

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

### Product Features

- Compliant with PD 3.2: Supports SOP communication, integrated transceiver (BMC PHY), and also supports structured VDM version
- VIN wide operating voltage range: 2.9V~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
- Perfectly compatible with 240W 48V/5A cable applications
- Package: SOT23 (Small 23 Package)

### Product Overview

FS612AH is an eMarker with USB Type-C interface. It complies with the USB PD 3.2 protocol.

FS612AH can be directly powered by a 1K resistor connected in series with VBUS, supporting 60V VBUS, and is used in 5-core solutions.

FS612AH can be powered by VCONN and applied to dual core solutions.

Use SOT23 and Xiao23 minimalist packaging.

FS612AH is suitable for wires with a power of 240W 48V/5A.

### Application field

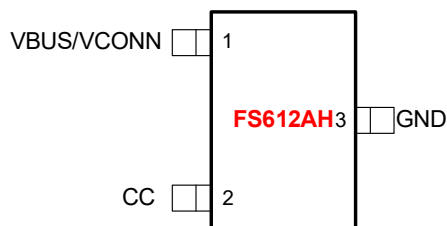
- USB Type-C cable

### Order information

Part No	Package	Pcs/Reel
FS612AH	SOT23	3000



## Chip packaging and pin definition



Pic 1. Pin definition

Table 1. FS612AH Pin function description

FS612AL	Name of the pin	Description
1	VBUS/VCONN	Power supply, can be connected to VBUS or VCONN
2	CC	Connect to USB Type-C CC
3	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°C~125°C
Environmental temperature	-40°C~85°C

## Function Description

FS612AH is an Emarker chip. Used for low-cost TYPE-C cables. FS612AH supports a wide range of input voltages, so it can be directly powered by VBUS or VCONN. FS612AH supports the latest USB PD 3.2 protocol. The ultra-high CC withstand voltage ensures that the chip will not be damaged.

FS612AH is used for 240W cables powered by VBUS or VCONN with a maximum voltage of 48V and a maximum current of 5A.

