USB Type-C DFP 1.5A/3.0A Controller with BC1.2 Auto-Detection

FEATURES

- 3.0V~5.5V Single Supply Operation.
- USB Type-C Rev. 1.2 Compliant DFP Controller
- Support Type-C 1.5A/3.0A Current
- VBUS Switch Control.
- Support Port Power Management.
- Support Apple® 2.7V/2.7V Fast Charging Mode.
- Support Samsung® 1.2V/1.2V Fast Charging Mode.
- Support BC1.2 & YD/T 1591-2009 Charging Mode
- Available in CPC8 Package.

APPLICATIONS

- Power Adapter
- Travel Charger
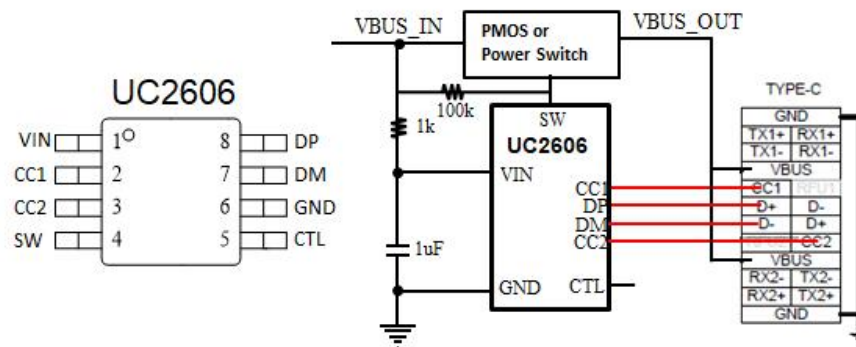- Wall USB Charger
- Power Bank

DESCRIPTION

The UC2606 is an autonomous Source only Type-C controller optimized power chargers and mobile chargers. It broadcasts the available current of the charger over CC1/CC2 using the USB Type-C standard and prevents VBUS from being asserted until a valid connection has been verified. It can be used for up to 16.5W or 7.5W charging using Type-C protocols.

UC2606 integrated automatic USB charger identification circuit allow mobile power supply, In-Car charger, USB wall adapters, travel chargers, and other dedicated chargers to identify themselves as a USB dedicated charger to USB devices.

UC2606 has CTL pin to control to switch 3.0A and 1.5A broadcast and this feature can be used to achieve two USB port power management.
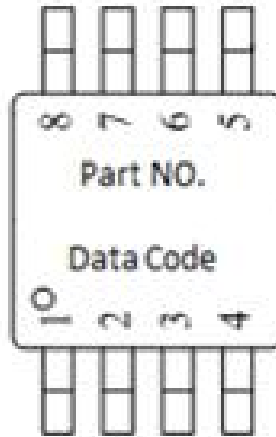
UC2606 CPC8 PACKAGE and SIMPLIFIED APPLICATION
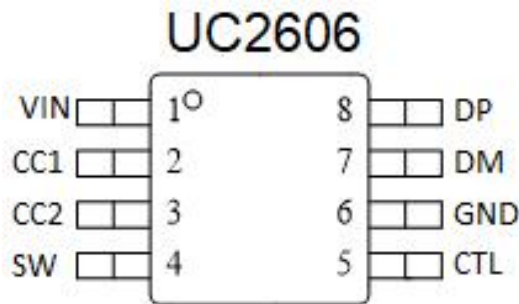

ORDING INFORMATION

Part Number	Package Type	Package Qty	Op Temp(°C)
UC2606	CPC8	5000	-40~85

Semi-High
Innovation for life

USB Type-C DFP 1.5A/3.0A Controller with BC1.2 Auto-Detection

MARK INFORMATION

Part NO.

Data Code

PINOUT

UC2606

VIN	1		8	DP
CC1	2		7	DM
CC2	3		6	GND
SW	4		5	CTL

PIN FUNCTIONS

NO.	NAME	TYPE[1]	DESCRIPTION
1	VIN	P/I	Power supply/Input voltage connected to Power Switch; connect a 1 µF or greater ceramic capacitor from IN to GND as close to the IC as possible
2	CC1	O/I	Analog input/output that connects to the Type-C receptacle CC1 pin
3	CC2	O/I	Analog input/output that connects to the Type-C receptacle CC2 pin
4	SW	O/I	Output Control for VBUS
5	CTL	O/I	Control pin for Type-C 1.5A/3.0A mode change
6	GND	G	Ground
7	DM	O/I	DM data line to connector, input for hand-shake voltage from portable equipment high impedance while disabled
8	DP	O/I	DP date line to connector, output for hand-shake voltage to portable equipment, high impedance while disabled

(1) G = Ground, I = Input, O = Output, P = Power

ABSOLUTE MAXIMUM RATINGS [1]

Over recommended operating free-air temperature range (unless otherwise noted)

PARAMETER		MIN	MAX	UNIT
Supply Voltage Range	VIN	-0.3	7.0	V
Input voltage range	DP,DM,CC1,CC2	-0.3	5.8	
ESD rating, Human Body Model (HBM)	VIN,		7	kV
	DP, DM, CC1,CC2		7	
Operating Junction Temperature	T_J	-40	125	°C
Storage Temperature Range	T_{stg}	-65	150	

(1)   Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under Recommended Operating Conditions is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

THERMAL CHARACTERISTICS

Over operating free-air temperature range (unless otherwise noted)

THERMAL METRIC			UNIT
θ_{JA}	CPC8 Package thermal impedance[1]	235	°C/W

(1)   The package thermal impedance is calculated in accordance with JESD 51-7.

