

GW8316

6-Channel Proximity Sensor for SAR Applications

Description

The GW8316 is an advanced 6-channel capacitive sensor MCU designed specifically for SAR (Specific Absorption Rate) applications. Capable of high-performance proximity detection based on capacitive sensing circuit operating with a wide range 2.7 V ~ 3.6 V supply voltage, this intelligent and smart sensor excels the presence detection of a user at various distances. With the human body proximity detection ability of the GW8316, radio frequency (RF) emission power can be optimized in the presence of the human body. The GW8316 provides noticeable performance benefits to portable electronic devices manufacturers by helping them to comply with stringent electromagnetic radiation regulations and SAR standards.

The GW8316 communicates to a host over the Inter-Integrated Circuit(I²C) serial bus, which can solely operate even in sleep mode. The Host can wake up the device from sleep mode with an I²C command. The interrupt signal output can be activated to allow the host to get the relative proximity distance or to receive a detection notification in an efficient way.

Equipped with an on-chip calibration functionality, the GW8316 can maintain performance across a wide range of temperatures, humidity, and noisy conditions. This feature allows for regular sensitivity adjustments, simplifying product development and improving overall performance.

Features

- Flexible 2.7 V ~ 3.6 V supply voltage
- High performance capacitive sensing circuit
 - 6 capacitive sensing inputs
 - Capacitance resolution: 1 aF
 - Capacitance offset compensation: ~ 300 pF
 - Automatic offset capacitance calibration
 - Active shield driver
 - Temperature sensor for compensation
- 8051 compatible MCU core
 - 32 KB Flash, 3KB SRAM
 - Capacitive sensor control interface
 - Separate configurations per channel
 - Digital sensor status output
 - Dedicated digital signal processing core

- Peripherals
 - 2 Timer, 1 WDT
 - 2 I²C serial interfaces, 1 UART
 - DMA
 - GPIO
 - 2 PWM
 - External interrupt output
- Flexible Event/Status Handling
- Low power consumption
 - Active mode: 50 μ A
 - Sleep mode: 1.9 μ A

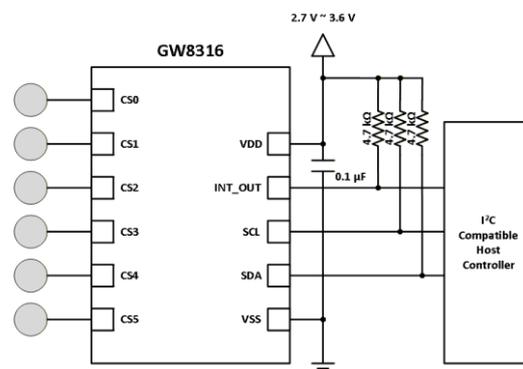
Physical Characteristics

- Supply voltage: 2.7 V ~ 3.6 V
- Operating temperature: -40 °C ~ 105 °C
- 12 DFN: 1.8 mm x 2.1 mm, 0.4 mm pitch
- 16 QFN: 3.5 mm x 3.5 mm, 0.8 mm pitch
- Pb & Halogen Free, RoHS/WEEE compliant

Typical Applications

- Wireless portable devices
 - Smartphones/Tablets/Laptops
 - Hotspots
 - Others

Basic Application Diagram

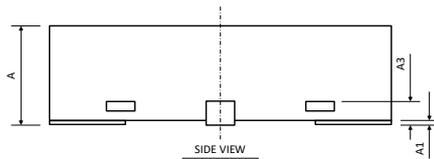
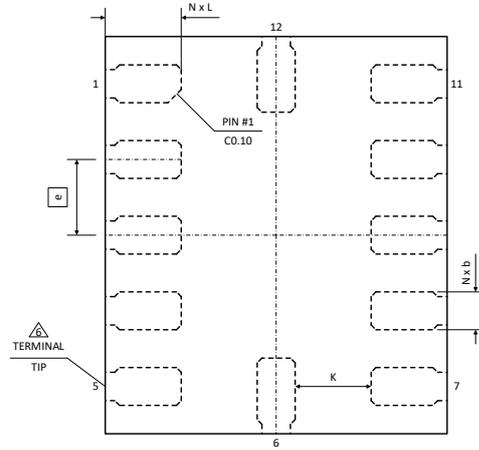
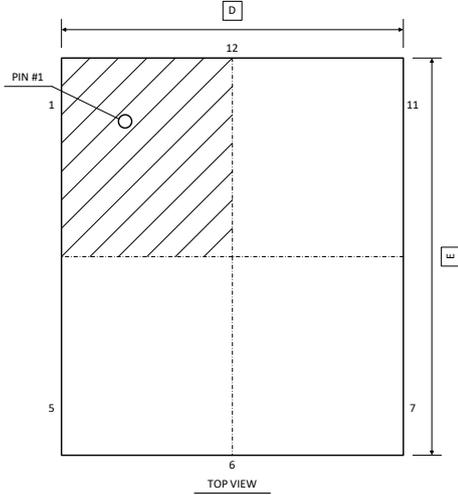


