

# USB Type-C PD3.2 Three C Fast Charging Protocol Intelligent Management Chip

## Product Features

- Compatible with multiple types of USB Type-A fast charging protocols, it can intelligently recognize the protocols used by the phone, including BC1.2, Apple2.4A, QC2.0 ClassA, QC3.0 ClassA, FCP, AFC, etc.
- Support C+C+C work.
- Compatible with multiple types of USB Type-C protocols, including TypeC protocol, TypeC PD2.0, TypeC PD3.0, TypeC PD3.2 and other protocols
- Supports 5V return when three ports are plugged in together
- The maximum current that can be selected for the adapted system
- D ± withstand voltage is 13V for both
- CC withstand voltage is 30V for all
- Voltage regulation accuracy 20mV/step
- VBUS voltage regulation range 3~21V
- Support customization of Typec PD PDO required by customers
- Encapsulation: SSOP28

## Product Overview

FS873 belongs to the Fast Chip Micro FSFC series, and the chip is selectively compatible with mainstream charging protocols. The chip can intelligently recognize the type of inserted phone and select the most suitable protocol to meet the needs of fast charging for the phone.

The D ± and CC withstand voltages of the chip are 13V and 30V, respectively, demonstrating extremely high reliability.

The voltage regulation range of FS873 ranges from a minimum of 3V to a maximum of 21V, and is suitable for output voltages of various fast charging protocols.

FS873 uses SSOP28 encapsulation.

## Application field

- Charger
- Mobile power bank
- USB panel
- Car charger
- USB socket
- Other TypeC power output devices

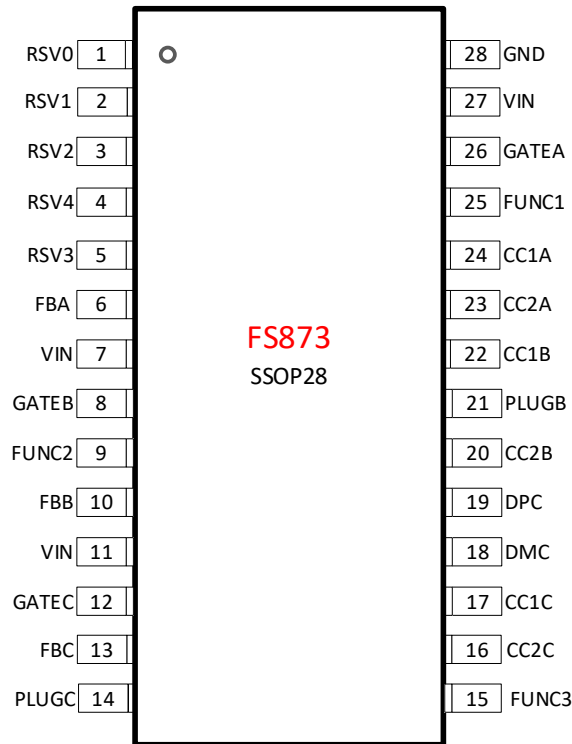
V1.3(202410)

## Order information

Part No	Package	Pcs/Reel
FS873-XYZ	SSOP28	4000

*comment: XYZ is selected according to specific function, refer to "device selection"*

## Chip packaging and pin definition



Pic 1. Pin definition

Table 1. FS873 Pin function description

SSOP28	Name of the pin	Description
1	RSV0	Control FUNC or PLUG
2	RSV1	Control FUNC or PLUG
3	RSV2	Control FUNC or PLUG
4	RSV4	Control FUNC or PLUG
5	RSV3	Control FUNC or PLUG
6	FBA	Connect to VFB of DC-DC or R terminal of 432/431
7, 11, 27	VIN	Chip power supply, usually connected to the output of the power system
8	GATEB	Control whether there is voltage output from Type-C2 port CVBUS and control PMOSFET
9	FUNC2	Used for multi port power reduction, connected to RSV
10	FBB	Connect to VFB of DC-DC or R terminal of 432/431
12	GATEC	Control whether there is voltage output from Type-C3 port CVBUS and control PMOSFET
13	FBC	Connect to VFB of DC-DC or R terminal of 432/431



