

5V 3A Ultra low Dropout Linear Regulator

1.Description

The FLD0530 is a 3A low dropout linear regulator designed for low dropout and high current applications. This device works with dual supplies, a control input for the control circuitry and a power input as low as 1.0V for providing current to output. It features 3A output current and ultra-low-drop output voltage as well as full protection functions. VOUT can be as low as 0.8V.

The other features include soft start, under voltage protection, current limit protection, Power-On-Reset function, and over temperature protection. The FLD0530 is available in DFN3x3-10L and ESOP8 packages.

2.Features

- VIN Range 1V to 6V
- VOUT is Adjustable (0.8V Min)
- Excellent Line Regulation (0.01%/V typ.)
- Excellent Load Regulation(0.1%/A typ.)
- Dropout Voltage Typically 250mV at IOU=3A
- Internal Thermal Overload Protection
- Internal Short-Circuit Current Limit
- VOUT Under Voltage Protection
- Ceramic Capacitor Stable

3.Applications

- Notebook,Netbook, Graphic Cards
- Low Voltage Logic Supplies
- Chipset Supplies
- Server System
- SMPS Post Regulators

4. Typical Application

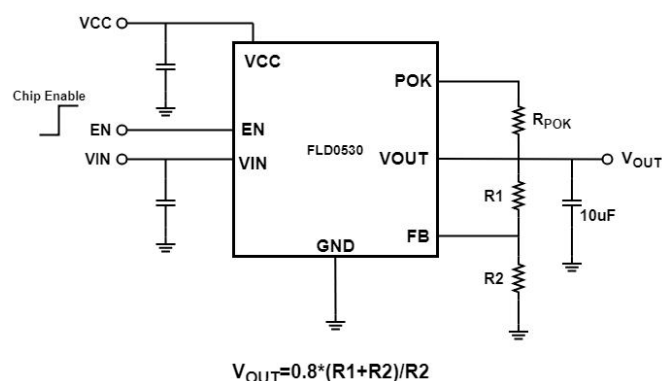


Figure 1. Typical Application for FLD0530

5. Order Information

Mode	VOUT(V)	Package	Ordering Number	Packing Option
FLD0530	Adj	ESOP8	FLD0530YESOP8G/TR	Tape and Reel,3000
FLD0530	Adj	DFN3x3_10L	FLD0530YDFN10G/TR	Tape and Reel,3000

