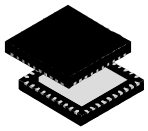
STMPE1208S

12 channel touch key controller

Data Brief

Features

- 12 touch key capacitive sensor inputs
- 12-bit general purpose Input/Output
- Operating voltage 2.5-5.5V
- 98µA in active mode, 60µA in idle mode
- Dual interrupt output pin
- I2C interface (Up to 400KHz)
- 8kV HBM ESD protection
- Idle and sleep mode for low power operation
- Advanced Filtering System (AFS)
- Environment tracking calibration (ETC)
- Individually adjustable TouchVariance (TVR) setting for all channels
- Adjustable EnvironmentalVariance (EVR) for optimal calibration



QFN40 5mm x 5mm

Applications

- Notebook Computer, Monitor
- Set Top Box, Television
- Portable media player, Game console
- Mobile phone, Smart phone
- Home Entertainment Systems
- Domestic Appliances

Description

The STMPE1208S is a GPIO 12 channel capacitive touch key sensor able to interface a Main Digital ASIC via the two-line bidirectional bus (I2C). It senses changes in capacitance using a fully digital architecture, giving fast and accurate results at very low power consumption. Automatic Impedance Calibration ensures that changes in environment will never affect the correct operation of the capacitive touch keys.

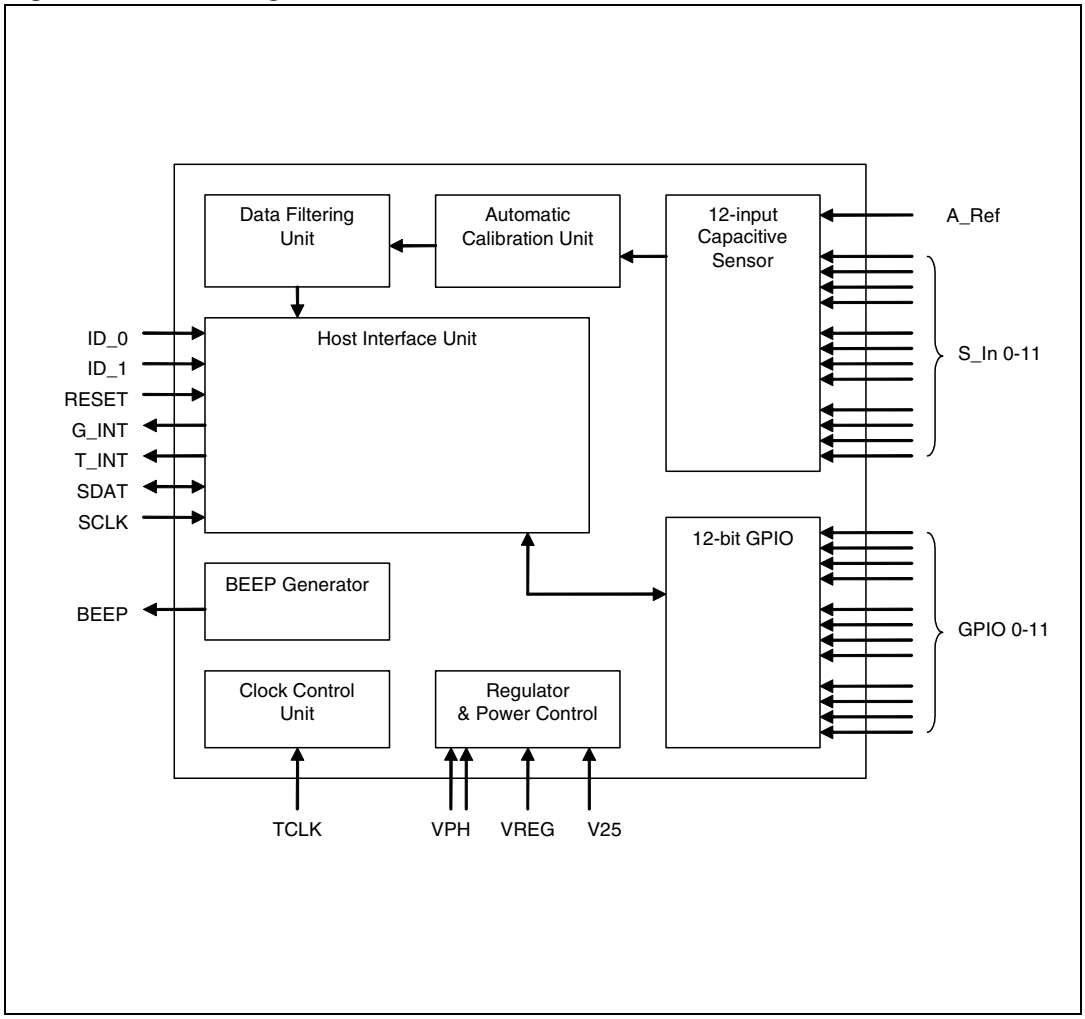
Table 1. Device summary

Part Number	Package	Packaging
STMPE1208SQTR	QFN40 5mm x 5mm	Tape and reel

Contents

1 Block diagram

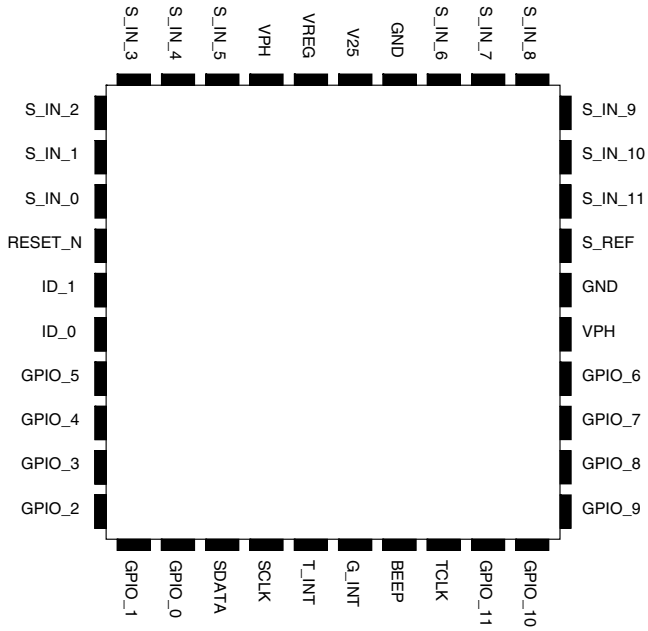
Figure 1. Block diagram



2 Pin settings

2.1 Pin connection

Figure 2. Pin connection



QFN40

2.2 Pin assignment

Table 2. Pin assignment

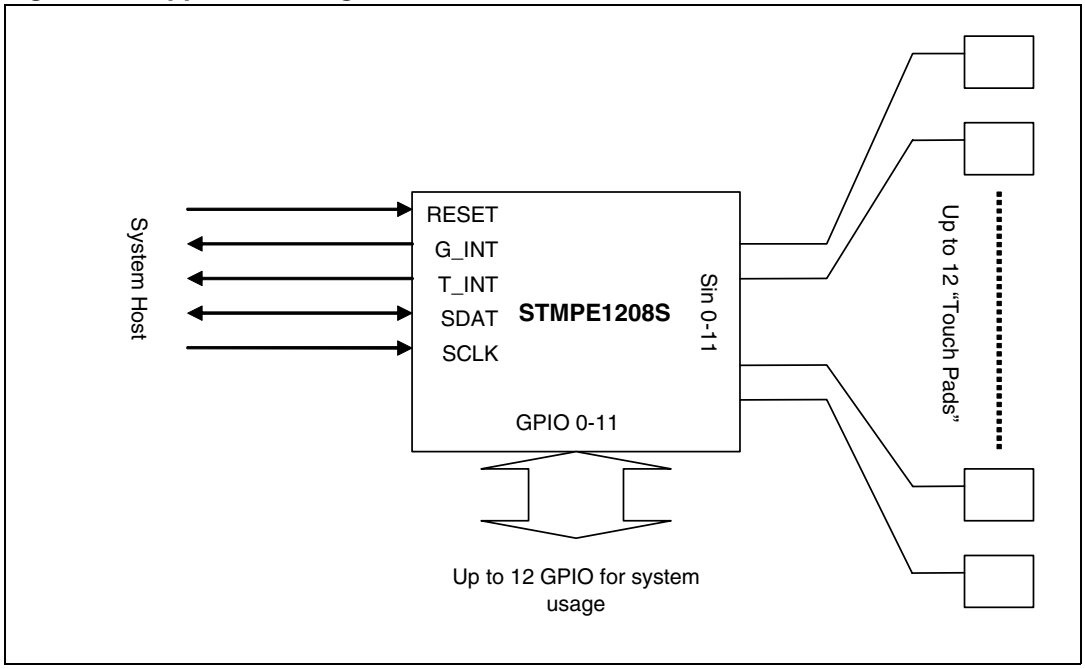
Pin	Name	Description
1	GPIO_1	General Purpose I/O
2	GPIO_0	General Purpose I/O
3	SDATA	I2C Data
4	SCLK	I2C Clock
5	TINT	Touch Interrupt
6	GINT	General Interrupt
7	BEEP	Beep output
8	TCLK	Test Pin
9	GPIO_11	General Purpose I/O
10	GPIO_10	General Purpose I/O
11	GPIO_9	General Purpose I/O

