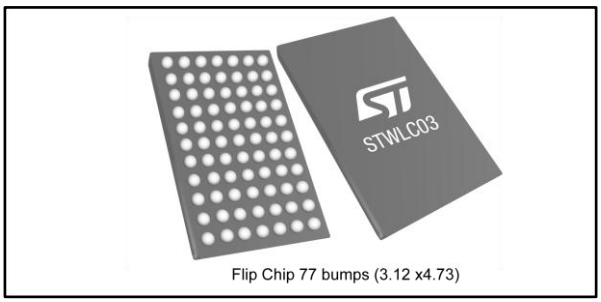
STWLC03

Dual mode Qi/PMA wireless power receiver

Data brief



Flip Chip 77 bumps (3.12 x4.73)

Features

- Up to 7.5 W output power
- Qi and/or PMA standard communication protocol
- Integrated high efficiency synchronous rectifier
- 1 MHz programmable buck converter with input current and input voltage regulation loop
- Buck converter efficiency up to 92%
- Simplified Li-Ion/Polymer charger function
- 32-bit, 16 MHz embedded microcontroller with 16 Kbyte ROM and 2 Kbyte RAM memory
- 2 Kbyte NVM memory for customization
- 10-bit, 8 channel A/D converter
- Integrated driver for external supply voltage switch
- Four configurable GPIOs
- Integrated 5 V LDO for auxiliary features
- Precise voltage and current measurements for FOD function
- Transmitter presence detection
- Integrated driver for external resonant switch
- I^2C interface
- Rx coil NTC protection
- Thermal protection
- Flip Chip 77 bumps (3.12x4.73 mm)

Applications

- Cellular phones
- PDAs
- Navigation systems
- Medical and healthcare instrumentation

Description

The STWLC03 is a high-end WPC and PMA compliant wireless power receiver IC. It includes a wireless power receiver, a programmable buck converter with simplified basic Li-Polymer/Li-Ion battery charger function and the embedded microcontroller, which allows a very wide range of customization and different standard supports. The integrated NVM memory stores the customized parameters via JTAG or I^2C interface of the device. Thanks to the integrated synchronous rectifier, it achieves high efficiency operations. The buck converter contains the configurable soft-start, input current and input voltage regulation loops to optimize the function in a wireless charging enviroment. If the wireless power is not available, the device can be supplied from an external supply and can connect this supply (5 V adapter/USB) to V_{OUT} through an external switch. The embedded microcontroller communicates with the host platform through the I^2C. The device contains blocks for the frequency detection and the driver for the external switch for the resonant frequency change. The package is a CSP suitable for very compact applications and it has a quad SPI interface with the external Flash memory for firmware development purposes.

Table 1: Device summary

Order code	Package	Packing
STWLC03JR	Flip Chip 77 bumps (3.12x4.73 mm)	Tape and reel

1 Package information

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: ***www.st.com***. ECOPACK® is an ST trademark.

