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
- VIN operates at a maximum of 42V and supports direct VBUS power supply
- CC withstand voltage up to 36V
- Support FUNC settings to meet different wire requirements
- Built in high voltage protection: The protection cable operates reliably at a maximum voltage of 28V
- Package: SOT23-5 (solder pads compatible with FS612A series)

Product Overview

FS612BL is an eMarker with USB Type-C interface. It complies with the USB PD 3.2 protocol.

FS612BL can be directly powered by VBUS and applied to 5-core solutions.

FS612BL can be powered by VCONN and applied to dual core solutions.

Use SOT23-5 minimalist packaging.

FS612BL is suitable for wires with fixed power of 100W 20V/5A and 140W 28V/5A.

Application field

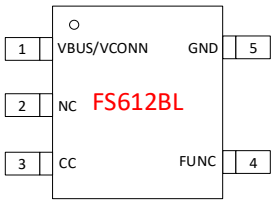
- USB Type-C cable

Order information

Part No	Package	Pcs/Reel
FS612BL	SOT23	3000

V1.3(202410)

Chip packaging and pin definition



SOT23-5

Pic 1. Pin definition

Table 1. FS612BL Pin function description

FS612BL	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
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

FS612BL is an Emarker chip. Used for low-cost TYPE-C cables. FS612BL supports a wide range of input voltages, so it can be directly powered by VBUS or VCONN. FS612BL supports the latest USB PD 3.2 protocol. The ultra-high CC withstand voltage ensures that the chip will not be damaged.

FS612BL has FUNC selection and can choose different wire configurations for 100W and 140W wire applications.

FS612BL has built-in overvoltage protection, which prevents the device from applying voltages higher than 28V and keeps the cable within a safe working range.

VBUS/VCONN

Can work at 2.9~42V

0.1uF capacitor is optional to improve power supply stability.