Table 2. Pin assignment (continued)

12	GPIO_8	General Purpose I/O
13	GPIO_7	General Purpose I/O
14	GPIO_6	General Purpose I/O
15	VPH	3-5.5V Power Supply (Regulator Input) Supply to this pin is also used for powering the GPIO
16	GND	GROUND
17	S_REF	Touch Sensing Reference. 1-5pF capacitor for compensation of stray capacitance on board, optional.
18	S_IN_11	Capacitive sensing channel 11
19	S_IN_10	Capacitive sensing channel 10
20	S_IN_9	Capacitive sensing channel 9
21	S_IN_8	Capacitive sensing channel 8
22	S_IN_7	Capacitive sensing channel 7
23	S_IN_6	Capacitive sensing channel 6
24	GND	GROUND
25	V25	2.5V Supply
26	VREG	Internal regulator output
27	VPH	3-5.5V Power Supply (Regulator Input)
28	S_IN_5	Capacitive sensing channel 5
29	S_IN_4	Capacitive sensing channel 4
30	S_IN_3	Capacitive sensing channel 3
31	S_IN_2	Capacitive sensing channel 2
32	S_IN_1	Capacitive sensing channel 1
33	S_IN_0	Capacitive sensing channel 0
34	RESET_N	Active Low Reset
35	ID_1	I2C Address 1
36	ID_0	I2C Address 2
37	GPIO_5	General Purpose I/O
38	GPIO_4	General Purpose I/O
39	GPIO_3	General Purpose I/O
40	GPIO_2	General Purpose I/O