### 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.

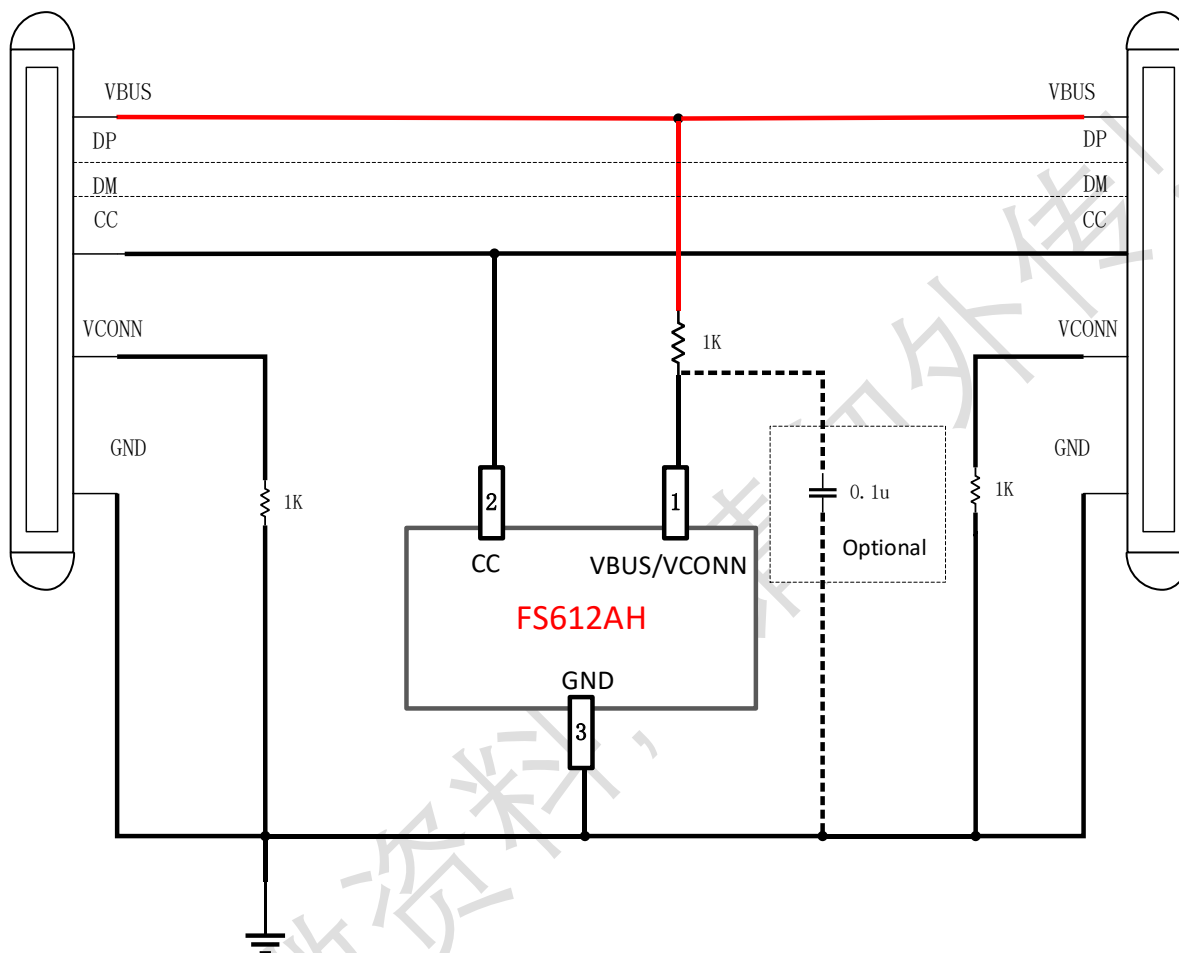
### CC

Can support 36V withstand voltage.



## Application example

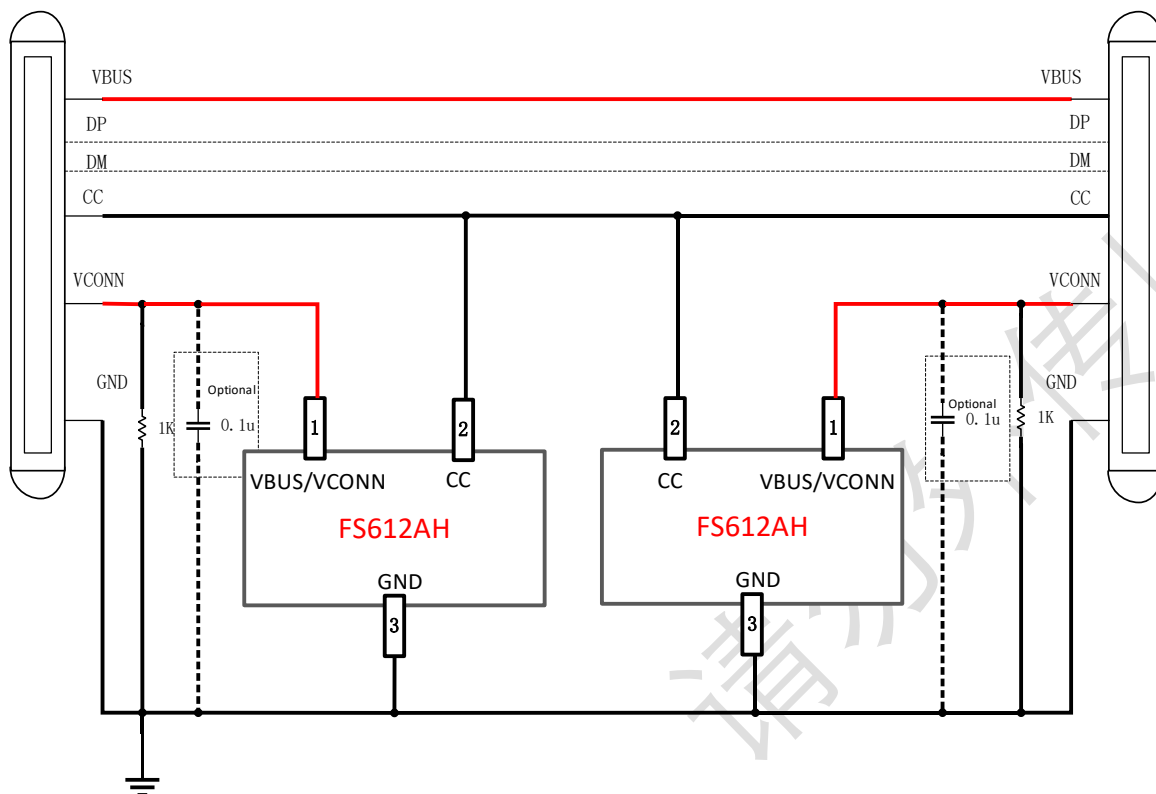
5-core single-chip application (FS612AH)



