

TM04N

1-CH Capacitance Touch Sensor Module with Differential Sensitivity Calibration

General Description

The TM04N Touch Sensor Module is designed specifically for detecting of capacitance variation in sense node, and it is 1 Channel capacitive touch sensor module with differential sensitivity calibration. It will project a sense field through almost any dielectric material and detect the capacitance variation in sense node. Especially the sensor module can eliminate any noise due to embedded common and normal noise elimination circuit.

Also the TM04N works in the very low power condition, supply voltage, 5.0V and be spend about 100uA (stand-by current)

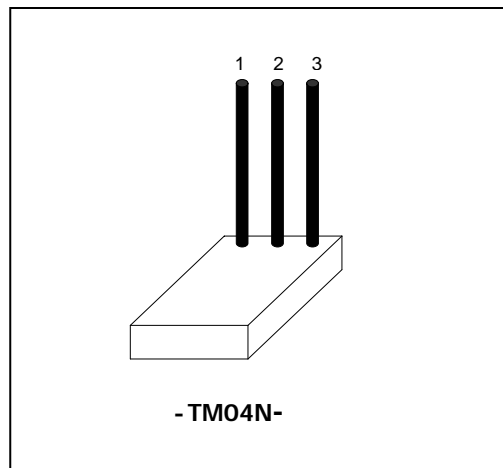
General Feature

- 1-Channel Capacitive Sensor Module with Differential Calibration.
- Open-Drain Digital Output.
- Digital Output by external Pull-up Resistor – Active “ Low” output
- 3 pin (GND, Vdd, OUT) Assignment
- 5.0V Operating Voltage
- Embedded common and normal noise elimination circuit

Application

- Home application(white Goods, Blue Goods...)
- Switch replacement
- Human presence detection
- Human interface for Toys /interactive games
- Switch for light controls.

Module Type



Pin Description

PIN Number	Symbol	Description	Protection
1	GND	Ground	
2	Vdd	Power Supply(5.0V)	
3	OUT	Open Drain	Vdd

Absolute Maximum Rating

Supply voltage	5.5V
Maximum voltage on any pin	VDD+0.3
Power Dissipation	10mW
Storage Temperature	-30 ~ 110°C
Operating Temperature	-10 ~ 75°C

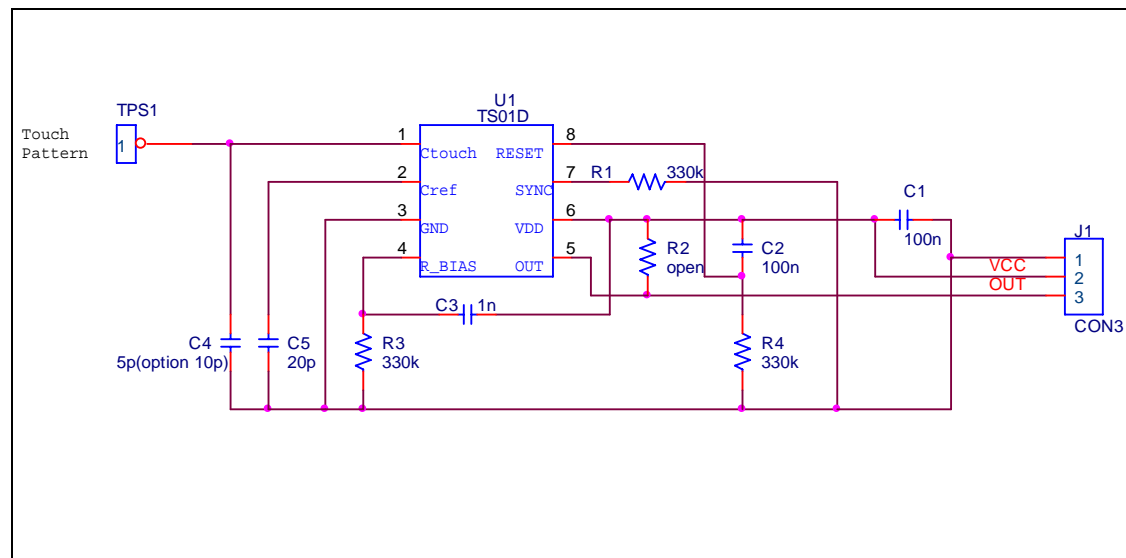
Characteristics	Symbol	Test Condition	Min.	Typ.	Max.	Units
Supply Voltage	Vdd		3.0	-	5.5	V
Current consumption	Id,max	-20°C < Ta < +75°C, Vdd = 5V	-		420	uA

