

GigaDevice Semiconductor Inc.

GD32F150xx
ARM[®] Cortex[™]-M3 32-bit MCU

Application Note

AN005

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1 Introduction

The objective of this application note is to explain the Touch Sensing Interface (TSI) configuration of GD32F150xx. The purpose of this document is not to provide detailed information on the devices, but to highlight the difference of TSI configurations with different packages. For the details about the functions and devices, please refer to the relevant user manual.

2 GD32F150xx TSI Configuration Summary

GD32F150xx contain a hardware Touch Sensing Interface (TSI) and only requires few external components to operate. The sensing channels are distributed over 6 analog I/O groups including: Group1 (PA0 ~ PA3), Group2 (PA4 ~ PA7), Group3 (PC5, PB0 ~ PB2), Group4 (PA9 ~ PA12), Group5 (PB3, PB4, PB6, PA7) and Group6 (PB11 ~ PB14), with maximum 18 configurable sampling channels and 6 configurable sampling pins.

The table below shows the TSI configuration map of GD32F150xx.

Table 1. TSI configuration map of GD32F150xx.

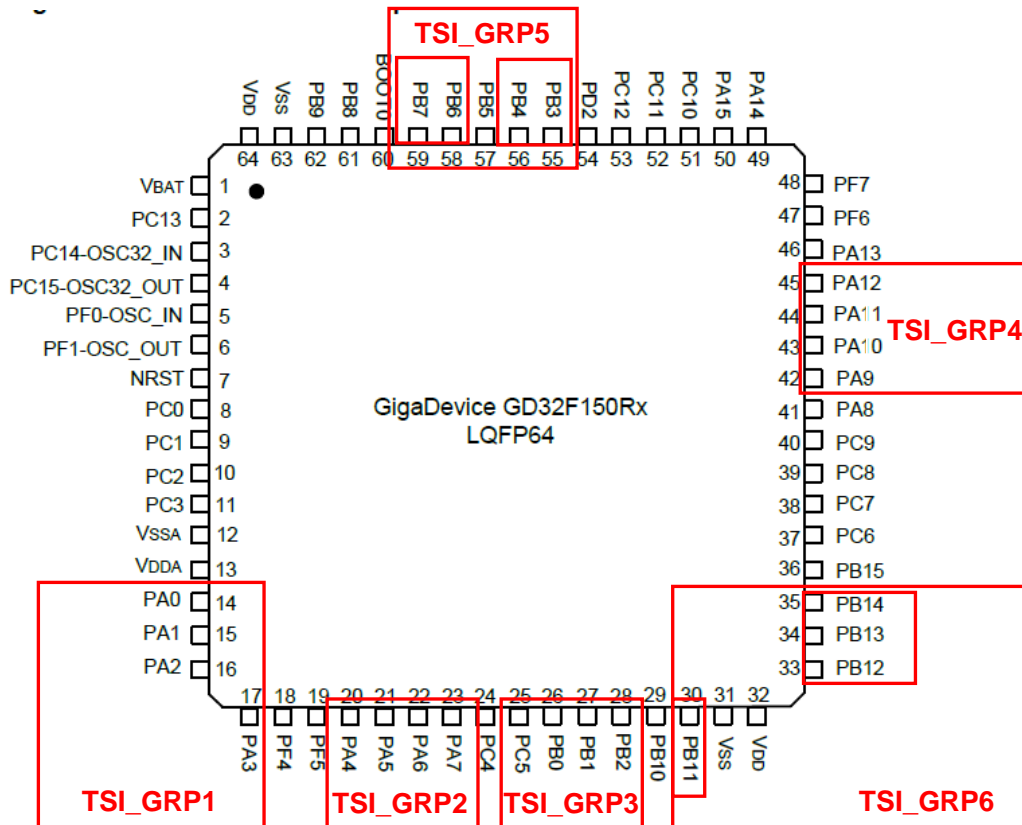
TSI Group	TSI Pins	GPIO Pins
TSI_GRP1	PIN1	PA0
	PIN2	PA1
	PIN3	PA2
	PIN4	PA3
TSI_GRP2	PIN1	PA4
	PIN2	PA5
	PIN3	PA6
	PIN4	PA7
TSI_GRP3	PIN1	PC5
	PIN2	PB0
	PIN3	PB1
	PIN4	PB2
TSI_GRP4	PIN1	PA9
	PIN2	PA10
	PIN3	PA11
	PIN4	PA12
TSI_GRP5	PIN1	PB3
	PIN2	PB4
	PIN3	PB6
	PIN4	PB7
TSI_GRP6	PIN1	PB11
	PIN2	PB12
	PIN3	PB13

TSI Group	TSI Pins	GPIO Pins
	PIN4	PB14

2.1 TSI Configuration of LQFP64 Package

According to LQFP64 package, TSI Group1 ~ TSI Group6 totally 6 groups have 24 TSI pins, which including maximum 18 configurable sampling channels and 6 configurable sampling pins. Details showed as figure below.

