

AT5102SG

Dual USB Dedicated Charging Port Controller

Description

The AT5102SG is a Dual USB dedicated charging port controller. An auto-detect feature monitors USB data line voltage, and automatically provides the correct electrical signatures on the data lines to charge compliant devices among the following dedicated charging schemes:

1. Divider DCP, required to apply 2 V and 2.7 V on the D+ and D- Lines respectively
2. BC1.2 DCP, required to short the D+ Line to the D- Line
3. Chinese Telecom Standard YD/T 1591-2009 Shorted Mode, required to short the D+ Line to the D- Line

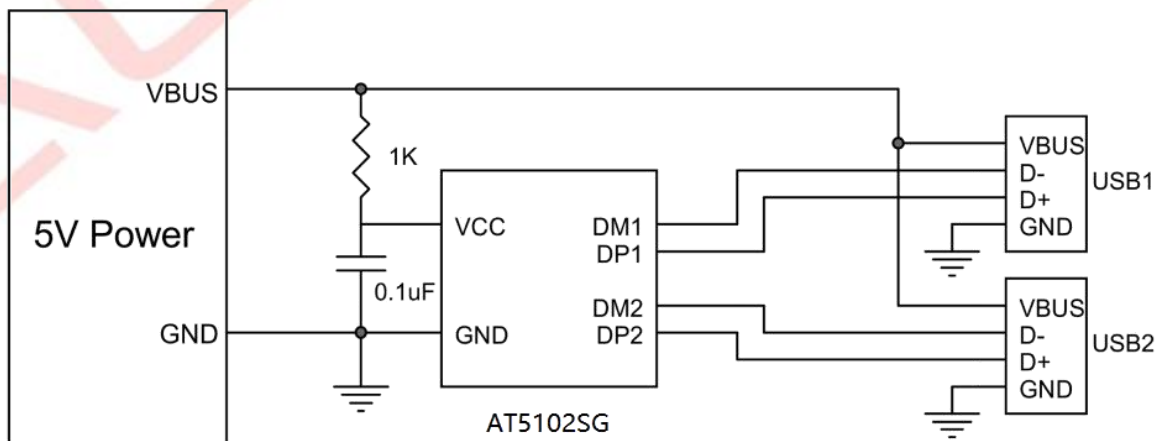
Features

- ◆ Supports USB DCP Shorting D+ Line to D - Line per USB Battery Charging Specification, Revision 1.2 (BC1.2)
- ◆ Supports Shorted Mode (Shorting D+ Line to D-Line) per Chinese Telecommunication Industry Standard YD/T 1591-2009
- ◆ Supports USB DCP Applying 2.7 V on D+ Line and 2.7 V on D- Line
- ◆ Supports USB DCP Applying 1.2 V on D+ and D - Lines
- ◆ Automatically Switch D+ and D- Lines Connections for an Attached Device
- ◆ Operating Range: 4.5 V to 5.5 V
- ◆ Available in SOT-23-6 Package

Applications

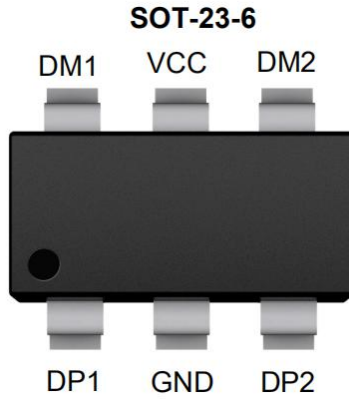
- ◆ Car Charger
- ◆ Vehicle USB Power Chargers Networking Systems
- ◆ Other USB Chargers

Typical Application



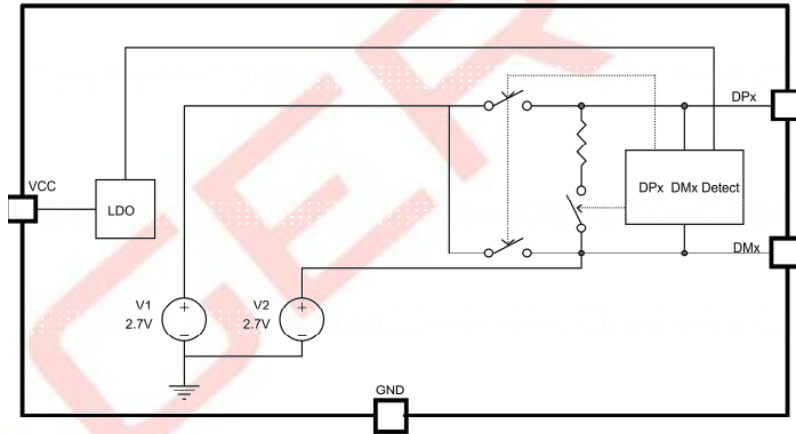
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Pin Distribution



PIN	NAME	DESCRIPTION
1	DP1	Connected to the D+ line of USB connector
2	GND	Ground
3	DP2	Connected to the D+ line of USB connector
4	DM2	Connected to the D- line of USB connector
5	VCC	Power supplier
6	DM1	Connected to the D- line of USB connector

Block Diagram



Absolute Maximum Ratings (Ta=25°C)

