nRF54L15 | nRF54L10 | nRF54L05 Datasheet

NORDIC SEMICONDUCTOR

Contents

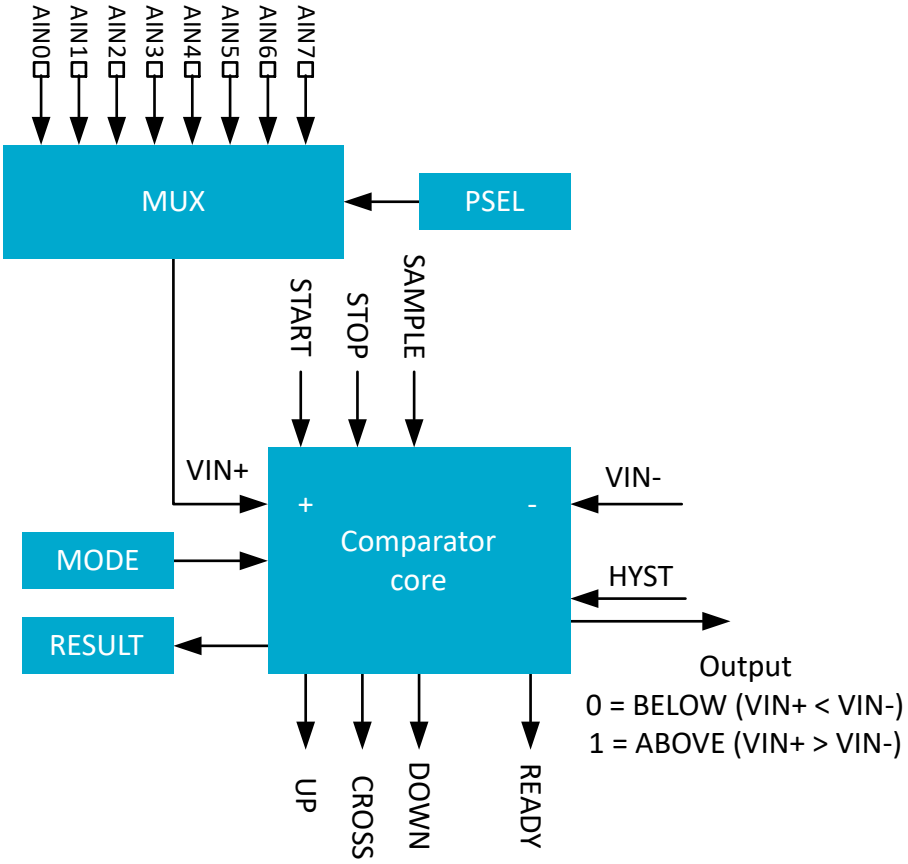
1. COMP — Comparator

The comparator peripheral (COMP) compares one input voltage (VIN+) against another input voltage (VIN-). VIN+ can be derived from an analog input pin (AIN0 to AIN7). VIN- can be derived from multiple sources depending on the operation mode of the comparator.

The main features of COMP are the following:

- Input range from 0 V to VDD
- Single-ended mode
  - Fully flexible hysteresis using a 64-level reference ladder
- Differential mode
  - Configurable hysteresis
- Reference inputs (VREF)
  - External reference from AIN0 to AIN7 (between 0 V and VDD)
  - Internal VDD reference
  - 1.2 V internal reference
- Two speed/power consumption modes, low-power and high-speed
- Single-pin capacitive sensor support
- Event generation on output changes
  - UP event when VIN+ rises above VIN- (VIN+ > VIN-)
  - DOWN event when VIN+ falls below VIN- (VIN+ < VIN-)
  - CROSS event on VIN+ and VIN- crossing
  - READY event on core and internal reference (if used) ready

Figure 1. COMP overview



START and STOP tasks

Once enabled through register ENABLE, COMP is started by triggering the START task and stopped by triggering the STOP task. COMP will generate a READY event to indicate when it is ready for use and the output is correct. The delay between START and READY is $t_{INT\_REF,START}$ when an internal reference is selected, or $t_{COMP,START}$ if an external reference is used. When the COMP peripheral is started, events will be generated every time VIN+ crosses VIN-.

Operation modes

COMP can be configured to operate in the two main operation modes, differential mode and single-ended mode. See register MODE for more information. In both operation modes, COMP can operate in different speed and power consumption modes (low-power to high-speed). High-speed mode will consume more power compared to low-power mode. Low-power mode will result in a slower response time compared to high-speed mode.

Use register PSEL to select any of the AIN[0..7] pins as the VIN+ input. The COMP operation mode does not matter. The source of VIN- depends on which operation mode is used.