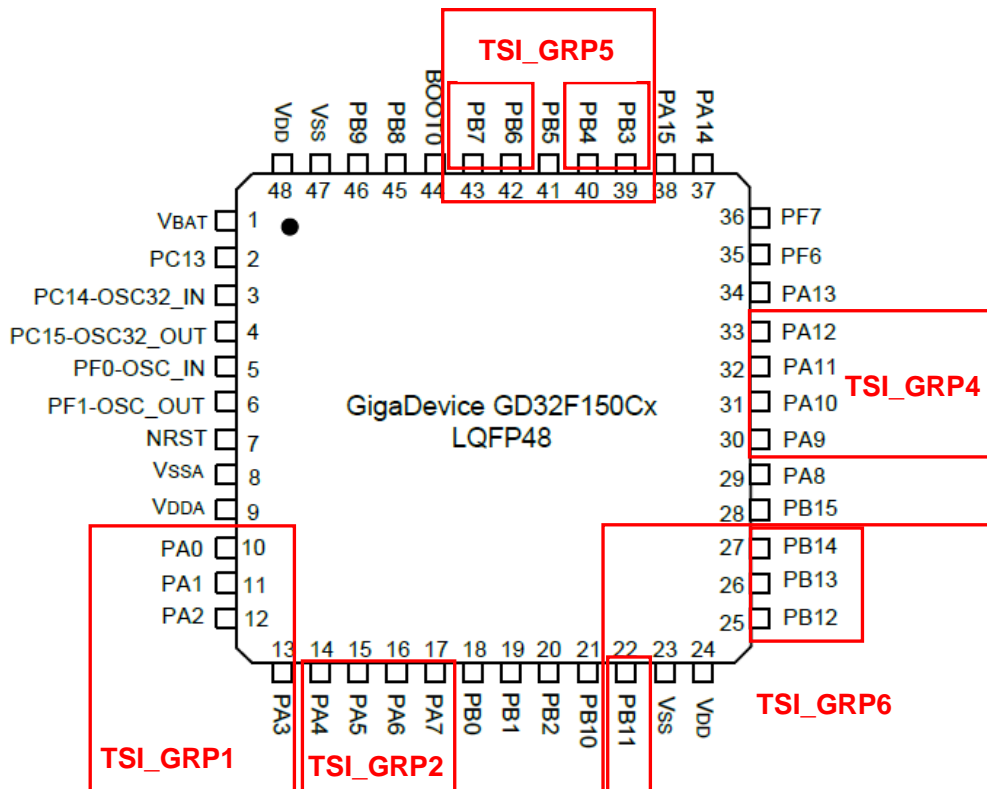
Figure 1. TSI Configuration of LQFP64 Package



2.2 TSI Configuration of LQFP48 Package

According to LQFP48 package, TSI Group1, TSI Group2, TSI Group4, TSI Group5, TSI Group6, totally 5 groups have 20 TSI pins, which including maximum 15 configurable sampling channels and 5 configurable sampling pins. Details showed as figure below.

