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
- VIN maximum 42V operation, supports VBUS direct power supply
- CC withstand voltage up to 36V
- Perfectly compatible with 140W 28V/5A wire applications
- Built in high voltage protection: the protection cable operates reliably at a maximum voltage of 28V
- Package: SOT23 (Small 23 Package)

Product Overview

FS612AL is an eMarker with USB Type-C interface. It complies with the USB PD 3.2 protocol.

FS612AL can be directly powered by VBUS and applied to 5-core solutions.

FS612AL can be powered by VCONN and applied to dual core solutions.

Use SOT23 and Xiao23 minimalist packaging.

FS612AL is suitable for wires with a fixed power of 140W 28V/5A.

Application field

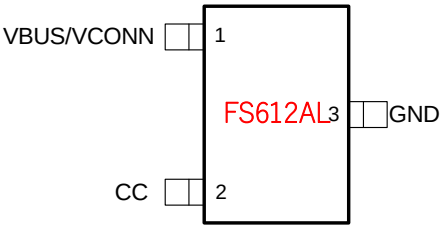
- USB Type-C cable

Order information

Part No	Package	Pcs/Reel
FS612AL	SOT23	3000

V1.4(202410)

Chip packaging and pin definition



Pic 1. Pin definition

Table 1. FS612AL 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
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/CC	2.9V~30V
Power consumption - working state (VBUS=5V)	<5mW
Working temperature (connector)	-40℃~125℃
Ambient temperature	-40℃~85℃

Function Description

FS612AL is an Emarker chip. Used for low-cost TYPE-C cables. FS612AL supports a wide range of input voltages, so it can be directly powered by VBUS or VCONN. FS612AL supports the latest USB PD 3.2 protocol. The ultra-high CC withstand voltage ensures that the chip will not be damaged.

FS612AL has adaptive function and is used for cables powered by VBUS or VCONN with a maximum voltage of 28V and a maximum current of 5A.

FS612AL has built-in overvoltage protection, which prevents the device from applying voltages higher than 28V and keeps the cables within a safe working range.

VBUS/VCONN

Can work at 2.9~42V

0.1uF capacitor is optional to improve power supply stability.

