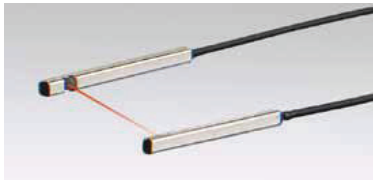


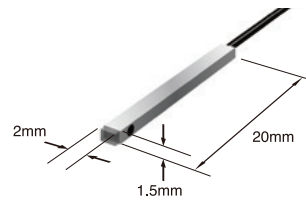
# NARROW BEAM , WAFER MAPPING



Ultra-narrow aperture light angle provides narrowest beam in a ultra-thin and ultra-compact size. Cross talk is reduced.

## Super narrow beam and super thin type

Super narrow view type: Aperture is 2° max.  
Ideal for wafer mapping.  
Straight type: NF-TG01  
Side type: NF-TG02,03

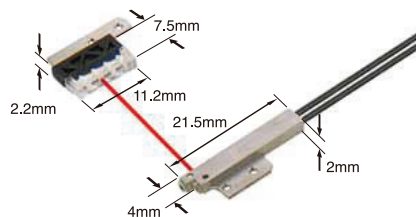


NF-TG04 features ultra-compact size sensing head (2mm x 1.5mm) and ultra-narrow 3 degree aperture for minimum object detection of 0.02mm diameter.

## Retro-reflective and diffuse type

Super thin 2mm height Retro-reflective type enables wafer mapping saving space.

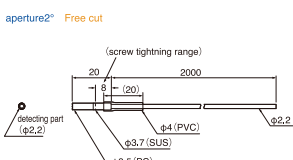
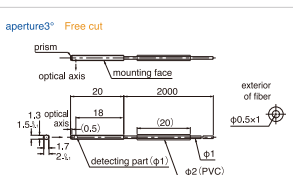
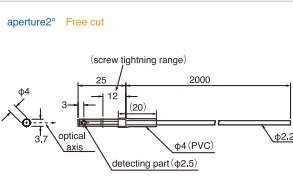
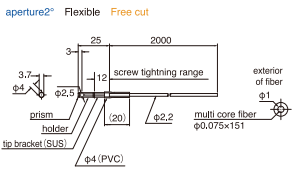
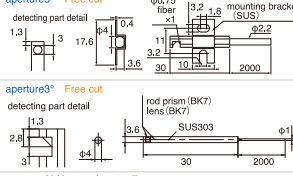
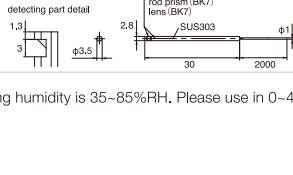
Retro-reflective type  
NF-RG01



Diffuse type  
NF-DR09

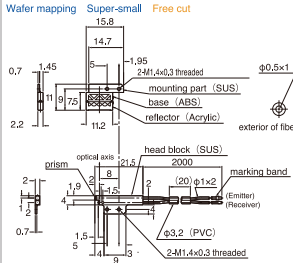
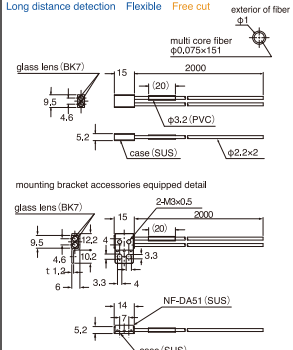


## Specifications (Thru-beam/Thru-beam Side)

|                | Sensing head                                                                                                                | Sensing distance (unit:mm)                                                                                        |                                                |       | Operation temperature (°C ~ °C) | Radius (mm) | Part Number |
|----------------|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|------------------------------------------------|-------|---------------------------------|-------------|-------------|
|                |                                                                                                                             | D3RF                                                                                                              | D2RF                                           | BRF   |                                 |             |             |
| Thru-beam      | aperture2° Free cut<br>                  | 7-EL<br>3,600<br>S-UL<br>3,600<br>S-PL<br>3,600<br>S-UL<br>3,200<br>S-ST<br>2,100<br>S-FS<br>2,000<br>S-HS<br>790 | Long<br>3,000<br>Std<br>2,000<br>Fast<br>1,300 | 2,300 | —40~70                          | R=25        | NF-TG01     |
|                | aperture3° Free cut<br>                  | 7-EL<br>1,000<br>S-UL<br>900<br>S-PL<br>790<br>S-UL<br>690<br>S-ST<br>450<br>S-FS<br>260<br>S-HS<br>90            | Long<br>500<br>Std<br>300<br>Fast<br>150       | 220   | —40~55                          | R=10        | NF-TG04     |
| Thru-beam side | aperture2° Free cut<br>                  | 7-EL<br>3,600<br>S-UL<br>3,600<br>S-PL<br>3,600<br>S-UL<br>3,300<br>S-ST<br>2,100<br>S-FS<br>1,780<br>S-HS<br>510 | Long<br>2,500<br>Std<br>1,600<br>Fast<br>800   | 900   | —40~60                          | R=25        | NF-TG03     |
|                | aperture2° Flexible Free cut<br>         | 7-EL<br>3,600<br>S-UL<br>3,600<br>S-PL<br>3,600<br>S-UL<br>3,300<br>S-ST<br>2,100<br>S-FS<br>1,500<br>S-HS<br>520 | Long<br>2,500<br>Std<br>1,600<br>Fast<br>800   | 1,000 | —40~55                          | R=1         | NF-TG02     |
|                | aperture5° Free cut<br>                 | 7-EL<br>4,000<br>S-UL<br>4,000<br>S-PL<br>4,000<br>S-UL<br>4,000<br>S-ST<br>3,000                                 | Long<br>4,000<br>Std<br>3,000<br>Fast<br>2,000 | 1,700 | —40~70                          | R=25        | NF-TS12     |
|                | aperture3° Free cut<br>                | 7-EL<br>4,000<br>S-UL<br>4,000<br>S-PL<br>4,000<br>S-UL<br>4,000<br>S-ST<br>3,000                                 | Long<br>3,000<br>Std<br>1,600<br>Fast<br>700   | 750   | —40~70                          | R=25        | NF-TS22     |
|                | aperture3° Heat resistant Free cut<br> | 7-EL<br>3,500<br>S-UL<br>2,500<br>S-PL<br>2,300<br>S-UL<br>1,900                                                  | Long<br>1,200<br>Std<br>700<br>Fast<br>500     | 500   | —40~70                          | R=10        | NF-TS22H    |

