Dual 300mA High Speed Low Dropout CMOS Voltage Regulators

Datasheet Brierf

PRELIMINARY DATASHEET

Description

The **FH6401** series are highly accurate, Dual, low noise, CMOS LDO voltage regulators. Performance features of the series include low output noise, high ripple rejection ratio, low dropout and very fast turn-on times.

The FH6401 includes a reference voltage source, error amplifiers, driver transistors, current limiters and phase compensators internally. The FH6401's current limiter's foldback circuit also operates as a short protect for the output current limiter. The output voltage for easch regulator is set independently by laser trimming. Voltages are selectable in 50mV steps within a range of 1.3V to 6.0V. The EN function allows the output of each regulator to be turned off indep endently, resulting in greatly reduced power consumption. The FH6401 series is available in the 6-pin SOT and DFN package.

Features

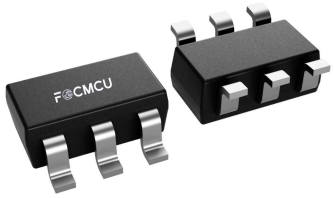
- Output voltage range: 1.3V to 6.0V(selectable in 50mV steps)
- Highly accurate: ± 2%
- Dropout voltage: 200mV@100mA(3.0V type)
- High ripple rejection: 70dB (1kHz)
- Low power consumption: 120uA (TYP.)
- Maximum output current: 300mA
- Standby current: less than 0.1uA
- Internal protector: current limiter and short protector

Applications

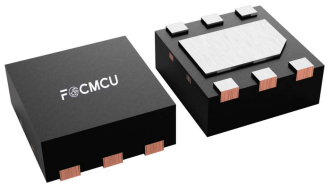
- Mobile phones
- Cameras / Video cameras
- Portable games
- Portable AV equipment
- PDAs
- Cordless phones and radio communication equipment

Package Type

- **SOT-23-6L**



- **DFN2*2-6L**



Typical Application Circuit

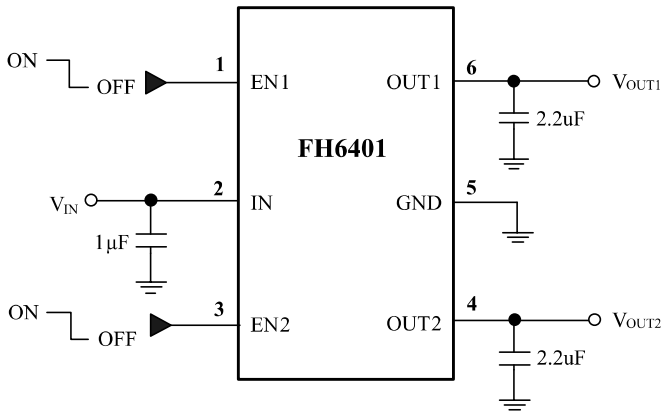


Figure 1. Typical Application Circuit

Application Conditions

1) Input capacitor (CIN): 1.0uF or more

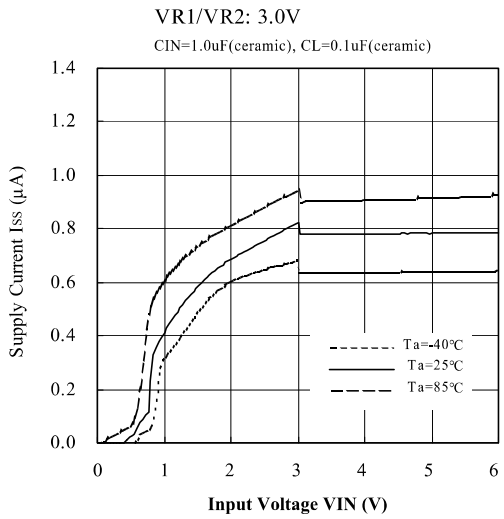
2) Output capacitor (CL): 1.0uF or more (tantalum capacitor)

3) Caution A general series regulator may oscillate, depending on the external components selected.

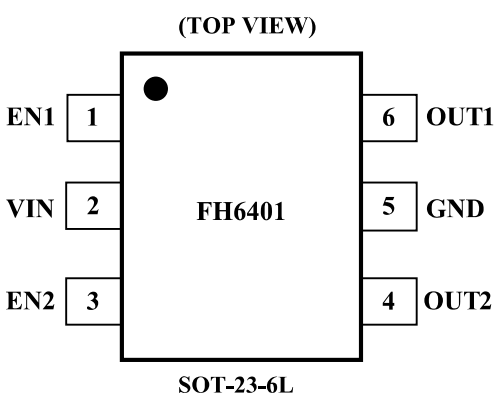
4) Check that no oscillation occurs with the application using the above capacitor.

