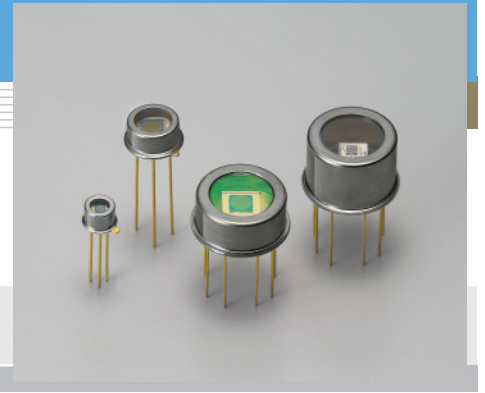


# InGaAs PIN photodiode G8422/G8372/G5852 series

Long wavelength type (up to 2.1  $\mu\text{m}$ )



## Features

- Cut-off wavelength: 2.1  $\mu\text{m}$
- 3-pin TO-18 package: low price
- TE-cooled type TO-8 package: low dark current
- Active area:  $\phi 0.3$  to  $\phi 3$  mm

## Applications

- Gas analyzer
- Water content analyzer
- NIR (Near Infrared) photometry

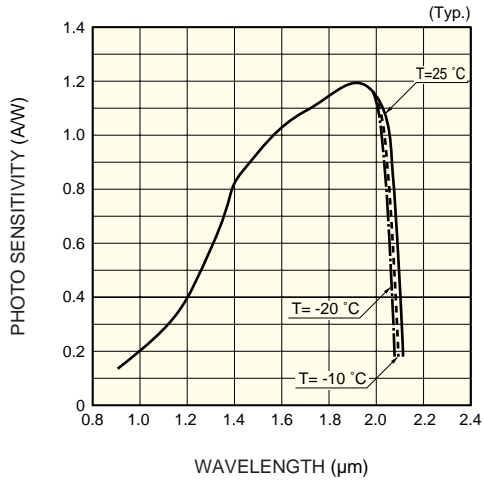
## Specifications / Absolute maximum ratings

| Type No.  | Dimensional outline | Package | Cooling             | Active area (mm) | Absolute maximum ratings          |                                 |                           |  |  |
|-----------|---------------------|---------|---------------------|------------------|-----------------------------------|---------------------------------|---------------------------|--|--|
|           |                     |         |                     |                  | Thermistor power dissipation (mW) | TE-cooler allowable current (A) | Reverse voltage $V_R$ (V) | Operating temperature $T_{opr}$ ( $^{\circ}\text{C}$ ) | Storage temperature $T_{stg}$ ( $^{\circ}\text{C}$ ) |
| G8422-03  | ①                   | TO-18   | Non-cooled          | $\phi 0.3$       | -                                 | -                               | -                         | -40 to +85   | -55 to +125  |
| G8422-05  |                     |         |                     | $\phi 0.5$       |                                   |                                 |                           |  |  |
| G8372-01  |                     |         |                     | $\phi 1$         |                                   |                                 |                           |  |  |
| G8372-03  | ②                   | TO-5    |                     | $\phi 3$         |                                   |                                 |                           |  |  |
| G5852-103 | ③                   | TO-8    | One-stage TE-cooled | $\phi 0.3$       | 0.2                               | 1.5                             | 2                         | -40 to +70   | -55 to +85   |
| G5852-11  |                     |         |                     | $\phi 1$         |                                   |                                 |                           |  |  |
| G5852-13  |                     |         |                     | $\phi 3$         |                                   |                                 |                           |  |  |
| G5852-203 | ④                   | TO-8    | Two-stage TE-cooled | $\phi 0.3$       | 0.2                               | 1.0                             | -                         | -  | -  |
| G5852-21  |                     |         |                     | $\phi 1$         |                                   |                                 |                           |  |  |
| G5852-23  |                     |         |                     | $\phi 3$         |                                   |                                 |                           |  |  |