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14	PLUGC	Used to output insertion status indication and connect to RSV
15	FUNC3	Used for multi port power reduction, connected to RSV
16	CC2C	Connect USB Type-C3 port CC2 pin
17	CC1C	Connect USB Type-C3 port CC1 pin
18	DMC	Connect USB Type-C3 port DM pin
19	DPC	Connect USB Type-C3 port DP pin
20	CC2B	Connect USB Type-C2 port CC2 pin
21	PLUGB	Used to output insertion status indication and connect to RSV
22	CC1B	Connect USB Type-C2 port CC1 pin
23	CC2A	Connect USB Type-C1 port CC2 pin
24	CC1A	Connect USB Type-C1 port CC1 pin
25	FUNC1	Used for multi port power reduction, connected to RSV
26	GATEA	Control whether there is voltage output from Type-C3 port CVBUS and control PMOSFET
28	GND	Chip ground, connected to system ground

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## Device selection

The identification method for the FS873 series is: FS873-XYZ.

X represents the value of PDO, as shown in the table below

Table 5. Naming X Values

X value	PDO
A	20W9V: 5V3A, 9V2.22A, 3.3-5.9V3A, 3.3-11V2A
B	20W12V: 5V3A, 9V2.22A, 12V1.66A, 3.3-5.9V3A, 3.3-11V2A
C	24W12V: 5V3A, 9V2.66A, 12V2A, 3.3-5.9V3A, 3.3-11V2A
D	27W12V: 5V3A, 9V3A, 12V2.25A, 3.3-5.9V3A, 3.3-11V2.45A
E	30W12V: 5V3A, 9V3A, 12V2.5A, 3.3-5.9V3A, 3.3-11V2.75A
F	30W20V: 5V3A, 9V3A, 12V2.5A, 15V2A, 20V1.5A, 3.3-5.9V3A, 3.3-11V2.75A
G	36W20V: 5V3A, 9V3A, 12V3A, 15V2.4A, 20V1.8A, 3.3-11V3A
H	45W20V: 5V3A, 9V3A, 12V3A, 15V3A, 20V2.25A, 3.3-11V3A
I	65W20V: 5V3A, 9V3A, 12V3A, 15V3A, 20V3.25A, 3.3-11V3A

Y represents the power when three ports are plugged in together

Table 6 Naming P Values

Y value	PDO
P1	7P5W5V: 5V1.5A

Z is used for protocol selection supported by chips, as shown in the table below

Table 7. Naming Z Values

Z value	Chip supported protocols
C	BC1.2 Apple2.4A QC AFC FCP



## Pin definition and instructions

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### VIN

LDO (recommended to use FS7533) is needed to power the VIN pin of FS873, and the output of LDO is directly connected to the VIN pin of FS873.

### DPC 和 DMC

DPC and DMC have a voltage resistance of 13V, which improves the stability of system plugging and unplugging.

### CC1A/B/C, CC2A/B/C

CC1A and CC2A are connected to CC1 and CC2 in Type-C1 port, CC1B and CC2B are connected to CC1 and CC2 in Type-C2 port, and CC1C and CC2C are connected to CC1 and CC2 in Type-C3 port. The withstand voltage is 30V, which improves the stability of system plugging and unplugging.

### FUNC1, FUNC2, FUNC3

FUNC connects to RSV

### PLUGB, PLUGC

Insert instructions and connect to RSV

### GATEA, GATEB, GATEC

External PMOS controls the path switch between VIN and VBUS.

### FBA/B/C

FBA/B is connected to the power system to control the VBUS voltage of USB. After the terminal device and FS873 negotiate the protocol and required voltage through D ± or CC, FS873 initiates voltage regulation through FBA/B/C. The voltage regulation accuracy of FBA/B/C is 20mV, and the voltage regulation speed is 20mV/1us. FB external resistor R1 to VBUS, external resistor R2 to ground. The usual calculation formula is as follows,

$$R_2 = \frac{R_1 V_{FB}}{V_{VBUS} - V_{FB}}$$

Such as,

$V_{VBUS}$  takes 5V

$V_{FB}$  can be found in the manual of the power IC, such as taking 0.8V



The typical value of R1 is 100K  $\Omega$ , and the accuracy needs to meet the requirements of the system, such as selecting an accuracy of 1%

So, R2 can be calculated.

