# df220

明皜传感

# Intelligent, digital force sensor



## GENERAL DESCRIPTION

The df220 is a digital output force measuring sensor independently developed by MiraMEMS. It is the first digital output force measuring sensor on the market at present.
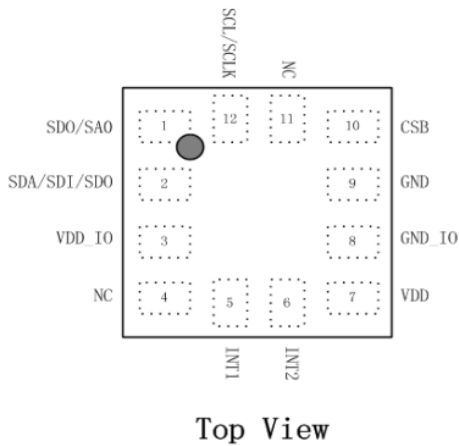
This highly sensitive force sensor consists of a MEMS element and an ASIC packaged in a 2x2x1.1mm land grid array (LGA). The measurement range is 0-10 N, and the resolution exceeds 4000. It can be widely used in pressure accelerator, pressure pen, pressure sensitive button and other scenes.

## TARGET APPLICATIONS

◆ Mobile / Smart phone

◆ Earphone

◆ Smart watch

◆ PC mouse pad/ Touchpads

◆ Video game controller

◆ Smart button

◆ Smart home application

◆ Robotic

## KEY FEATURES

| df220 Technical data | |
|---|---|
| Digital resolution | 14-bit |
| Measurement ranges | 0-10N |
| Sensitivity | 700LSB/N |
| Output data rate | 1Hz to 1000Hz |
| Digital inputs/outputs | I2C/SPI interface 2 interrupt pins |
| Supply voltage (VDD) | 1.62V to 3.6V |
| I/0 supply voltage (VDDIO) | 1.62V to 3.6V |
| Temperature range | -40°C to +85°C |
| LGA package | 2x2x1.1mm LGA-12 package |
| Shock resistance | 10000g×200us |

# df220

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Top View

## Pin configuration

## TECHNICAL SPECIFICATIONS

| Pin | Name | Description |
|-----|------|-------------|
| 1 | SDO/SA0 | SPI: serial data out I2C: I2C address select |
| 2 | SDA/SDI/SDO | Serial data I/O |
| 3 | VDD_IO | Power supply |
| 4 | NC | NO internal connection |
| 5 | INT1 | Interrupt pin |
| 6 | INT2 | Interrupt pin |
| 7 | VDD | Power supply |
| 8 | GND_IO | Ground |
| 9 | GND | Ground |
| 10 | CSB | Chip select for SPI |
| 11 | NC | NO internal connection |
| 12 | SCL/SCLK | Digital clock |

## SENSOR FEATURES

- ### Power consumption

  **Normal mode**
  95 µA @ ODR = 125Hz
  **Suspend mode**
  1µA

- ### Embedded intelligence

  New data interrupt
  Active interrupt

## SYSTEM COMPATIBILITY

The df220 is a low power high performance digital micro touch force sensor developed by MEMS technology.

The df220 adopts differential capacitance sensing technology. Compared with the past piezoresistive technology, it has high precision, low power consumption, low noise, and stable temperature performance.

The df220 has very wide ranges for VDD and VDDIO supply voltages. The df220 features I2C and SPI (3-wire/4-wire) digital, serial interfaces.