USB Type-C PD QUICK CHARGER PROTOCOL SNIFFER IC

PRODUCT FEATURES

- Compatible with USB type-C PD 3.0 (Including PPS) Protocol
- Compatible with USB type-A fast charging protocols
- Automatically identify the quick charger's protocol
- Automatically triggers the required voltage
- C1/C2 withstand breakdown voltage over 30V
- D± withstand breakdown voltage over 12V
- Package：SSOP10

PRODUCT OVERVIEW

- FS312 automatically Connect with the charger to complete the voltage setting application according to the voltage set by the peripheral circuit, such as 5V, 9V, 12V, 15V, and 20V.
- FS312 supports the Type-C PD3.0 protocol, meanwhile supports variety of Type-A quick charging protocols. According to the priority of the protocol, it can automatically complete connection with the charger and complete the selection of set voltage.
- If the set voltage is not found by FS312, then other voltages can be selected according to the setting.
- The D± withstand breakdown voltage of the IC is higher than 12V, CC1(refer to page2) and CC2(refer to page2) withstand breakdown voltage is higher than 30V, which has a very high reliability。
- IC's power can be directly connected to the power supply, withstand breakdown voltage more than 30V, no need additional LDO.
- Main models include: FS312L can apply for the highest 12V voltage; FS312H can apply for a maximum voltage of 20V。
- FS312 provides SSOP10 package type.

PRODUCT APPLICATION FIELD

- Wireless charging
- Bluetooth speaker
- Car charger
- Power storage device
- Industrial test
- Other USB type-A/C power input devices

PRODUCT ORDER INFORMATION

Product code	Package	Amount/lot
FS312L	SSOP10	4000
FS312H	SSOP10	4000

V1.4 (202008)

Chip package and Pin definition

SSOP10
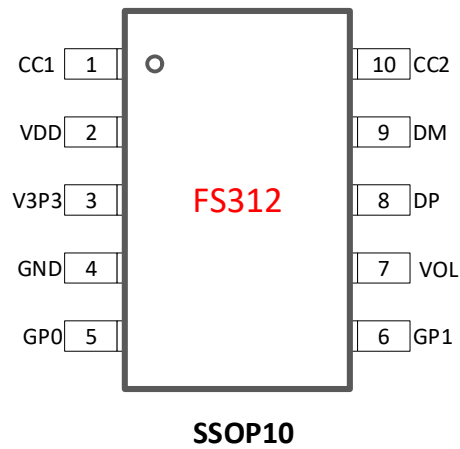
Figure 1. Pin definition

Table 1. FS312 pin function description

FS312	The name of Pin	Description
1	CC1	Connect to the type-C socket
2	VDD	IC power
3	V3P3	IC LDO output
4	GND	Ground
5	GP0	Protocol selection, default to V3P3
6	GP1	Protocol selection, default to V3P3
7	VOL	External resistance, prefabricated trigger voltage
8	DP	Connect to the DP/D+ pin of the USB socket
9	DM	Connect the DM/D- pin of the USB socket
10	CC2	Connect to the type-C socket

LIMIT RANGE OF OPERATION

Table 2. Maximum scope of work status

Parameter	Value
VDD	-0.3v~31V
CC1, CC2	-0.3v~31V
DP, DM	-0.3v~13V
VOL, GP0, GP1	-0.3v~5.5V

If exceed the limit of operating range listed in the above table may permanently damage the IC. Customer should try to avoid it。

NORMAL RANGE OF OPERATION

Table 3. Maximum scope of work status

Parameter	Value
VDD	3v~20V
CC1, CC2	0~5V
DP, DM	0v~3.3V
VOL, GP0, GP1	0v~3.3V
Work temperature range	-40°~105°

DEVICE SELECTION

FS312 supports the customization of Type-A fast charger protocols, contact the original factory or the agent for support。

PIN DEFINITION AND INSTRUCTIONS

VDD
VDD provides power to the IC and supports a minimum of 3V and a maximum of 20V.Can be directly connected to the VBUS of USB port。

V3P3
Stable output of internal power supply, external decoupling capacitance。 Maximum output current is 50mA,

it can be used to power other system devices.

VOL

VOL Pin functions are shown in the following table。

Table 5. VOL Pin function

FUNC external resistor	Setting application voltage
Float/GND	5V
180K	20V
140K	15V
100K	12V
51K	9V

DP AND DM

The withstand voltage tolerance of DP and DM is greater than 12V, which improves the stability of the system plug

CC1 AND CC2

The withstand voltage of CC1 and CC2 is greater than 30V, which improves the stability of system plug。

GP0 AND GP1

GP0/1 to select different protocol.

