High Speed Low Dropout Middle Current Voltage Regulators

PRELIMINARY DATASHEET

Datasheet Brierf

General Description

The FH6123 series are highly precise, low noise, positive voltage LDO regulators manufactured using CMOS processes. The series achieves high ripple rejection and low dropout and consists of a standard voltage source, an error correction, current limiter and a phase compensation circuit plus a driver transistor. Output voltage is selectable in 100mV increments within a range of 1.5V~5.0V. The series is also compatible with low ESR ceramic capacitors which give added output stability. This stability can be maintained even during load fluctuations due to the excellent transient response of the series.

The current limiter's feedback circuit also operates as a short protect for the output current limiter and the output pin The CE function enables the output to be turned off, resulting in greatly reduced power consumption.

Features

- Output Voltage Range: 1.0V to 5.0V (selectable in 100mV steps)
- Highly Accurate: ±2%
- Dropout Voltage: 300mV @ 100mA (3.0Vtype)
- High Ripple Rejection: 60dB (1kHz)
- Low Power Consumption: 70μA(TYP.)
- Maximum Output Current : 300mA
- Standby Current : less than2.0μA
- Internal protector: current limiter
- Internal discharge MOSFET

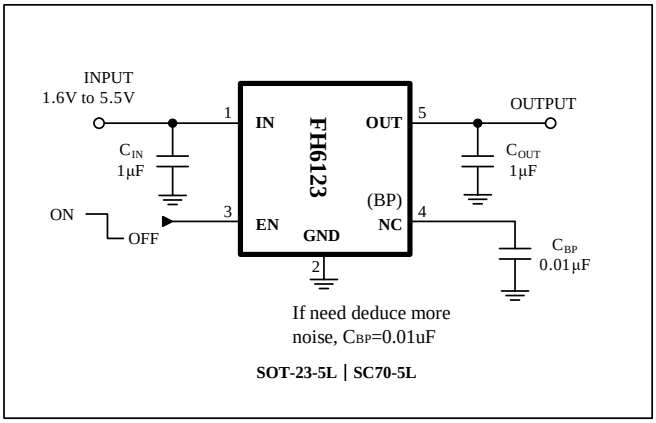
Applications

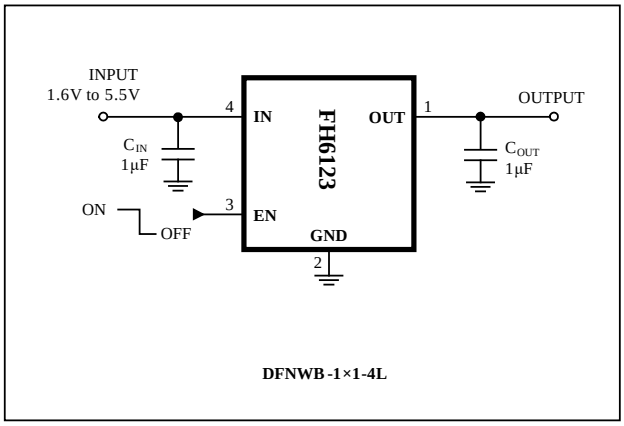
- Mobile phones
- Cordless phones
- Cameras, Video cameras
- Portable AV equipment
- Battery powered equipment
- Portable games
- Reference voltage

Package

- SOT-23-5L
- DFNWB1*1-4L
- SOT-353/SC70-5
- SOT-343

Typical Application Circuit





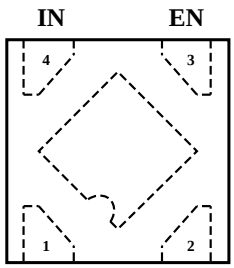
Caution :

- The above connection diagram and constant will not guarantee successful operation.
- Perform thorough evaluation using the actual application to set the constant.

Figure 1. FH6123 Typical Application

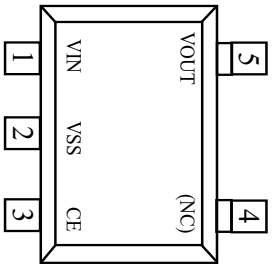
Pin Configuration

(TOP VIEW)



DFN1*4-4L

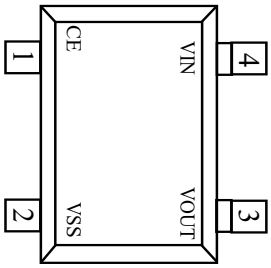
(TOP VIEW)



SOT-23-5L

SOT-353/SC70-5L

(TOP VIEW)