FS612AH Application Diagram - Single Core 5-Wire



5-core dual chip application (FS612AH)

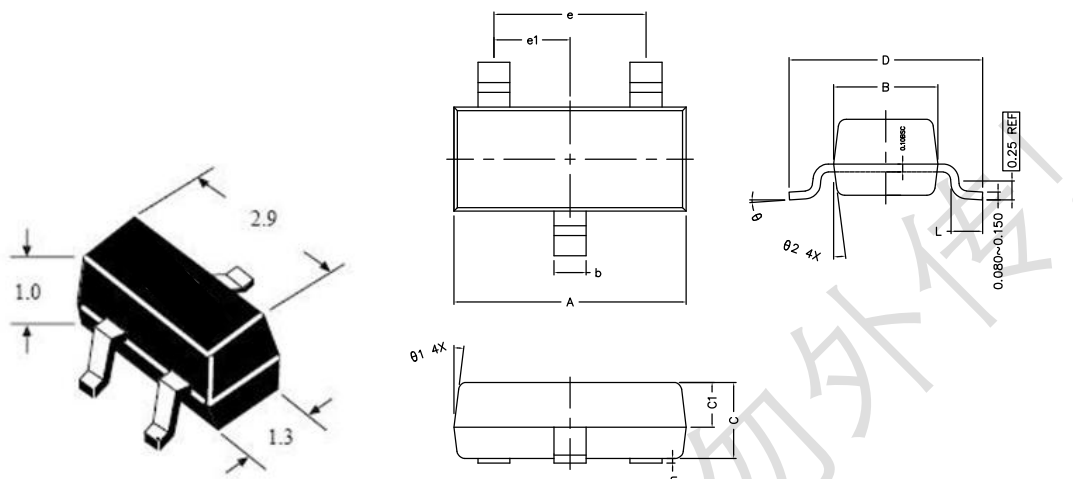


FS612AH Application Diagram - Dual Core 5-Wire



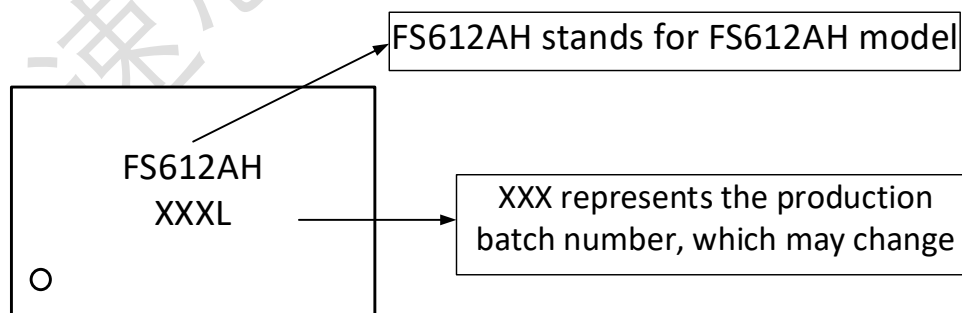
## Package outline drawing

## SOT23



Symbol	MIN	NORM	MAX
A	2.800	2.900	3.000
B	1.200	1.300	1.400
C	0.900	1.000	1.1 00
C1	0.500	0.550	0.600
D	2.250	2.400	2.550
L	0.300	0.400	0.500
h	0.010	0.050	0.100
b	0.300	0.400	0.500
e	1.90 TYP		
e1	0.95 TYP		
θ1	7° TYP		
θ2	7° TYP		
θ	0°~7°		

## Chip silk screen information



1. FS612AH model information: FS612AH, 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

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### HQ

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

Website: [www.fastsoc.com](http://www.fastsoc.com)

Wechat public Account.: fastsoc

### Sales and technical support

Contact: Ms. Ge

Mobilephone: 1895-248-8621

E-mail: [gejing@fastsoc.com](mailto:gejing@fastsoc.com)

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