

Charge Fast CF2.0 Single Chip

SUMMARY

Description

The Jiangsu Macrocloud Tech. (JMT)'s CF2.0 is a single chip solution for fast charge portable power banks to support various fast charge standards such as,

1. Qualcomm Quick Charge 2.0 and QC3.0,
2. MediaTek's Pump Express Plus(PEP),
3. Apple's 5V/2.4A, and
4. Others such as BC1.2 etc.

Product Features

- Fully Supports Quick Charge 3.0 Class A and Class B specification. Output Voltage Can be Configured in Discreet Steps from,
 - ✓ Class A: 3.6 V up to 12 V in 200mV steps
 - ✓ Class B: 3.6 V up to 20 V in 200mV steps
- Fully Supports Quick Charge 2.0 Class A and Class B specification
 - ✓ Class A: 5 V, 9 V, and 12 V Output Voltage
 - ✓ Class B: 5 V, 9 V, 12 V, and 20 V Output Voltage
- Supports MediaTek's Pump Express Plus,
 - ✓ From 5V to 3.6V in 200mV decrements and
 - ✓ Up to 7V, 9V & 12V
- Supports Apple's 5V/2.4A
- Compatible with USB BC1.2
- Built in MCU with UART and I2C/SPI for OLED display
- Automatically detects various fast charge protocols

Protections

- ✓ Built in protections for short-circuit, over-voltage and over-current
- ✓ Dedicated pin for external over-temperature protection

Packages

There are two packages to support different ports.

1. 7mmx7mm LQFP 32, with 32 pins, for 1 fast charge port and 1 fast discharge port.
2. 7mmx7mm LQFP 48, with 48 pins, for 1 fast charge port and 2 fast discharge ports.

