

High Speed LDO Regulators, High PSRR, Low noise

PRELIMINARY DATASHEET

General Description

Datasheet Brief

The FH6120 series are highly accurate, low noise, CMOS LDO Voltage Regulators. FH6120 can provide output value in the range of 1.0V~4.5V every 0.1V step. It also can be customized on command.

Offering low output noise, high ripple rejection ratio, low dropout and very fast turn-on times, the FH6120's is ideal for today's cutting edge mobile phone.

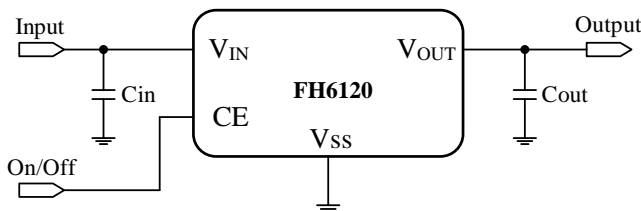
Internally the FH6120 includes a reference voltage source, error amplifiers, driver transistors, current limiters and phase compensators. The FH6120's current limiters fold-back circuit also operates as a short protect for the output current limiter and the output pin.

The FH6120's is also fully compatible with low ESR ceramic capacitors, reducing cost and improving output stability.

This high level of output stability is maintained even during frequent load fluctuations, due to the excellent transient response performance and high PSRR achieved across a broad range of frequencies.

The CE function allows the output of regulator to be turned off, resulting in greatly reduced power consumption.

Typical Application



Note: Input capacitor ($C_{IN} = 1.0\mu\text{F}$) and output capacitor ($C_{OUT} = 1.0\mu\text{F}$) are recommended in all application circuits.

Figure 1. FH6120 Typical application

Features

- Maximum Output Current: 500mA ($V_{IN}=4.3\text{V}, V_{OUT}=3.3\text{V}$)
- Dropout Voltage: 100mV@ $I_{OUT}=100\text{mA}$
- Operating Voltage Range: 1.2V ~ 6.0V
- Highly Accuracy: $\pm 1\%$
- Low Power Consumption: 30uA (TYP.)
- Standby Current: 0.1uA (TYP.)
- High Ripple Rejection: 70dB@1KHz (FH6120C33)
- Low output noise: 50uVrms
- Line Regulation: 0.05% (TYP.)

Package Type

- 4-pin FBP1*1-4L
- 5-pin SOT-23-5L, SOT353 (SC70-5L)
- 6-pin DFN2*2-6

Device Information (1)

PART NUMBER	PACKAGE	BODY SIZE (NOM)
FH6120	SOT-23 (5)	2.90mm x 1.60mm
	SC70 (5)	2.00mm x 1.25mm
	FBP (4)	1.00mm x 1.00mm
	DFN (6)	2.00mm x 2.00mm

(1) For all available packages, see the orderable addendum at the end of the datasheet.

Typical Application

- Mobile phones
- Portable games
- Cameras, Video cameras
- Reference voltage sources
- Battery powered equipment
- Cordless phones, radio communication equipment