The power system can be AC/DC, and for better feedback, it is recommended to use 432 instead of 431.

## Application example

The typical application of FS873 is shown in the figure on the right, where the chip is powered by the output of the power supply.

FBA/B/C is connected to the R end of 431/432.

GATE controls VBUS output through PMOS.

Application 1 Common Application of Same Plug and Share 5V

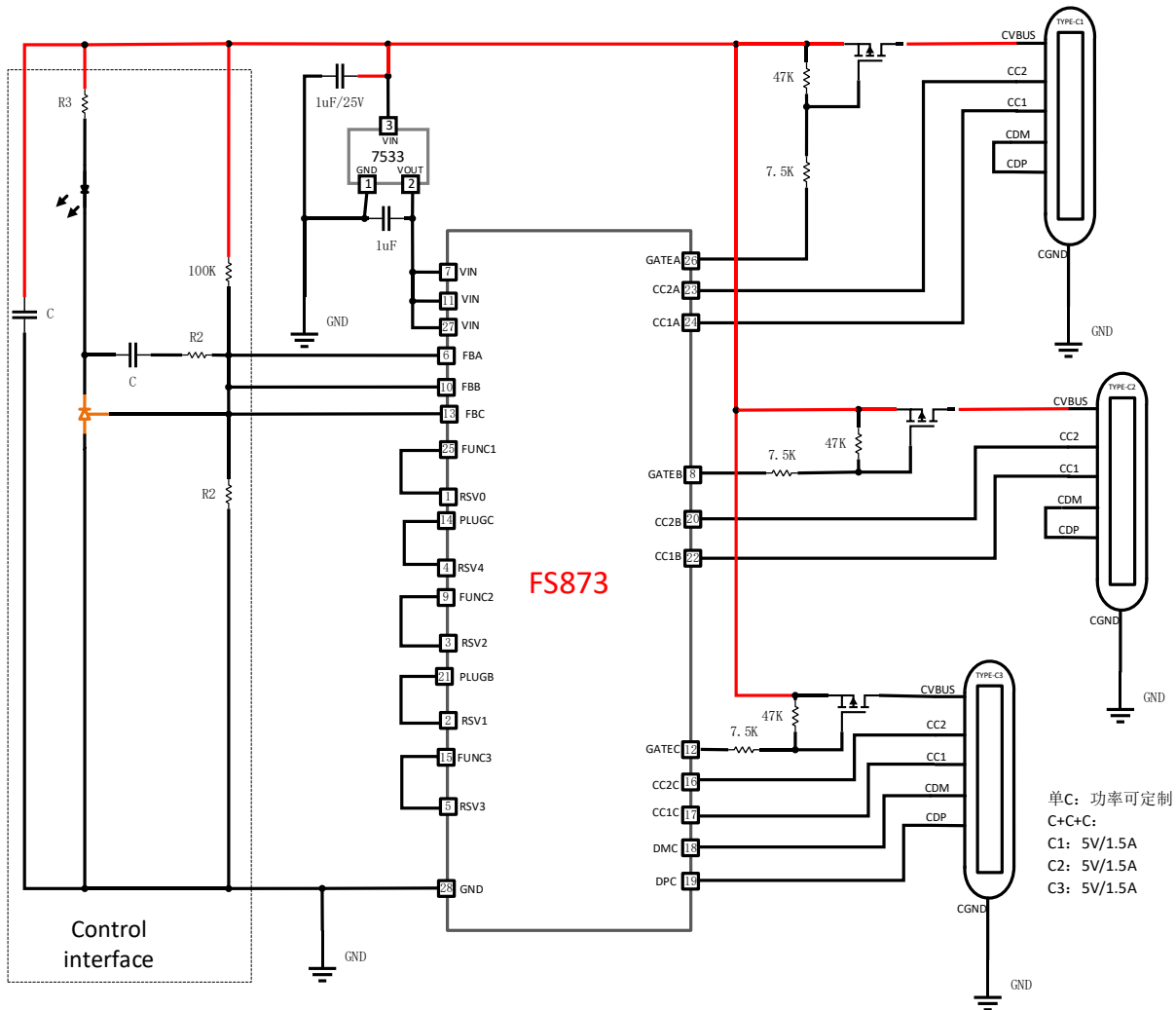


Figure 2. Typical Application Diagram of Same Plug and Shared 5V



Application 2 Two way BUCK  
FBA/B/C is connected to the VFB of DC-DC.