6. Pin Configuration

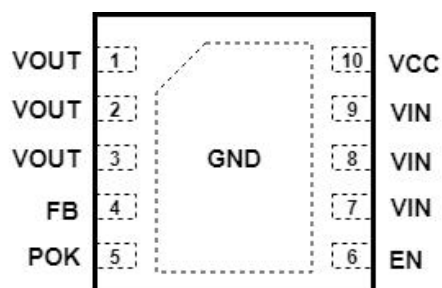


Figure 2. Pin Assignment of FLD0530 Package DFN3x3-10L

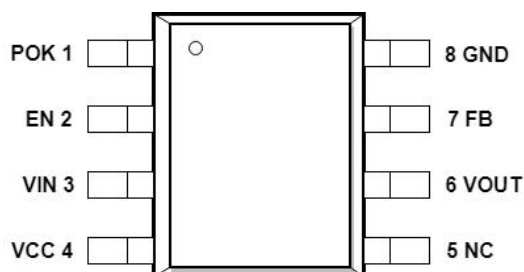


Figure 3. Pin Assignment of FLD0530 Package ESOP8

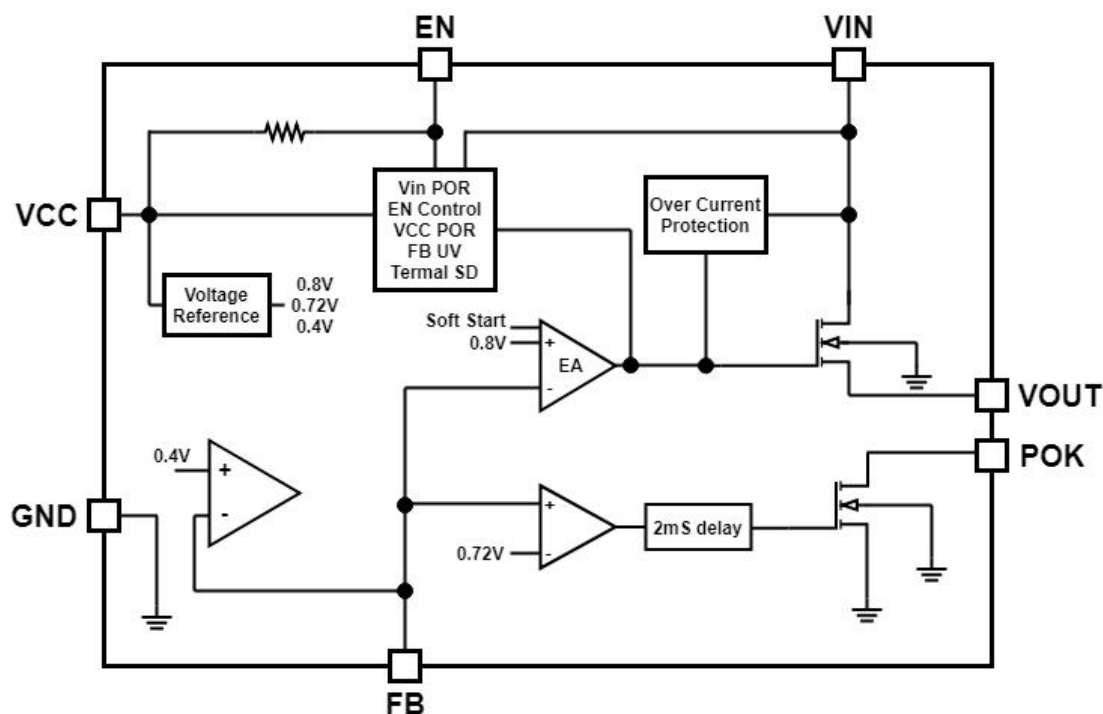
7.Pin Description

Pin Name	Pin No.DFN3X3-10L	Pin No.PSOP8	Pin Function
POK	5	1	Power OK indication, open drain output.
FB	4	7	Feedback
VOUT	1,2,3	6	Output Voltage pin, the Source of power device.
VIN	7,8,9	3	Input Voltage pin, the Drain of power device.
EN	6	2	Enable pin. Internal pull high to VCC.
VCC	10	4	Supply input of control circuit.
GND	11(Exposed PAD)	2&(Exposed PAD)	Ground
NC	--	5	Non connect

8.Absolute Maximum Ratings

- VIN-----0.3V to +6.5V
- Junction Temperature -----125℃
- Lead Temperature (Soldering, 10 sec.) -----300℃
- Storage Temperature-----65℃ to 150℃