■ Block Diagram

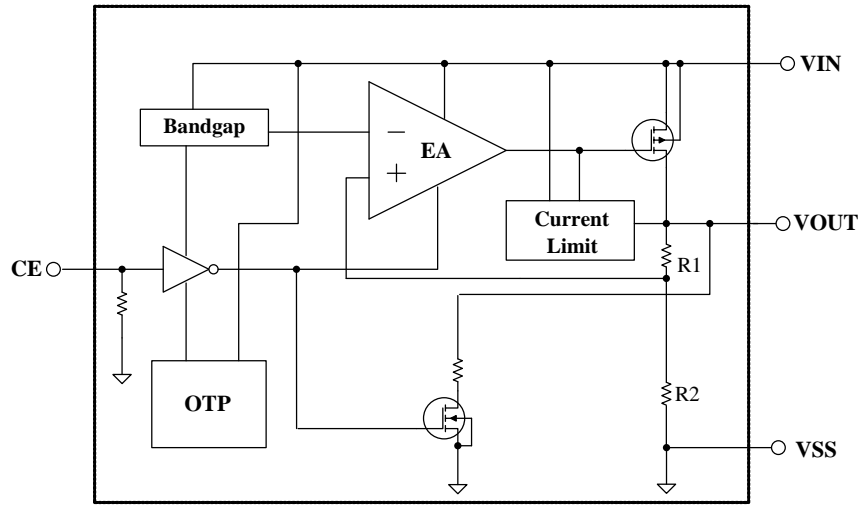
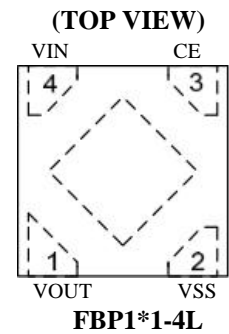
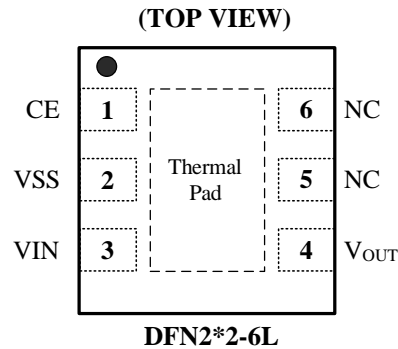
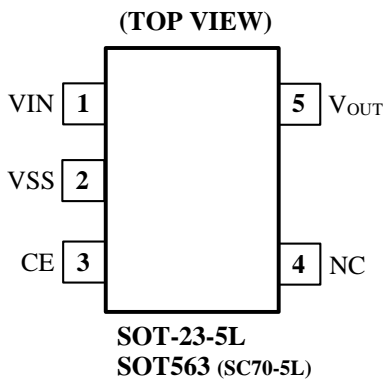


Figure 2. FH6120 function block

■ Pin Configuration



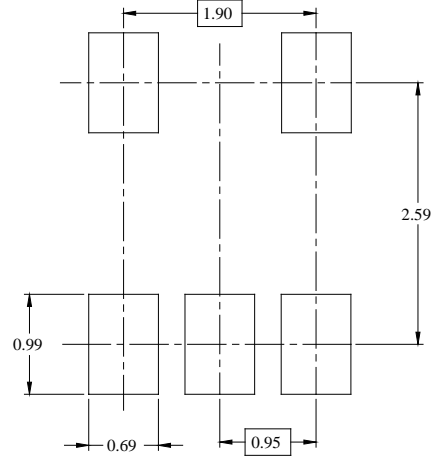
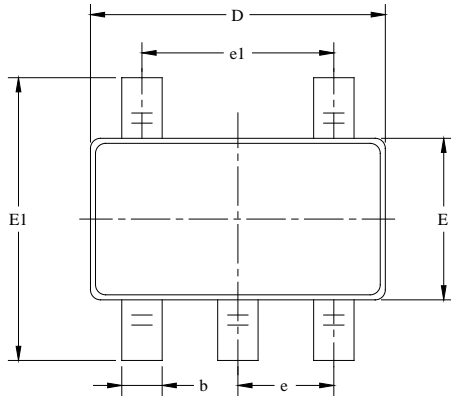
■ Pin Assignment

● FH6120C **

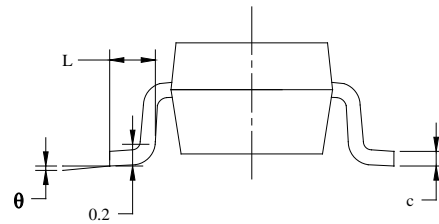
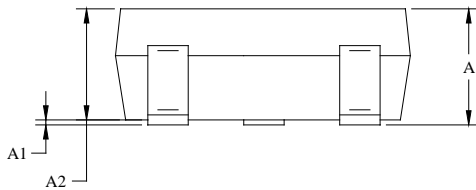
Pin Name	Pin Number			I/O	Description
	SOT-23-5L SOT353 (SC70-5L)	DFN2*2-6L	FBP1*1-4L		
VIN	1	3	4	I	Input Supply of the LDO
VSS (GND)	2	2	2	G	Ground.
CE (EN)	3	1	3	I	Enable Pin. Connect this pin to ground or less than 0.4V to disable the device, connect EN to 1.5V or above to enable the device. This pin should not be floated.
NC	4	5 / 6	/	O	Not internally connected.
VOUT	5	4	1	O	Regulator Output Pin.