SOT-343-4L

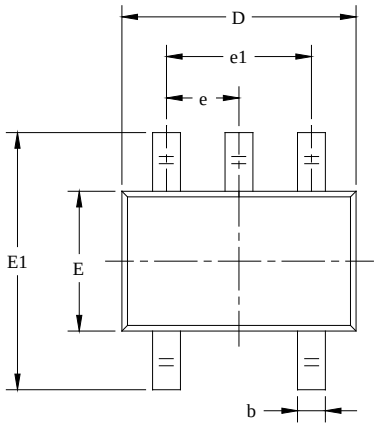
Pin Assignment

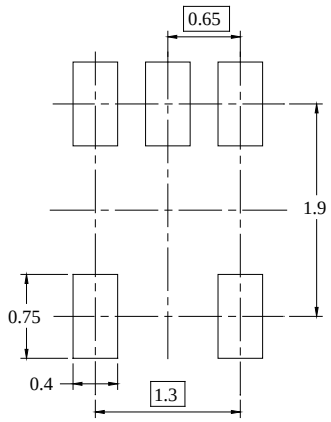
Pin Number				Pin Name	Function
SOT-23-5L	DFNWB1*1-4L	SOT-353/SC70-5	SOT-343-4L		
1	4	1	4	VIN	Supply power
2	2	2	2	VSS	Ground
3	3	3	1	CE	Enable pin
4	-	4	-	NC	NC
5	1	5	3	VOUT	Voltage output

Pin Name	I/O	Description
VIN	I	Input Voltage Supply Pin. It is recommended to use a 1μF or larger ceramic capacitor from IN pin to ground. This ceramic capacitor should be placed as close as possible to IN pin.
VSS(GND)	G	Ground.
CE(EN)	I	Enable Pin. Drive EN high to turn on the regulator. Drive EN low to turn off the regulator. This pin must be pulled high by an external resistor connected to IN pin if EN pin is not used.
NC(BP)	O	Reference-Noise Bypass Pin (fixed voltage version only). Bypass with an external capacitor CBP can reduce output noise to very low level. The capacitor is recommended to be placed very close to the pin for high PSRR.
VOUT	O	Regulator Output Pin. It is recommended to use a ceramic capacitor with effective capacitance in the range of 0.5μF to 10μF to get good power supply decoupling. This ceramic capacitor should be placed as close as possible to OUT pin.
Exposed Pad	/	Exposed Pad. Connect it to GND internally. Connect it to a large ground plane to maximize thermal performance; this pad is not an electrical connection point.

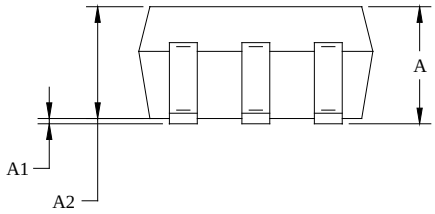
Package Information

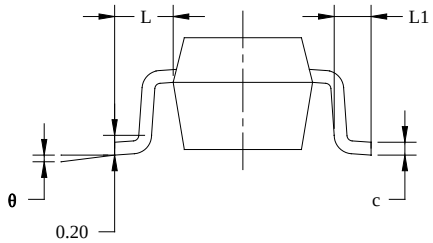
- Type: **SOT-353** (SC70-5L)





RECOMMENDED LAND PATTERN(Unit: mm)

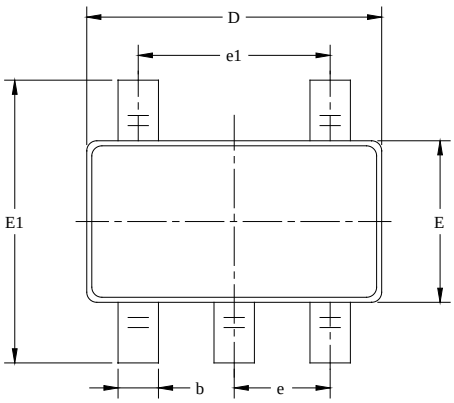


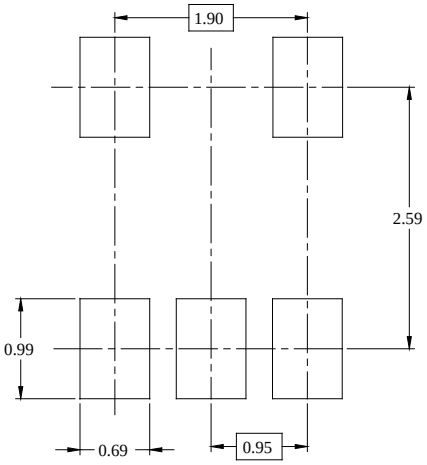


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.65 TYP		0.026 TYP	
e1	1.300 BSC		0.051 BSC	
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

