



**Genesys Logic, Inc.**

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**GL888F**  
**USB Charging Port Controller**  
**Datasheet**

**Revision 1.01**  
**Nov. 15, 2012**

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## Revision History

Revision	Date	Description
1.00	10/31/2012	First formal release
1.01	11/15/2012	Updated SDP information, p.10

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## CHAPTER 1 GENERAL DESCRIPTION

The GL888F is a USB fast-charging controller which complies with USB Battery Charging Specification (abbrev. as BC). Before the USB BC is released, most handheld devices have different charging mechanisms that are not compliant with each other. Generally speaking, old wall-chargers are useless when you have new handheld devices. Now with a USB enabled wall-charger, it provides unified charging mechanism by traditional USB current supply (0.5A) when charging devices through USB ports. With a USB enabled wall-charger which complies with USB **BC**, it provides unified charging mechanism by more USB current supply (up to 1.5A) when charging devices through USB ports, so called “fast-charging” mechanism. In another word, GL888F is a high performance solution for “fast-charging” mechanism and it saves at most 66% of charging time.

In addition, the GL888F will automatically detect and charge not only USB BC compliant devices, but also Apple/Samsung/RIM devices. This feature implies wide range of end product applications and provides design flexibility for system manufactures.

## **CHAPTER 2    FEATURES**

- Supports Battery Charging Specification 1.2
- Supports Chinese Communications Industry Standard YD/T 1591-2009
- Auto detect and charge for Apple, Samsung, and BC compliant devices,
- Ultra low power consumption
- Target Application
  - USB universal wall charger
  - Car charger
  - Power bank
  - Wall watt

## CHAPTER 3 PIN ASSIGNMENT

### 3.1 GL888F

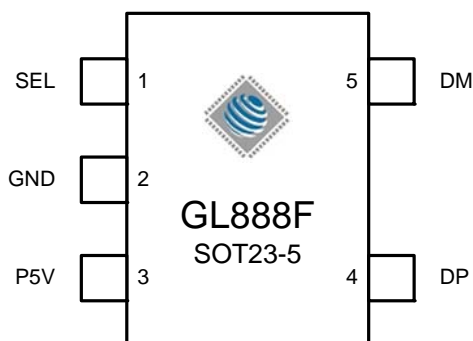


Figure 3.1 – GL888F Pinout

Table 3.1 – GL888F Pin Assignment

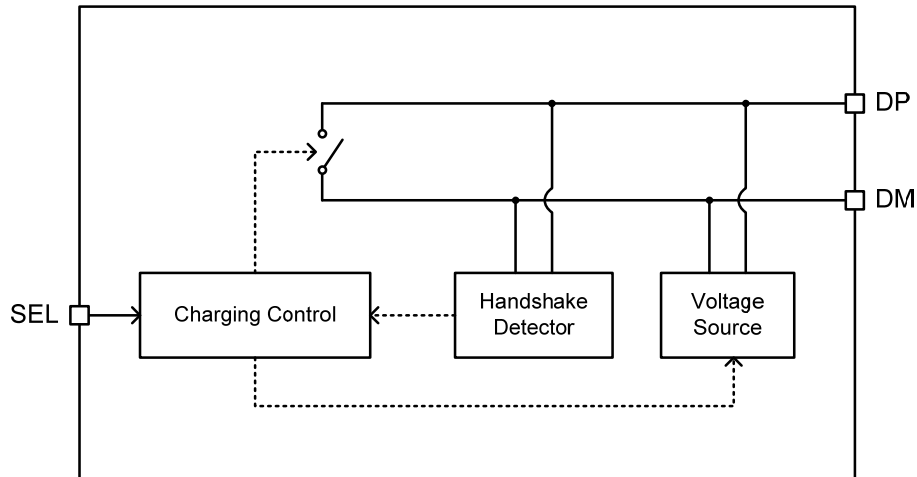
NO	GL888F	TYPE	DESCRIPTION
1	SEL	I	Charging mode select (internal pull-up) 1: Auto 2A mode 0: Auto 1A mode
2	GND	P	Ground
3	P5V	P	5V input
4	DP	I/O	D+ data line to USB connector
5	DM	I/O	D- data line to USB connector

**Type Notation (in chip reset status)**

**I** Input mode      **P** Power / Ground  
**O** Output mode



## CHAPTER 4 ARCHITECTURE



**Figure 4.1 – Block Diagram**

Figure 4.1 shows the architecture of GL888F, which supports different kinds of charger mechanism, including Apple 1A/2A wall charger, Samsung Galaxy Tab wall charger, and standard USB charger. In auto mode (refer to Table 5.1), it can automatically detect the type of connected device, and switch to appropriate charging mode.

GL888F is designed for low standby power application. For the system with AC power, the ultra low power consumption of GL888F does not increase the suspend current. And for the system with battery power, GL888F don't impact the standby time as well.

## CHAPTER 5 CHARGING MODES

GL888F supports several kinds of particular charging modes, described in Table 5.1.