- Differential mode – Derived directly from pins AIN[0..7].
- Single-ended mode – Derived from VREF. VREF can be derived from VDD, AIN[0..7], or internal 1.2 V reference.

The selected analog pins will be acquired by the comparator once it is enabled.

An optional hysteresis on VIN+ and VIN- can be enabled when the module is used in differential mode through the register HYST. In single-ended mode, VUP and VDOWN thresholds can be set to implement a hysteresis using the reference ladder (see Comparator in single-ended mode). This hysteresis is in the order of magnitude of $V_{DIFFHYST}$, and prevents noise on the signal to create unwanted events. See Hysteresis example where VIN+ starts below VUP for an illustration of the effect of an active hysteresis on a noisy input signal.

An upward crossing will generate an UP event and a downward crossing will generate a DOWN event. The CROSS event will be generated every time there is a crossing, independent of direction.

The immediate value of the comparator can be sampled to register RESULT by triggering the SAMPLE task.

Current source on analog input

A selectable current can be applied through register ISOURCE on the selected AIN[n] line. Enabling the block creates a feedback path around the comparator, forming a relaxation oscillator. The circuit will sink current from VIN+ when the comparator output is high, and source current into VIN+ when the comparator output is low. The frequency of the oscillator is dependent on the capacitance at the analog input pin, the reference voltages, and the value of the current source. In this mode, only a capacitive sensor needs to be attached between the analog input pin and ground. With a selected current of 10 µA, VUP-VDOWN equal to 1 V, and an external capacity of typically 10 pF, the resulting oscillation frequency is around 500 kHz.

The frequency of the oscillator can be calculated as follows:

```
f_OSC = I_SOURCE / (2C·(VUP-VDOWN) )
```

Shared resources

The COMP shares analog resources with other analog peripherals.

Additionally, COMP shares registers and other resources with other peripherals that have the same ID as the COMP. See Peripherals with shared ID for more information.

The COMP peripheral shall not be disabled (by writing to the ENABLE register) before the peripheral has been stopped. Failing to do so may result in unpredictable behavior.

