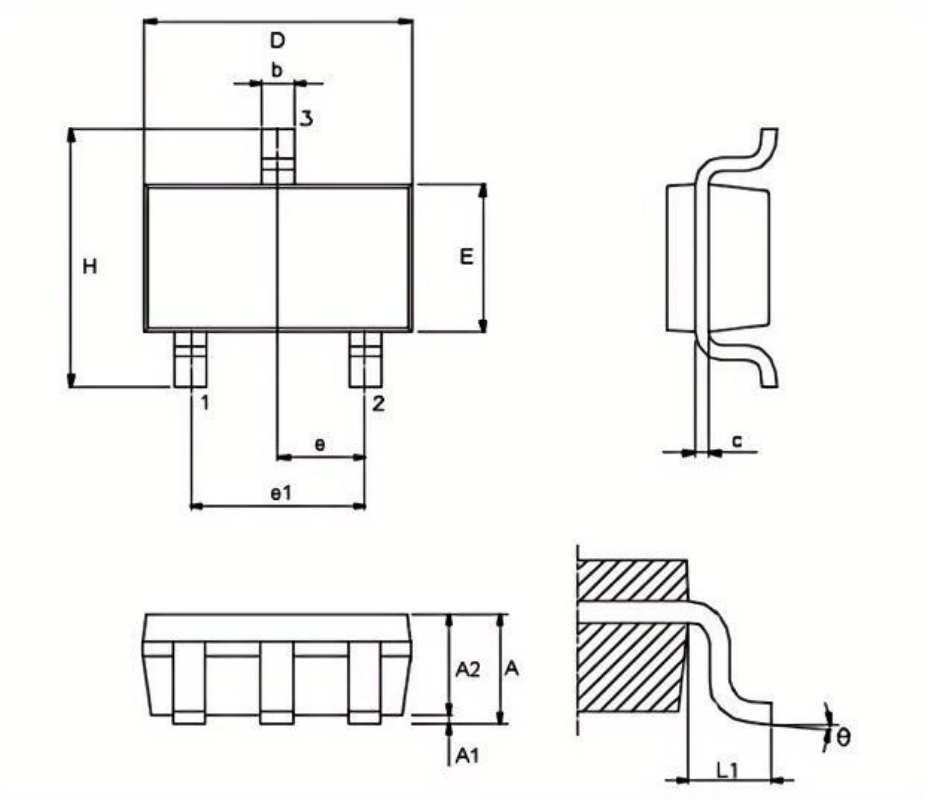
1) The circuit incorporates a phase compensation circuit and utilizes the ESR of the output capacitor for compensation; therefore, it is recommended to connect a capacitor with a capacitance greater than 2.2 μF to ground.

2) For optimal performance, use polarized 10 μF capacitors for both input and output, and position them as close as possible to the V_{IN} and V_{OUT} pins of the LDO.

3) Pay attention to the operating conditions of input/output voltages and load currents to prevent the IC's internal power dissipation (P_D) from exceeding the maximum allowable value specified in the package documentation. P_D is calculated as: $P_D = (V_{IN} - V_{OUT}) \times I_{OUT}$. For example, with V_{OUT} = 5 V and SOT89 package, when V_{IN} = 12 V and I_{OUT} = 100 mA, $P_D = (12 - 5) \times 100$ mA = 0.7 W; exceeding the specified limit of 0.5 W may damage the IC. P_D values vary by package type; refer to the "Thermal Information" section for details.

