



## Product Overview

RZC7512 is a dual channel USB Dedicated charging port (DCP) (BC1.2) controller. With automatic detection feature, it monitors USB. The MCU automatically detects the data line voltage and automatically provides the correct voltage characteristics on the data line to provide compatible charging for the following dedicated charging configurations:

1. Apple Divider DCP, requiring D+ and D- Apply to the line 2.7V Voltage
2. BC1.2 DCP, requiring D+ Short circuit to D-line
3. China Telecom Standard YD/T 1591-2009 Short-circuit mode requires D+ Short circuit to D-line
4. Samsung DCP, Require D+ Line and D- The voltage on the line is 1.2V

## Features

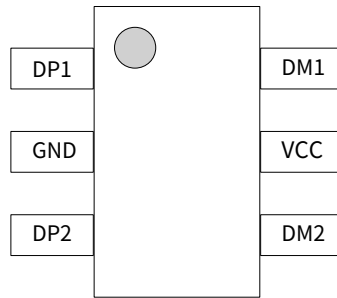
- pair USB Charging port controller
- Operating voltage range 4.5V to 5.5V
- according to USB Battery Charging Specifications BC1.2, support USB DCP D+ Short circuit to D- The line complies with
- China Telecom standards YD/T 1591-2009, support short circuit mode (support D+ Short circuit to D-Line) Supported in
- D+ and D- Apply to the line 2.7V Voltage USB DCP Supported by D+ and D- Apply on the line 1.2V Voltage USB DCP
- Automatically switches for connected powered devices D+ and D- Line connection adopts SOT23-6 Encapsulation
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## Application Areas

- In-car USB Power charger
- With USB Port AC (AC)-DC (DC) Charger Power
- Bank
- Mobile Internet Devices USB port
- other USB charger



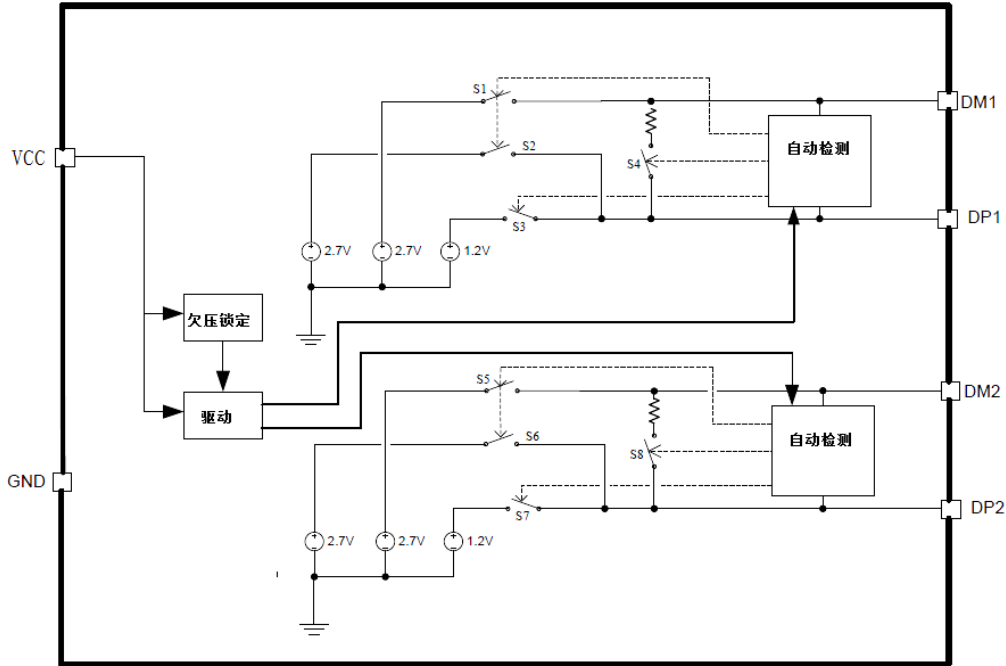
**Pin Distribution**



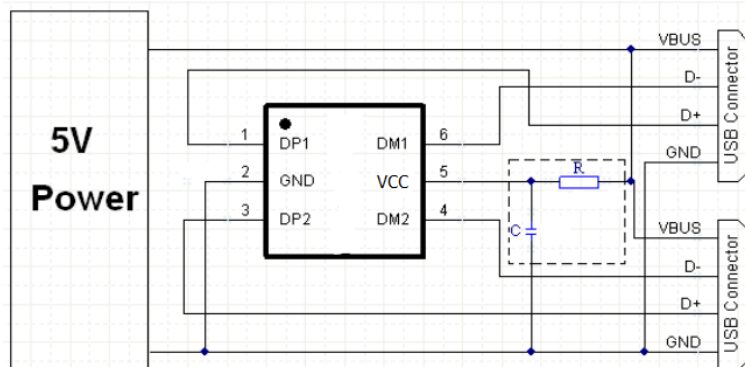
**Pin Definition**

Serial number	name	describe
1	DP1	Connect toUSBofD+Line, according toDCPDetects and provides correct voltage to portable devices
2	GND	Power Ground
3	DP2	Connect toUSBofD+Line, according toDCPDetects and provides correct voltage to portable devices
4	DM2	Connect toUSBofD-Line, according toDCPDetects and provides correct voltage to portable devices
5	VCC	Power supply port, connect one1uFor larger ceramic capacitor toGNDpins, and as close to the chip as possible
6	DM1	Connect toUSBofD-Line, according toDCPDetects and provides correct voltage to portable devices

Internal Block Diagram



Typical application circuit



**Note:**The above circuits and parameters are for reference only. For actual application circuits, please set parameters based on sufficient actual measurements. The resistor R in the dotted box in the figure is to prevent the output voltage of the AC-DC power supply from overshooting to more than 5V and damaging the IC. It mainly plays a current limiting role. The recommended value is 100R-300R. The capacitor C is mainly used to compensate for the impact of R on the power ripple. The recommended value is 1uF or more.