Electrical Characteristics

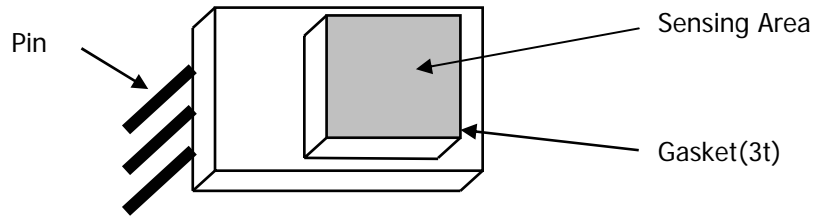
TA = 25°C

Characteristics	Symbol	Condition	Min	Typ	Max	Units
Operating supply Voltage	VDD		4.8	5.0	5.2	V
Current consumption	IDD	VDD=5.0V, R3=330K		110		uA
Output Impedance (open drain)	Zo	Vout = 0V(at Low) Vout = 5V(at high)		12 30M		Ohm
Output Max. sink Current	Iout	Ta = 25°C			4.0	mA
Self calibration time after reset	Tcal	VDD=5.0V , R3=330K		100		msec
Internal OSC Frequency	Fosc	VDD=5.0V , R3=330K	3.0		8.0	MHz
Output Impedance (open drain)	Zo	delta C > 0.1pF delta C < 0.1pF		12 30M		Ohm

