USB Type-C PD Fast charging protocol intelligent trigger chip

Product Features

- Compatible with USB Type-CPD3.0 (including PPS) protocol
- Compatible with multiple types of USB Type-A fast charging protocols
- The maximum voltage that can be selected for the adapted system
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- Automatically identify the fast charging protocol features of the charger
- Automatically trigger the required voltage
- CC withstand voltage above 30V
- D ± withstand voltage of 12V or above
- Package：SSOP10

Product Overview

FS312L is set according to the voltage of the peripheral circuit, such as 5V, 9V, 12V, automatically shake hands with the charging device to complete the application for setting the voltage.

FS312L supports TypeC PD3.0 protocol and multiple A-port fast charging protocols. It can automatically complete the handshake with the charger and select the set voltage according to protocol priority.

If the set voltage cannot be found for FS312L, other voltages can be selected according to the setting.

The D ± withstand voltage of the chip is higher than 12V, and the withstand voltage of CC1 and CC2 is higher than 30V, indicating extremely high reliability.

Chip power supply can be directly connected to the power supply, with a withstand voltage of over 30V, without the need for additional LDO. FS312L can apply for a maximum voltage of 20V.

FS312L provides SSOP10 package.

Application field

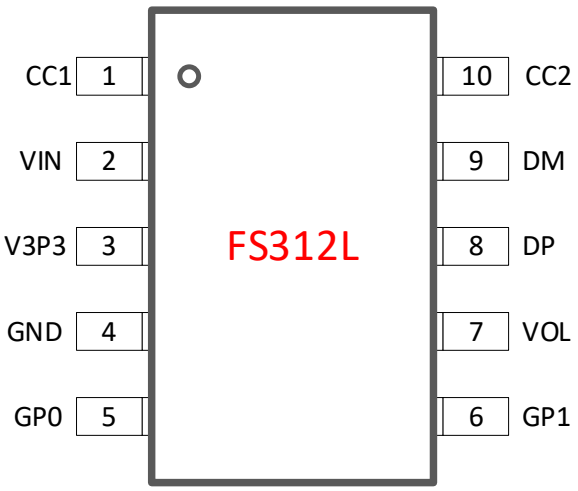
- Wireless charger
- Bluetooth speaker
- On-board equipment
- Energy storage power supply
- Industrial testing
- Other USB Type-C power output devices

Order information

Part No	Package	Pcs/Reel
FS312L	SSOP10	4000

V1.0(202501)

Chip packaging and pin definition



SSOP10

Figure 1. Pin Definition

Table 1. FS312LPin function description

FS312L	Name of the pin	Description
1	CC1	Connect Type-C socket
2	VIN	Chip power supply
3	V3P3	Chip LDO output
4	GND	Chip ground
5	GP0	Protocol selection function, default connected to V3P3
6	GP1	Protocol selection function, default connected to V3P3
7	VOL	External resistor, pre fabricated trigger voltage
8	DP	Connect DP/D+pins to USB socket
9	DM	Connect DM/D-pins to USB socket
10	CC2	Connect Type-C socket

Extreme operating range

Table 2. Maximum working range

Parameter	value
VIN	-0.3V~31V
CC1, CC2	-0.3V~31V
DP，DM	-0.3V~13V
VOL，GP0，GP1	-0.3V~5.5V

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
VIN	3V~20V
CC1, CC2	0~5V
DP，DM	0V~3.3V
VOL，GP0，GP1	0V~3.3V
Operating temperature range	-40°~105°

Device Configuration

FS312L supports A-port protocol customization, contact the original factory or agent for support.

Pin definition and instructions

VIN
VIN is powered by the chip, supporting a minimum of 3V and a maximum of 20V. VBUS that can be directly connected to a USB port.

V3P3
Internal power supply stabilizing output, external decoupling capacitor.

VOL
Table 5. VOL Foot Function

FUNC external resistance	Set application voltage
NC	5V
51K	9V
100K	12V

DP and DM
Both DP and DM withstand voltage are greater than 12V, improving the stability of system plugging and unplugging.

CC1 and CC2
Both CC1 and CC2 have a withstand voltage greater than 30V, improving the stability of system plugging and unplugging.

GP0 and GP1
GP0 and GP1 can choose protocols. By default, V3P3 is connected and the protocol is automatically selected.

Table 6. GP Foot Functions

GP0	GP1	协议
GND	GND	PD
GND	V3P3	PPS
V3P3	GND	QC
V3P3	V3P3	Automatically select protocol priority: PD/PPS>QC>FCP>AFC

If the charger does not support PPS and the GP pin selects PPS protocol, the required voltage can still be applied for.

If the charger supports PPS and the GP pin selects PPS protocol, then PPS protocol will be prioritized.