3 Application diagram

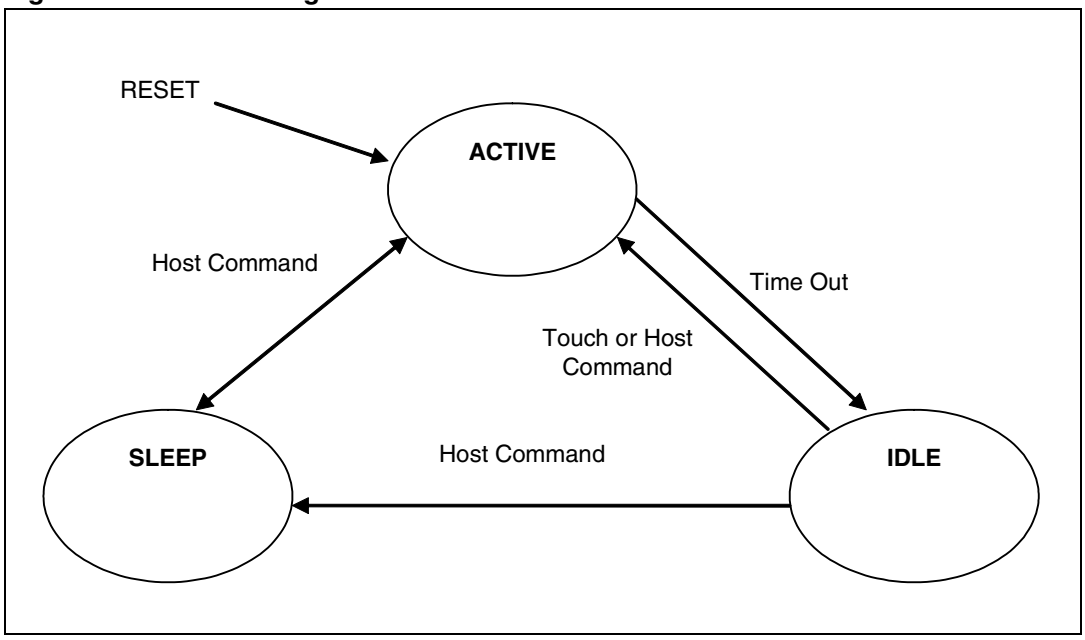
Figure 3. Application diagram



4 Power management

STMPE1208S operates in 3 states:

Figure 4. Power management



On RESET, STMPE1208S enters ACTIVE state immediately.

Upon a fixed period of inactivity, device enters IDLE state. Any touch activity in IDLE state would cause the device to go back to ACTIVE state.

If no touch activity is expected, host may set the device into SLEEP state to conserve power.

5 Package mechanical data

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a Lead-free second level interconnect . The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com

Table 3. QFN40 5mm x 5mm Mechanical data

Dim.	mm.		
	Min	Typ	Max
A	0.80	0.85	0.90
A1	0.00		0.05
A3		0.203 ref	
b	0.15	0.20	0.25
D		5.00 BSC	
E		5.00 BSC	
D2	3.70	3.80	3.90
E2	3.70	3.80	3.90
e		0.40 BSC	
L	0.30	0.35	0.40
L1			0.10
P		45° BSC	
aaa		0.15	
ccc		0.10	