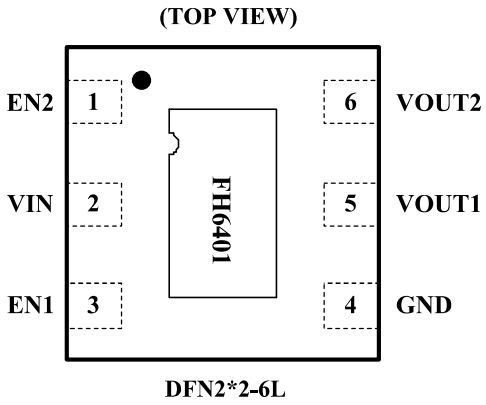
TYPICAL PERFORMANCE CHARACTERISTICS

- Supply Current vs. Input Voltage



Pin Configuration





PIN DESCRIPTION

Pin Number		Pin Name	Function	Description
SOT-23-6L	DFN2*2-6L			
1	3	EN1	ON/OFF Control1	Channel 1 Enable Pin. Drive EN1 high to turn on the channel 1 output. Drive EN1 low to put the channel 1 regulator into shutdown mode. If EN1 and EN2 are both low, both regulators and the reference turn off.
2	2	VIN	Power Input	Supply Input Pin.
3	1	EN2	ON/OFF Control2	Channel 2 Enable Pin. Drive EN2 high to turn on the channel 2 output. Drive EN2 low to put the channel 2 regulator into shutdown mode. If EN1 and EN2 are both low, both regulators and the reference turn off.
4	6	VOUT2	Output 2	Channel 2 Output Voltage Pin.
5	4	GND	Ground	Common Ground.
6	5	VOUT1	Output 1	Channel 1 Output Voltage Pin.

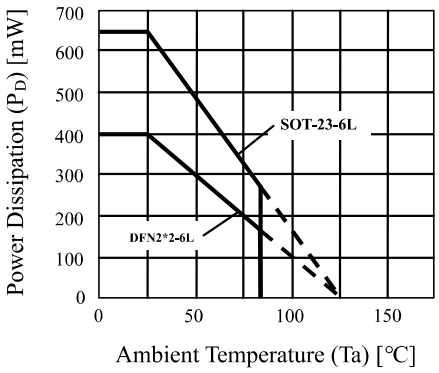
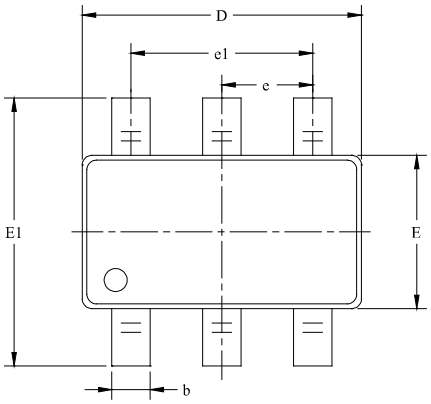


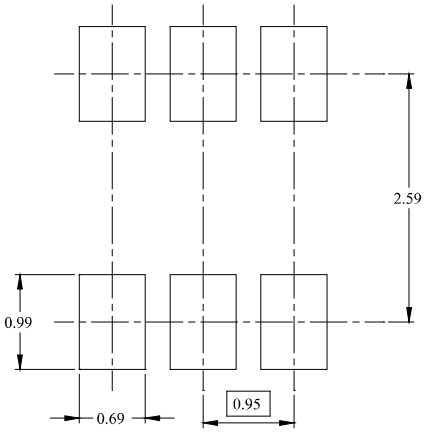
Figure 2. Power Dissipation of Package (when mounted on board)

Function		Status
ON/OFF logic	1ch	Active “H”
	2ch	Active “H”
Pull-up resistor	1ch	None
	2ch	None
Pull-down resistor	1ch	Available
	2ch	Available