RECOMMENDED OPERATING CONDITIONS

PARAMETER		MIN	MAX	UNIT
V_{IN}	Input voltage of IN	4.5	6.5	V
$V_{DP/DM}$	DP data line input voltage		5.5	
$I_{DP/DM}$	Continuous sink/source current		±10	mA
T_J	Operating Junction Temperature	-40	125	°C

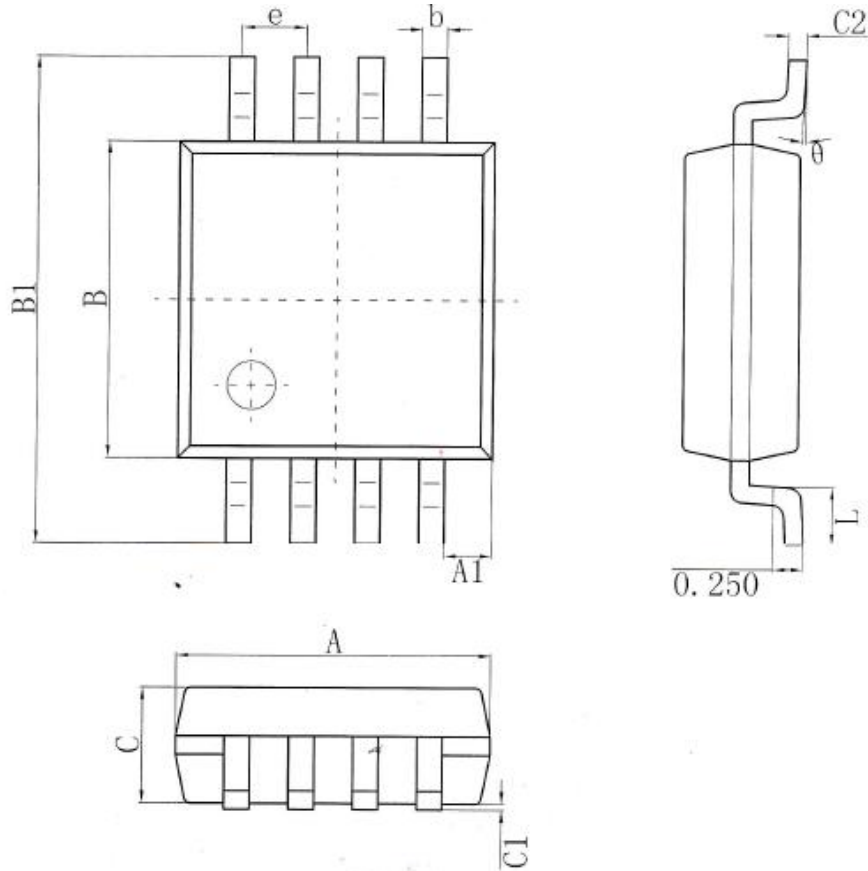## USB Type-C DFP 1.5A/3.0A Controller with BC1.2 Auto-Detection

ELECTRICAL CHARACTERISTICS

Conditions are: $T_A = 25°C$, $V_{IN} = 5.0$ V. Positive current are into pins. All voltages are with respect to GND (unless otherwise noted).

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
SUPPLY CURRENT					
I_{IN}	VIN ON supply current		230		µA
I_{INI}	VIN idle supply current	CC1/CC2 floating		0	5	
BC 1.2 DCP MODE					
R_{DPM_SHORT}	DP / DM shorting resistance		125	200	Ω
IPAD MODE 2.4A Mode					
V_{DP_IPAD}	DP output voltage		2.5	2.7	2.9	V
V_{DM_IPAD}	DM output voltage		2.5	2.7	2.9	V
Galaxy Tab MODE					
V_{DP_GAL}	DP output voltage		1.1	1.2	1.3	V
V_{DM_GAL}	DM output voltage		1.1	1.2	1.3	
UFP Mode					
$I_{SRC\_3.0A}$	Sourcing current	CTL=H	297	330	363	uA
$I_{SRC\_1.5A}$		CTL=0	162	180	198	

USB Type-C DFP 1.5A/3.0A Controller with BC1.2 Auto-Detection

PACKAGE INFORMATION

CPC8

尺寸 标注	最小(mm)	最大(mm)	尺寸 标注	最小(mm)	最大(mm)
A	2.50	2.70	C	0.85	1.05
A1	0.35	0.45	C1	0.00	0.15
e	0.53 (BSC)		C2	0.15	0.18
B	2.50	2.70	L	0.40	0.60
B1	3.85	4.15	θ	0°	8°
b	0.16	0.26			