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STWLC33

Multi-mode Qi/AirFuel inductive wireless power receiver with transmitter function

Data brief

CSP 3.97x2.67 mm, 52 balls

Features

- Up to 15 W output power in RX mode and 5 W in TX mode
- Qi 1.2 and AirFuel inductive wireless standard communication protocol
- Integrated high efficiency synchronous rectifier
- Low drop regulator with output current and input voltage regulation loop
- Total system efficiency up to 80% at 5 V VOUT
- 32-bit, 32 MHz ARM Cortex microcontroller with 32 kB FW memory, 8 kB RAM memory
- 4 kB NVM for configuration
- 32 MHz PWM timer
- 10-bit 8-channel A/D converter
- Up to 5 configurable GPIOs
- Integrated 5 V LDO for auxiliary features
- Precise voltage and current measurements for FOD function
- Overvoltage clamp protection
- HW FSK and ASK demodulators
- I²C interface
- Thermal protection
- CSP 3.97x2.67 mm, 400 µm pitch 52 balls

Applications

- Phones, PDAs
- Power banks
- Navigation systems
- Wearable devices
- Medical and healthcare instrumentation

Description

The STWLC33 is an integrated wireless power solution suitable for portable applications. The STWLC33 is able to operate with Qi 1.2 or AirFuel inductive communication protocol. It can operate up to 15 W receivers or 5 W transmitters.

Thanks to the integrated low impedance synchronous rectifier and the low drop out linear regulator, the STWLC03 achieves high efficiency and low power dissipation. I²C interface allows many parameters to be customized in the device and this configuration can be stored in the embedded NVM.

The CSP package is suitable for very compact applications.

Table 1: Device summary

Order code	Package	Packing
STWLC33JR	CSP (3.97x2.67 mm) 400 µm pitch 52 balls	Tape and reel

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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 CSP (3.97x2.67 mm) package information

Figure 1: CSP (3.97x2.67 mm) package outline

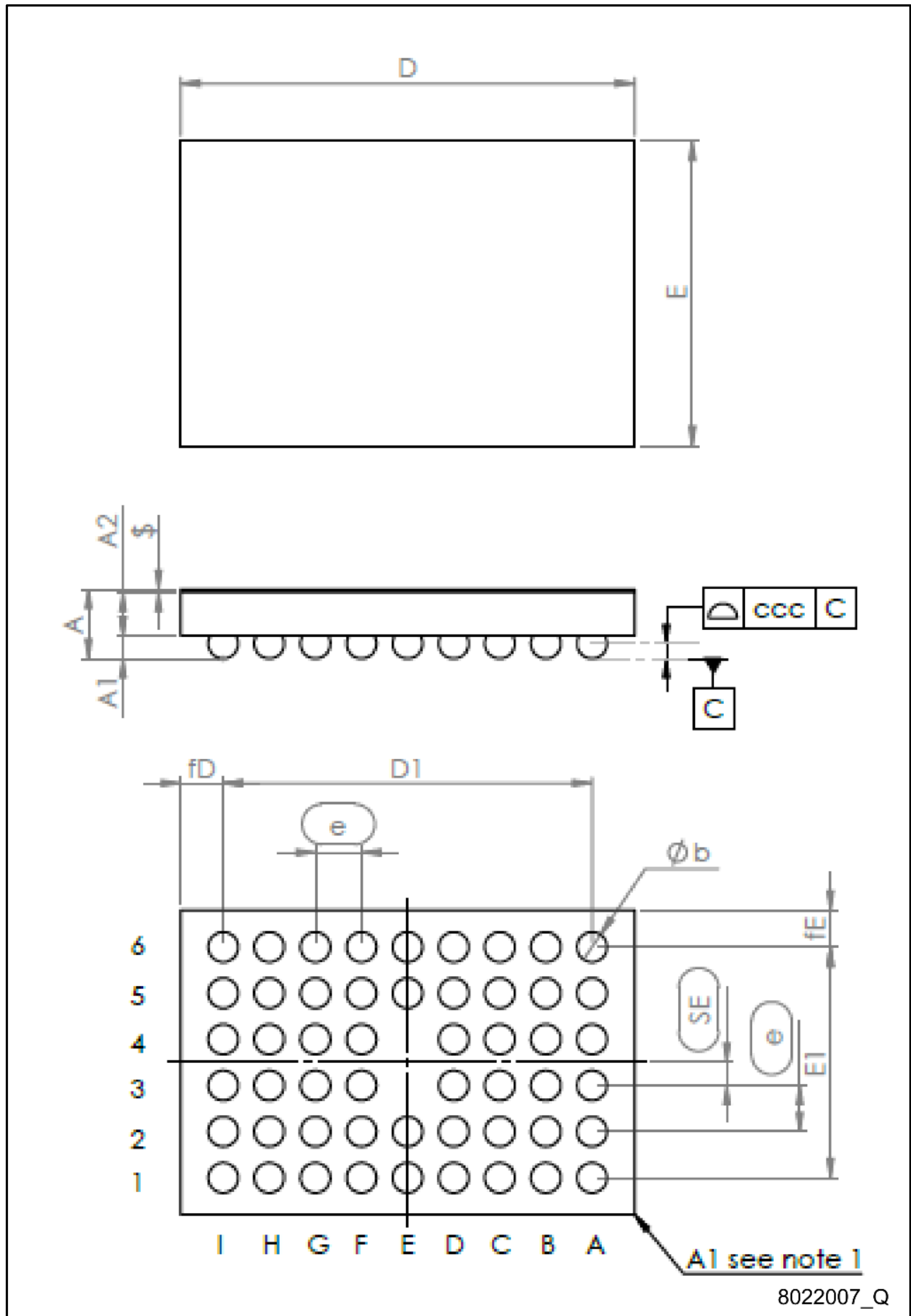
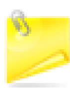