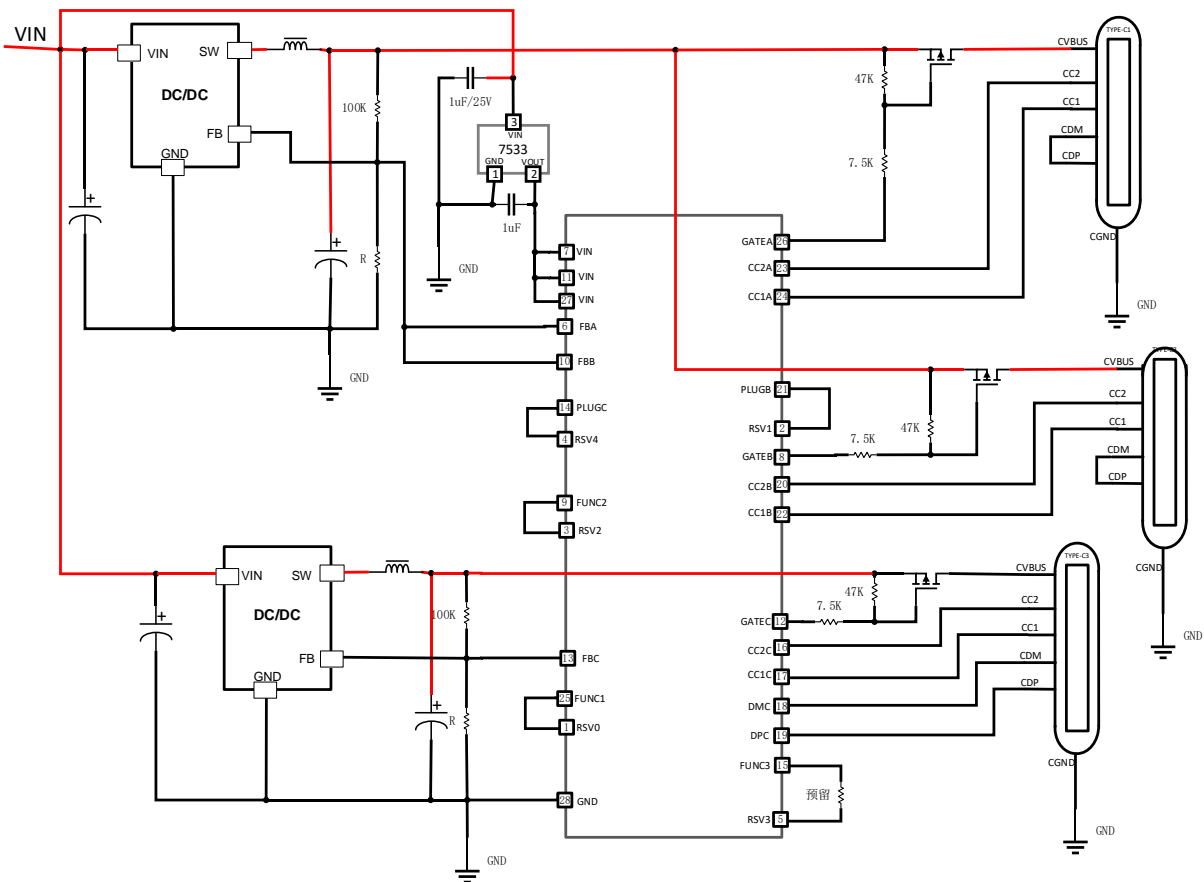


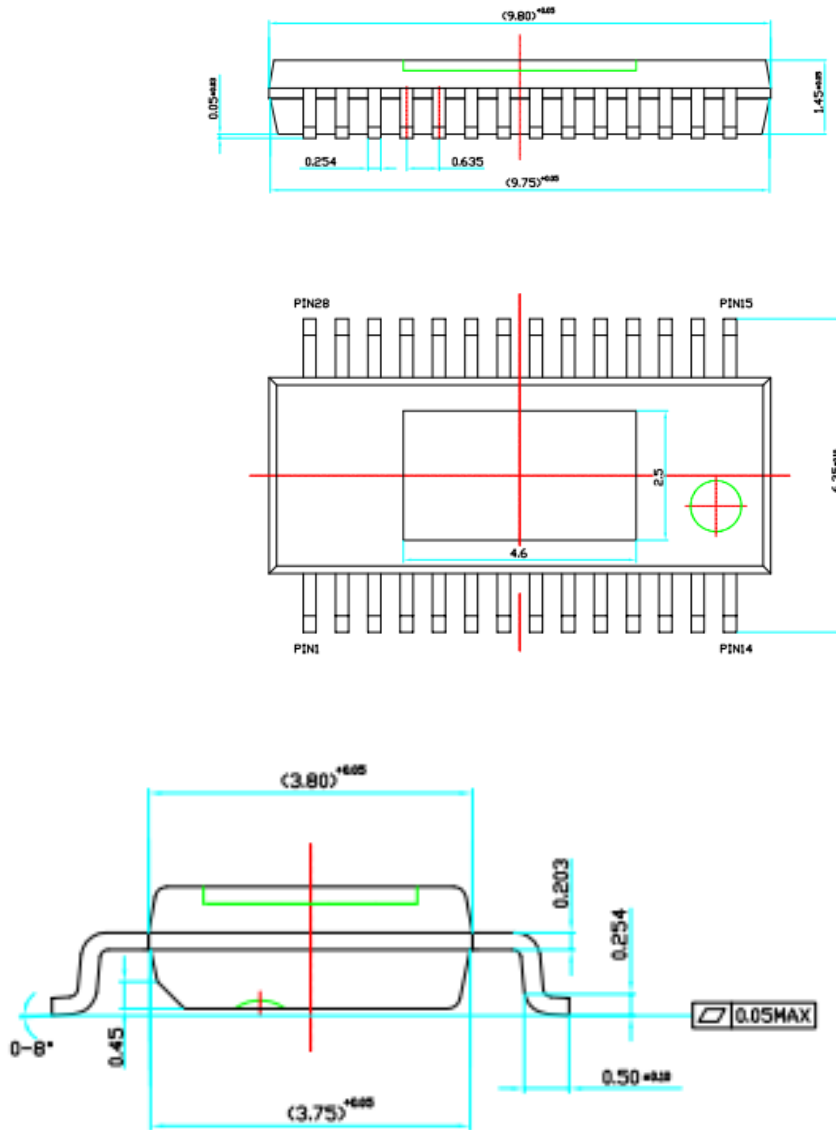
Figure 3. Two way BUCK, simultaneous fast charging application diagram



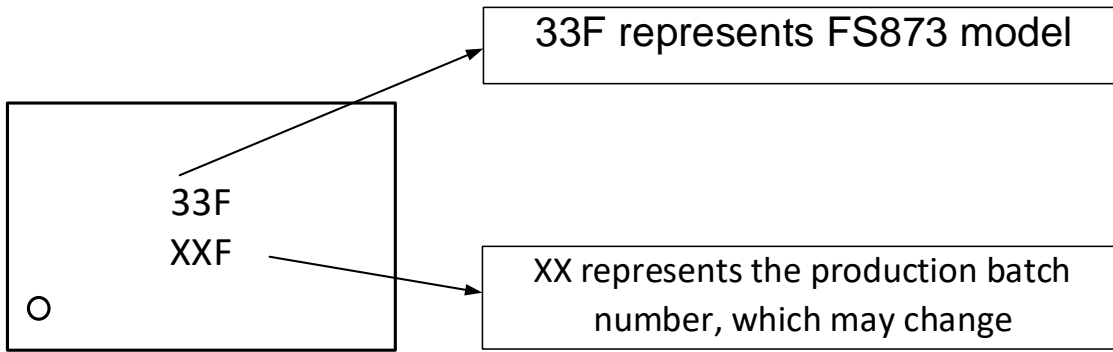


### Package outline drawing

SSOP28



Screen printing instructions



1. FS873 model information: 33F, 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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