## Electrical and optical characteristics (Typ. unless otherwise noted)

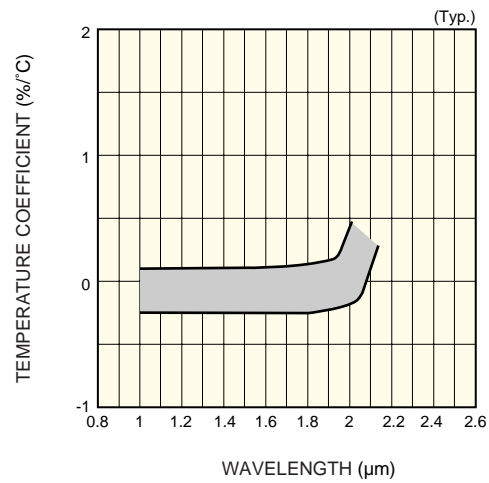
| Type No.  | Measurement condition<br>Element Temperature $T$<br>( $^{\circ}\text{C}$ ) | Spectral response range $\lambda$<br>( $\mu\text{m}$ ) | Peak sensitivity wavelength $\lambda_p$<br>( $\mu\text{m}$ ) | Photo sensitivity $S$<br>$\lambda = \lambda_p$<br>(A/W) | Dark current $I_D$<br>$V_R = 1$ V |                      | Cut-off frequency $f_c$<br>$V_R = 1$ V<br>$R_L = 50$ $\Omega$<br>(MHz) | Terminal capacitance $C_t$<br>$V_R = 1$ V<br>$f = 1$ MHz<br>(pF) | Shunt resistance $R_{sh}$<br>$V_R = 10$ mV<br>(M $\Omega$ ) | $D^*$<br>$\lambda = \lambda_p$<br>( $\text{cm} \cdot \text{Hz}^{1/2}/\text{W}$ ) | NEP<br>$\lambda = \lambda_p$<br>( $\text{W}/\text{Hz}^{1/2}$ ) |
|-----------|--|--|--|---|-----------------------------------|----------------------|--|--|---|--|--|
|           |  |  |  |   | Typ. (nA)                         | Max. (nA)            |  |  |   |  |  |
| G8422-03  | 25   | 0.9 to 2.1   | 1.95   | 1.2   | 55                                | 550                  | 100  | 8  | 0.9   | $2.5 \times 10^{11}$   | $1.5 \times 10^{-13}$  |
| G8422-05  |  |  |  |   | 125                               | 1250                 | 80   | 20   | 0.3   |  | $2.5 \times 10^{-13}$  |
| G8372-01  |  |  |  |   | 500                               | 5000                 | 40   | 80   | 0.1   |  | $4 \times 10^{-13}$  |
| G8372-03  |  |  |  |   | 5 ( $\mu\text{A}$ )               | 50 ( $\mu\text{A}$ ) | 3  | 800  | 0.01  |  | $1.5 \times 10^{-12}$  |
| G5852-103 | -10  | 0.9 to 2.07  | 1.95   | 1.2   | 5.5                               | 55                   | 100  | 8  | 9   | $8 \times 10^{11}$   | $5 \times 10^{-14}$  |
| G5852-11  |  |  |  |   | 50                                | 500                  | 40   | 80   | 1   |  | $1 \times 10^{-13}$  |
| G5852-13  |  |  |  |   | 500                               | 5000                 | 3  | 800  | 0.1   |  | $4 \times 10^{-13}$  |
| G5852-203 | -20  | 0.9 to 2.05  | 1.95   | 1.2   | 3                                 | 30                   | 100  | 8  | 18  | $1.2 \times 10^{12}$   | $3 \times 10^{-14}$  |
| G5852-21  |  |  |  |   | 25                                | 250                  | 40   | 80   | 2   |  | $8 \times 10^{-14}$  |
| G5852-23  |  |  |  |   | 250                               | 2500                 | 3  | 800  | 0.2   |  | $3 \times 10^{-13}$  |

■ Spectral response



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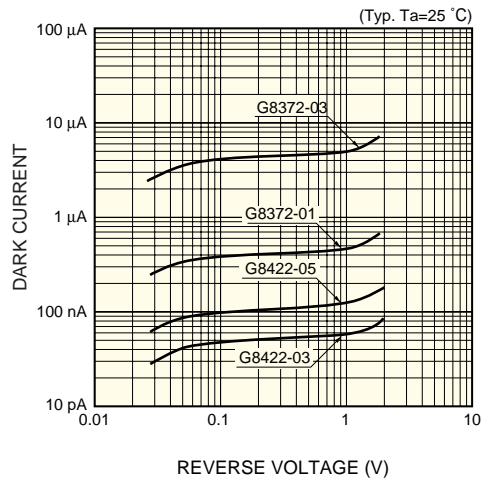
■ Photo sensitivity temperature characteristic