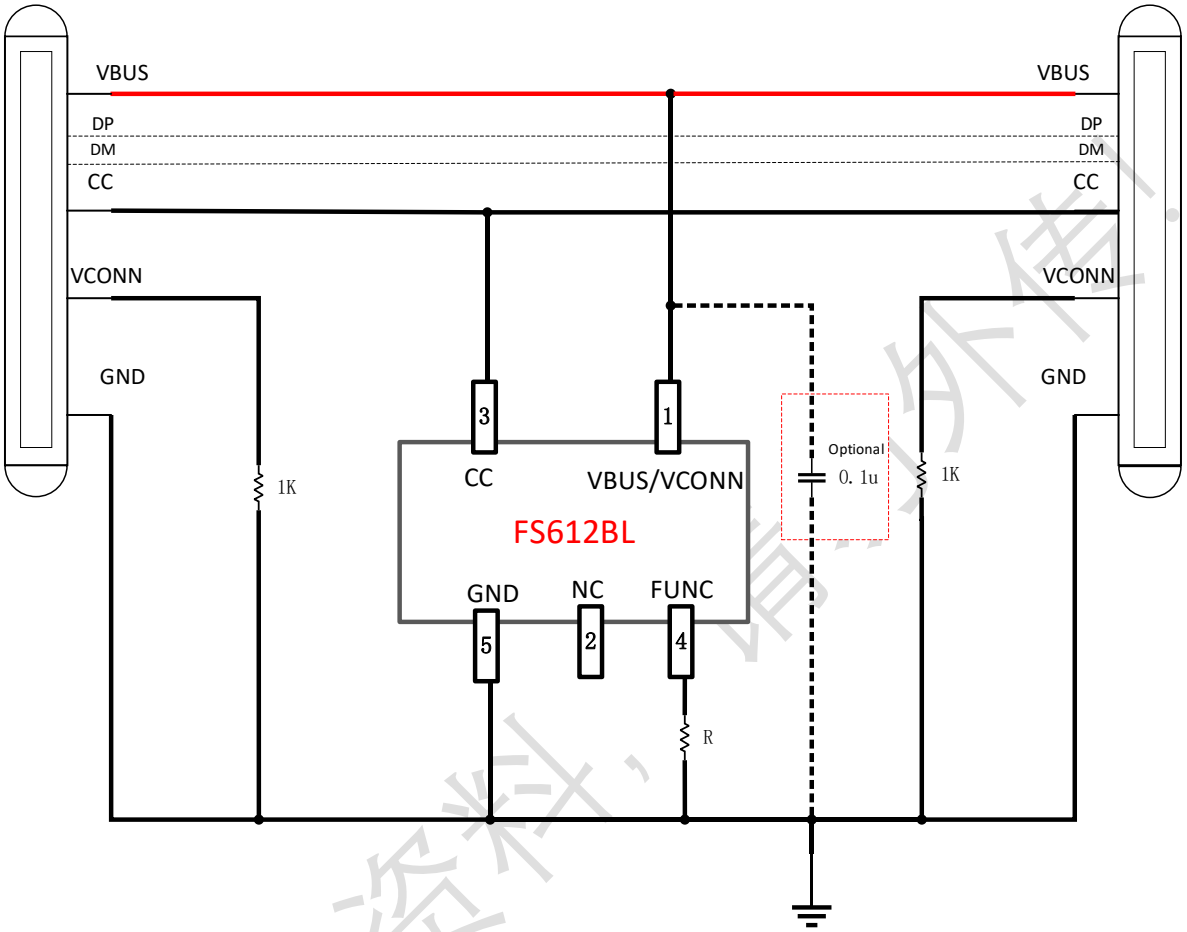
Can be connected to VBUS or VCONN

CC

Can support 36V withstand voltage.

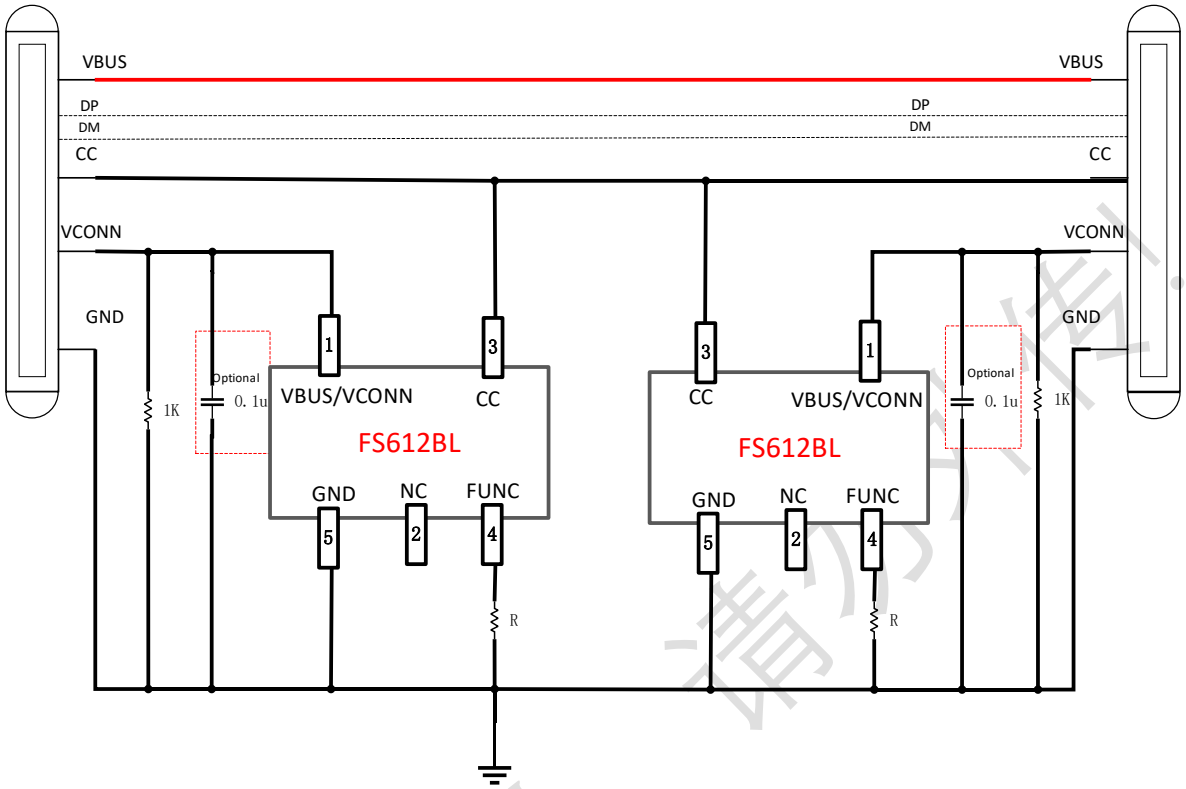
Application example

5-Core Single Chip Application (FS612BL)