Application example

The typical application of FS312L is shown in the following figure, where the chip is powered by the output of the power system. Users can choose between Type-C or Micro-B interfaces..

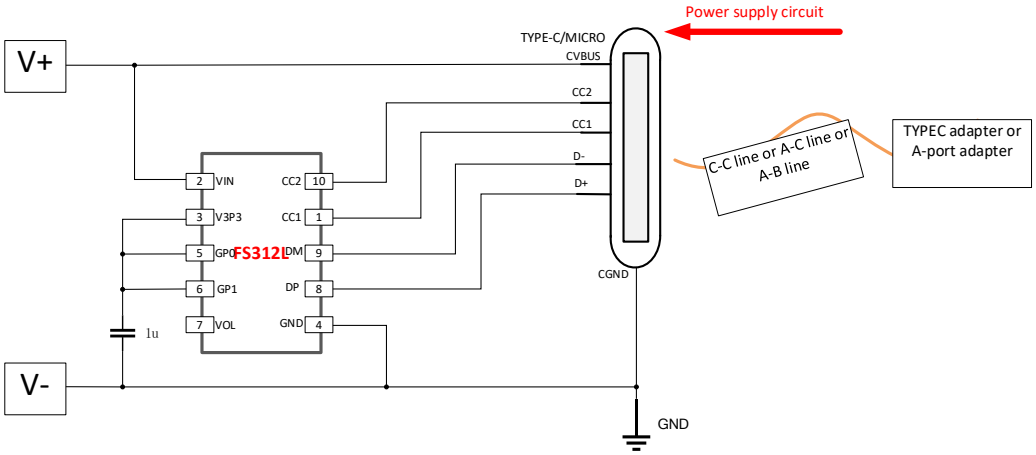
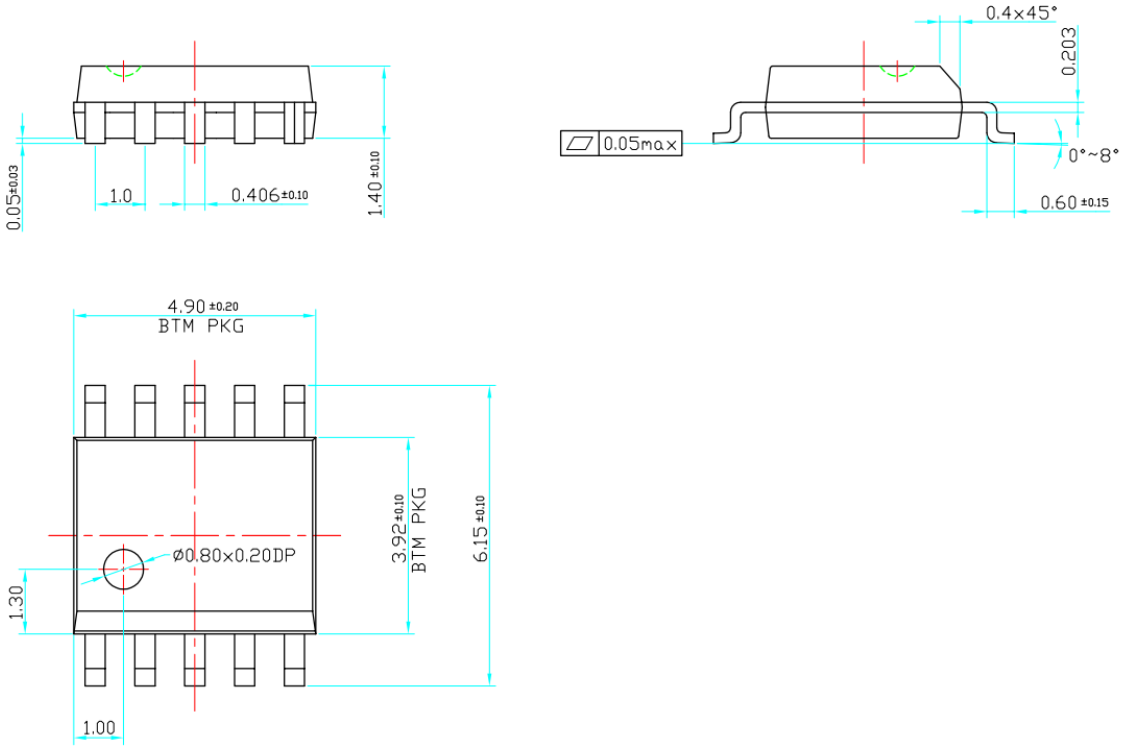


Figure 2. Application diagram

Package outline drawing

SSOP10



Screen printing instructions：no screen printing

Company information and statement

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