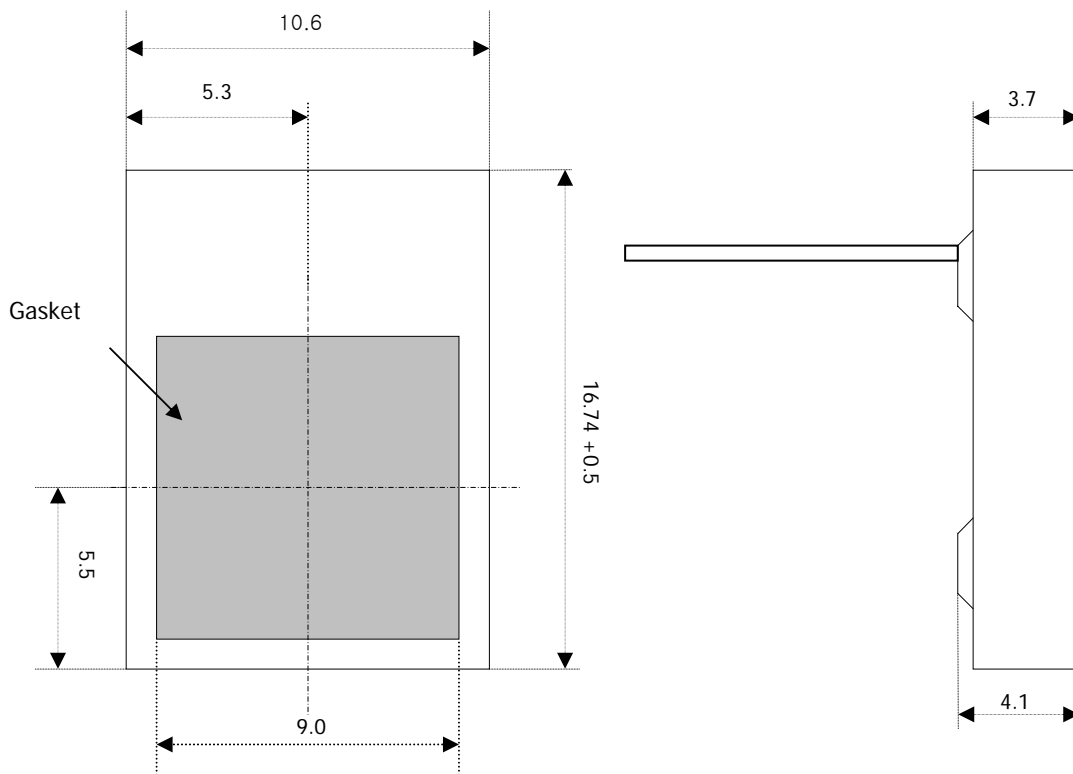
Internal Schematic



Sensing Area

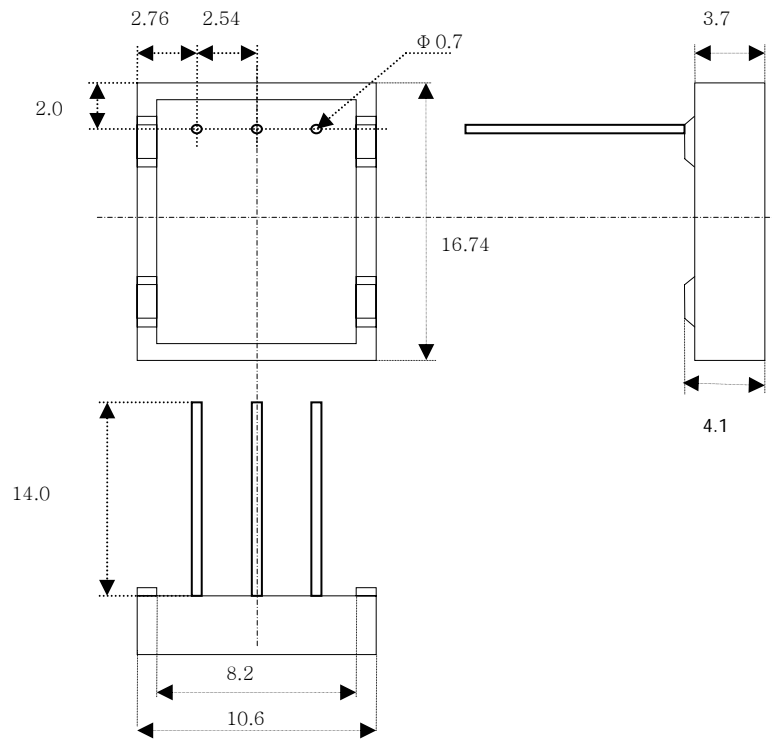


Gasket Position (Unit : mm)



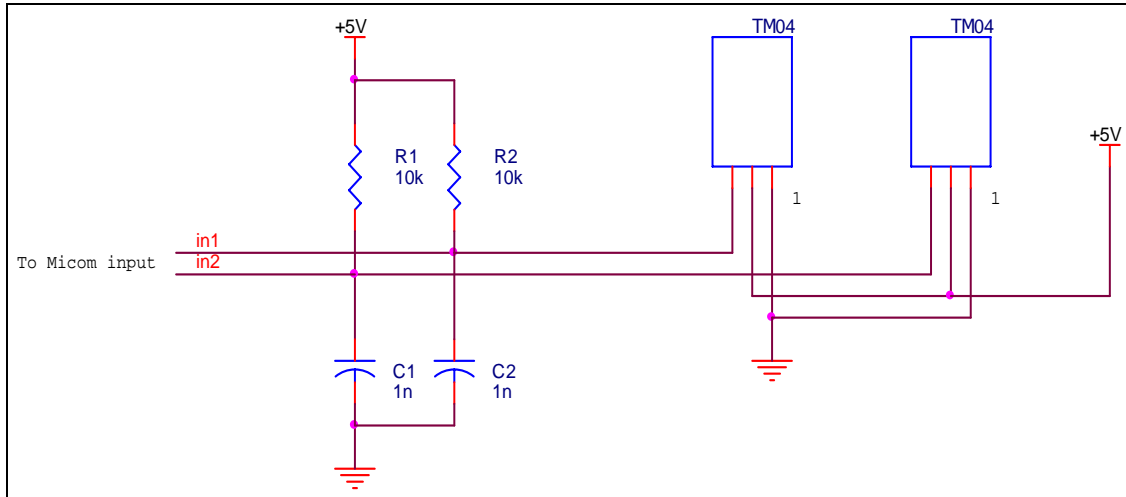
* Ex) Gasket Size : Width(9.0mm) X Thickness(3.0mm) X Length(9.0mm)

Physical Dimensions (millimeters unless otherwise noted)