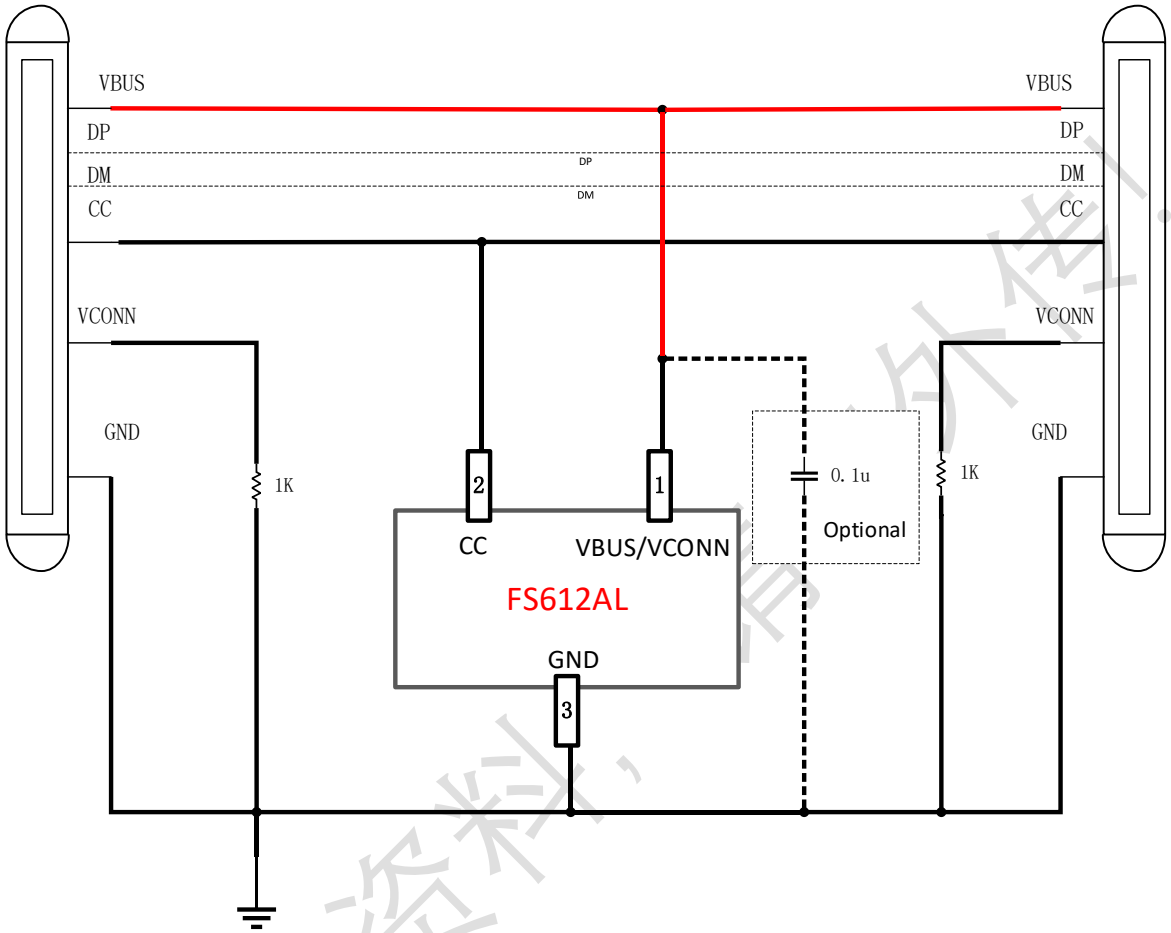
Can be connected to VBUS or VCONN

CC

Can support 36V withstand voltage.

