

## Active antenna detector

### SPECIFICATION

#### 1 FEATURES

- TSMC SiGe BiCMOS 0.18  $\mu\text{m}$
- Wide range of threshold adjustment
- A load current limit
- Supported foundries: TSMC, UMC, SMIC, iHP, Vanguard, SilTerra

#### 2 APPLICATION

- Receivers

#### 3 OVERVIEW

The antenna detector supplies an active antenna and is able to detect both open and short circuits. A current limiter restricts the antenna current to a safe level in the case of a short circuit in order to protect the circuit.

The block is fabricated on TSMC SiGe BiCMOS 0.18  $\mu\text{m}$  technology.

#### 4 STRUCTURE

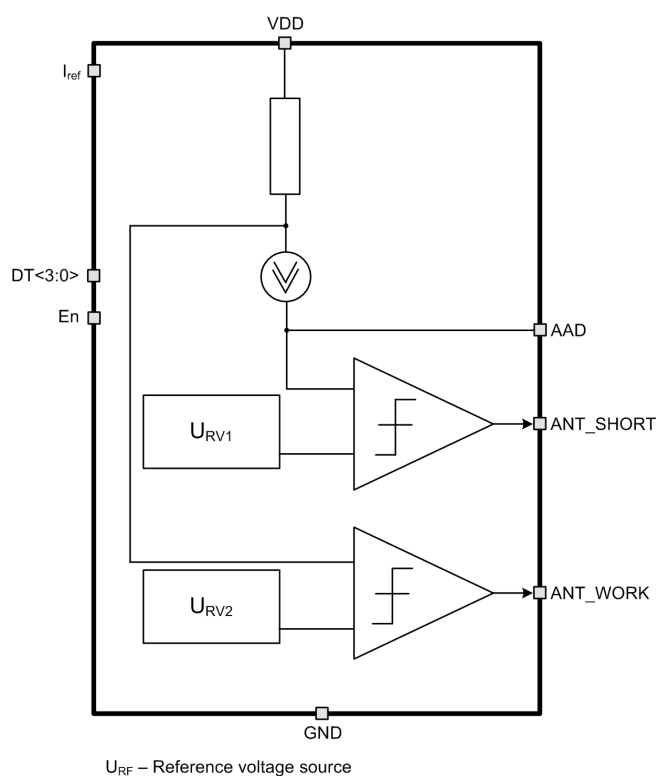


Figure 1: Active antenna detector structure

## 5 PIN DESCRIPTION

Name	Direction	Description
I <sub>ref</sub>	I	Reference current
DT<3:0>	I	Digital code defined the active antenna nominal current
AAD	IO	Active antenna supply voltage
ANT_WORK	O	Active antenna status
ANT_SHORT	O	
EN	I	Enable/disable
VDD	IO	Supply voltage
GND	IO	Ground

## 6 LAYOUT DESCRIPTION

Active antenna detector dimensions are given in the table 1.

Table 1: Block dimensions

Dimension	Value	Unit
Height	337	um
Width	690	um

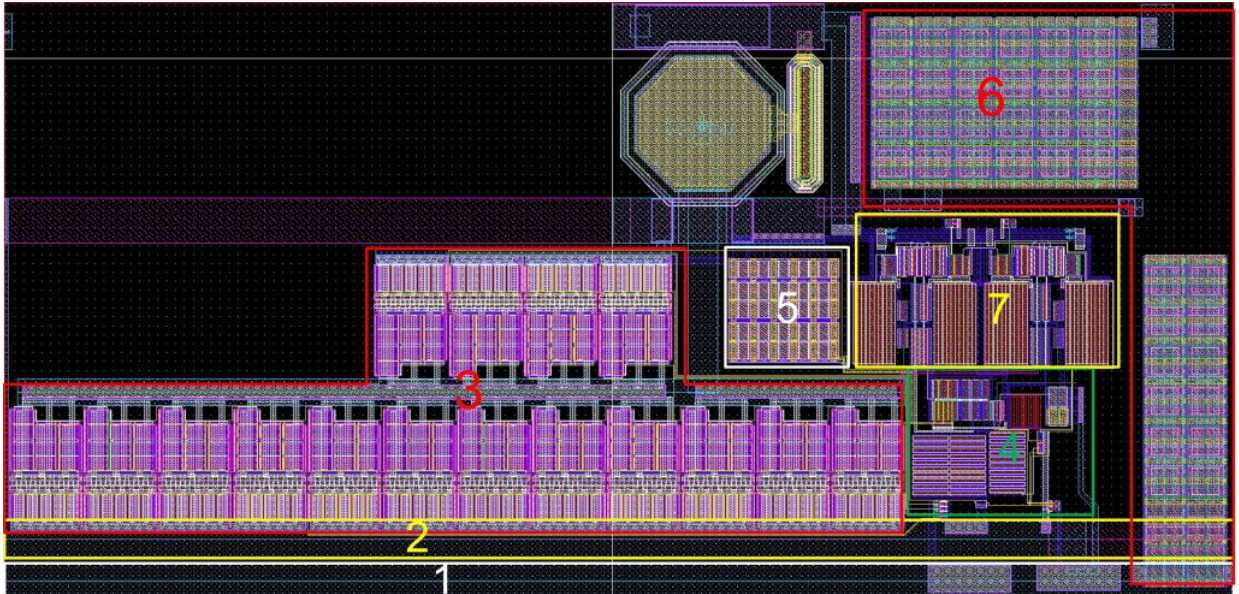


Figure 2: Active antenna detector layout

1. Supply voltage bus
2. Ground bus
3. Active antenna current source
4. Reference voltage source
5. Reference voltage filter
6. Supply voltage filter
7. Comparators

## 7 OPERATING CHARACTERISTICS

### 7.1 TECHNICAL CHARACTERISTICS

Technology \_\_\_\_\_ TSMC SiGe BiCMOS 0.18 um  
 Status \_\_\_\_\_ Silicon proven  
 Area \_\_\_\_\_ 0.15 mm<sup>2</sup>

### 7.2 ELECTRICAL CHARACTERISTICS

The values of electrical characteristics are specified for  $V_{cc} = 2.8 \div 3.6$  V and  $T = -40 \div +85^{\circ}\text{C}$ . Typical values are at  $V_{cc} = 3.3$  V,  $T = +27^{\circ}\text{C}$ , unless otherwise specified.

Parameter	Symbol	Condition	Value			Unit
			min	typ.	max	
Supply voltage	$V_{cc}$	-	2.8	3.3	3.6	V
Operating temperature range	T	-	-40	+27	+85	°C
Supply current	$I_{cc}$	-	-	140	-	μA
Detection current	$I_{AW}$	-	-	$0.22 \times I_{nom}^*$	-	mA
Short circuit protection current	$I_{AS}$	In case of the short circuit	-	$2 \times I_{nom}^*$	-	mA
Stand-by current	$I_{stb}$	-	-	-	25	nA
Input logic-level high	$V_{IH}$	For digital inputs EN, DT<3:0>	0.7V <sub>cc</sub>	-	V <sub>cc</sub> +0.25	V
Input logic-level low	$V_{IL}$		-0.25	-	0.3	V

Note: \* – nominal current of an active antenna is set by the digital code DT<3:0>.

## 8 DELIVERABLES

Depending on license type IP may include:

- Schematic or NetList
- Abstract view (.lef and .lib files)
- Layout (optional)
- Verilog behavior model
- Extracted view (optional)
- GDSII
- DRC, LVS, antenna report
- Test bench with saved configurations (optional)
- Documentation