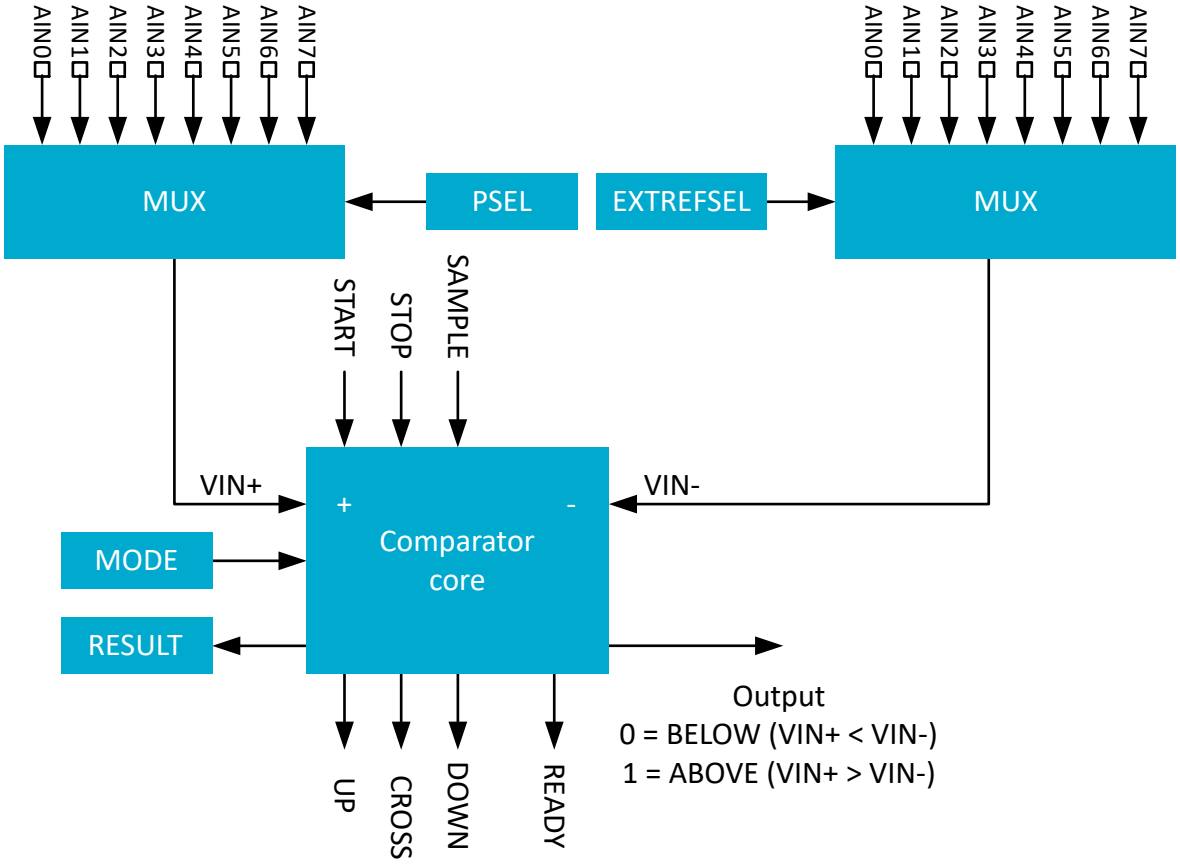
Differential mode

In differential mode, the reference input VIN- is derived directly from one of the AINx pins.

Before enabling the comparator via the ENABLE register, the following registers must be configured for the differential mode:

- PSEL
- MODE
- EXTREFSEL

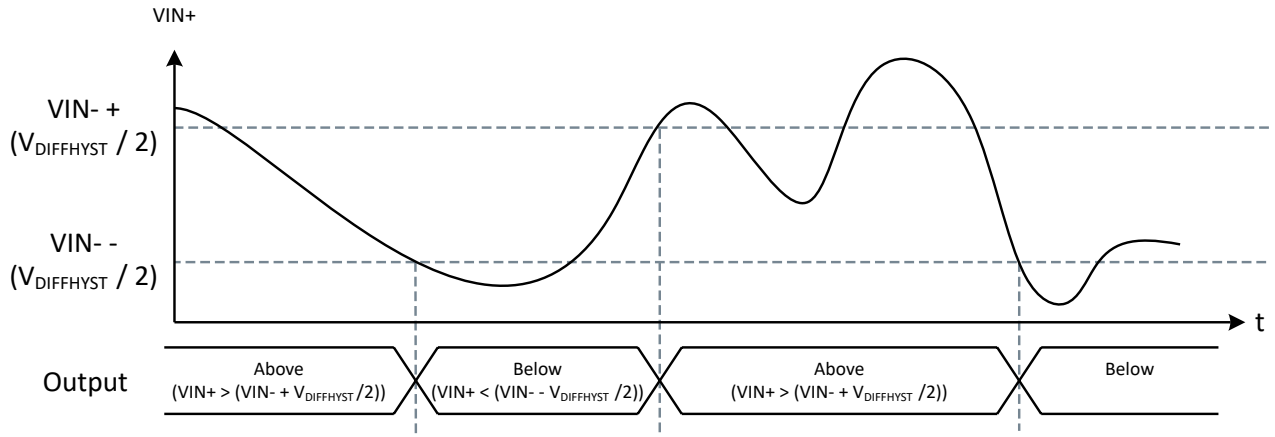
Figure 2. Comparator in differential mode



Note: Depending on the device, not all the analog inputs may be available for each MUX. See definitions for PSEL and EXTREFSEL for more information about which analog pins are available on a particular device.

When HYST register is turned on while in this mode, the output of the comparator (and associated events) will change from ABOVE to BELOW whenever VIN+ becomes lower than VIN- - ($V_{DIFFHYST}$ / 2). It will also change from BELOW to ABOVE whenever VIN+ becomes higher than VIN- + ($V_{DIFFHYST}$ / 2). This behavior is illustrated in Hysteresis enabled in differential mode.

