EMarker chip for USB Type-C PD3.2 100W/140W cable

Product Features

- Compliant with PD 3.2: Supports SOP communication, integrated transceiver (BMC PHY), and also supports structured VDM version
- VIN has a wide operating voltage range of 2.9V to 42V
- VIN operates at a minimum of 2.9V and supports direct power supply from VCONN
- After connecting a 1K resistor in series with VIN, it supports up to 50V VBUS
- After connecting a 2K resistor and a 0.1uF capacitor in series with VIN, it supports up to 60V VBUS
- CC withstand voltage up to 36V
- Support FUNC settings to meet different wire requirements
- Package: SOT23-5 (solder pads compatible with FS612A series)

Product Overview

FS612BH is an eMarker with USB Type-C interface. It complies with the USB PD 3.2 protocol.

FS612BH can be directly powered by a 1K resistor connected in series with VBUS, supporting 60V VBUS, and is used in 5-core solutions.

FS612BH can be powered by VCONN and applied to dual core solutions..

Use SOT23-5 minimalist packaging.

FS612BH is suitable for wires with a power of 240W 48V/5A.

Application field

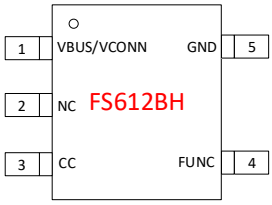
- USB Type-C cable

Order information

Part No	Package	Pcs/Reel
FS612BH	SOT23	3000

V1.3(202410)

Chip packaging and pin definition



SOT23-5

Pic 1. Pin definition

Table 1. FS612BH Pin function description

FS612BH	Name of the pin	Description
1	VBUS/VCONN	Power supply, can be connected to VBUS or VCONN
2	NC	Mid-air
3	CC	Connect to USB Type-C CC
4	FUNC	External resistor, choose different cable configurations
5	GND	Chip ground

Extreme operating range

Table 2. Maximum operating range

Parameter	Value
VBUS/VCONN	-0.5V~42V <55V(Connect 1K resistors in series) <65V (Connected in series with 2K resistor)
CC	-0.5V~36V
Storage temperature	-65℃~150℃
Working temperature (connector)	-40℃~125℃
Anti static ability	±2000 V

The maximum operating range listed in the table above, if the limit is exceeded, the chip may be permanently damaged. Users

should try to avoid it.

Normal operating range

Table 3. Normal operating range

Parameter	Value
VBUS/VCONN	2.9V~30V <50V（Connect 1K resistors in series） <60V (connected in series with 2K resistor and 0.1uF capacitor)
CC	0~5V
Power consumption - working status（VBUS=5 V）	<5mW
Working temperature (connector)	-40℃~125℃
Environmental temperature	-40℃~85℃

Function Description

FS612BH is an Emarker chip. Used for low-cost TYPE-C cables. FS612BH supports a wide range of input voltages, so it can be directly powered by VBUS or VCONN. FS612BH supports the latest USB PD 3.2 protocol. The ultra-high CC withstand voltage ensures that the chip will not be damaged.

FS612BH has FUNC selection, allowing for the selection of different wire configurations. Used for 240W 48V/5A applications.

VBUS/VCONN

0.1uF capacitor is optional to improve power supply stability.

It can be connected to TYPEC VBUS through a 1K resistor.

You can connect TYPEC VBUS through a 2K resistor, at which point a 0.1uF capacitor must be connected.