9.Functional Block Diagram



10. Electrical Characteristics

(VCC=5V, T_J=25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Control Input Voltage VCC	V _{CC}	V _{OUT} = V _{REF}	3.0	--	6.0	V
VCC POR Threshold	V _{CCPOR}		2.5	--	2.9	V
VCC POR Hysteresis	V _{CCHY}		--	0.4	--	V
Power Input Voltage VIN	V _{IN}	V _{OUT} = V _{REF}	1.05	--	VCC	V
VIN POR Threshold	V _{INPOR}		0.8	--	1.0	V
VIN POR Hysteresis	V _{INHY}		0.2	--	0.5	V
VIN POR Deglitch Time	T _{DEG}		--	100	--	uS
Control Input Current in Shutdown	I _{VCCSD}	V _{IN} =V _{CC} =5V, V _{EN} =0V	--	10	30	uA
Quiescent Current	I _Q	V _{IN} =V _{CC} = V _{EN} =5V, I _{OUT} =0A	--	0.9	1.5	mA
Reference Voltage	V _{REF}	V _{IN} =V _{CC} = V _{EN} =5V, I _{OUT} =0A, V _{OUT} =V _{REF}	0.785	0.8	0.815	V
VIN Line Regulation	V _{REFLINE}	1.05V<V _{IN} <5V, V _{CC} = V _{EN} =5V	--	0.01	0.1	%/V
Load Regulation	V _{REFLOAD}	0A<I _{OUT} <3A, V _{CC} = V _{EN} =5V	--	0.1	0.5	%/A
Dropout Voltage	V _{DROP}	I _{OUT} =3A, V _{CC} =5V, V _{OUT} =1.2V	--	250	360	mV
VOOUT Pull Low Resistance	R _{PULL}	V _{CC} = 5V, V _{EN} =0V, Sink =5mA	--	--	150	ohm
Enable High Level	V _{EN}		1.1	--	--	V
Disable Low Level	V _{SD}		--	--	0.3	V
Enable Source Current	I _{EN}	V _{CC} = 5V, V _{EN} =0V	--	5	10	uA
Enable pull high resistor	R _{EN}		500K	--	--	ohm
Output Voltage Ramp Up Time	T _{SS}		0.6	1	2	mS
POK Threshold	V _{POKH}	V _{FB} Rising	90	--	94	%
	V _{POKL}	V _{FB} falling	80	--	84	%
POK Sink Voltage	V _{POK}	Sinking Current = 5mA	--	--	0.4	V
POK Delay Time	T _{POKDE}	From V _{OUT} >92% to POK rising	1	2	4	mS
OCP Threshold Level	I _{OCP}		3.2	4.5	--	A
Under Voltage Threshold	V _{UVP}	V _{FB} Falling	--	0.4	--	V
Thermal Shutdown Temperature	T _{SD}		--	165	--	C
Thermal Shutdown	T _{SDHY}		--	30	--	C

11. Typical Performance Characteristics

$V_{IN}=5V$, $V_{CC}=5V$, $C_{IN}=10\mu F$, $C_{OUT}=10\mu F$, $T_J=25^\circ C$, unless otherwise specified