Operating humidity is 35~85%RH. Please use in 0~40°C when it's 85%RH.

Specifications (Thru-beam Side/Retro Reflective/Diffuse)

|                      | Sensing head                                                                                                                   | Sensing distance (unit:mm)                                                                             |                                          |      | Operation temperature (℃~℃) | Radius (mm) | Part Number |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|------------------------------------------|------|-----------------------------|-------------|-------------|
|                      |                                                                                                                                | D3RF                                                                                                   | D2RF                                     | BRF  |                             |             |             |
| Retro reflective 4×2 | Water mapping Super-small Free cut<br>        | 7-EL<br>590<br>6-UL<br>550<br>5-PL<br>480<br>4-LG<br>420<br>3-ST<br>270<br>2-FS<br>180<br>1-HS<br>70   | Long<br>350<br>Std<br>230<br>Fast<br>130 | N.A. | -40~60                      | R=10        | NF-RG01     |
|                      | Long distance detection Flexible Free cut<br> | 7-EL<br>1,070<br>6-UL<br>990<br>5-PL<br>880<br>4-LG<br>770<br>3-ST<br>500<br>2-FS<br>310<br>1-HS<br>90 | Long<br>600<br>Std<br>380<br>Fast<br>200 | 250  | -40~70                      | R=1         | NF-DR09     |

Operating humidity is 35~85%RH. Please use in 0~40℃ when it's 85%RH.  
Sensing distance of diffuse type is for 500 x 500mm white paper.

HEAT RESISTANT(up to 130℃)



12 models to choose from featuring thru-beam and diffuse in both head-on and space saving side-view

Space saving

Heat resistant right angle type NF25-TH and NF25-DH help installing in limited space.

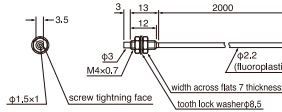
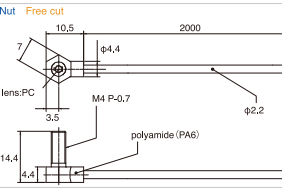
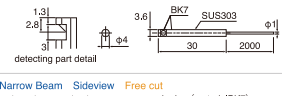
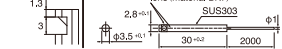
Straight type



Right angle type



Specifications (Thru-beam)

|                | Sensing head                                                                                                           | Sensing distance (unit:mm)                                                                                    |                                             |                                            | Operation temperature (℃~℃) | Radius (mm) | Part Number |          |
|----------------|------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------|--------------------------------------------|-----------------------------|-------------|-------------|----------|
|                |                                                                                                                        | D3RF                                                                                                          | D2RF                                        | BRF                                        |                             |             |             |          |
| Thru-beam 130℃ | Free cut<br>                      | 7-EL<br>2,100<br>6-UL<br>2,070<br>5-PL<br>1,800<br>4-LG<br>1,530<br>3-ST<br>990<br>2-FS<br>620<br>1-HS<br>200 | Long<br>1,100<br>Std<br>650<br>Fast<br>400  | 500                                        | -60~130                     | R=25        | NF-TH17     |          |
|                | Nut Free cut<br>                  | 7-EL<br>2,000<br>6-UL<br>1,100<br>5-PL<br>1,000<br>4-LG<br>900<br>3-ST<br>600<br>2-FS<br>300<br>1-HS<br>90    | Long<br>750<br>Std<br>500<br>Fast<br>170    | 300                                        | -40~105                     | R=25        | NF25-TH     |          |
|                | Sideview Free cut<br>             | 7-EL<br>3,500<br>6-UL<br>2,300<br>5-PL<br>2,000<br>4-LG<br>1,800                                              | 3-ST<br>1,200<br>2-FS<br>600<br>1-HS<br>170 | Long<br>1,300<br>Std<br>700<br>Fast<br>400 | 500                         | -40~105     | R=10        | NF-TS22M |
|                | Narrow Beam Sideview Free cut<br> | 7-EL<br>3,500<br>6-UL<br>2,500<br>5-PL<br>2,300<br>4-LG<br>1,900                                              | 3-ST<br>1,300<br>2-FS<br>650<br>1-HS<br>200 | Long<br>1,200<br>Std<br>700<br>Fast<br>500 | 500                         | -40~105     | R=10        | NF-TS22H |

Operating humidity is 35~85%RH. Please use in 0~40℃ when it's 85%RH