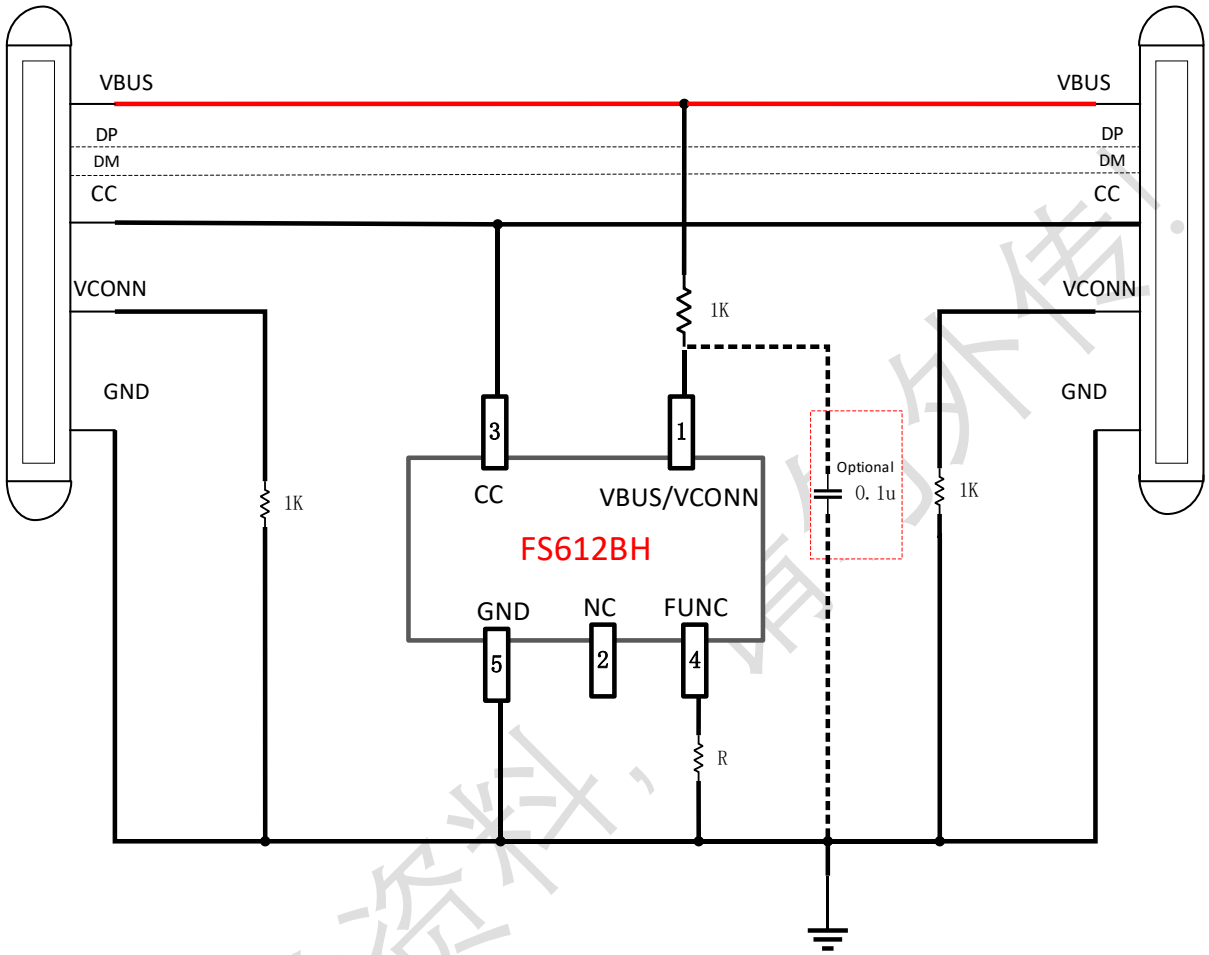
Can be directly connected to TYPEC VCONN.

CC

Can support 36V withstand voltage.