1.1 Flip Chip 77 bumps (3.12x4.73 mm) package information

Figure 1: Flip Chip 77 bumps (3.12x4.73 mm) package outline

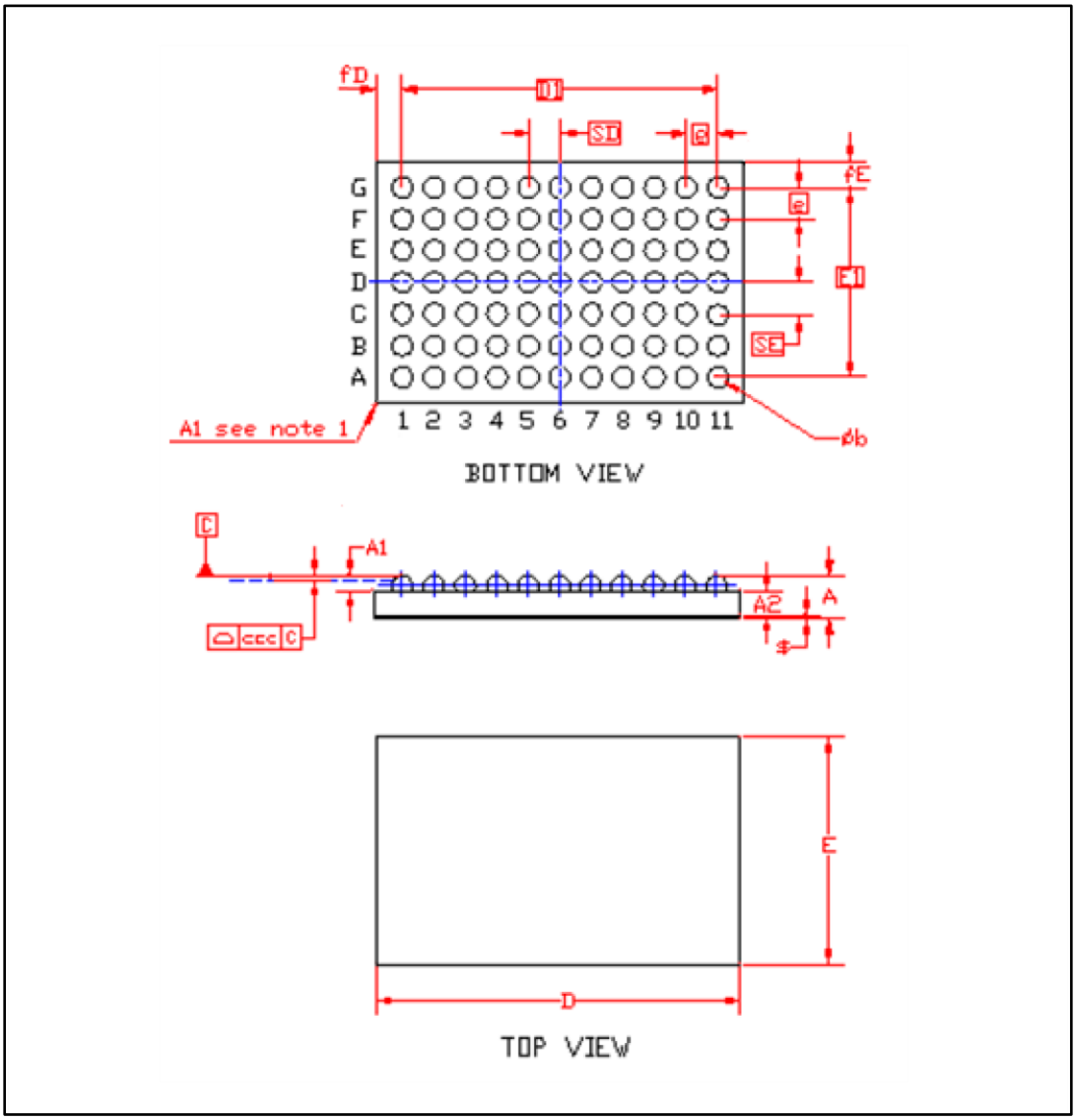
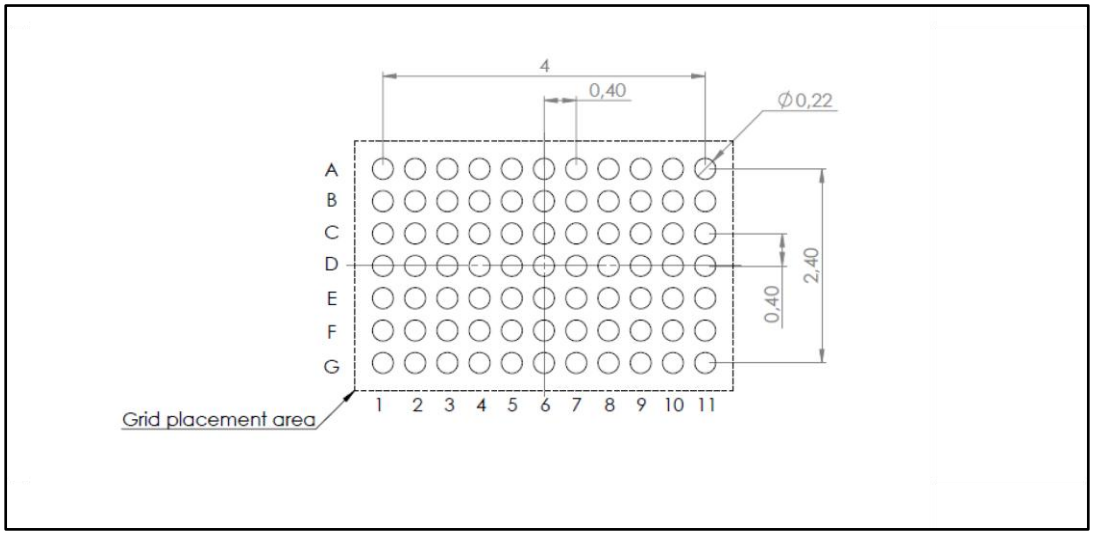


Table 2: Flip Chip 77 bumps (3.12x4.73 mm) package mechanical data

Dim.	mm		
	Min.	Typ.	Max.
A	0.50	0.55	0.60
A1	0.17	0.20	0.23
A2	0.28	0.30	0.32
b	0.23	0.26	0.29
D	4.67	4.70	4.73
D1		4.00	
E	3.06	3.09	3.12
E1		2.40	
e		0.40	
SD		0.20	
SE		0.20	
fD		0.352	
fE		0.346	
$		0.05	
ccc		0.075	

The terminal A1 on the bump side is identified by a distinguishing feature (for instance by a circular "clear area", typically 0.1 mm diameter) and/or a missing bump. The terminal A1 on the backside of the product is identified by a distinguishing feature (for instance by a circular "clear area", typically between 0.1 and 0.5 mm diameter, depending on the die size).

Figure 2: Flip Chip 77 bumps (3.12x4.73 mm) recommended footprint



2 Revision history

Table 3: Document revision history

Date	Revision	Changes
04-Jun-2015	1	Initial release.
05-Jun-2015	2	Updated the title and the description.

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