Figure 3. Hysteresis enabled in differential mode



Single-ended mode

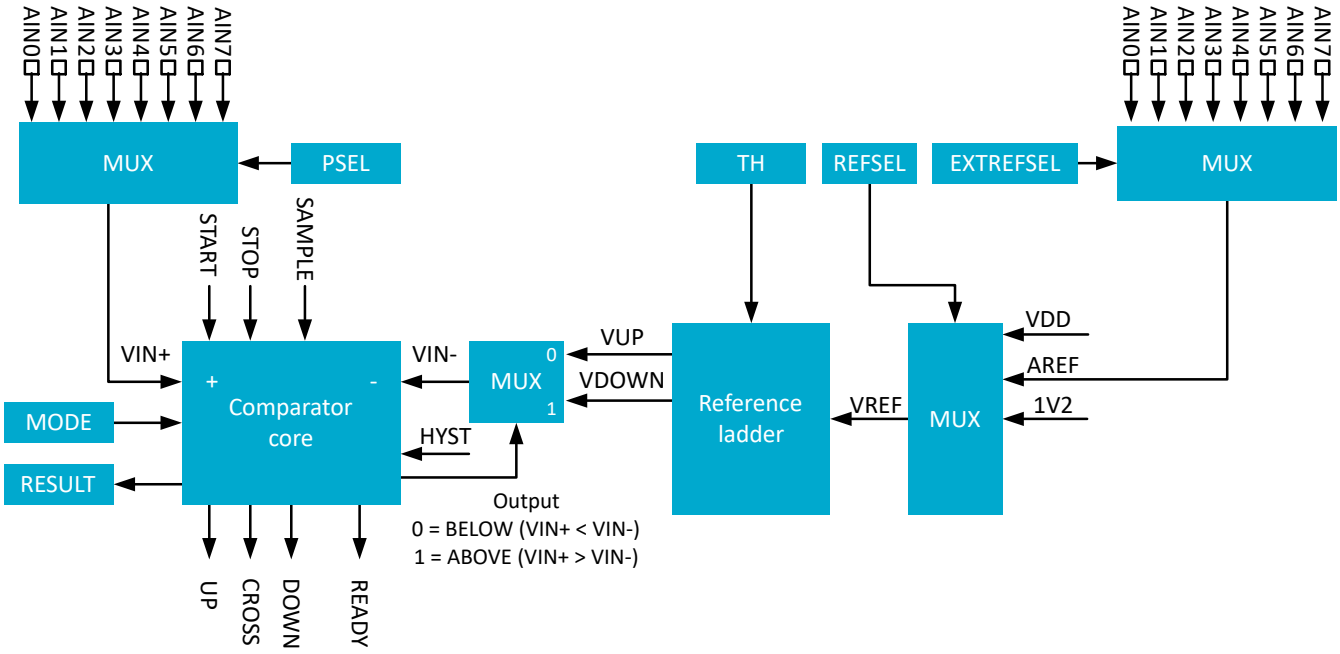
In single-ended mode, VIN- is derived from the reference ladder.

Before enabling the comparator via the ENABLE register, the following registers must be configured for the single-ended mode:

- PSEL
- MODE
- REFSEL
- EXTREFSEL
- TH

The reference ladder uses the reference voltage (VREF) to derive two new voltage references, VUP and VDOWN. VUP and VDOWN are configured using THUP and THDOWN respectively in the TH register. VREF can be derived from any of the available reference sources, configured using the EXTREFSEL and REFSEL registers as illustrated in Comparator in single-ended mode . When AREF is selected in the REFSEL register, the EXTREFSEL register is used to select one of the AIN0-AIN7 analog input pins as reference input. The selected analog pins will be acquired by the comparator once it is enabled.

Figure 4. Comparator in single-ended mode



Note: Depending on the device, not all the analog inputs may be available for each MUX. See definitions for PSEL and EXTREFSEL for more information about which analog pins are available on a particular device.

When the comparator core detects that VIN+ > VIN-, i.e. ABOVE as per the RESULT register, VIN- will switch to VDOWN. When VIN+ falls below VIN- again, VIN- will be switched back to VUP. By specifying VUP larger than VDOWN, a hysteresis can be generated as illustrated in Hysteresis example where VIN+ starts below VUP and Hysteresis example where VIN+ starts above VUP.

Writing to HYST has no effect in single-ended mode, and the content of this register is ignored.