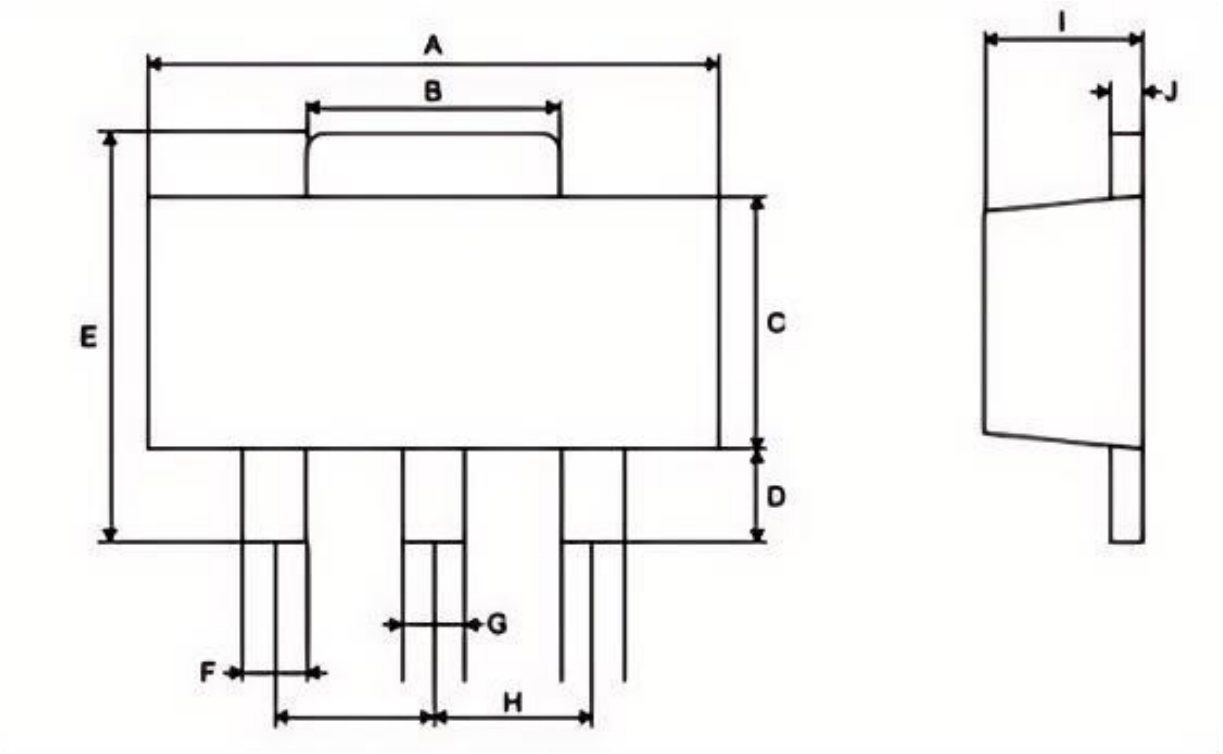
11. Package Information

(1) SOT23-3 Package Dimensions:



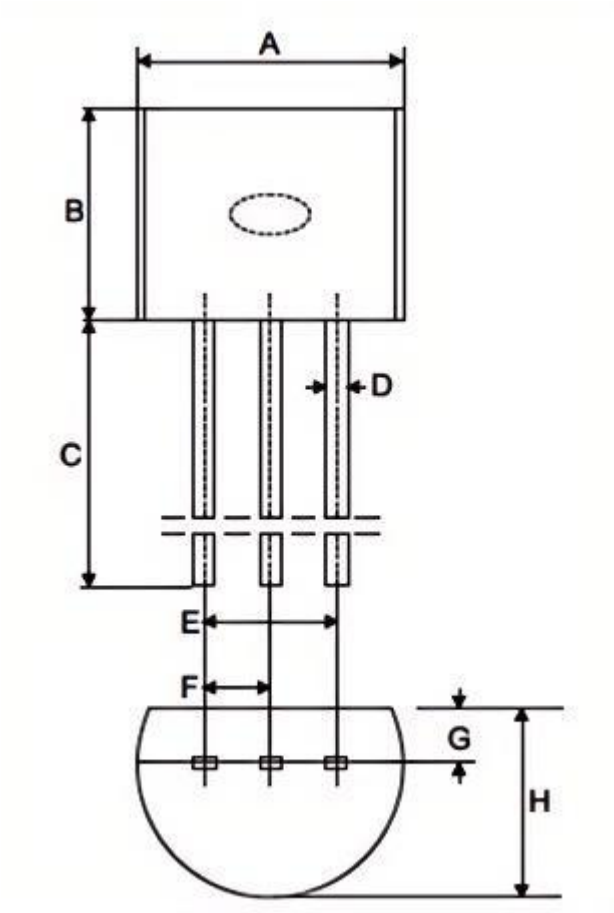
Symbol	Dimensions (mm)		
	Min	Typ	Max
A	—	—	1.45
A1	—	—	0.15
A2	0.90	1.15	1.30
b	0.30	—	0.50
C	0.08	—	0.22
D	—	2.90	—
E	—	1.60	—
e	—	0.95	—
e1	—	1.90	—
H	—	2.80	—
L1	—	0.60	
θ	0°	—	9°

(2) SOT-89-3L Package Dimensions:



Symbol	Dimensions (mm)		
	Min	Typ	Max
A	4.40	—	4.60
B	1.35	—	1.83
C	2.29	—	2.60
D	0.89	—	1.20
E	3.94	—	4.25
F	0.36	—	0.48
G	0.44	—	0.56
H	—	1.50	—
I	1.40	—	1.60
J	0.35	—	0.44

(3) TO-92 Package Dimensions:



Symbol	Dimensions (mm)		
	Min		Max
A	4.39	4.57	5.21
B	4.32	—	5.33
C	12.70	14.73	—
D	—	0.38	—
E	—	2.54	—
F	—	1.27	—
G	—	0.89	—
H	3.18	3.61	4.19

12. Important Notice And Disclaimer

- We reserve the right to change the instruction manual 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 taking safety measures when using our products for system design and overall manufacturing to avoid potential failure risks that may cause personal injury or property damage.
- The improvement of product quality is endless, our company will be dedicated to provide customers with better products.

13. Version Modification Record

Version Number	Revision
first edition	
V0.1	1. Update the Order Information on page 2.
V0.2	2. Update the Electrical Characteristics on page 5.