■ Packaging Information

- Package Type: **SOT-23-5L**



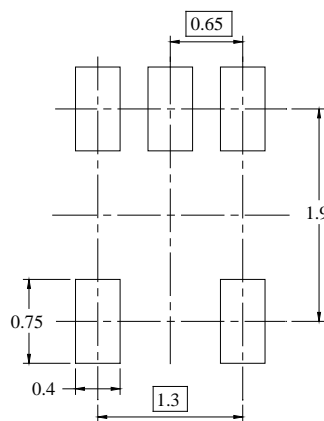
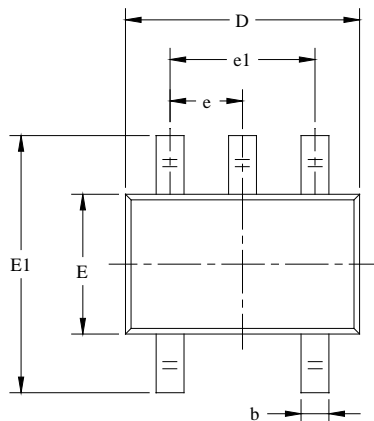
RECOMMENDED LAND PATTERN (Unit: mm)



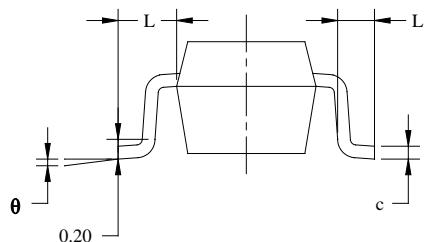
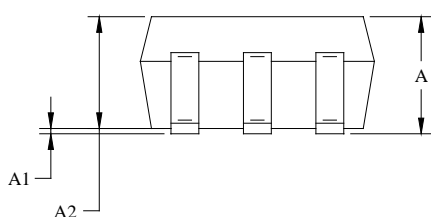
DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	1.05	1.45	0.0413	0.0570
A1	0	0.15	0	0.0059
A2	0.9	1.3	0.0354	0.0511
B	0.25	0.5	0.0098	0.0196
C	0.10	0.23	0.0039	0.0090
D	2.82	3.05	0.1110	0.1200
E	2.60	3.05	0.1023	0.1200
E1	1.50	1.75	0.0590	0.0688
e	0.95REF		0.0374REF	
e1	1.90REF		0.0748REF	
L	0.10	0.60	0.0039	0.0236
a0	00	300	00	300

■ Packaging Information

- Package Type: SOT353 (SC70-5L)



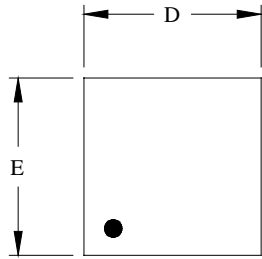
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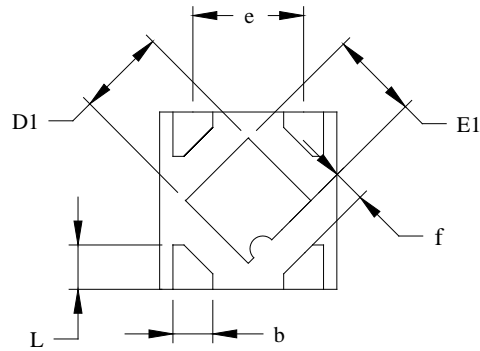
DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	0.9	1.1	0.035	0.043
A1	0.0	0.10	0.00	0.004
A2	0.9	1.0	0.035	0.039
B	0.15	0.35	0.006	0.014
C	0.08	0.15	0.003	0.006
D	2.0	2.2	0.079	0.087
E	2.15	2.45	0.085	0.096
E1	1.15	1.35	0.045	0.096
e	0.65 REF		0.026 REF	
e1	1.20	1.4	0.047	0.055
L	0.26	0.46	0.01	0.018
a0	00	80	00	80

■ Packaging Information

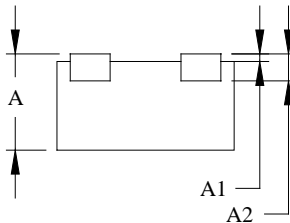
- Package Type: **FBP1*1-4L**



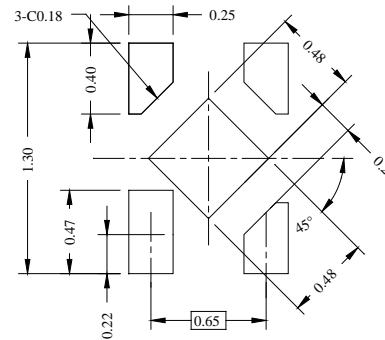
TOP VIEW



BOTTOM VIEW



SIDE VIEW

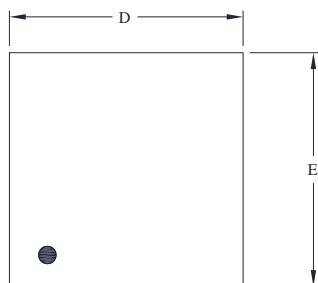


RECOMMENDED LAND PATTERN (Unit: mm)