Figure 5. Hysteresis example where VIN+ starts below VUP

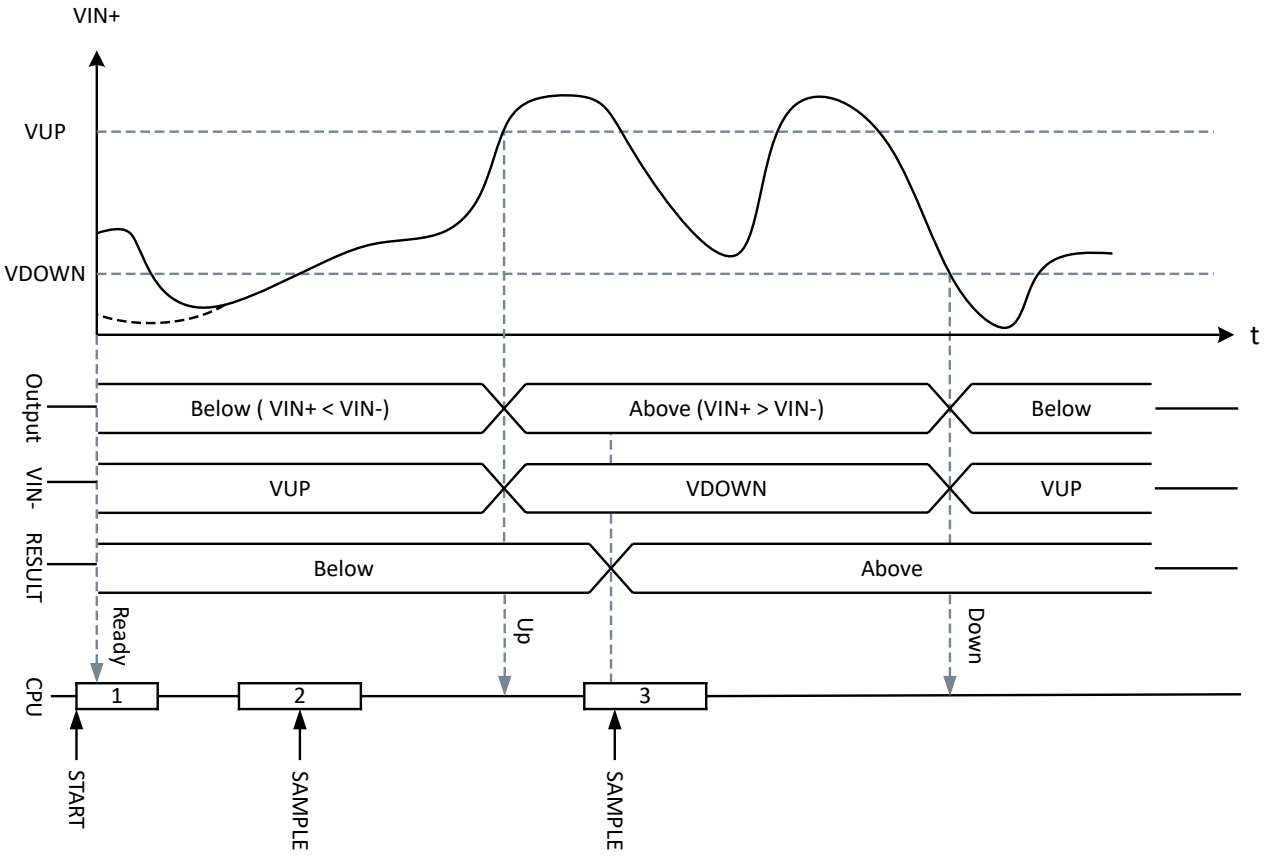
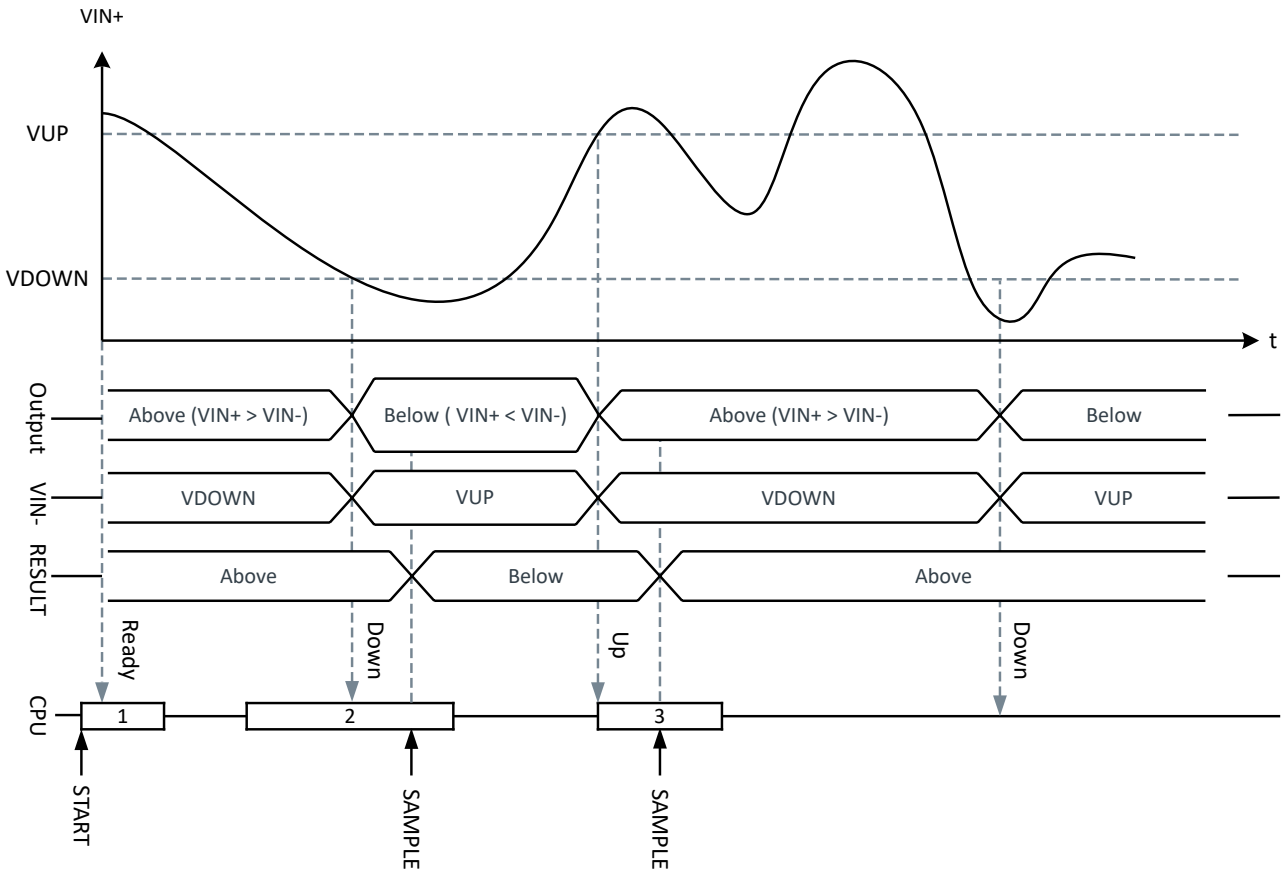