**Table 5.1 – Charging Mode Comparison**

Charging Mode	Data Transfer	Max Charging Current	Support Device
Apple 1A	X	1A	Apple device <sup>(1)</sup>
Apple 2A	X	2A	Apple device <sup>(1)</sup>
Samsung Tablet <sup>(2)</sup>	X	2A	Samsung Galaxy Tab
Auto 1A	X	2A	Legacy device BC 1.1/1.2 device Apple device (max 1A) Samsung Galaxy Tab
Auto 2A	X	2A	Legacy device BC 1.1/1.2 device Apple device (max 2A) Samsung Galaxy Tab

(1) Refer Apple website for detail support list

(2) Support by GL888F Auto mode

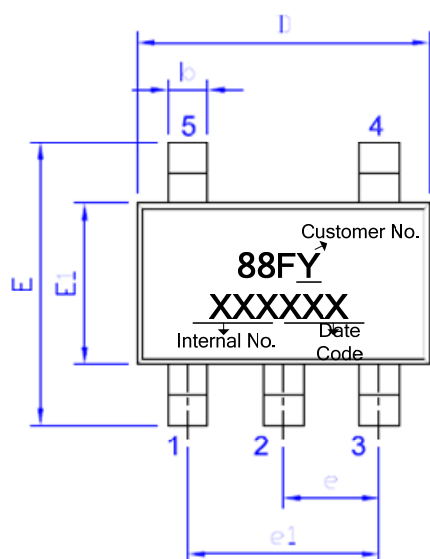
Battery Charging Specification defines three charging ports: SDP, CDP and DCP. The SDP is a standard USB port which can transfer data and provide maximum 500mA (for USB2.0) or 900mA (for USB3.0) current. The purpose of CDP is to replace SDP, so it can charge device with higher current (up to 1.5A) even during USB data transfer. The DCP is only a dedicated charging port which supports high current without data transfer. The BC 1.1/1.2 compliant device is able to be charged whether it connects to CDP or DCP.

Two Apple wall charging modes for Apple devices: “Apple 1A” is for lower battery capacity device, such as iPhone, iPod, and “Apple 2A” is for higher battery capacity device, such iPad series. Most up-to-date Apple devices comply with both types of charging modes, so “Apple 2A” mode is recommended. Please be noted that the charging current is controlled by device itself, so connecting iPhone to a host under “Apple 2A” charging mode may not cause iPhone draw higher charging current than under “Apple 1A” charging mode.

Samsung Galaxy Tab has a dedicated charging behavior, and this is “Samsung Tablet” mode designed for. GL888F can support this under auto mode.

When setting “Auto 1A” mode, GL888F will automatically detect the connected device and switch between DCP, “Apple 1A”, and “Samsung Tablet” mode to charge, whereas “Auto 2A” mode will switch between DCP, “Apple 2A”, and “Samsung Tablet” mode. To support most up-to-date devices,” Auto 2A” mode is strongly recommended.

## CHAPTER 6 PACKAGE DIMENSION



SYMBOL	DIMENSION MM (MIL)		
	MIN.	NOM.	MAX.
A	---	---	1.45 (57.1)
A1	0.00 (3.9)	---	0.15 (5.9)
A2	0.90 (35.4)	1.15 (45.3)	1.30 (51.2)
b	0.30 (11.8)	---	0.50 (19.7)
c	0.08 (3.1)	---	0.22 (8.7)
D	2.90 (114.2) BSC		
e	0.95 (37.4) BSC		
e1	1.90 (74.8) BSC		
E	2.8 (110.2) BSC		
E1	1.60 (63) BSC		
L	0.30 (11.8)	0.45 (17.7)	0.60 (23.6)
L1	0.60 (23.6) REF		
L2	0.25 (9.8) BSC		
R	0.10 (3.9)	---	---
R1	0.10 (3.9)	---	0.10 (3.9)
y	---	---	0.25 (9.8)
$\theta$	0°	4°	8°
$\theta1$	5°	10°	15°

NOTE: 1. REFER TO JEDEC MO-178  
2. ALL DIMENSIONS IN MILLIMETERS.

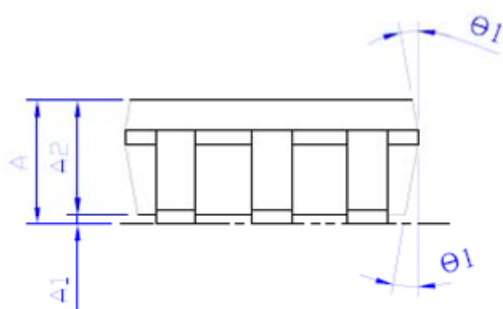
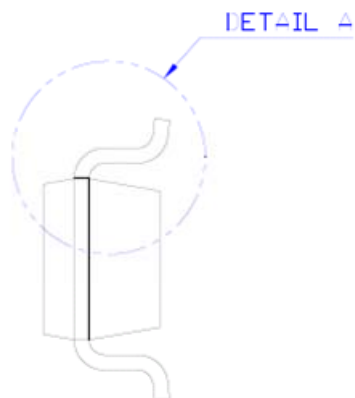
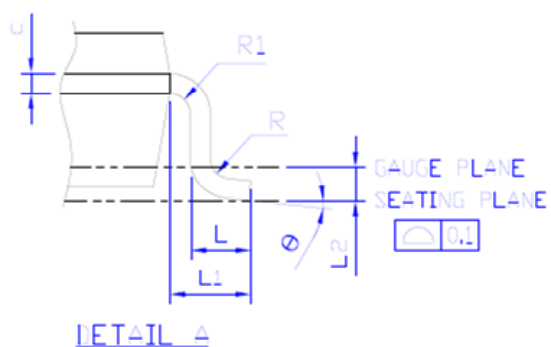


Figure 6.1 – GL888F 5 pin SOT23 Package

## CHAPTER 7 ORDERING INFORMATION

Table 7.1 – Ordering Information

Part Number	Package	Green/Wire Material	Version	Status
GL888F-FIG*X	SOT23-5	Green Package + AU Wire	X	Available

\*The marking of "FIG" will not be shown on the IC due to SOT23-5 package size limitation.