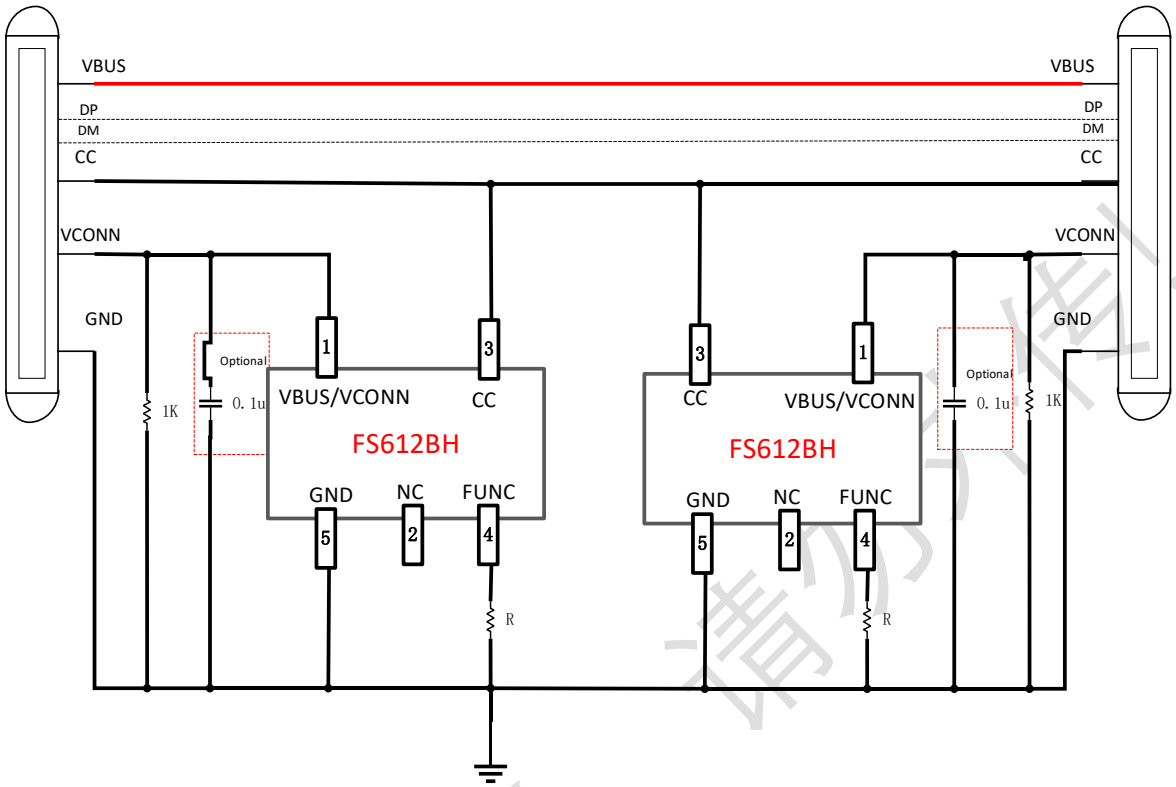
Application example

5-Core Single Chip Application (FS612BH)



FS612BH Application Diagram (5-Chip Single Chip)

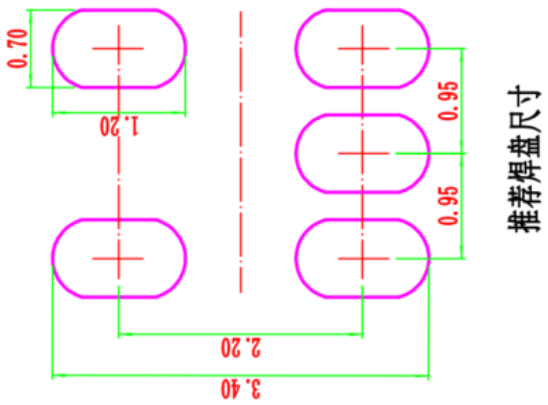
5-core dual chip application (FS612BH)



FS612BH application diagram (5-core dual chip)