Figure 5. Package dimensions

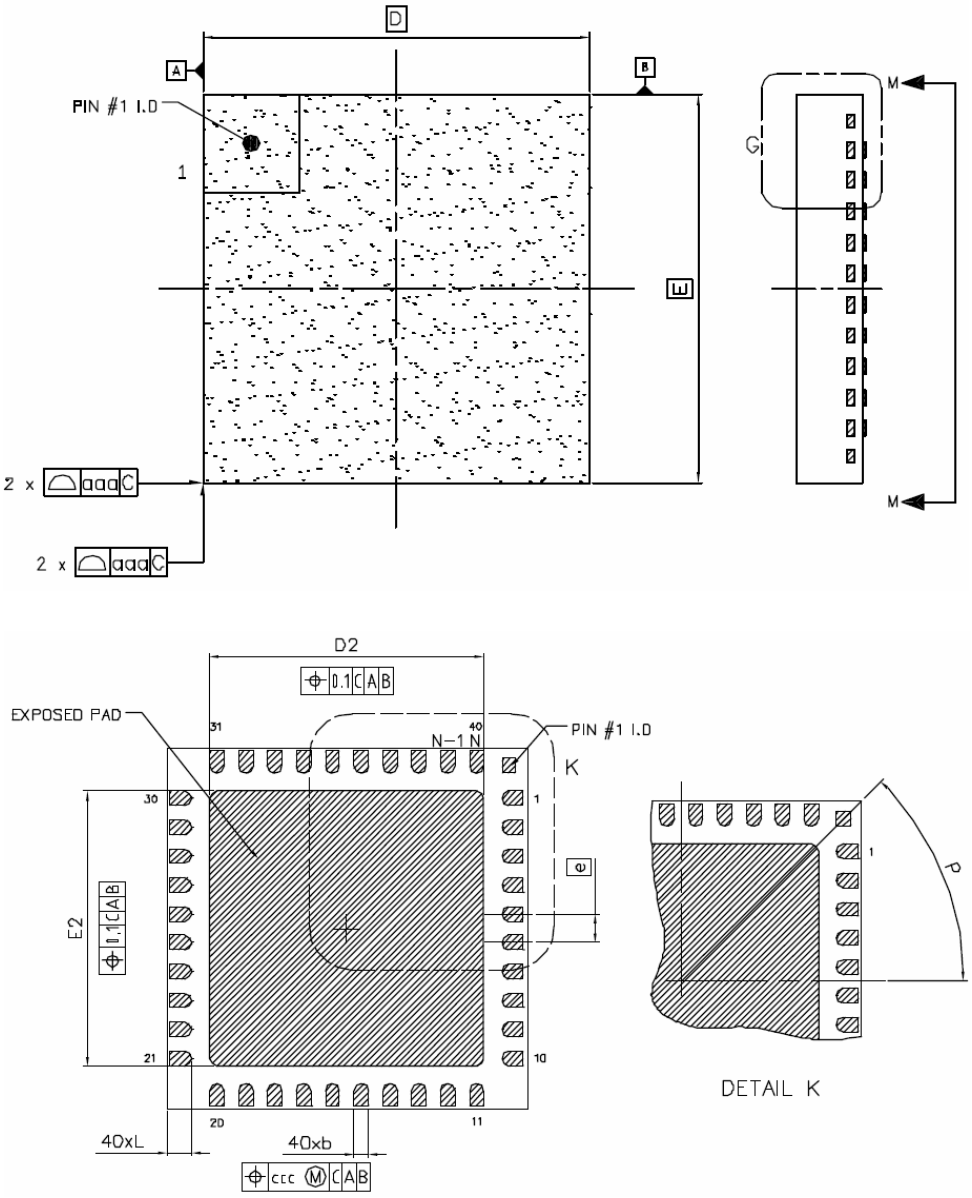
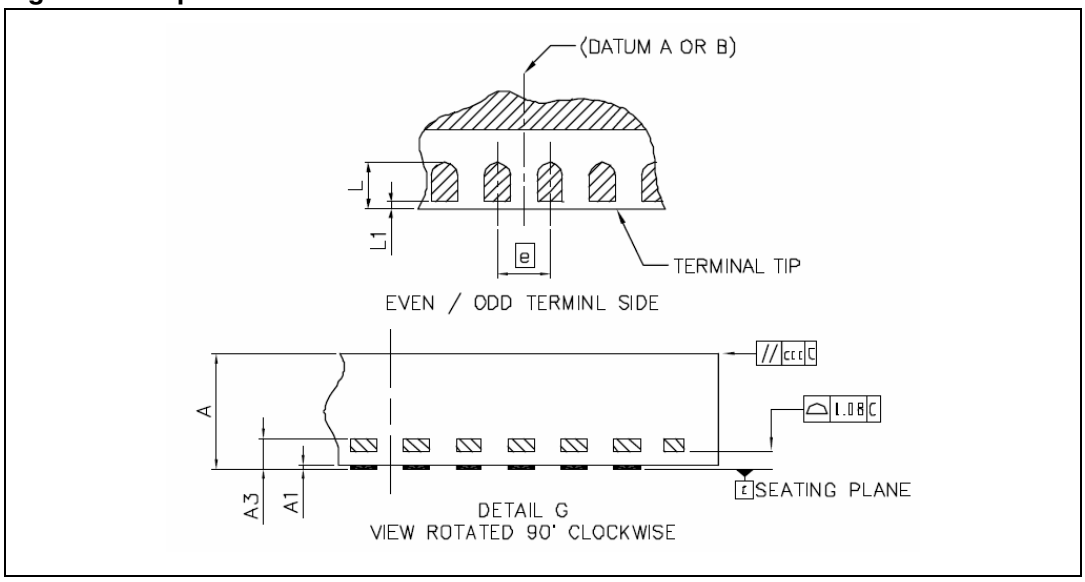


Figure 6. Tape and reel



6 Revision history

Table 4. Revision history

Date	Revision	Changes
19-Jun-2007	1	Initial release

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