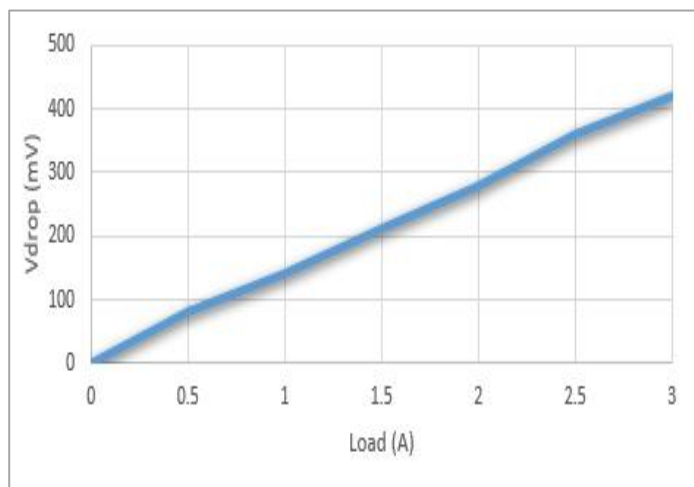


Fig 1. V_{DROP} vs Output Current

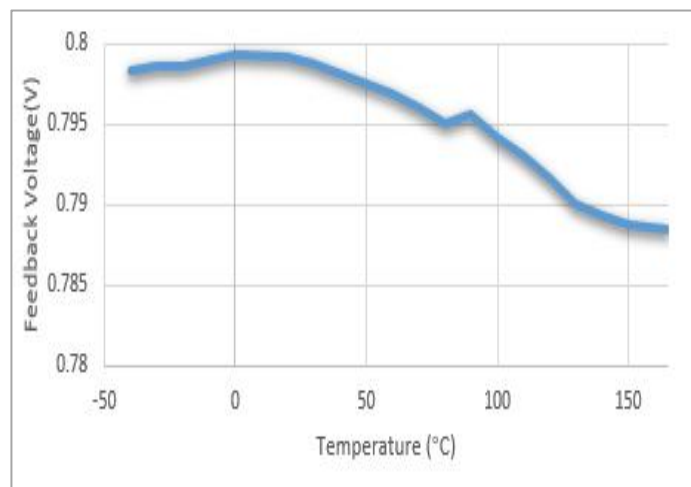


Fig 2. FB Voltage vs Temperature

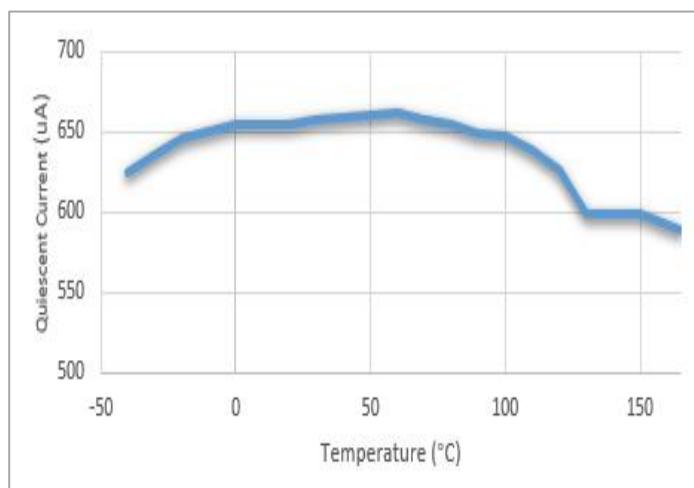


Fig 3. Quiescent Current vs Temperature

12. Operating Waveforms

$V_{IN}=4V$, $V_{CC}=4V$, $V_{OUT}=1.8V$, $C_{IN}=10\mu F$, $C_{OUT}=10\mu F$, $T_J=25^\circ C$, unless otherwise specified