FS612BL Application diagram

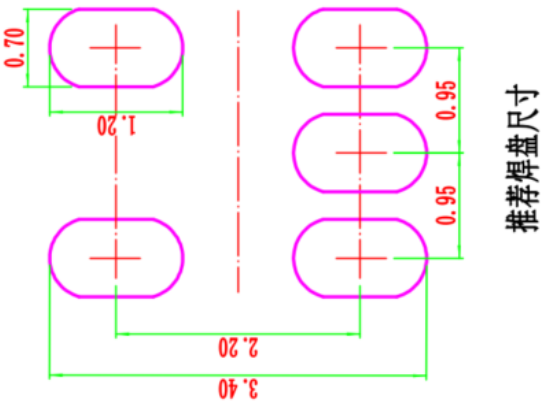
5-core dual chip application (FS612BL)



FS612BL Application diagram

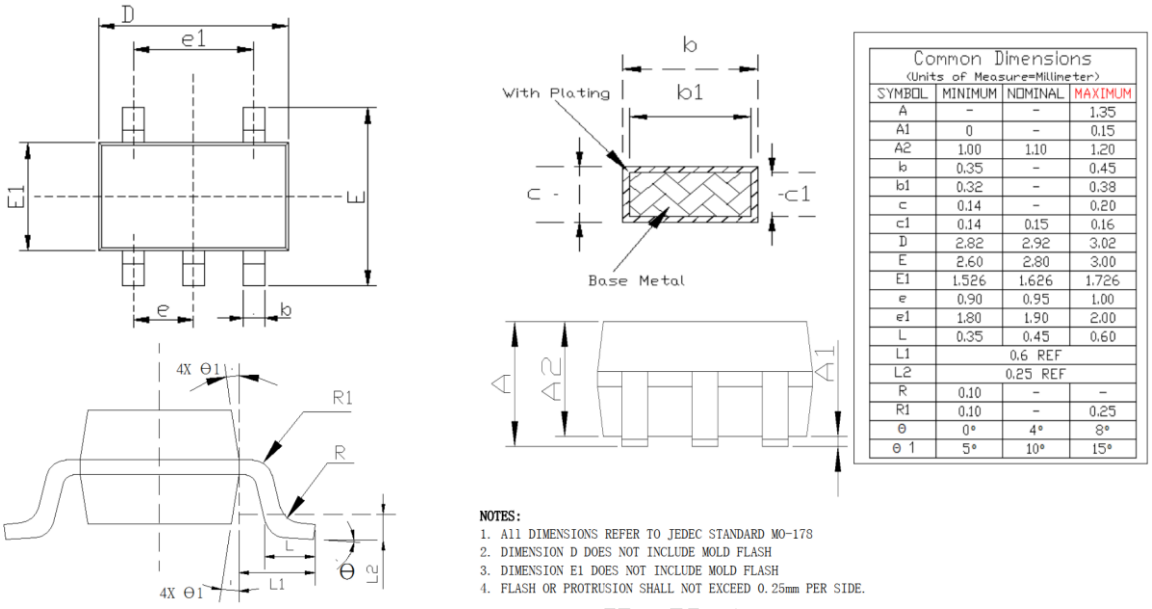
Layout suggestion

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

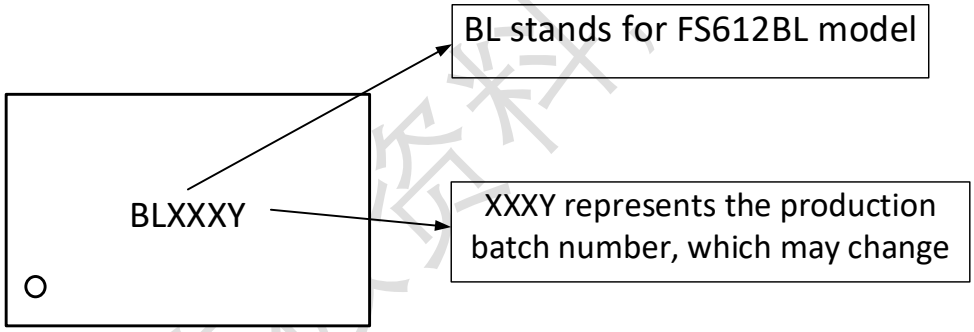


Common Dimensions
(Units of Measure=Millimeter)

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°
θ 1	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. FS612BL model information: BL, 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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