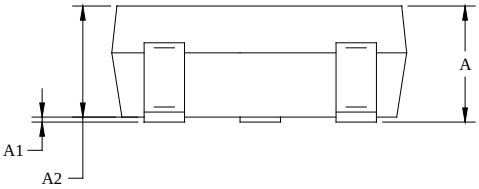
Package Information

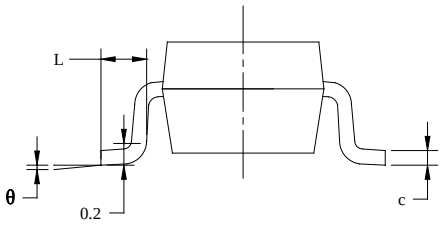
- Type: **SOT-23-5L**





RECOMMENDED LAND PATTERN(Unit: mm)

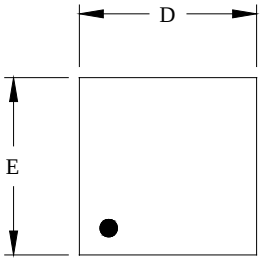




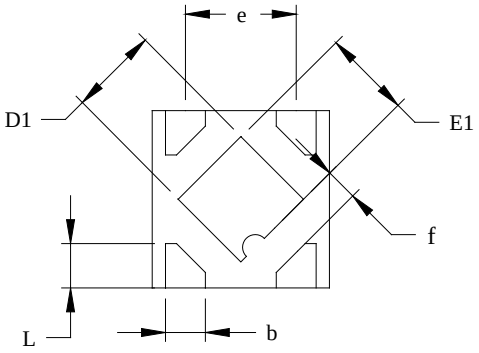
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950 BSC		0.037 BSC	
e1	1.900BSC		0.075 BSC	
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

Package Information

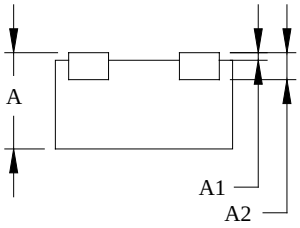
- Type: **DFN1*1-4L**



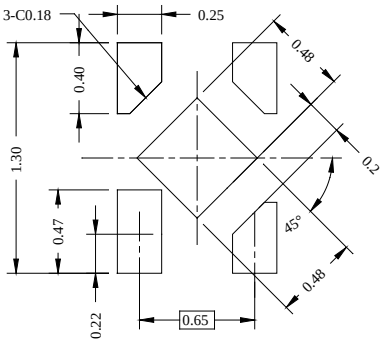
TOP VIEW



BOTTOM VIEW



SIDE VIEW

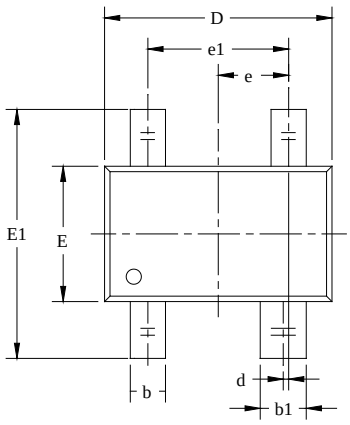


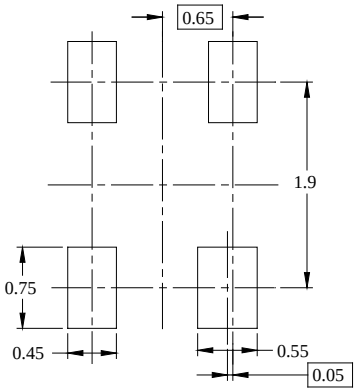
RECOMMENDED LAND PATTERN (Unit: mm)

Symbol	Dimensions In Millimeters		
	MIN	MOD	MAX
A	0.500	0.550	0.600
A1	0.000		0.050
A2	0.152 REF		
D	0.950	1.000	1.050
D1	0.450	0.500	0.550
E	0.950	1.000	1.050
E1	0.450	0.500	0.550
b	0.175	0.225	0.275
e	0.625 BSC		
f	0.195 REF		
L	0.200	0.250	0.300

Package Information

- Type: **SOT-343-4L**





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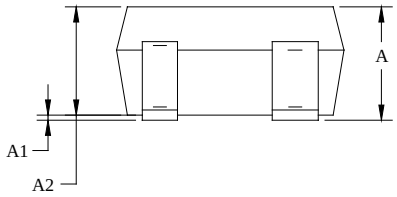

