Dual USB Dedicated Charging Port Controller

Description

The TN5102SG is a Dual USB decated 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 2.7 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

4、1.2 V on both D+ and D- Lines

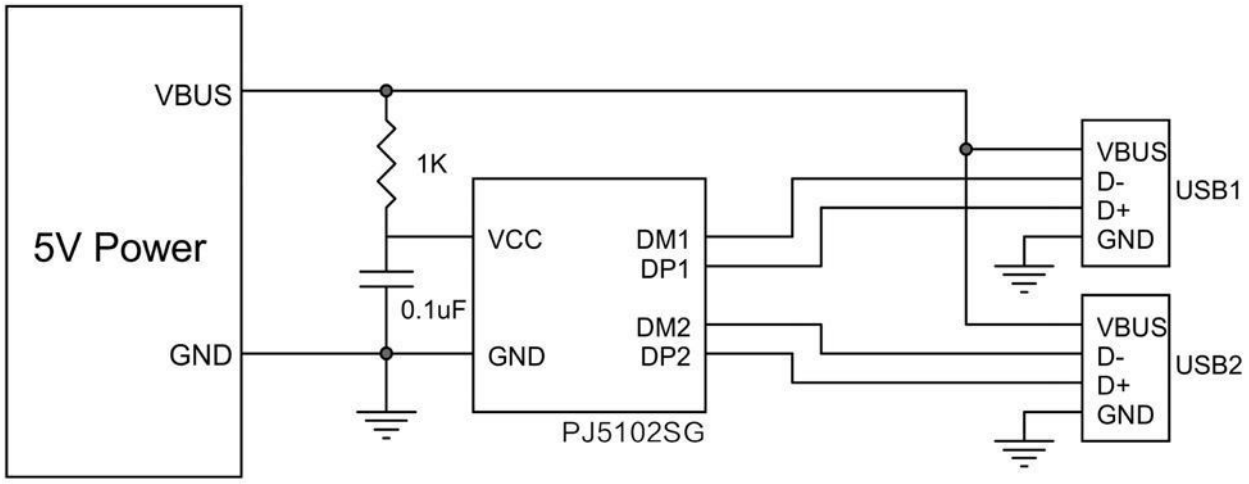
Features

- 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

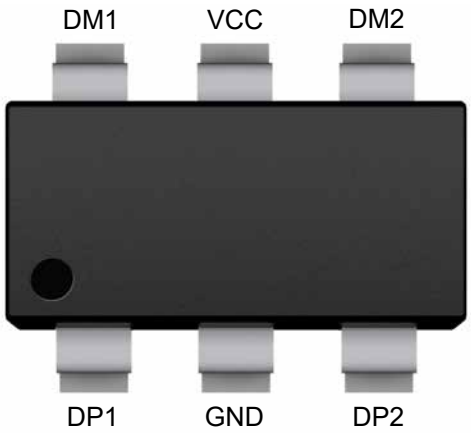
- Car Charger
- Vehicle USB Power Chargers Networking Systems
- Other USB Chargers