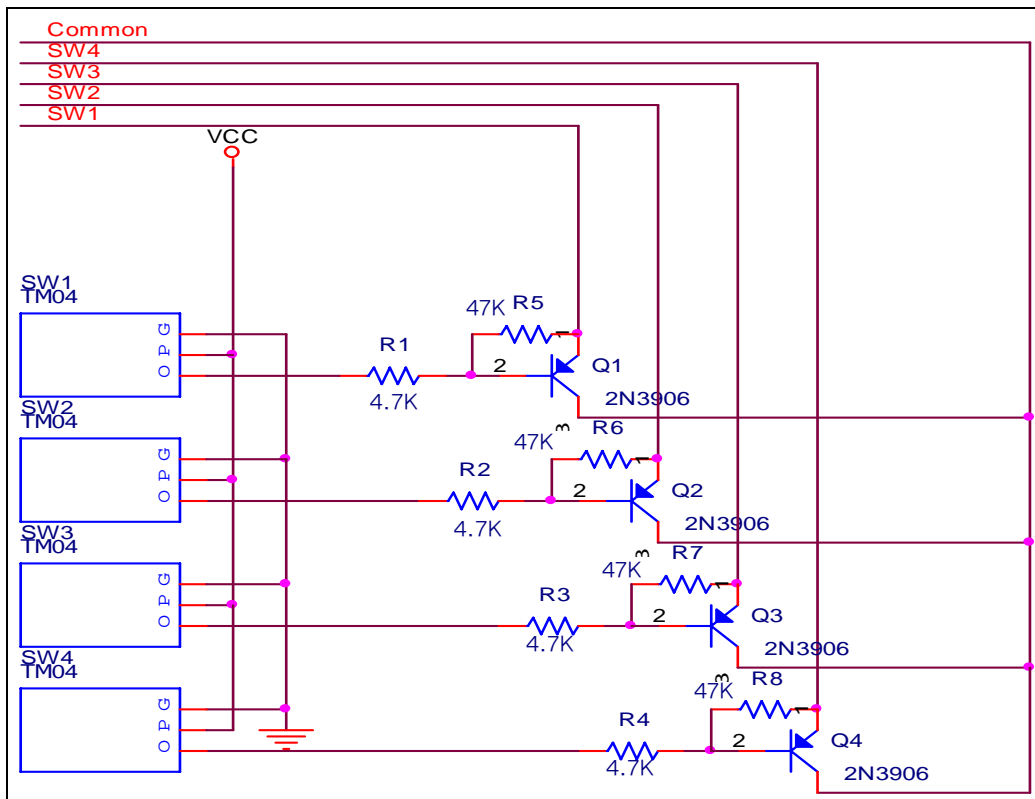


Application Circuits

1. Typical Application(example)

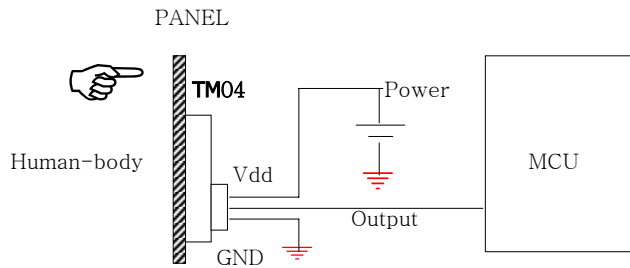


2. Key Scan Application(example)



Application Field

1. Switch Application



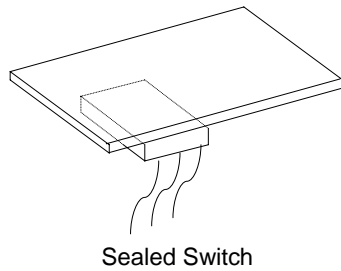
Application fields for soft Switch

- . Home appliance as Monitor, Refrigerator, air-conditioner, white-black goods.
- . various key Matrix

*** Notice :**

Panel must be used non-conductivity materials.

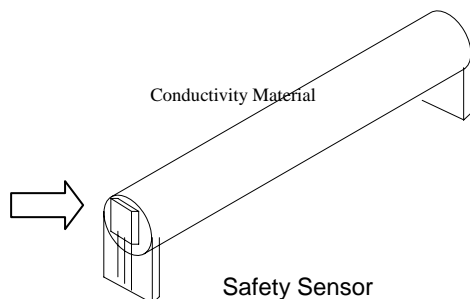
2. Security Systems



Application fields for Securities

Digital Door-lock, Switches for human-body sensing

3. Safety Sensor for Home Appliances



For Safety Sensor

- . Direct sensing for handle bar using conductive metal tape or coating

Module Selection Guide

TM04 - 1 - 2 3

1

Code	Sensitivity Level
A	Glass : Over 4.0t ~ Under 6.0t
B	Glass : Over 2.0t ~ Under 4.0t
C	Glass : Over 6.0t ~ Under 8.0t

2 3

(단위 : mm, 공차 : ±0.5mm)