Absolute maximum range

parameter	symbol	Minimum	Maximum	unit
VCCFoot pressure resistance	VCC	- 0.3	6	V
DP1/DP2Foot pressure resistance	VDP1/ VDP2	- 0.3	VCC+0.3	V
DM1/DM2Foot pressure resistance	VDM1/ VDM2	- 0.3	VCC+0.3	V
Operating temperature range	T <sub>OP</sub>	- 20	80	°C
Operating junction temperature	T <sub>J</sub>	- 20	150	°C
Storage temperature range	T <sub>STG</sub>	- 45	125	°C

**Electrical parameters** ( $4.5V \leq VCC \leq 5.5V$ ,  $T_a = -20 \sim 80^\circ C$ )

parameter	symbol	Test conditions	Minimum	Typical Value	Maximum	unit
VCC Input voltage	VCC		4.5		5.5	V
VCC POR Voltage	V <sub>CC_POR</sub>		3.5		3.9	V
	V <sub>CC_POR_HYS</sub>			250		mV
Quiescent Current	I <sub>VCC</sub>	VCC=5V		350	450	uA
DP Floating voltage	V <sub>DP1</sub> /V <sub>DP2</sub>	VCC=5V		2.7		V
DM Floating voltage	V <sub>DM1</sub> /V <sub>DM2</sub>	VCC=5V		2.7		V
Output Impedance	R <sub>OUT</sub>	Output voltage = 2.7V		twenty three		kΩ
Output short circuit impedance	R <sub>DM DP</sub>			50		Ω

**Functional Description**

RZC7512It is dual channel USB Dedicated charging port (DCP) controller. Automatic detection feature monitoring USB The data line voltage is automatically provided with the correct electrical characteristics on the data line. It can automatically identify and successfully connect to Apple devices, reducing the trouble caused by traditional voltage division through resistors. RZC7512It also supports other brands of mobile phones (compliant with BC1.2 Standard or Samsung DCP Specification), solves the problem of selecting computer mode when the charger fails to handshake with the mobile phone (500mA) Charging problem.

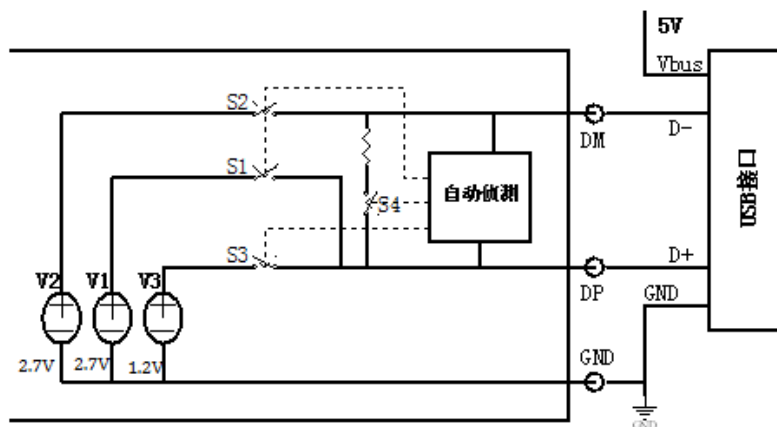
RZC7512 Support voltage divider mode DCP, short circuit mode DCP and 1.2V/1.2V mode DCP.  
Voltage Divider DCP Request in D+ Line and D- Apply to the line 2.7V Voltage. BC1.2 DCP Request to D+ Line shorted to D- line.

China Telecom Standard YD/T 1591-2009 Shorting mode requires D+ Line shorted to D- line.

Samsung DCP (1.2V/1.2V Mode) Requirements D+ Line and D- The voltage on the line is 1.2V.

**DCP Automatic detection**

RZC7512 Built-in auto-detection function supports voltage divider mode, short mode and 1.2V/1.2V Mode. When a voltage divider mode device is detected, DP Feet and DM Loading on feet 2.7V When voltage is detected BC1.2 DCP When the device is connected, RZC7514 Automatically switches to short-circuit mode. 1.2V mode device, load 1.2V Voltage to DP Feet and DM foot. DCP The automatic identification function block diagram is as follows:





RZC7512 DCP Automatic identification function block diagram

model	S1	S2	S3	S4
Voltage Divider Mode	ON	ON	OFF	OFF
Short circuit mode	OFF	OFF	OFF	ON
1.2V/1.2Vmodel	OFF	OFF	ON	ON



Packaging information

**SOT23-6**