

REP05P 紅外探測器使用說明書

SPECIFICATION OF PYROELECTRIC PASSIVE INFRARED SENSOR

MODEL NO. REP05B

PART NO. _____

SCOPE

THIS SPECIFICATION DESCRIBES A PYROELECTRIC PASSIVE INFRARED SENSOR SUPPLIED BY NIPPON CERAMIC CO., LTD.

TYPE OF SENSOR

BALANCED DIFFERENTIAL (SERIES OPPOSED TYPE.)

PHYSICAL CONFIGURATION

- 1) PACKAGE : TO-5 METAL CAN WITH DIMENSIONS SHOWN IN FIGURE 1-C
- 2) ELEMENT GEOMETRY : FOUR SENSITIVE AREAS 1.375 mm LONG, 1.0 mm WIDE AND SPACED 0.8 mm APART.
- 3) ELEMENT ORIENTATION : SEE FIGURE 1-B
- 4) LEAD CONFIGURATION : SEE FIGURE 1-C, 1-D

ELECTRICAL CHARACTERISTICS (AT 26 ± 5 °C)

- 1) CIRCUIT CONFIGURATION : FOUR-TERMINAL SENSOR WITH SOURCE FOLLOWER
SEE FIGURE 2
- 2) OPERATING VOLTAGE : 3 ~ 10 V DC (R_s: 47KΩ)
- 3) SOURCE VOLTAGE : 0.35 ~ 1.5 V (V_D: 5V, R_s: 47KΩ)
- 4) SIGNAL OUTPUT : MIN. 2.0 V_{p-p} (TYP. 3.0 V_{p-p})
(S₁, S₂)
SIGNAL OUTPUT IS MEASURED AT CHOPPER FREQUENCY OF 1 Hz WHEN CONNECTED TO THE AMPLIFIER OF GAIN 72.5 dB (AT 1 Hz) AND SUBMITTED TO THE EMISSION OF INFRARED ENERGY OF 13 μW/cm² FROM 420 K BLACK BODY.
SEE FIGURE 3
- 5) NOISE OUTPUT : MAX. 250 mV_{p-p} (TYP. 95 mV_{p-p})
NOISE OUTPUT SHALL BE MEASURED FOR 20 SECONDS WHEN CONNECTED TO THE AMPLIFIER OF GAIN 72.5 dB AND SHUT OUT FROM INFRARED ENERGY.
SEE FIGURE 3
- 6) BALANCE OUTPUT : MAX. 15 %
[BO1 / | SA+SB |] ≤ 0.15 [BO2 / | SC+SD |] ≤ 0.15
BO1 : BALANCE OUTPUT BO2 : BALANCE OUTPUT
SA : SIGNAL OUTPUT ON ELEMENT A SC : SIGNAL OUTPUT ON ELEMENT C
SB : SIGNAL OUTPUT ON ELEMENT B SD : SIGNAL OUTPUT ON ELEMENT D
BALANCE OUTPUT IS MEASURED AT CHOPPER FREQUENCY OF 1 Hz WHEN CONNECTED TO THE AMPLIFIER OF GAIN 72.5 dB (AT 1 Hz) AND SUBMITTED TO THE EMISSION OF INFRARED ENERGY OF 13 μW/cm² FROM 420 K BLACK BODY.
SEE FIGURE 3
- 7) FREQUENCY RESPONSE : 0.3 Hz TO 3.0 Hz / ± 10 dB

OPTICAL CHARACTERISTICS

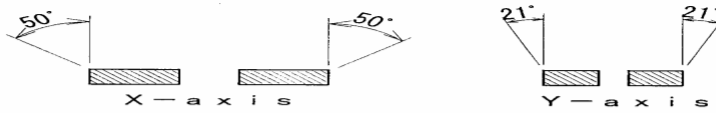
- 1) FIELD OF VIEW : 50° FROM EDGE OF ELEMENT ON AXIS X
: 21° FROM EDGE OF ELEMENT ON AXIS Y
: SEE FIGURE 1-A
- 2) FILTER SUBSTRATE : SILICON
- 3) CUT ON (5 %T ABS) : 5.0 ± 0.5 μm
- 4) TRANSMISSION : ≥ 70 % AVERAGE 7 ~ 14 μm

ENVIRONMENTAL REQUIREMENTS

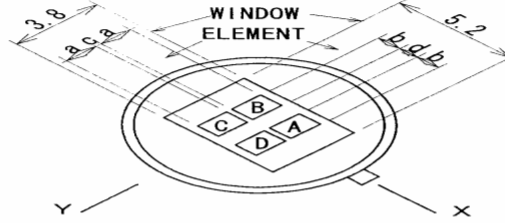
- 1) OPERATING TEMPERATURE : -20 °C TO +70 °C
- 2) STORAGE TEMPERATURE : -30 °C TO +80 °C
- 3) RELATIVE HUMIDITY :
THE SENSOR SHALL OPERATE WITHOUT INCREASE IN NOISE OUTPUT WHEN EXPOSED TO 90 ~ 95 % RH AT 30 °C CONTINUOUSLY.
- 4) HERMETIC SEAL :
THE SENSOR SHALL BE SEALED TO WITHSTAND A VACUUM OF 21.28 kPa.