Characteristics	Symbol	Rating	Unit
VIN to GND		-0.3 to 7	V
DP1,DM1,DP2,DM2 to GND		-0.3 to +6	V
Operating Junction Temperature		-40 to 125	°C
Storage Junction Temperature		-55 to 150	°C
Junction to Ambient Thermal Resistance	R θ JA	180	°C/W
Junction to board thermal resistance	R θ JB	120	°C/W
Junction to case thermal resistance	R θ JC	42	°C/W

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ESD Ratings

		Value	Unit
Electrostatic discharge	Human-body model(HBM)	± 8000	V

Recommended Operating Conditions

	Symbol	Min	Max	Unit
Input voltage of VCC	VCC	4.5	5.5	V
DP1,DP2 data line input voltage	VDP	0	5.5	V
DM1,DM2 data line input voltage	VDM	0	5.5	V
DP1,DP2 Continuous sink or source current	IDP	0	± 10	mA
DM1,DM2 Continuous sink or source current	IDM	0	± 10	mA

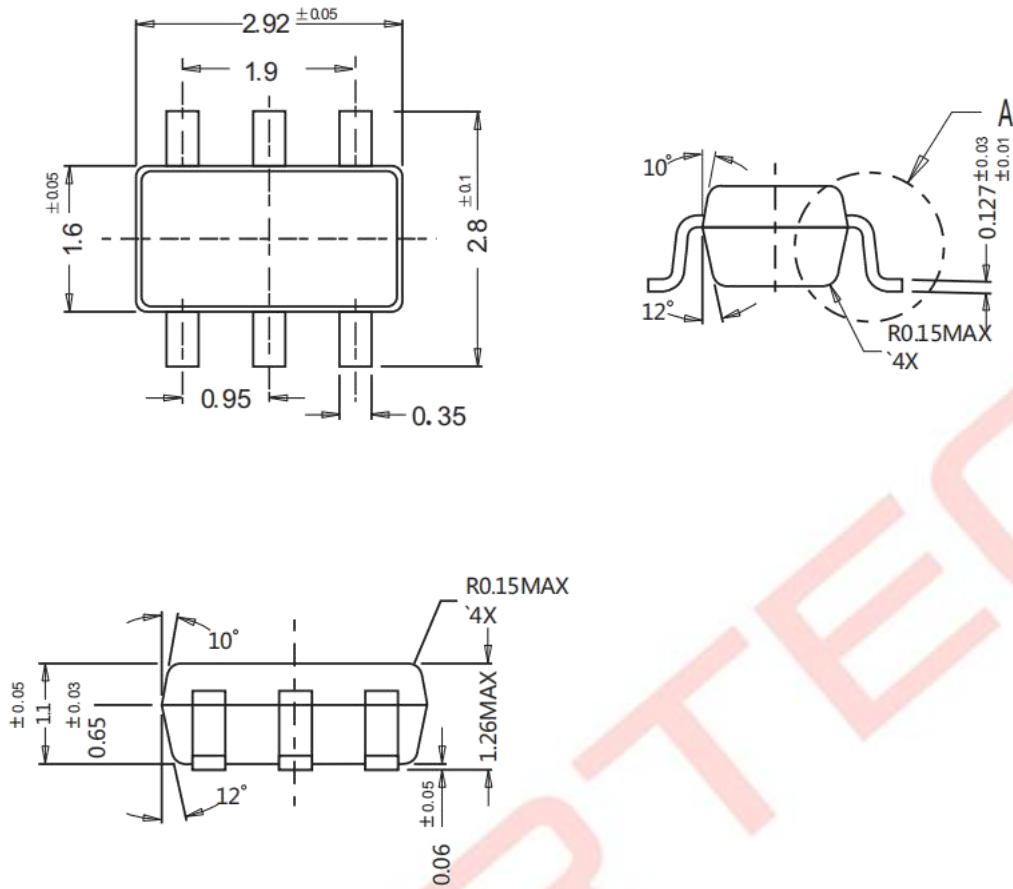
Electrical Characteristics(T_j=25°C unless otherwise noted, VCC=5V)

Characteristics	Symbol	Conditions	Min	Typ	Max	Unit
Input Voltage	VCC		4.3	5	5.5	V
UVLO voltage	VUVLO		3.1	3.7	4.3	V
UVLO Hysteresis				0.1		V
Quiescent Current	ICCQ	VCC=5V		220		uA
BC 1.2 DCP Mode						
DP,DM Short Resistance	RDPM			160	200	Ω
Resistance between DPX and GND	RDPG	VDPX=0.8V		650	1000	KΩ
Resistance between DMX and GND	RDMG	VDMX=0.8V		650	1000	KΩ
DPX threshold of Goes to divider mode	VDPX_TH			300		mV
Divider Mode						
DPX output voltage	VDPX_2.7		2.6	2.7	2.8	V
DMX output voltage	VDMX_2.0		2.6	2.7	2.8	V
DPX output impedance	RDPX		24	30	36	KΩ
DMX output impedance	RDMX		24	30	36	KΩ
1.2V/1.2V Mode						
DPX output voltage	VDPX_1.2		1.12	1.2	1.28	V
DMX output voltage	VDMX_1.2		1.12	1.2	1.28	V

Note: DPX Stands for DP1 or DP2,DMX Stands for DM1 or DM2

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Package Outline(SOT-23-6 Dimensions in mm)



Ordering Information

Device	Package	Shipping
AT5102SG	SOT-23-6	3000/Tape & Reel(7inches)