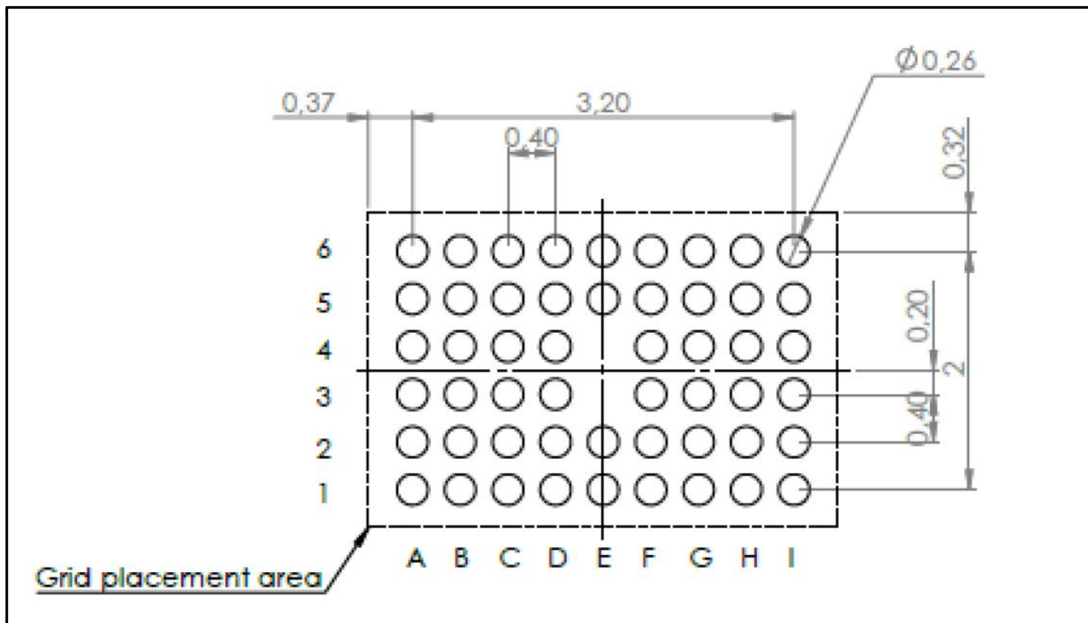
Table 2: CSP (3.97x2.67 mm) package mechanical data

Dim.	mm		
	Min.	Typ.	Max.
A	0.545	0.600	0.655
A1	0.170	0.200	0.230
A2	0.350	0.375	0.400
b	0.230	0.260	0.290
D	3.910	3.940	3.970
D1		3.20	
E	2.610	2.640	2.670
E1		2.00	
e		0.40	
SE		0.20	
fD		0.370	
fE		0.320	
$		0.025	
ccc		0.060	



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: CSP (3.97x2.67 mm) recommended footprint



2 Revision history

Table 3: Document revision history

Date	Revision	Changes
23-Feb-2017	1	Initial release.

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