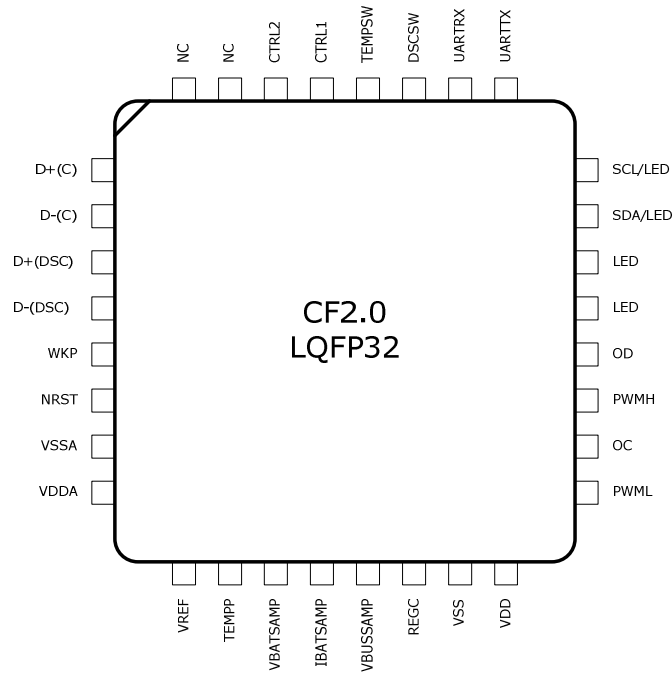


Fig.1 LQFP 32

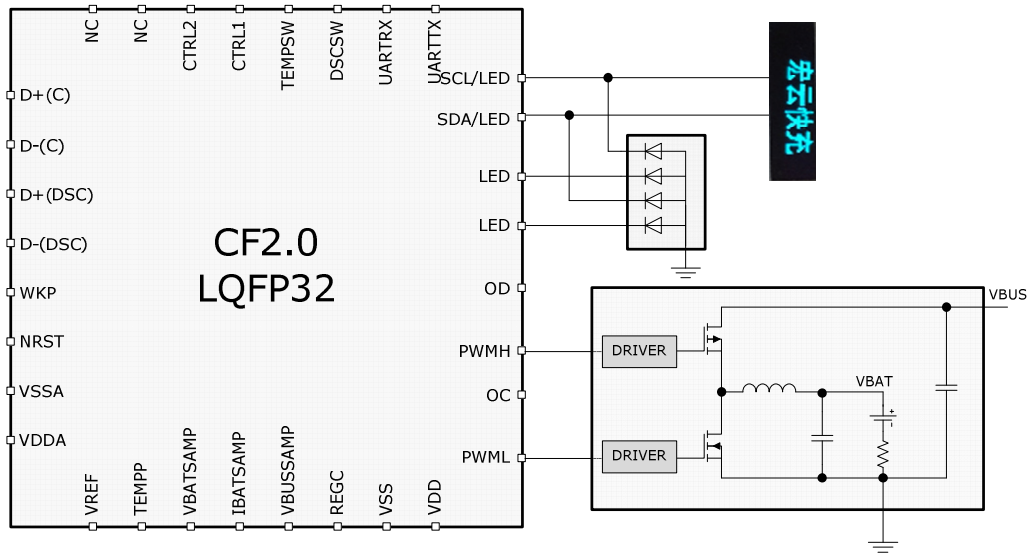


Fig.2 Typical Application

Table1 Signal Descriptions

Signal Name	Type	Function
VDDA	VDDA	Analog power supply (2.75V~5.5V)
VSSA	VSSA	Analog ground
VDD	VDD	Digital power supply (2.75V~5.5V)
VSS	VSS	Digital ground
REGC	REGC	Regulator capacitor
VREF	A	Reference voltage input
RST	I	System reset input
WKP	I	Wakeup
TEMPP	A	Temperature detection input
VBATSAMP	A	Battery voltage detection input
IBATSAMP	A	Battery current sense input
VBUSSAMP	A	VBUS voltage detection input
OC	O	Over charge protection
OD	O	Over discharge protection
PMWH	O	PWM Complementary output
PWML	O	PWM Complementary output
D+(C)	A	USB D+ data line input (Charge port)
D-(C)	A	USB D- data line input (Charge port)
D+(DSC)	A	USB D+ data line input (Discharge port)
D-(DSC)	A	USB D- data line input (Discharge port)
UARTTX	I	UART TX (debugging interface)
UARTRX	O	UART RX (debugging interface)
DSCSW	O	Discharge control switch
TEMPSW	O	Temperature detection low power control
CTRL1	O	Fast charge control signal 1
CTRL2	O	Fast charge control signal 2
SCL/LED	O	I2C Clock (for OLED) /LED display
SDA/LED	O	I2C Data (for OLED) /LED display
LED	O	LED Display
LED	O	LED Display
NC	NC	Not connected

CF2.0 Fast Charge Module (Serena) for Portable Power Banks

Fast Charge Module (Serena) is based on JMT's single chip CF2.0 to support most of the fast charge standards, such as Qualcomm QC2.0/QC3.0, MTK PEP, Apple's 5V/2.4A, and others such as BC1.2 etc.

Fast Charge Port:

- ✓ Voltage: 3.6V~6V, Current: Max 3A
- ✓ Voltage: 6V~9V, Current: Max 2A
- ✓ Voltage: 9V~12V, Current: Max 1.5A

Fast Discharge Port:

- ✓ Voltage: 3.6V~6V, Current: Max 3A
- ✓ Voltage: 6V~9V, Current: Max 2A
- ✓ Voltage: 9V~12V, Current: Max 1.5A

Protections:

- ✓ short-circuit, over-voltage and over-current protection
- ✓ Over-temperature protection

Display:

- ✓ OLED or
- ✓ 4 LEDs

87% efficiency, and ripple 100mV (1.1%), tested on Mi4 phone @ 9V/1.2A.

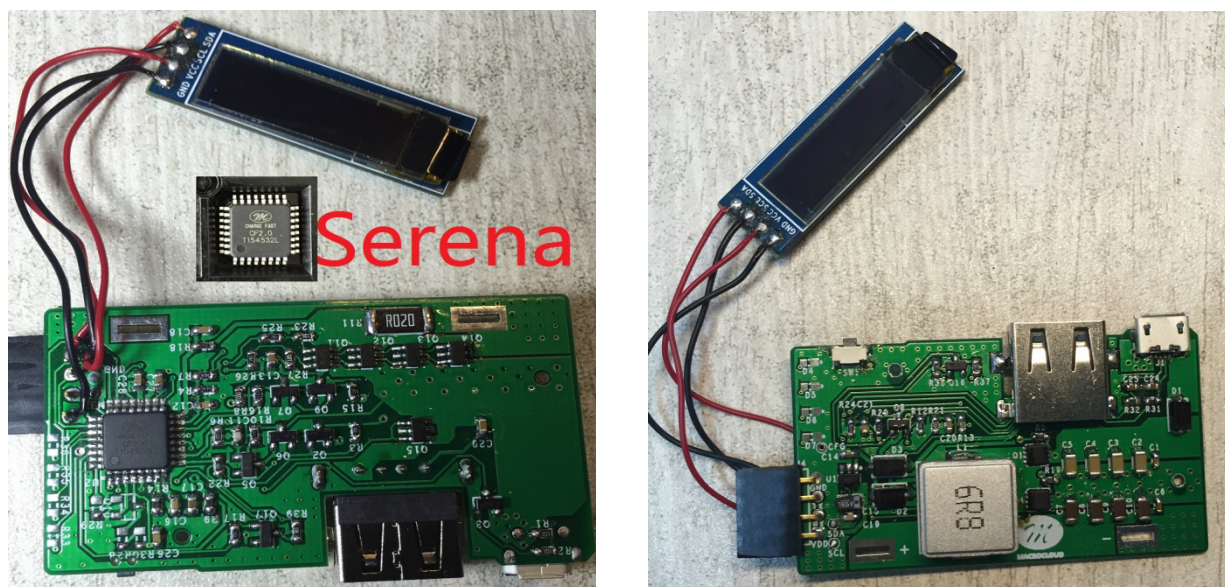


Fig.3 Serena PCBA (front and back side)