Figure 6. Hysteresis example where VIN+ starts above VUP



Registers

Instances

Instance	Domain	Base address	TrustZone			Split access	Description
			Map	Att	DMA		
COMP : SCOMP : NS	GLOBAL	0x501060000x40106000	US	S	NA	No	Comparator COMP

Register overview

Register	Offset	TZ	Description
TASKS_START	0x000		Start comparator
TASKS_STOP	0x004		Stop comparator

Register	Offset	TZ	Description
TASKS_SAMPLE	0x008		Sample comparator value. This task requires that COMP has been started by the START Task.
SUBSCRIBE_START	0x080		Subscribe configuration for task START
SUBSCRIBE_STOP	0x084		Subscribe configuration for task STOP
SUBSCRIBE_SAMPLE	0x088		Subscribe configuration for task SAMPLE
EVENTS_READY	0x100		COMP is ready and output is valid
EVENTS_DOWN	0x104		Downward crossing
EVENTS_UP	0x108		Upward crossing
EVENTS_CROSS	0x10C		Downward or upward crossing
PUBLISH_READY	0x180		Publish configuration for event READY
PUBLISH_DOWN	0x184		Publish configuration for event DOWN
PUBLISH_UP	0x188		Publish configuration for event UP
PUBLISH_CROSS	0x18C		Publish configuration for event CROSS
SHORTS	0x200		Shortcuts between local events and tasks
INTEN	0x300		Enable or disable interrupt

Register	Offset	TZ	Description
INTENSET	0x304		Enable interrupt
INTENCLR	0x308		Disable interrupt
INTPEND	0x30C		Pending interrupts
RESULT	0x400		Compare result
ENABLE	0x500		COMP enable
PSEL	0x504		Pin select
REFSEL	0x508		Reference source select for single-ended mode
EXTREFSEL	0x50C		External reference select
TH	0x530		Threshold configuration for hysteresis unit
MODE	0x534		Mode configuration
HYST	0x538		Comparator hysteresis enable
ISOURCE	0x53C		Current source select on analog input

TASKS_START

Address offset: 0x000

Start comparator

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																																A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
A	W	TASKS_START			Start comparator
			Trigger	1	Trigger task

TASKS_STOP

Address offset: 0x004

Stop comparator

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																																A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
A	W	TASKS_STOP			Stop comparator
			Trigger	1	Trigger task

TASKS_SAMPLE

Address offset: 0x008

Sample comparator value. This task requires that COMP has been started by the START Task.

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																																A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
A	W	TASKS_SAMPLE			Sample comparator value. This task requires that COMP has been started by the START Task.
			Trigger	1	Trigger task

SUBSCRIBE_START

Address offset: 0x080

Subscribe configuration for task START

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID		B																							A	A	A	A	A	A	A	A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
A	RW	CHIDX		[0..255]	DPPI channel that task START will subscribe to
B	RW	EN			
			Disabled	0	Disable subscription
			Enabled	1	Enable subscription

SUBSCRIBE_STOP

Address offset: 0x084

Subscribe configuration for task STOP

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID		B																							A	A	A	A	A	A	A	A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
A	RW	CHIDX		[0..255]	DPPI channel that task STOP will subscribe to
B	RW	EN			
			Disabled	0	Disable subscription
			Enabled	1	Enable subscription

SUBSCRIBE_SAMPLE

Address offset: 0x088

Subscribe configuration for task SAMPLE

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID		B																							A	A	A	A	A	A	A	A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
A	RW	CHIDX		[0..255]	DPPI channel that task SAMPLE will subscribe to
B	RW	EN			
			Disabled	0	Disable subscription
			Enabled	1	Enable subscription