Typical Application



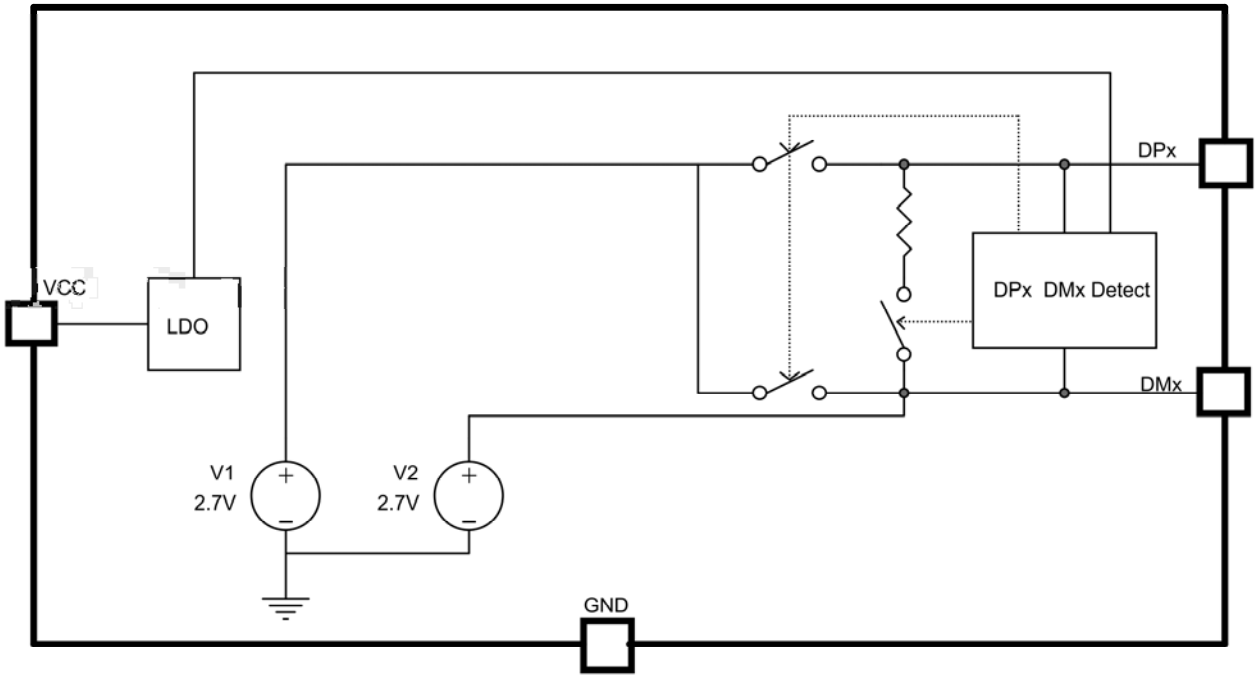
Pin Function And Descriptions

SOT-23-6



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 suppler
6	DM1	Connected to the D-line of USB connector

Block Diagram



Absolute Maximum Ratings (at T_A = 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	$R_{\theta JA}$	180	°C/W
Junction to board thermal resistance	$R_{\theta JB}$	120	°C/W
Junction to case thermal resistance	$R_{\theta JC}$	42	°C/W

ESD Ratings

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

Recommended Operating Conditions

	Symbol	Min.	Max.	Unit
Input voltage of VCC	V_{CC}	4.5	5.5	V
DP1,DP2 data line input voltage	V_{DP}	0	5.5	V
DM1,DM2 data line input voltage	V_{DM}	0	5.5	V
DP1,DP2 Continuous sink or source current	I_{DP}	0	±10	mA
DM1,DM2 Continuous sink or source current	I_{DM}	0	±10	mA

Electrical Characteristics

(T_J=25°C. V_{CC}=5V, unless otherwise specified)

Characteristics	Symbol	Conditions	Min.	Typ.	Max.	Units
Input Voltage	VCC		4.3	5	5.5	V
UVLO Voltage	V_{UVLO}		3.1	3.7	4.3	V
UVLO Hysteresis				0.1		V
Quiescent Current	I_{CCQ}	VCC=5V		220		uA
BC 1.2 DCP Mode						
DP,DM Short Resistance	R_{DPM}			160	200	Ω
Resistance between DPx and GND	R_{DPG}	VDPx=0.8V		650	1000	KΩ
Resistance between DMx and GND	R_{DMG}	VDMx=0.8V		650	1000	KΩ
DPx threshold of Goes to divider mode	V_{DPX_TH}			300		mV
Divider Mode						
DPx output voltage	$V_{DPX\_2.7}$		2.6	2.7	2.8	V
DMx output voltage	$V_{DMX\_2.7}$		2.6	2.7	2.8	V
DPx output impedance	R_{DPX}		24	30	36	KΩ
DMx output impedance	R_{DMX}		24	30	36	KΩ
1.2V /1.2V Mode						
DPX output voltgage	$V_{DPX\_1.2}$		1.12	1.2	1.28	V
DMX output voltgage	$V_{DMX\_1.2}$		1.12	1.2	1.28	V