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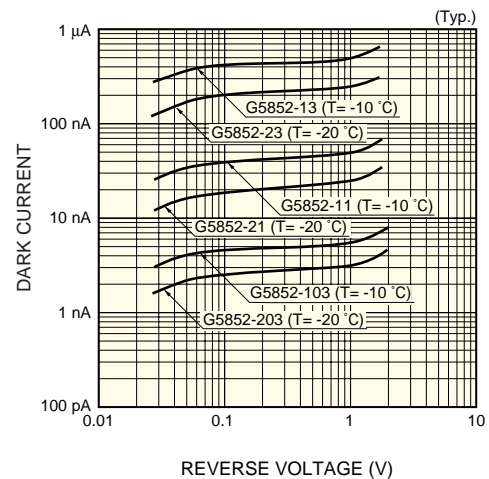
■ Dark current vs. reverse voltage

Non-cooled type



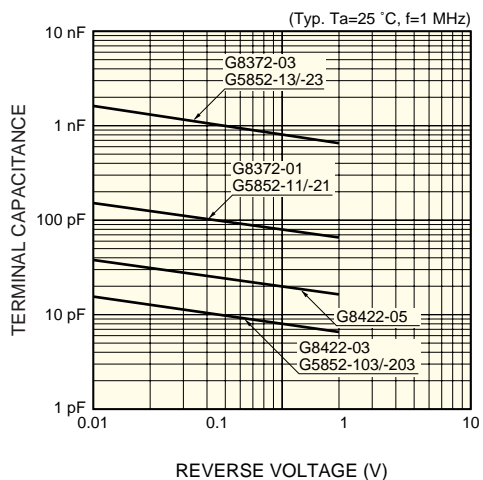
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TE-cooled type



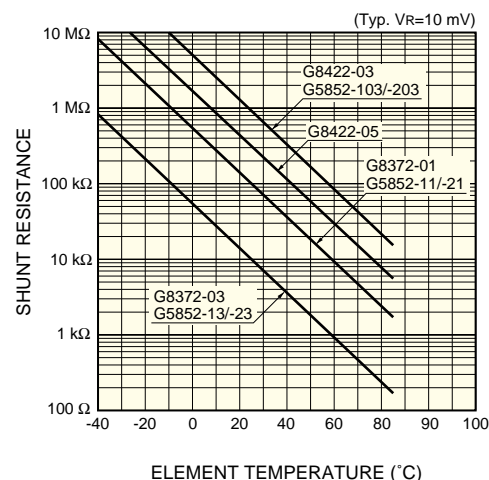
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■ Terminal capacitance vs. reverse voltage



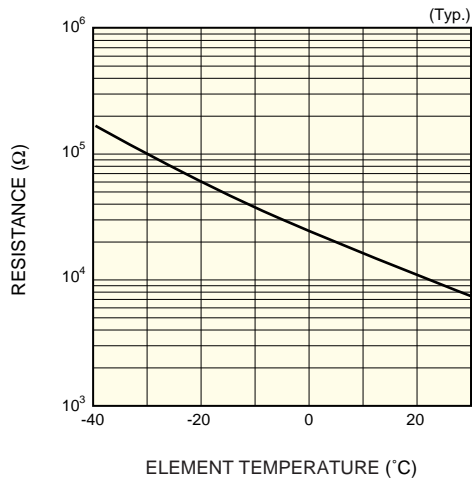
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■ Shunt resistance vs. element temperature



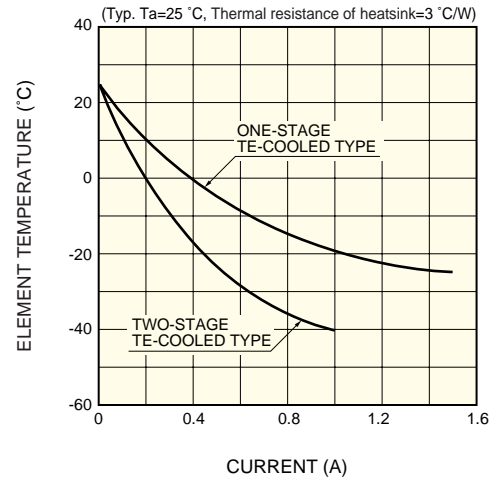
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■ Thermistor temperature characteristic



