



8-bit MCU Product Family IS32CS8976 & IS32CS8978 LIN MCU Family with Touch Sense Controller



Lumissil's IS32CS8976A/B and IS32CS8978A/B are general-purpose MCUs designed for automotive applications, featuring 64KB ECC e-Flash and 2KB SRAM. These devices are SAE-J2602 compliant and include a 20k baud LIN 2.0/2.2 controller with a PHY transceiver, while supporting up to 20 capacitive touch sensors.

The automotive-grade MCUs are tested across a temperature range of -40°C to $+125^{\circ}\text{C}$, are AEQ-100 certified, and are available in a wettable flank package (IS32CS8978A/B).

Both the IS32CS8976A/B and IS32CS8978A/B simplify design through Lumissil's Gen 3 capacitive touch technology. This technology provides moisture and dust resistance, enables active proximity sensing (APS) without physical contact, and includes circuitry that periodically calibrates keys to eliminate false triggers by adapting to environmental conditions. APS also extends proximity detection capabilities.

To ease design, the IS32CS8976A/B and IS32CS8978A/B feature a suite of communication peripherals, as well as digital and analog sub-systems. They support fast 400kHz I2C, SPI, and UART protocols and come complete with reconfigurable GPIO pins, ADCs, and comparators.

KEY FEATURES

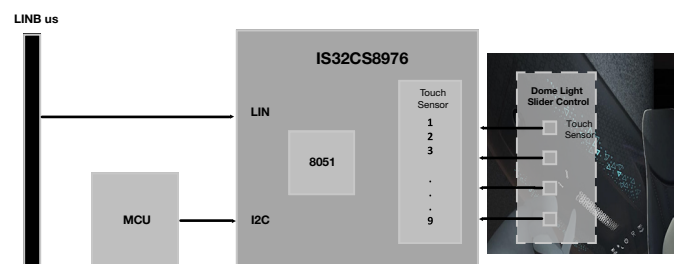
- **MCU and memory:** 8051 with 64KB e-Flash supports firmware for command control applications.
- **Touch keys:** Up to 20 water and dust resistant touch sensors, supports multiple applications with a single device.
- **Key calibration:** Supports multiple independent applications with a single device through individual key calibration.
- **Calibration monitoring:** Prevents false triggering.

- **Auto sleep and wake:** Perfect for power challenged applications.
- **Automotive interface:** LIN Phy and Controller 2.0/2.2, perfect for automotive communications.
- **Other interfaces:** Fast 400kHz I2C, SPI, and EUART are popular interfaces for communication between one or more touch controllers.
- **Peripherals:** Wide array of analog and digital peripherals including an ADC/DAC, and PWM controller for flexibility.

APPLICATIONS

1. **Dome light slider control:** Touch control enables the adjustment of brightness of the interior dome light.
2. **Steering wheel controls:** Touch control of radio stations, dashboard status indicators and on/off function of others.
3. **Dashboard control:** Touch control of air conditioners, radio stations and clock setting.
4. **Light switches:** Touch control of the interior light.
5. **Door locks:** Touch sensors facilitate locking/unlocking of doors through touch and proximity sense.

BLOCK DIAGRAM



Dome Light Control Enabled by the IS32CS8976

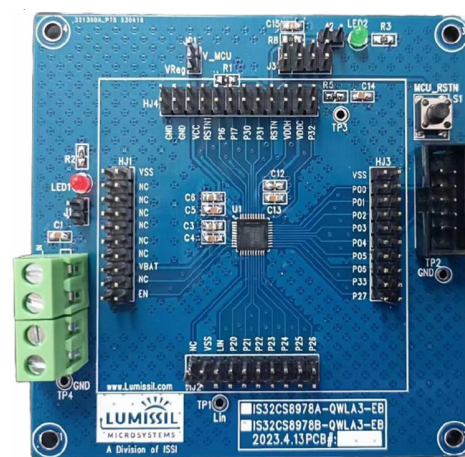
DEVELOPMENT BOARD

Lumissil's development kit consists of,

1. Evaluation board
2. Cap-sense calibration GUI
3. EzISP programming GUI
4. Standard code

ORDERING INFORMATION

Part	Package	Quantity/Reel
IS32CS8976A-ZLA3-TR	eTSSP-24	2500
IS32CS8976B-ZLA3-TR		
IS32CS8978A-QWLA3-TR	WQFN-40	
IS32CS8978B-QWLA3-TR		



IS32CS8978 Evaluation Board

LIN MCU FAMILY WITH TOUCH SENSE CONTROLLER

	IS32CS8978A	IS32CS8978B	IS32CS8976A	IS32CS8976B
Supply Voltage	5V	3.3V	5V	3.3V
MCU and Memory	8051 with 64KB		8051 with 16kb	
Cap Sense	20		9	
GPIO	20		10	
ADC	16CH 12bit SAR		4CH 11bit SAR	
Comparators	4		2	
UART	2		1	
I2C	1		2	
SPI	1		1	
DAC	1CH 8bit		1CH 8bit	
LIN	LIN 2.2A SAEJ2602 Controller and Phy		LIN 2.2A SAEJ2602 Controller and Phy	
Interrupts	6		6	
Timers	5 @ 16bit 1 @ 24bit		5 @ 16bit 1 @ 24bit	
PWM	6CH 12bit		6CH 12bit	