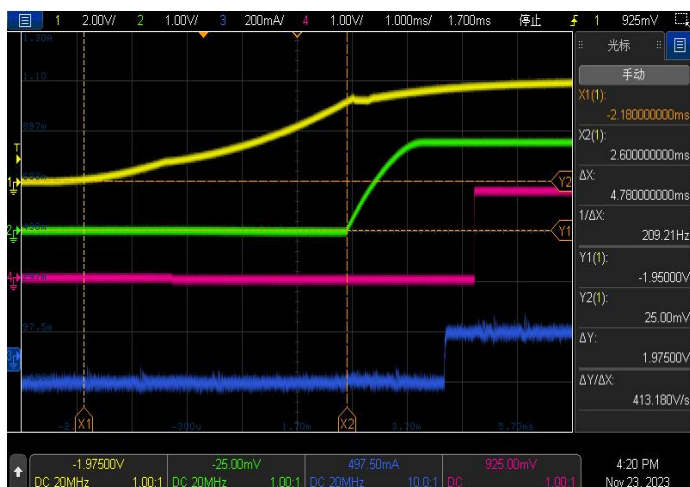


Fig 1. V_{CC} Power ON, $I_{OUT}=200mA$

CH1: V_{CC} , 2V/Div, DC; CH2: V_{OUT} , 1V/Div, DC
CH3: V_{POK} , 1V/Div, DC; CH2: I_{OUT} , 200mA/Div, DC

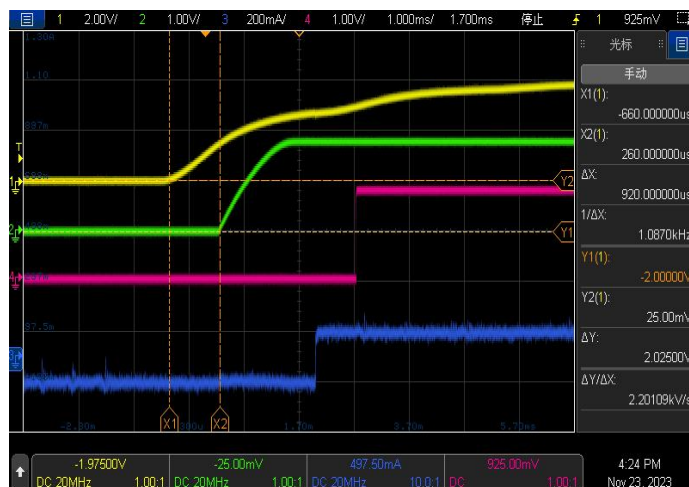


Fig 2. V_{IN} Power ON, $I_{OUT}=200mA$

CH1: V_{IN} , 2V/Div, DC; CH2: V_{OUT} , 1V/Div, DC
CH3: V_{POK} , 1V/Div, DC; CH2: I_{OUT} , 200mA/Div, DC



Fig 3. EN Power ON, $I_{OUT}=200mA$

CH1: V_{EN} , 2V/Div, DC; CH2: V_{OUT} , 1V/Div, DC
CH3: V_{POK} , 1V/Div, DC; CH2: I_{OUT} , 200mA/Div, DC

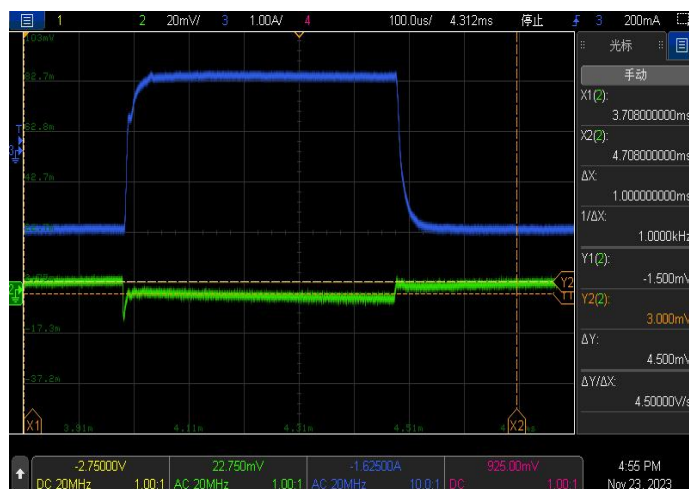
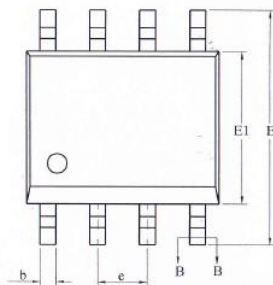
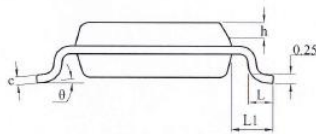
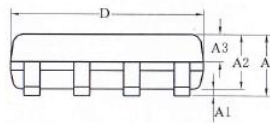
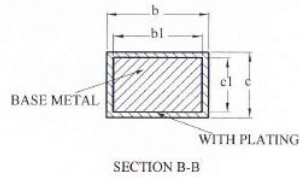
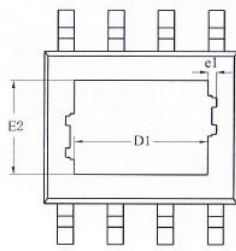


Fig 4. Load Transient, $I_{OUT}=0A$ to $3A$

13.Package Outline Dimensions(All dimensions in mm.)

Package Type: ESOP8



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	—	—	1.65
A1	0.05	—	0.15
A2	1.30	1.40	1.50
A3	0.60	0.65	0.70
b	0.39	—	0.47
b1	0.38	0.41	0.44
c	0.20	—	0.24
c1	0.19	0.20	0.21
D	4.80	4.90	5.00
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e	1.27BSC		
h	0.25	—	0.50
L	0.50	0.60	0.80
L1	1.05REF		
θ	0	—	8°

Size (mm) L1F: Std (Gull)	D1	E2	e1
90*90	2.09REF	2.09REF	0.16REF
95*130	3.10REF	2.21REF	0.10REF

14.Important Notice And Disclaimer

- We reserves 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.

15.Version Modification Record

Version Number	Revision
first edition	
V1.0	1. Update the Important Notice And Disclaimer on page 8.