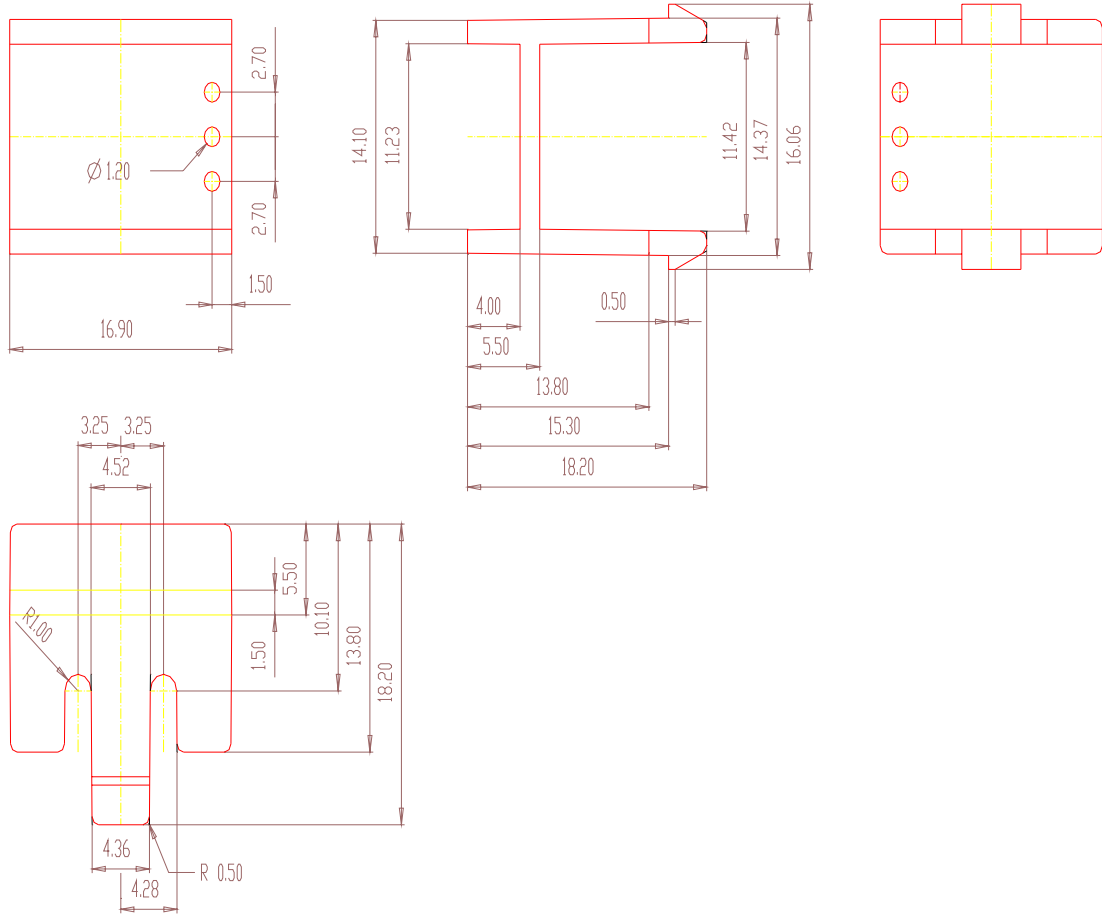
Code	Gasket 사양
3T	9 x 3 x 9
4T	9 x 4 x 9
Special Code	User Spec.

Module Color Spec

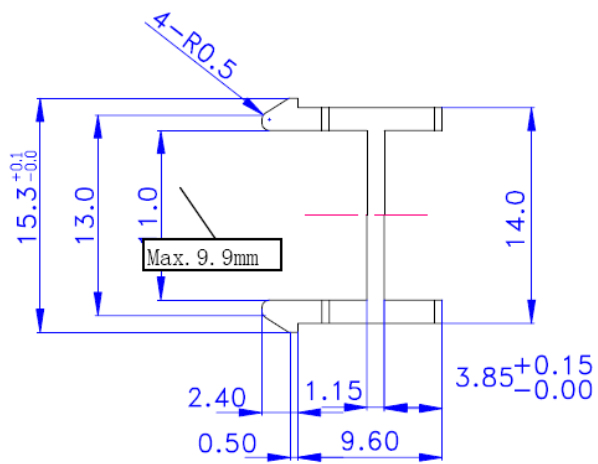
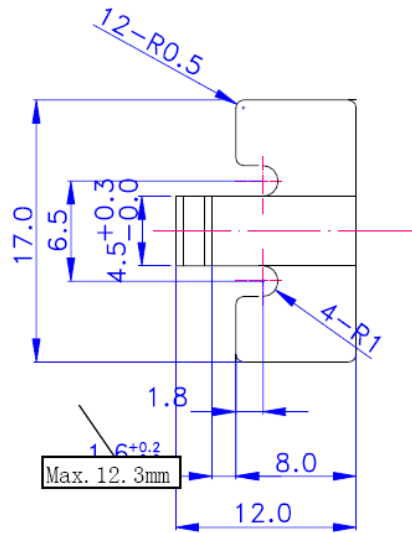
Module	Case Color
TM04N – A	Sky Blue
TM04N – B	Light Brown
TM04N – C	Violet

Bracket Dimensions (millimeters unless otherwise noted)

1. Bracket-I



2. Bracket-II



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