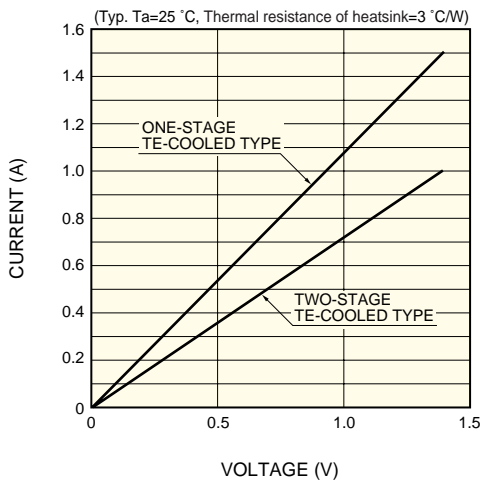
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■ Cooling characteristics of TE-cooler



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■ Current vs. voltage characteristics of TE-cooler

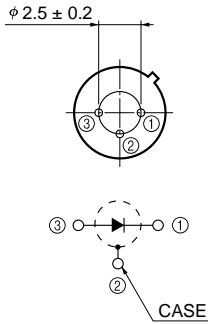
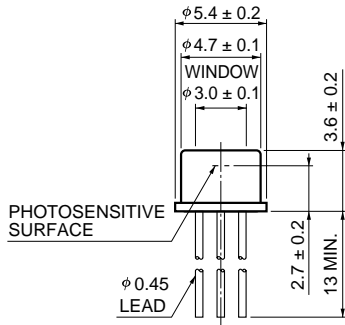


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# InGaAs PIN photodiode G8422/G8372/G5852 series

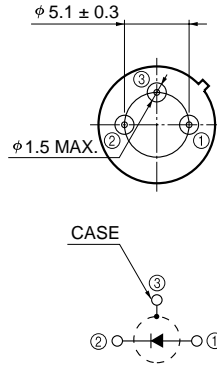
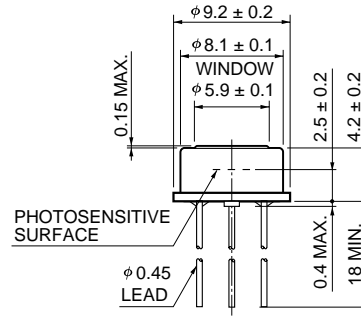
■ Dimensional outline (unit: mm)

① G8422-03/-05, G8372-01



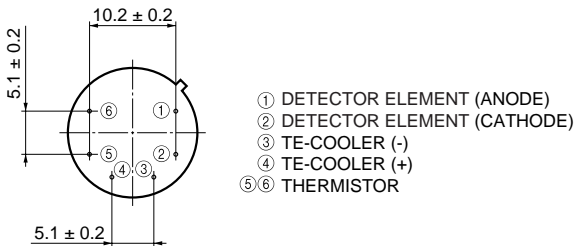
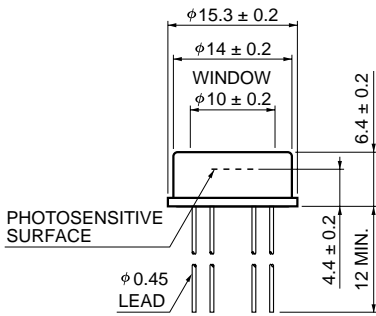
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② G8372-03



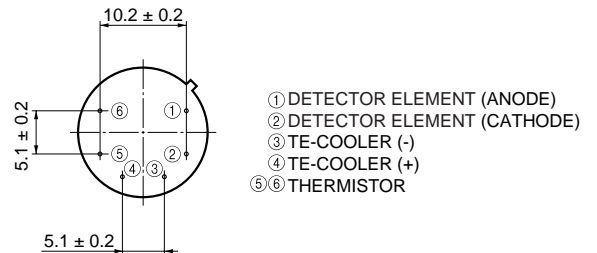
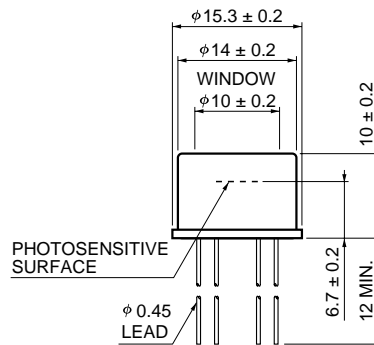
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③ G5852-103/-11/-13



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④ G5852-203/-21/-23



KIRDA0031EB

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