

CapSense Express™ (CY8C201xx) – CSA Parameters– Quick Reference

Default Parameters: List of parameters which can have default values at different voltages.

Default Parameters	5V, 3.3V, 2.7V
Baseline Update Threshold	200
Debounce	3
Settling Time	160
Clock	IMO
Low Baseline Reset	50

Parameter with recommended range of values: The value of IDAC can be changed depending on the sensor size, overlay thickness and sensitivity requirements of the board. The range for IDAC below has been obtained by setting 70 as the minimum threshold for difference count (sensitivity). Low values of IDAC give high sensitivity. Sensitivity reduces with small sensor size and thick overlays.

Parameter with recommended range of values	5V	3.3V	2.7V
IDAC	4 to 16	4 to 20	4 to 8

Parameters to be tuned: List of parameters which needs to be tuned based on the values of parameters mentioned above to meet the sensitivity requirements. Table below gives the range of these parameters for the range of IDAC values mentioned above.

Parameters to be tuned	5V	3.3V	2.7V	Formula # as per AN2403
Finger Threshold	150 to 50	185 to 50	100 to 50	(ON Threshold + OFF Threshold)/2
Noise Threshold	80 to 28	98 to 28	50 to 28	40*DIFF
Hysteresis	30 to 10	35 to 10	20 to 10	(ON Threshold - OFF Threshold)/2
Negative Noise Threshold	80 to 28	98 to 28	50 to 28	Noise threshold

Notes:

- All the above values have been obtained on an Evaluation Board (CY3218-CAPEXP1) following the guidelines of “Layout Guidelines for PSoC CapSense – Best Practices-Quick Reference” document. The readings were taken with an acrylic overlay of 1.5mm thickness. Above recommended values can be used as a reference for designs following the recommended layout guidelines document.
- Sensitivity (difference count) increases with Clock, reduction in IDAC and decreases with increase in overlay thickness. Hence, use low values of IDAC at higher clock rates to increase sensitivity when using thick overlays.
- The range for Finger threshold, Noise Threshold and Hysteresis has been determined as per the SNR requirements specified in the App. Note AN2403. For more details refer to this Application note.

DIFF = Difference Count = Increase in raw count value with finger press

ON Threshold = 90*DIFF, OFF Threshold = 60*DIFF