EVENTS_READY

Address offset: 0x100

COMP is ready and output is valid

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																																A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
A	RW	EVENTS_READY			COMP is ready and output is valid
			NotGenerated	0	Event not generated
			Generated	1	Event generated

EVENTS_DOWN

Address offset: 0x104

Downward crossing

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																																A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
A	RW	EVENTS_DOWN			Downward crossing
			NotGenerated	0	Event not generated
			Generated	1	Event generated

EVENTS_UP

Address offset: 0x108

Upward crossing

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																																A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
A	RW	EVENTS_UP			Upward crossing
			NotGenerated	0	Event not generated
			Generated	1	Event generated

EVENTS_CROSS

Address offset: 0x10C

Downward or upward crossing

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																																A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
A	RW	EVENTS_CROSS			Downward or upward crossing

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																																A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
			NotGenerated	0	Event not generated
			Generated	1	Event generated

PUBLISH_READY

Address offset: 0x180

Publish configuration for event READY

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID	B																								A	A	A	A	A	A	A	A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
A	RW	CHIDX		[0..255]	DPPI channel that event READY will publish to
B	RW	EN			
			Disabled	0	Disable publishing
			Enabled	1	Enable publishing

PUBLISH_DOWN

Address offset: 0x184

Publish configuration for event DOWN

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID	B																								A	A	A	A	A	A	A	A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
A	RW	CHIDX		[0..255]	DPPI channel that event DOWN will publish to

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID	B																								A	A	A	A	A	A	A	A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
B	RW	EN			
			Disabled	0	Disable publishing
			Enabled	1	Enable publishing

PUBLISH_UP

Address offset: 0x188

Publish configuration for event UP

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID	B																								A	A	A	A	A	A	A	A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
A	RW	CHIDX		[0..255]	DPPI channel that event UP will publish to
B	RW	EN			
			Disabled	0	Disable publishing
			Enabled	1	Enable publishing

PUBLISH_CROSS

Address offset: 0x18C

Publish configuration for event CROSS

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID	B																								A	A	A	A	A	A	A	A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
A	RW	CHIDX		[0..255]	DPPI channel that event CROSS will publish to
B	RW	EN			
			Disabled	0	Disable publishing
			Enabled	1	Enable publishing

SHORTS

Address offset: 0x200

Shortcuts between local events and tasks

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																												E	D	C	B	A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
A	RW	READY_SAMPLE			Shortcut between event READY and task SAMPLE
			Disabled	0	Disable shortcut
			Enabled	1	Enable shortcut
B	RW	READY_STOP			Shortcut between event READY and task STOP
			Disabled	0	Disable shortcut
			Enabled	1	Enable shortcut
C	RW	DOWN_STOP			Shortcut between event DOWN and task STOP

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																												E	D	C	B	A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
			Disabled	0	Disable shortcut
			Enabled	1	Enable shortcut
D	RW	UP_STOP			Shortcut between event UP and task STOP
			Disabled	0	Disable shortcut
			Enabled	1	Enable shortcut
E	RW	CROSS_STOP			Shortcut between event CROSS and task STOP
			Disabled	0	Disable shortcut
			Enabled	1	Enable shortcut

INTEN

Address offset: 0x300

Enable or disable interrupt

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																													D	C	B	A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
A	RW	READY			Enable or disable interrupt for event READY
			Disabled	0	Disable
			Enabled	1	Enable

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																													D	C	B	A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
B	RW	DOWN			Enable or disable interrupt for event DOWN
			Disabled	0	Disable
			Enabled	1	Enable
C	RW	UP			Enable or disable interrupt for event UP
			Disabled	0	Disable
			Enabled	1	Enable
D	RW	CROSS			Enable or disable interrupt for event CROSS
			Disabled	0	Disable
			Enabled	1	Enable

INTENSET

Address offset: 0x304

Enable interrupt

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																													D	C	B	A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
A	RWW1S	READY			Write '1' to enable interrupt for event READY
			Set	1	Enable

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																													D	C	B	A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
			Disabled	0	Read: Disabled
			Enabled	1	Read: Enabled
B	RWW1S	DOWN			Write '1' to enable interrupt for event DOWN
			Set	1	Enable
			Disabled	0	Read: Disabled
			Enabled	1	Read: Enabled
C	RWW1S	UP			Write '1' to enable interrupt for event UP
			Set	1	Enable
			Disabled	0	Read: Disabled
			Enabled	1	Read: Enabled
D	RWW1S	CROSS			Write '1' to enable interrupt for event CROSS
			Set	1	Enable
			Disabled	0	Read: Disabled
			Enabled	1	Read: Enabled

