

# 6010S Specification Sheet (English Translation)

## 1. Overview

The 6010S is a capacitive touch control ASIC with single-channel touch input and dual PWM outputs. It's designed for touch-dimming LED lighting applications, offering low power consumption, high anti-interference performance, a wide operating voltage range, no flickering, and minimal external components.

## 2. Main Features

- Operating voltage: 2.4V to 5.5V
- Standby current: ~9uA @ 5V (CSEL = 10nF)
- Single-channel touch input
- Dual PWM outputs at 20kHz
- Capacitive touch sensing via charge sharing
- Built-in voltage regulator, power-on reset, and low-voltage reset
- Software algorithms for real-time environmental adaptation and digital filtering
- ESD protection > 4KV (HBM)

## 3. Package and Pin Description (SOP-8 Package)

Pin	Name	Type	Description
1	LO	I/O	Working status indicator
2	CSEL	I/O	Sampling capacitor input
3	VDD	P	Power supply (positive)
4	VSS	P	Power supply (ground)
5	TCH	I/O	Touch input
7	SO1	I/O	PWM output 1 (LED1)
8	SO2	I/O	PWM output 2 (LED2)

## 4. Function Description

- On first power-up, the lights are off, and the LO pin outputs low level.
- In the off state:
  - Short touch (<550ms) turns the light on and cycles through modes:

- LED1 ON, LED2 OFF
- LED1 OFF, LED2 ON
- LED1 ON, LED2 ON
- LED1 OFF, LED2 OFF (loop repeats)
- Long touch (>550ms) adjusts brightness in current mode:
  - Brightness increases during hold; stops at release.
  - If held >3s, brightness maxes out and stops changing.
  - Another long press decreases brightness similarly.
  - Brightness adjustment range: 5% - 100%
- Touch functions (short and long) are independent and can be used anytime.
- Brightness and color temperature memory is supported while powered.
- LO pin outputs high when lights are on, low when off - usable as a work status indicator.

## 5. Application Circuit

A typical application circuit is shown in the original document.

Note: Touch sensitivity can be adjusted by changing the capacitor between CSEL and GND.

## 6. Electrical Characteristics

### 6.1 Absolute Maximum Ratings

Parameter	Range	Unit
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Supply Voltage	-0 to 6.0	V
Input Voltage	-0.3 to VDD + 0.3	V
Operating Temp.	-20 to +70	degreesC
Storage Temp.	-40 to +125	degreesC

### 6.2 DC Characteristics (VDD = 2.4V-5.5V, Temp = 25 degreesC)

Parameter	Typical	Unit
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Standby Current @5V	9	uA
Standby Current @3V	6.5	uA
PWM Frequency	20	kHz
Input High Voltage	$\geq 0.75V_{DD}$	V

Input Low Voltage	<= 0.25VDD	V	
Output Source Current	-4.5 to -12	mA	
Output Sink Current	12 to 28	mA	

7. Package Dimensions (SOP-8)

Symbol	Min (mm)	Max (mm)	
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A	4.80	5.00	
A1	0.35	0.45	
A2	-	-	
A3	-	-	
B	3.80	4.00	
B1	5.80	6.20	
B2	-	-	
C, C1, C2	0.55	0.65	

8. Revision History

Version	Change	Date	
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V1.0	Initial release	2018-03-21	
V1.1	Updated ESD specs	2020-11-10	