CONFIGURATION (FIGURE 1)

FIELD OF VIEW
(FIGURE 1-A)

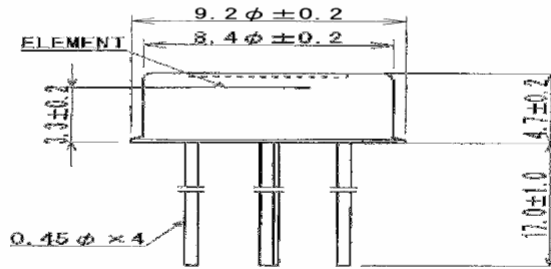


TOP VIEW
(FIGURE 1-B)



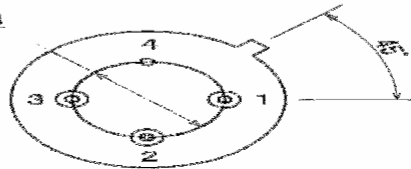
ELEMENT
a=1.375
b=1.0
c=0.25
d=0.8

SIDE VIEW
(FIGURE 1-C)



BASE VIEW
(FIGURE 1-D)

PCR 5.08

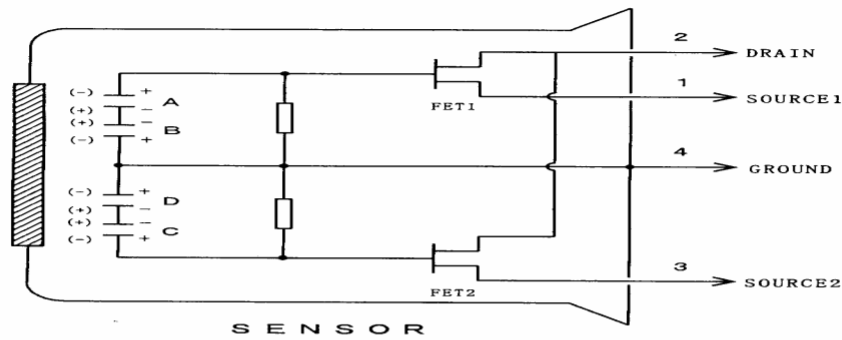


1: SOURCE (1)
2: DRAIN
3: SOURCE (2)
4: GROUND

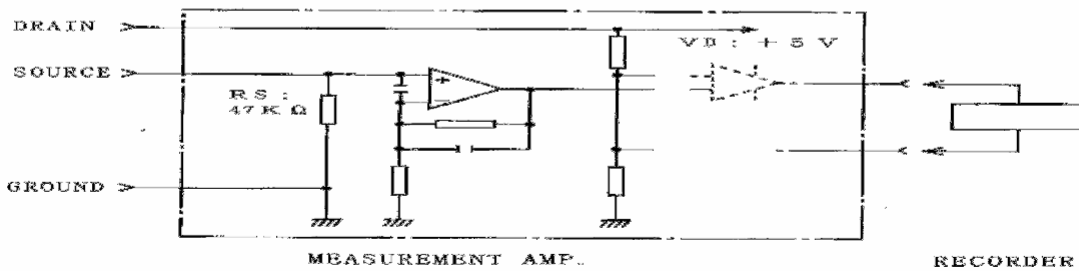
UNIT : mm

CIRCUIT CONFIGURATION (FIGURE 2)

SENSOR CIRCUIT (FIGURE 2-A)

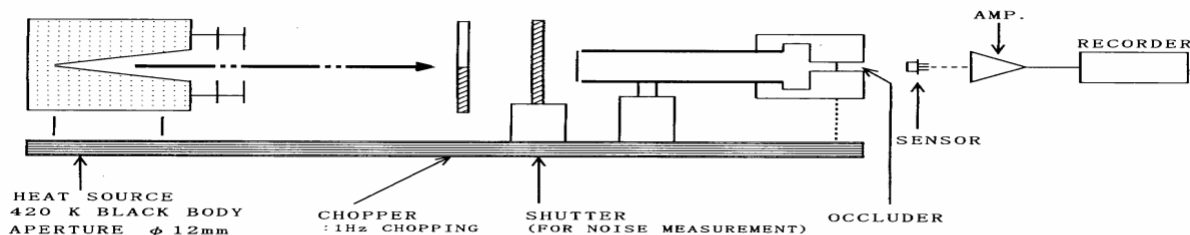


MEASUREMENT AMP. CIRCUIT (FIGURE 2-B)