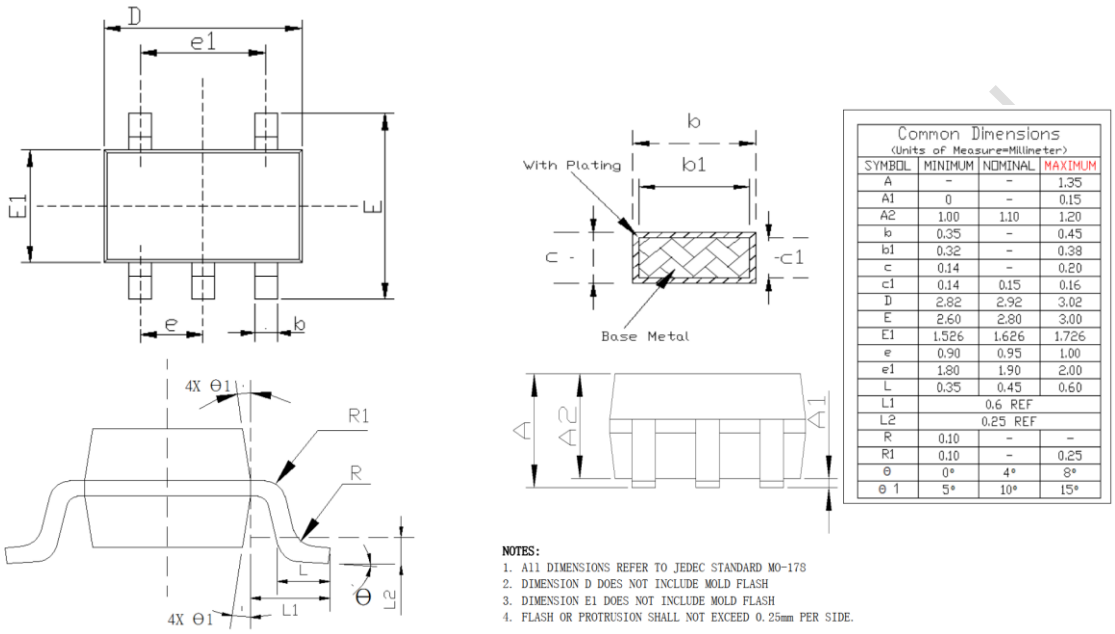
Layout suggestion

In order to be compatible with the FS612A series (SOT23) packaging, it is recommended that customers follow the following size layout:



Package outline drawing

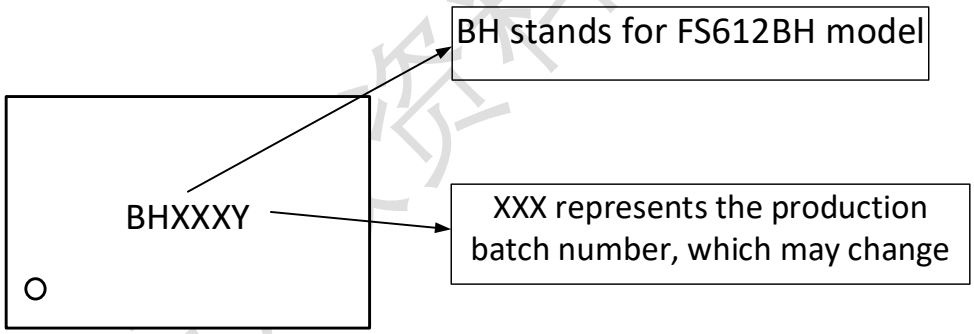
SOT23-5



Common Dimensions (Units of Measure=Millimeter)			
SYMBOL	MINIMUM	NOMINAL	MAXIMUM
A	-	-	1.35
A1	0	-	0.15
A2	1.00	1.10	1.20
b	0.35	-	0.45
b1	0.32	-	0.38
c	0.14	-	0.20
c1	0.14	0.15	0.16
D	2.82	2.92	3.02
E	2.60	2.80	3.00
E1	1.526	1.626	1.726
e	0.90	0.95	1.00
e1	1.80	1.90	2.00
L	0.35	0.45	0.60
L1	0.6 REF		
L2	0.25 REF		
R	0.10	-	-
R1	0.10	-	0.25
θ	0°	4°	8°
θ1	5°	10°	15°

NOTES:
1. All DIMENSIONS REFER TO JEDEC STANDARD MO-178
2. DIMENSION D DOES NOT INCLUDE MOLD FLASH
3. DIMENSION E1 DOES NOT INCLUDE MOLD FLASH
4. FLASH OR PROTRUSION SHALL NOT EXCEED 0.25mm PER SIDE.

Chip silk screen information



1. FS612BH model information: BH, fixed and unchanged
2. The production batch number code is used to distinguish the batch number information each time, based on changes in the production batch

Company information and statement

HQ

E2-503, China Internet of Things International Innovation Park, No. 200, Linghu Avenue, Xinwu District, Wuxi City

Website: www.fastsoc.com

Wechat public Account.: fastsoc

Sales and technical support

Contact: Ms. Ge

Mobilephone: 1895-248-8621

E-mail: gejing@fastsoc.com

Statement

Wuxi FASTSOC Microelectronics co., Ltd. reserves the right to modify the product and the product data manual at any time. All information in this document, including product functions, performance, and company information, may be modified without informing users. The functional and performance indicators described in this article were tested in a laboratory environment and there is no guarantee that the same data will be available on customer products. The information herein does not imply, indicate, support, prove or imply in any form that the Product can be used for any application that infringes the intellectual property rights of any third party. The information herein is only for guidance in the use of the chip and does not authorize users to use the intellectual property rights of Our company or any other company.

Our products are not designed for extreme conditions and life support systems. If the user chooses to use it on these occasions, it is at the user's own risk without our confirmation and permission.