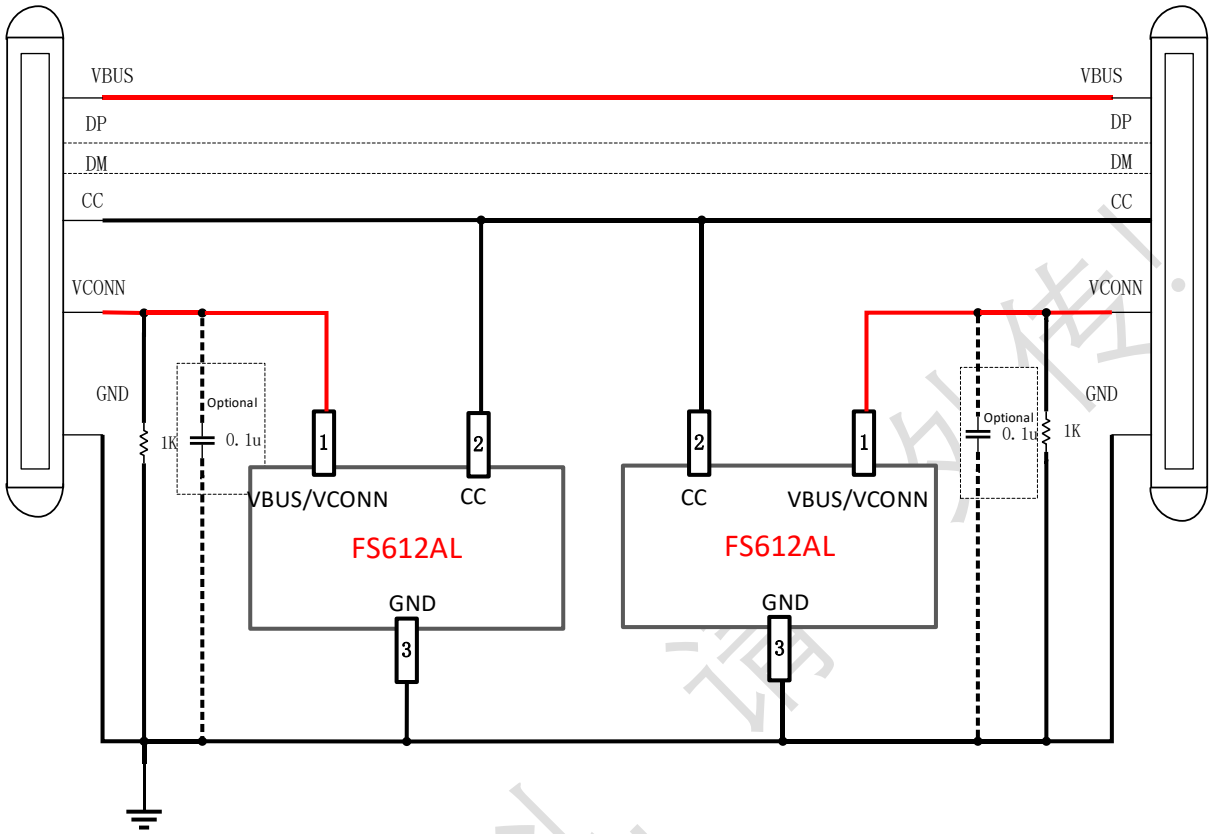
Application example

5-Core Single Chip Application (FS612AL)



FS612AL Application diagram

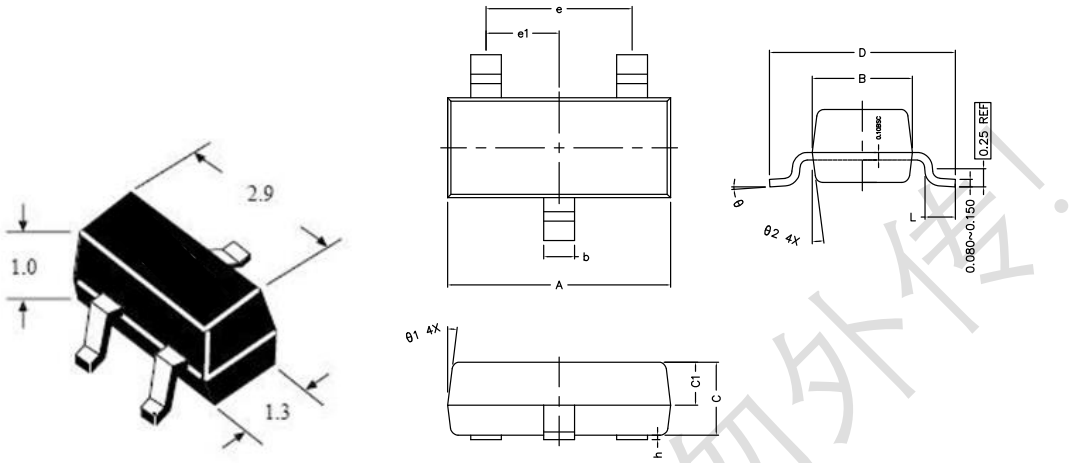
5-core dual chip application (FS612AL)



FS612AL Application diagram

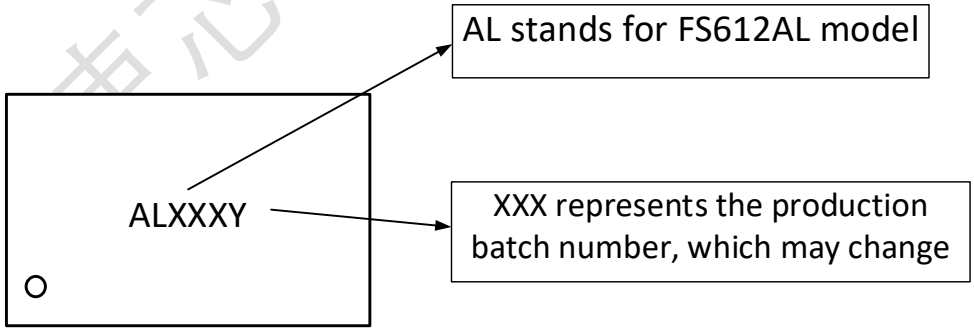
Package outline drawing

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. FS612AL model information: AL, 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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