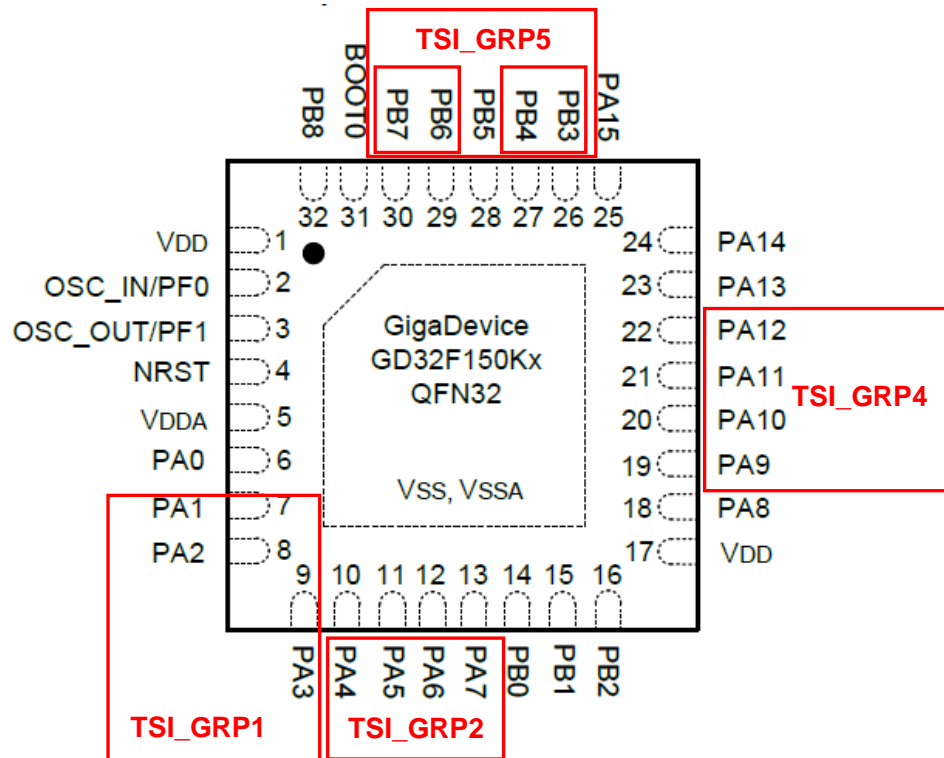
Figure 2. TSI Configuration of LQFP48 Package



2.3 TSI Configuration of QFN32 Package

According to QFN32 package, TSI Group1, TSI Group2, TSI Group4, TSI Group5, totally 4 groups have 16 TSI pins, which including maximum 12 configurable sampling channels and 4 configurable sampling pins. Details showed as figure below.

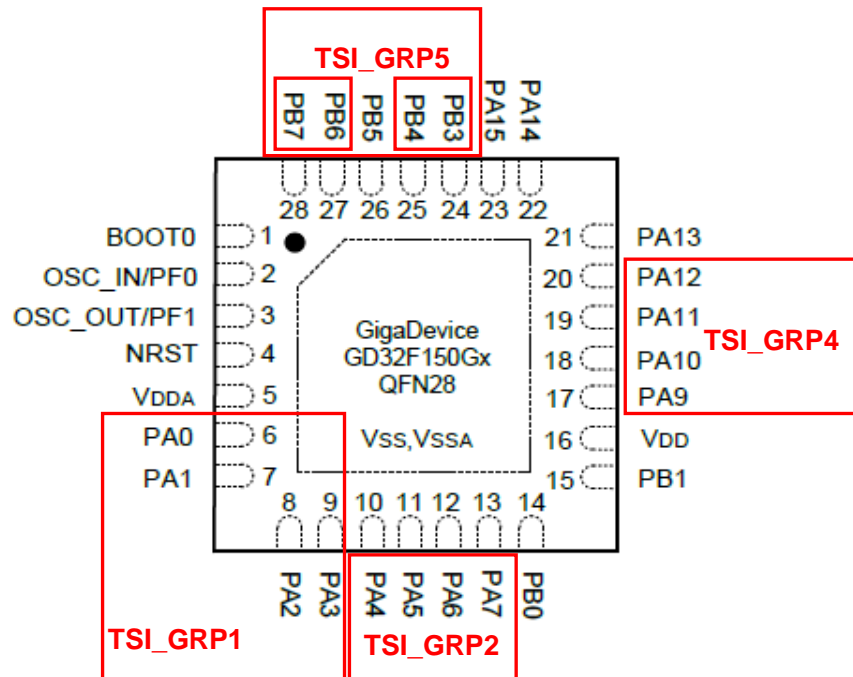
Figure 3. TSI Configuration of QFN32 Package



2.4 TSI Configuration of QFN28 Package

According to QFN28 package, TSI Group1, TSI Group2, TSI Group4, TSI Group5, totally 4 groups have 16 TSI pins, which including maximum 12 configurable sampling channels and 4 configurable sampling pins. Details showed as figure below.

Figure 4. TSI Configuration of QFN28 Package



3 Revision history

Table 2. Revision history

Revision No.	Description	Date
1.0	Initial Release	Oct.22, 2014