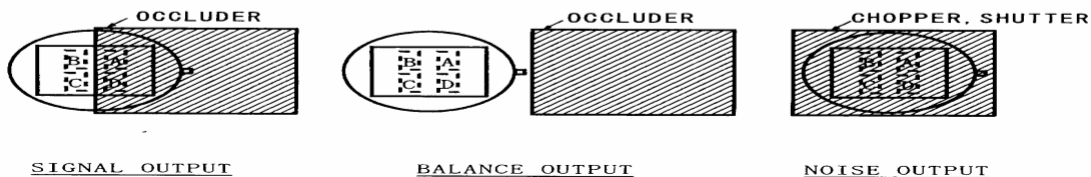


※ MEASUREMENT AMP. : NON-INVERTED TYPE, GAIN 72.5 dB AT 1 Hz 0.4~2.7 Hz / -3 dB

TEST SET-UP BLOCK DIAGRAM (FIGURE 3)



OCCLUDER POSITION



※ NOTES

1. DESIGN RESTRICTIONS/PRECAUTIONS

FOR OUTDOOR APPLICATIONS, BE SURE TO APPLY SUITABLE SUPPLEMENTARY OPTICAL FILTER AND DRIP-PROOF, ANTI-DEW CONSTRUCTION. THIS SENSOR IS DESIGNED FOR INDOOR USE. IN CASES WHERE SECONDARY ACCIDENTS DUE TO OPERATION FAILURE OR MALFUNCTIONS CAN BE ANTICIPATED, ADD A FAIL SAFE FUNCTION TO THE DESIGN.

2. USAGE RESTRICTIONS/PRECAUTIONS

TO PREVENT SENSOR MALFUNCTIONS, OPERATIONAL FAILURE OR ANY DETERIORATION OF ITS CHARACTERISTICS, DO NOT USE THIS SENSOR IN THE FOLLOWING, OR SIMILAR, CONDITIONS.

- A. IN RAPID ENVIRONMENTAL TEMPERATURE CHANGES.
- B. IN STRONG SHOCK OR VIBRATION.
- C. IN A PLACE WHERE THERE ARE OBSTRUCTING MATERIALS (GLASS, FOG, ETC.) THROUGH WHICH INFRARED RAYS CANNOT PASS WITHIN DETECTION AREA.
- D. IN FLUID, CORROSIVE GASES AND SEA BREEZE.
- E. CONTINUAL USE IN HIGH HUMIDITY ATMOSPHERE.
- F. EXPOSED TO DIRECT SUN LIGHT OR HEADLIGHTS OF AUTOMOBILES.
- G. EXPOSED TO DIRECT WIND FROM A HEATER OR AIR CONDITIONER.

3. ASSEMBLY RESTRICTIONS/PRECAUTIONS

SOLDERING -----

- A. USE SOLDERING IRONS WHEN SOLDERING.
- B. AVOID KEEPING PINS OF THIS SENSOR HOT FOR A LONG TIME AS EXCESSIVE HEAT MAY CAUSE DETERIORATION OF ITS QUALITY. (E.G. WITHIN 5 SEC. AT 350 °C)

WASHING -----

- A. BE SURE TO WASH OUT ALL FLUX AFTER SOLDERING AS REMAINDER MAY CAUSE MALFUNCTIONS.
- B. USE A BRUSH WHEN WASHING. WASHING WITH AN ULTRASONIC CLEANER MAY CAUSE OPERATIONAL FAILURE.

4. HANDLING AND STORAGE RESTRICTIONS/PRECAUTIONS

TO PREVENT SENSOR MALFUNCTIONS, OPERATIONAL FAILURE, APPEARANCE DAMAGE OR ANY DETERIORATION OF ITS CHARACTERISTICS, DO NOT EXPOSE THIS SENSOR TO THE FOLLOWING OR SIMILAR, HANDLING AND STORAGE CONDITIONS.

- A. VIBRATION FOR A LONG TIME.
- B. STRONG SHOCK.
- C. STATIC ELECTRICITY OR STRONG ELECTROMAGNETIC WAVES.
- D. HIGH TEMPERATURE AND HUMIDITY FOR A LONG TIME.
- E. CORROSIVE GASES OR SEA BREEZE.
- F. DIRTY AND DUSTY ENVIRONMENTS THAT MAY CONTAMINATE THE OPTICAL WINDOW.

SENSOR TROUBLES RESULTING FROM MISUSE, INAPPROPRIATE HANDLING OR STORAGE ARE NOT THE MANUFACTURER'S RESPONSIBILITY.