Table 5. GP Pin function

GP0	GP1	Protocol
GND	GND	PD
GND	V3P3	PPS
V3P3	GND	QC
V3P3	V3P3	Auto-selection
		Priority：PD/PPS>QC>FCP>AFC

APPLICATION SAMPLE

The typical application of the FS312 is shown in the figure below. The IC is powered-up by the power supply system. Customer can choose type-c or micro-b interfaces。
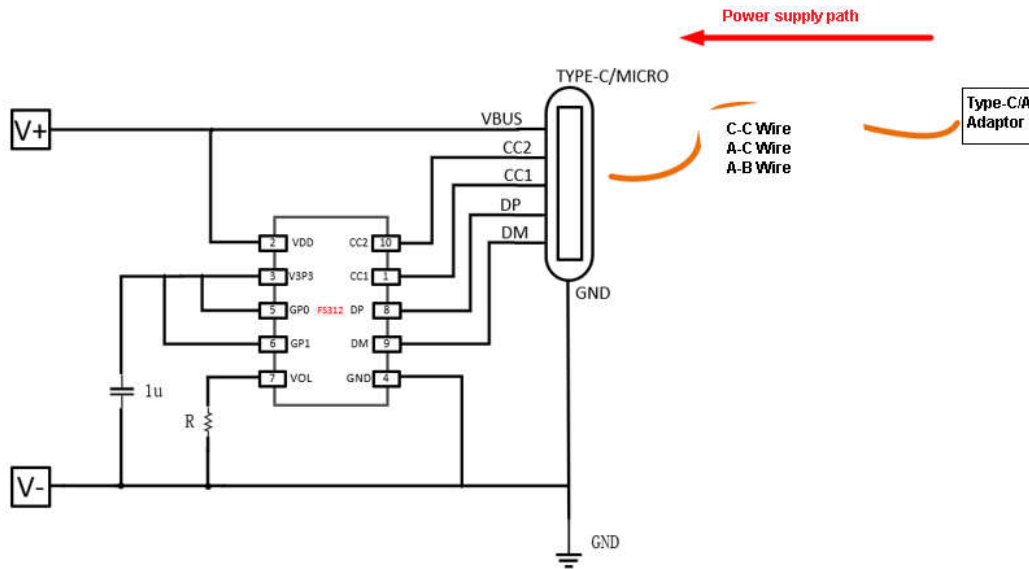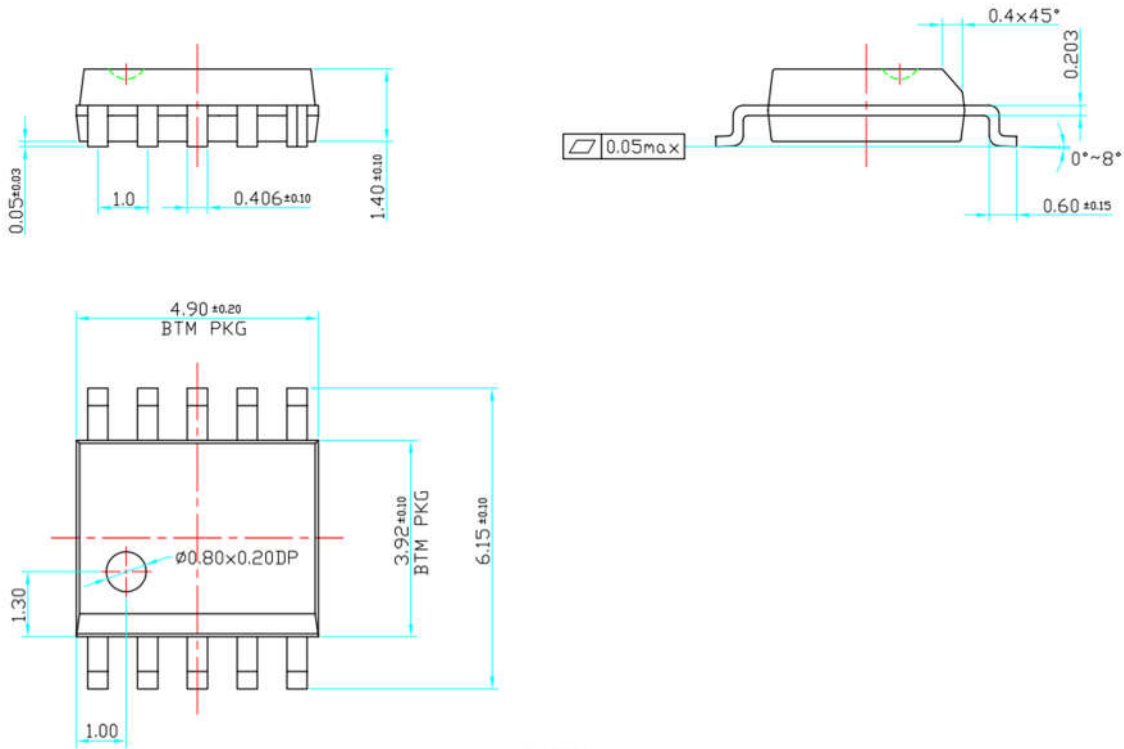
Figure 2. Application diagram

PACKAGE OUTLINE

SSOP10

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