INTENCLR

Address offset: 0x308

Disable interrupt

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																													D	C	B	A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
A	RWW1C	READY			Write '1' to disable interrupt for event READY
			Clear	1	Disable
			Disabled	0	Read: Disabled
			Enabled	1	Read: Enabled
B	RWW1C	DOWN			Write '1' to disable interrupt for event DOWN
			Clear	1	Disable
			Disabled	0	Read: Disabled
			Enabled	1	Read: Enabled
C	RWW1C	UP			Write '1' to disable interrupt for event UP
			Clear	1	Disable
			Disabled	0	Read: Disabled
			Enabled	1	Read: Enabled
D	RWW1C	CROSS			Write '1' to disable interrupt for event CROSS
			Clear	1	Disable
			Disabled	0	Read: Disabled

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																													D	C	B	A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
			Enabled	1	Read: Enabled

INTPEND

Address offset: 0x30C

Pending interrupts

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																													D	C	B	A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
A	R	READY			Read pending status of interrupt for event READY
			NotPending	0	Read: Not pending
			Pending	1	Read: Pending
B	R	DOWN			Read pending status of interrupt for event DOWN
			NotPending	0	Read: Not pending
			Pending	1	Read: Pending
C	R	UP			Read pending status of interrupt for event UP
			NotPending	0	Read: Not pending
			Pending	1	Read: Pending
D	R	CROSS			Read pending status of interrupt for event CROSS

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																													D	C	B	A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
			NotPending	0	Read: Not pending
			Pending	1	Read: Pending

RESULT

Address offset: 0x400

Compare result

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																																A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
A	R	RESULT			Result of last compare. Decision point SAMPLE task.
			Below	0	Input voltage is below the threshold (VIN+ < VIN-)
			Above	1	Input voltage is above the threshold (VIN+ > VIN-)

ENABLE

Address offset: 0x500

COMP enable

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																															A	A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
A	RW	ENABLE			Enable or disable COMP
			Disabled	0	Disable

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																															A	A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
			Enabled	2	Enable

PSEL

Address offset: 0x504

Pin select

The pin is selected based on PSEL.PORT

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																					B	B	B	B				A	A	A	A	A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
A	RW	PIN			Analog pin select
B	RW	PORT			GPIO Port selection

REFSEL

Address offset: 0x508

Reference source select for single-ended mode

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																															A	A	A
Reset 0x00000004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0

ID	R/W	Field	Value ID	Value	Description
A	RW	REFSEL			Reference select
			Int1V2	0	VREF = internal 1.2 V reference
			VDD	4	VREF = VDD

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																														A	A	A
Reset 0x00000004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0

ID	R/W	Field	Value ID	Value	Description
			ARef	5	VREF = AREF

EXTREFSEL

Address offset: 0x50C

External reference select

The external reference pin is selected based on EXTREFSEL.PORT

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																					B	B	B	B				A	A	A	A	A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
A	RW	PIN			External analog reference pin select
B	RW	PORT			GPIO Port selection

TH

Address offset: 0x530

Threshold configuration for hysteresis unit

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																			B	B	B	B	B	B			A	A	A	A	A	A
Reset 0x00002020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
A	RW	THDOWN		[63:0]	VDOWN = (THDOWN+1)/64*VREF
B	RW	THUP		[63:0]	VUP = (THUP+1)/64*VREF

MODE

Address offset: 0x534

Mode configuration

Bit number					31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																												B							A	A
Reset 0x00000000					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ID	R/W	Field	Value ID	Value	Description																															
A	RW	SP			Speed and power modes																															
			Low	0	Low-power mode																															
			Normal	1	Normal mode																															
			High	2	High-speed mode																															
B	RW	MAIN			Main operation modes																															
			SE	0	Single-ended mode																															
			Diff	1	Differential mode																															

HYST

Address offset: 0x538

Comparator hysteresis enable

Bit number					31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																																				A
Reset 0x00000000					0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ID	R/W	Field	Value ID	Value	Description																															
A	RW	HYST			Comparator hysteresis																															
			NoHyst	0	Comparator hysteresis disabled																															

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																																A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
			Hyst40mV	1	Comparator hysteresis enabled

ISOURCE

Address offset: 0x53C

Current source select on analog input

Bit number	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
ID																															A	A
Reset 0x00000000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ID	R/W	Field	Value ID	Value	Description
A	RW	ISOURCE			Current source select on analog input
			Off	0	Current source disabled
			Ien2uA5	1	Current source enabled (+/- 2.5 uA)
			Ien5uA	2	Current source enabled (+/- 5 uA)
			Ien10uA	3	Current source enabled (+/- 10 uA)