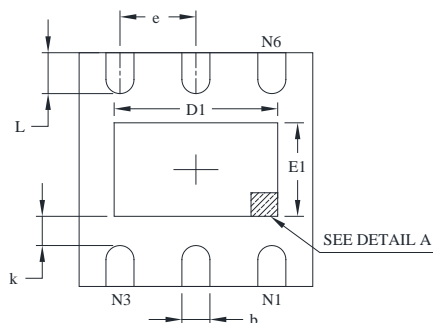
DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	0.335	0.410	0.013	0.016
D	0.950	1.100	0.037	0.043
E	0.950	1.100	0.037	0.043
D1	0.370	0.470	0.015	0.019
E1	0.370	0.470	0.015	0.019
k	0.170MIN		0.007MIN	
b	0.160	0.260	0.060	0.010
C	0.010	0.090	0.000	0.004
e	0.600	0.700	0.024	0.028
L1	0.185	0.255	0.007	0.010
L2	0.03REF		0.001REF	
L3	0.185	0.255	0.007	0.010

■ Packaging Information

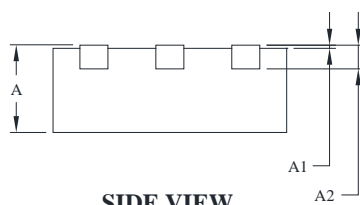
- Package Type: **DFN2*2-6L**



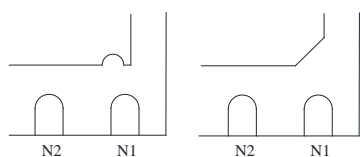
TOP VIEW



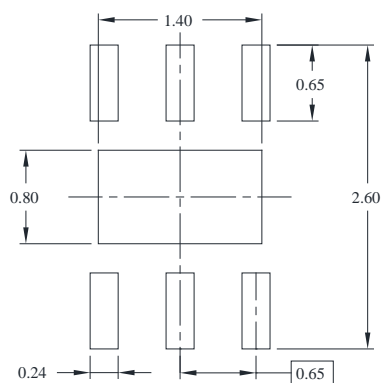
BOTTOM VIEW



SIDE VIEW



DETAIL A



RECOMMENDED LAND PATTERN (Unit: mm)

DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	0.7	0.8	0.0276	0.0315
A1	0	0.05	0	0.002
A2	0.203(TYP)		0.008(TYP)	
b	0.2	0.35	0.0078	0.0138
D	1.9	2.1	0.0748	0.0827
E	1.9	2.1	0.0748	0.0827
E1	0.5	0.9	0.0197	0.0354
e	0.65(TYP)		0.0256(TYP)	
L	0.25	0.426	0.0098	0.0168
K	0.2	—	0.0079	—
D1	1	1.45	0.0393	0.0571

Ordering Information

Part Number	Input Voltage	Output Function	Operating Temperature	Package Type	Top Mark	SPQ
FH6120C**M5	~ 6.5V	<ul style="list-style-type: none"> ** → Output voltage e.g., 15=1.5V 18=1.8V 44=4.4V The selectable voltage values are: 1.2V / 1.5V / 1.8V / 2.5V / 2.8V / 3.0V / 3.3V / 3.6V / 4.4V / 5.0V Enable can be set 	-40°C to +85°C	SOT-23-5L	* ** *	3000EA/Reel
FH6120C**R5	~ 6.5V		-40°C to +85°C	SOT353 (SC70-5L)	* ** *	3000EA/Reel
FH6120C**D6	~ 6.5V		-40°C to +85°C	DFN2*2-6L (0.75)	** -- ** --	10000EA/Reel
FH6120C**U4	~ 6.5V		-40°C to +85°C	FBP1*1-4L (0.37)	** --	10000EA/Reel

Note:

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➤ Update by Nov.2024