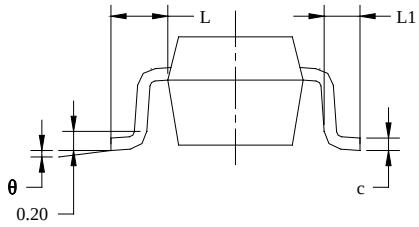

Symbol	Dimensions In Millimeters		Dimensions In Inches	
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A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.250	0.400	0.010	0.016
b1	0.350	0.500	0.014	0.020
c	0.080	0.150	0.003	0.006
d	0.050TYP		0.002TYP	
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.65 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

Ordering Information

Part Number	VOUT	Features	Operating Temperature	Package Type	Top Mark	SPQ
FH6123C12M5	1.2V	● CE Pin Logic: Active 'High' (pull-down resistor built in) ● Accurate: ±2% ● PSRR: 60dB(@1kHz) ● Output Current: 300mA(max.)	-40℃ to +85℃	SOT-23-5L	* Y M L	3000PCS/Reel
FH6123C15M5	1.5V		-40℃ to +85℃		* Y M L	3000PCS/Reel
FH6123C18M5	1.8V		-40℃ to +85℃		* Y M L	3000PCS/Reel
FH6123C25M5	2.5V		-40℃ to +85℃		* Y M L	3000PCS/Reel
FH6123C28M5	2.8V		-40℃ to +85℃		* Y M L	3000PCS/Reel
FH6123C30M5	3.0V		-40℃ to +85℃		* Y M L	3000PCS/Reel
FH6123C33M5	3.3V		-40℃ to +85℃		* Y M L	3000PCS/Reel
FH6123C36M5	3.6V		-40℃ to +85℃		* Y M L	3000PCS/Reel
FH6123C12S5	1.2V		-40℃ to +85℃	SOT-353 (SC70-5L)	* Y M L	3000PCS/Reel
FH6123C15S5	1.5V		-40℃ to +85℃		* Y M L	3000PCS/Reel
FH6123C18S5	1.8V		-40℃ to +85℃		* Y M L	3000PCS/Reel
FH6123C25S5	2.5V		-40℃ to +85℃		* Y M L	3000PCS/Reel
FH6123C28S5	2.8V		-40℃ to +85℃		* Y M L	3000PCS/Reel
FH6123C30S5	3.0V		-40℃ to +85℃		* Y M L	3000PCS/Reel
FH6123C33S5	3.3V		-40℃ to +85℃		* Y M L	3000PCS/Reel
FH6123C36S5	3.6V		-40℃ to +85℃		* Y M L	3000PCS/Reel
FH6123C12M4	1.2V		-40℃ to +85℃	SOT-343-4L	* Y M L	3000PCS/Reel
FH6123C15M4	1.5V		-40℃ to +85℃		* Y M L	3000PCS/Reel
FH6123C18M4	1.8V		-40℃ to +85℃		* Y M L	3000PCS/Reel
FH6123C25M4	2.5V		-40℃ to +85℃		* Y M L	3000PCS/Reel
FH6123C28M4	2.8V		-40℃ to +85℃		* Y M L	3000PCS/Reel
FH6123C30M4	3.0V		-40℃ to +85℃		* Y M L	3000PCS/Reel
FH6123C33M4	3.3V		-40℃ to +85℃		* Y M L	3000PCS/Reel
FH6123C36M4	3.6V		-40℃ to +85℃		* Y M L	3000PCS/Reel

Ordering Information

Part Number	VOUT	Features	Operating Temperature	Package Type	Top Mark	SPQ
FH6123C12D4	1.2V	● CE Pin Logic: Active 'High' (pull-down resistor built in) ● Accurate: ±2% ● PSRR: 60dB(@1kHz) ● Output Current: 300mA(max.)	-40℃ to +85℃	DFN1.0*1.0-4L	* M L	10000PCS/Reel
FH6123C15D4	1.5V		-40℃ to +85℃		* M L	10000PCS/Reel
FH6123C18D4	1.8V		-40℃ to +85℃		* M L	10000PCS/Reel
FH6123C25D4	2.5V		-40℃ to +85℃		* M L	10000PCS/Reel
FH6123C28D4	2.8V		-40℃ to +85℃		* M L	10000PCS/Reel
FH6123C30D4	3.0V		-40℃ to +85℃		* M L	10000PCS/Reel
FH6123C33D4	3.3V		-40℃ to +85℃		* M L	10000PCS/Reel

Note:

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Update by Jun.2023