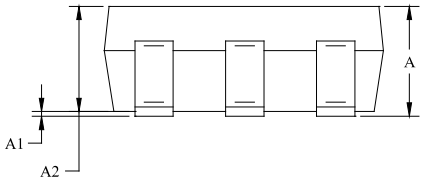
PACKAGE OUTLINE DIMENSIONS

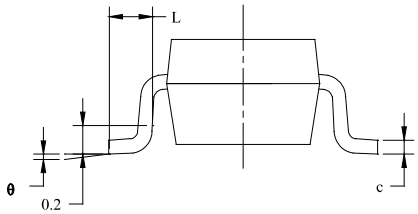
SOT-23-6L





RECOMMENDED LAND PATTERN(Unit: mm)

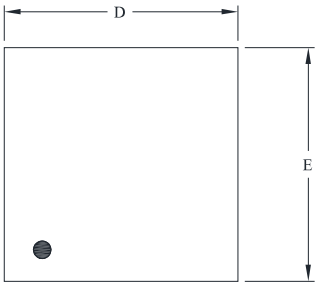




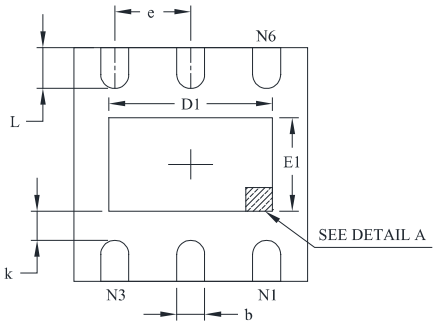
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950 BSC		0.037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

PACKAGE OUTLINE DIMENSIONS

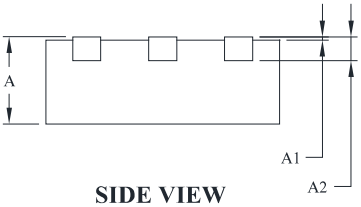
DFN2*2-6L



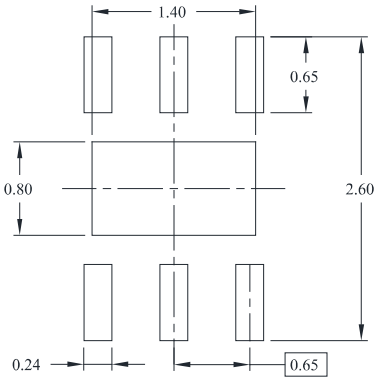
TOP VIEW



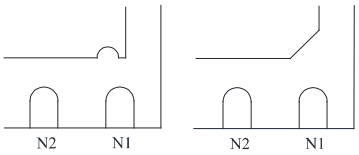
BOTTOM VIEW



SIDE VIEW



RECOMMENDED LAND PATTERN(Unit: mm)



DETAIL A

Pin #1 ID and Tie Bar Mark Options

NOTE: The configuration of the Pin #1 identifier is optional, but must be located within the zone indicated.

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A2	0.203 REF		0.008 REF	
D	1.900	2.100	0.075	0.083
D1	1.100	1.450	0.043	0.057
E	1.900	2.100	0.075	0.083
E1	0.600	0.850	0.024	0.034
k	0.200 MIN		0.008 MIN	
b	0.180	0.300	0.007	0.012
e	0.650 TYP		0.026 TYP	
L	0.250	0.450	0.010	0.018