Note: 1. DPX Stands for DP1 or DP2, DMX Stands for DM1 or DM2

Package Outline

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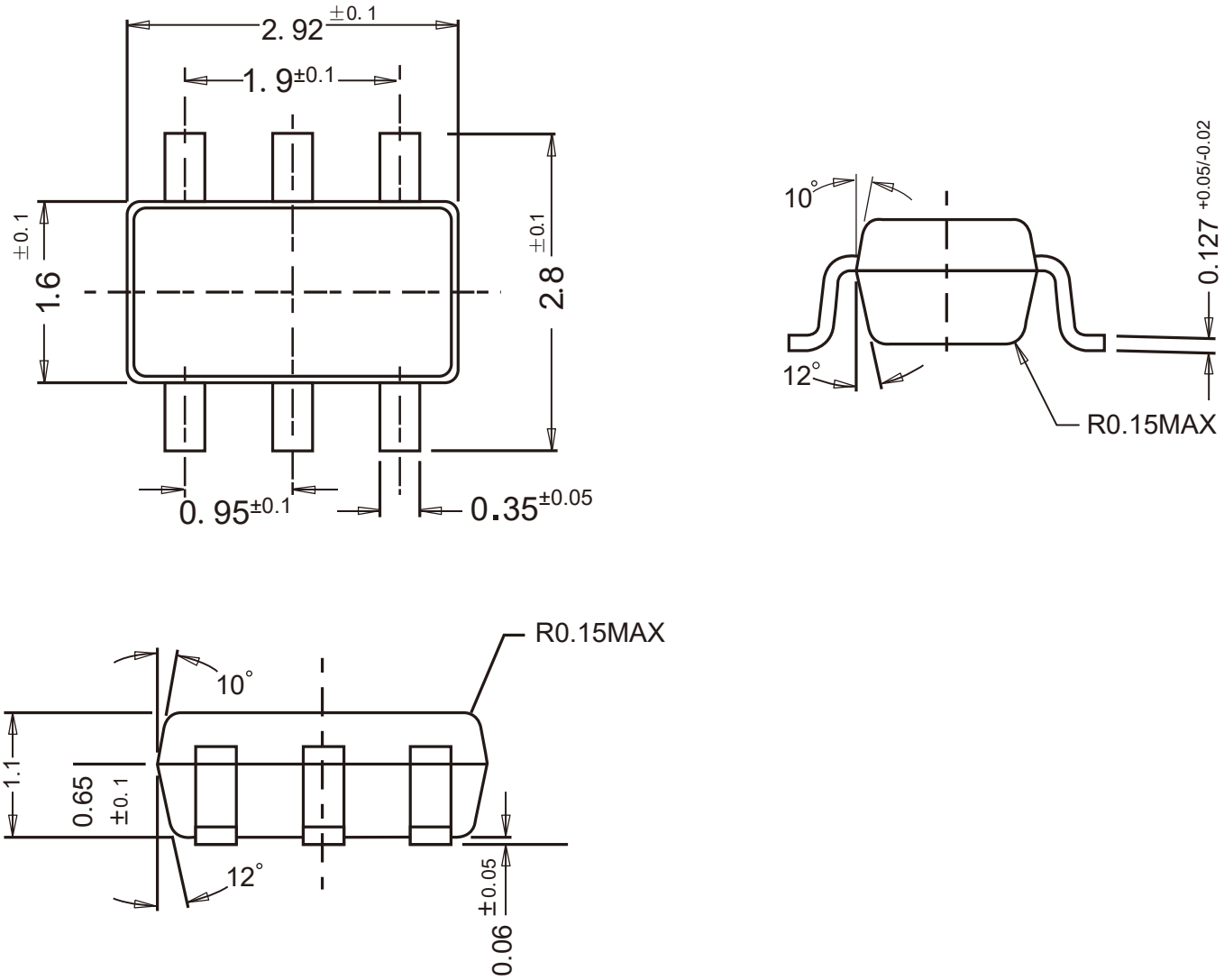
Dimensions in mm



Ordering Information

Device	Package	Shipping
TN5102SG	SOT-23-6	3,000PCS/Reel&7inches

Contact Information

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For additional information, please contact your local Sales Representative.

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