Ordering Information

Device name	Package	Remark
GW8316ADQDR	1.8 mm x 2.1 mm, 0.4 mm pitch	12 DFN Consumer
GW8316ARRJRQ	3.5 mm x 3.5 mm, 0.4 mm pitch	16 QFN AEC-Q100

Package Information

12 DFN Package

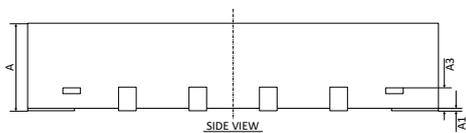
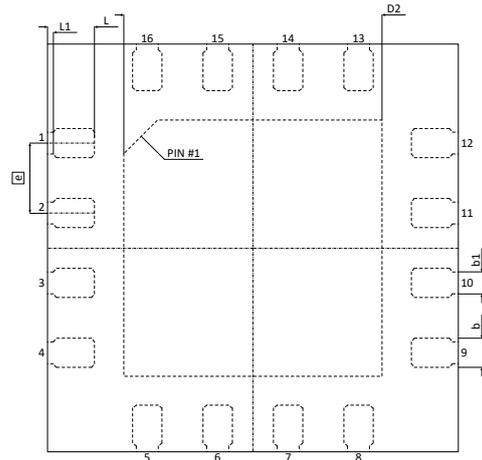
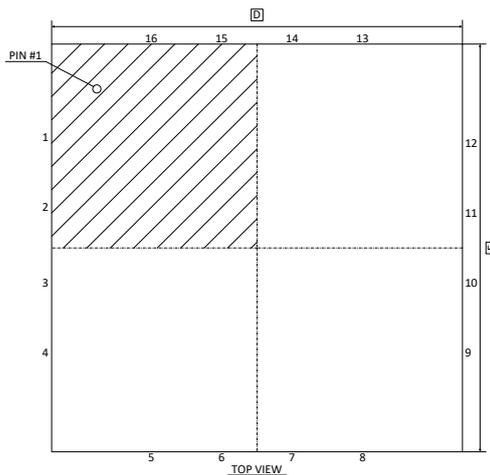


Notes

1. All dimensions are in millimeters.
2. N is the total number of terminals.
3. The location of the marked terminal #1 identifier is within the hatched area.
4. ND and NE refer to the number of terminals on each D and E side respectively.
5. Dimension b applies to the metallized terminal and is measured between 0.15 mm and 0.30 mm from the terminal tip. The terminal has a radius of the other end of it, dimension b should not be measured in that radius area.
6. Coplanarity applies to the terminals and all other bottom surface metallization.

Dimension Table				
Symbol	Min.	Typ.	Max.	Note
A	0.45	0.50	0.55	
A1	0.00	0.02	0.05	
A3	0.127 Ref.			
b	0.15	0.20	0.25	5
D	1.80 BSC			
E	2.10 BSC			
e	0.40 BSC			
K	0.20	-	-	
L	0.30	0.40	0.50	
N	12			2
ND	1			4
NE	5			4

16 QFN Package



Dimension Table			
Symbol	Min.	Typ.	Max.
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
A3	0.203 REF		
b	0.20	0.25	0.30
b1	0.15 REF		
D	3.40	3.50	3.60
D2	0.21	2.20	2.30
E	3.40	3.50	3.60
E2	0.21	2.20	2.30
e	0.60 BSC		
L	0.35	0.40	0.45
L1	0.05 REF		

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Corporate Headquarters

Gwanak Analog Co., Ltd., 1 Gwanak-ro, Gwanak-gu, Seoul National University Research Park, FL 5, Seoul, Korea 08826

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