ORDERING INFORMATION

Part Number	Voltage Range	Voltage Output	Operating Temperature	Package Type	Top Mark	SPQ
FH6401C1828M6	~ 6.5V	VOUT1: 1.8V | VOUT2: 2.8V	-40°C to 85°C	SOT-23-6L	1 X Y Z	3000PCS/Reel
FH6401C2818M6	~ 6.5V	VOUT1: 2.8V | VOUT2: 1.8V	-40°C to 85°C	SOT-23-6L	1 X Y Z	
FH6401C2833M6	~ 6.5V	VOUT1: 2.8V | VOUT2: 3.3V	-40°C to 85°C	SOT-23-6L	1 X Y Z	
FH6401C1833M6	~ 6.5V	VOUT1: 1.8V | VOUT2: 3.3V	-40°C to 85°C	SOT-23-6L	1 X Y Z	
FH6401C3318M6	~ 6.5V	VOUT1: 3.3V | VOUT2: 1.8V	-40°C to 85°C	SOT-23-6L	1 X Y Z	
FH6401C3328M6	~ 6.5V	VOUT1: 3.3V | VOUT2: 2.8V	-40°C to 85°C	SOT-23-6L	1 X Y Z	
FH6401C3033M6	~ 6.5V	VOUT1: 3.0V | VOUT2: 3.3V	-40°C to 85°C	SOT-23-6L	1 X Y Z	
FH6401C2828M6	~ 6.5V	VOUT1: 2.8V | VOUT2: 2.8V	-40°C to 85°C	SOT-23-6L	1 X Y Z	
FH6401C3333M6	~ 6.5V	VOUT1: 3.3V | VOUT2: 3.3V	-40°C to 85°C	SOT-23-6L	1 X Y Z	
FH6401C1828D6	~ 6.5V	VOUT1: 1.8V | VOUT2: 2.8V	-40°C to 85°C	DFN2*2-6L	1 X Y Z	5000PCS/Reel
FH6401C2818D6	~ 6.5V	VOUT1: 2.8V | VOUT2: 1.8V	-40°C to 85°C	DFN2*2-6L	1 X Y Z	
FH6401C2833D6	~ 6.5V	VOUT1: 2.8V | VOUT2: 3.3V	-40°C to 85°C	DFN2*2-6L	1 X Y Z	
FH6401C1833D6	~ 6.5V	VOUT1: 1.8V | VOUT2: 3.3V	-40°C to 85°C	DFN2*2-6L	1 X Y Z	
FH6401C3318D6	~ 6.5V	VOUT1: 3.3V | VOUT2: 1.8V	-40°C to 85°C	DFN2*2-6L	1 X Y Z	
FH6401C3328D6	~ 6.5V	VOUT1: 3.3V | VOUT2: 2.8V	-40°C to 85°C	DFN2*2-6L	1 X Y Z	
FH6401C3033D6	~ 6.5V	VOUT1: 3.0V | VOUT2: 3.3V	-40°C to 85°C	DFN2*2-6L	1 X Y Z	
FH6401C2828D6	~ 6.5V	VOUT1: 2.8V | VOUT2: 2.8V	-40°C to 85°C	DFN2*2-6L	1 X Y Z	
FH6401C3333D6	~ 6.5V	VOUT1: 3.3V | VOUT2: 3.3V	-40°C to 85°C	DFN2*2-6L	1 X Y Z	

Note:

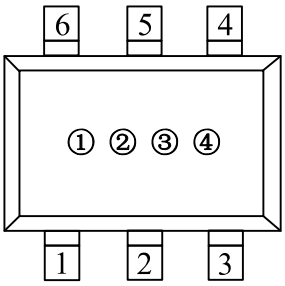
- **FH6401CxxxxM6 | FH6401CxxxxD6** devices are Pb-free and RoHs compliant.
- The surface prints of our semiconductor devices are subject to change during the production process and do not involve changes in electrical parameters, and we will not separately state the notice.
- If you have any other custom purchase needs, please contact our sales department.
- ForDevices reserves the right to amend and legally interpret the electrical parameters of this chip device. (http://www.fordevices.com)

ORDERING INFORMATION

Marking Rule

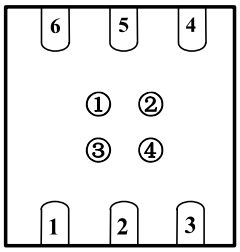
- **SOT-23-6L | DFN2*2-6L**

(Top View)



SOT-23-6L

(Top View)



DFN2*2-6L

ESD SENSITIVITY CAUTION

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

Product Folder

Order Now

Technical Documents

Tools & Software

Support & Community

Important Notice:

- The information described herein is subject to change without notice.
- FOCMCU Inc. is not responsible for any problems caused by circuits or diagrams described herein whose related industrial properties, patents, or other rights belong to third parties. The application circuit examples explain typical applications of the products, and do not guarantee the success of any specific mass-production design.
- Use of the information described herein for other purposes and/or reproduction or copying without the express permission of FOCMCU Inc. is strictly prohibited.
- The products described herein cannot be used as part of any device or equipment affecting the human body, such as exercise equipment, medical equipment, security systems, gas equipment, or any apparatus installed in airplanes and other vehicles, without prior written permission of FOCMCU Inc.
- Although FOCMCU Inc. exerts the greatest possible effort to ensure high quality and reliability, the failure or malfunction of semiconductor products may occur. The user of these products should therefore give thorough consideration to safety design, including redundancy, fire-prevention measures, and malfunction prevention, to prevent any accidents, fires, or community damage that may ensue.

▲ Update by Feb.2023