

PHOTODETECTORS



Ta=25°C

| パッケージ<br>Package | 品名<br>Part name | 電氣的光学的特性／Electro-optical characteristics                |                           |      |                 |                    |                                         |                  |                                |                 |                |                |                                                                  | 絶対最大定格／Absolute maximum ratings |                                                                  |                                                  |                                          | 標準梱包<br>数量<br>Standard<br>qty.<br>/Reel | WEB |                                        |
|------------------|-----------------|---------------------------------------------------------|---------------------------|------|-----------------|--------------------|-----------------------------------------|------------------|--------------------------------|-----------------|----------------|----------------|------------------------------------------------------------------|---------------------------------|------------------------------------------------------------------|--------------------------------------------------|------------------------------------------|-----------------------------------------|-----|----------------------------------------|
|                  |                 | ピーク感度波長<br>Peak sensitivity<br>wavelength<br>λp<br>Typ. | 光電流<br>Photocurrent<br>Ic |      |                 |                    | 暗電流<br>Dark current<br>I <sub>CEO</sub> |                  | 応答速度<br>Response time<br>tr/τf |                 |                |                | 指向半値角<br>Half-intensity<br>angle<br>2θ <sub>1/2</sub><br>(θx/θy) | 指向特性<br>Spatial distribution    | コレクタ・エミッタ間電圧<br>Collector-emitter<br>voltage<br>V <sub>CEO</sub> | コレクタ電流<br>Collector<br>current<br>I <sub>c</sub> | 動作温度<br>Operating<br>temperature<br>Topr |                                         |     | 保存温度<br>Storage<br>temperature<br>Tstg |
|                  |                 |                                                         | Min.                      | Typ. | V <sub>CE</sub> | Ee※2               |                                         |                  | Typ.                           | V <sub>CE</sub> | R <sub>L</sub> | I <sub>c</sub> |                                                                  |                                 |                                                                  |                                                  |                                          |                                         |     |                                        |
|                  |                 |                                                         |                           |      |                 |                    | Max.                                    | V <sub>CEO</sub> |                                |                 |                |                |                                                                  |                                 |                                                                  |                                                  |                                          |                                         |     |                                        |
| 単位 (Units)       |                 | nm                                                      | mA                        |      | V               | mW/cm <sup>2</sup> | μA                                      | V                | μs                             | V               | Ω              | mA             |                                                                  | deg.                            | -                                                                | V                                                | mA                                       | ℃                                       | ℃   | pcs.                                   |

PHOTO TRANSISTORS

|            |                                     |                   |      |      |   |   |     |    |           |    |     |   |  |           |  |    |    |         |          |       |  |
|------------|-------------------------------------|-------------------|------|------|---|---|-----|----|-----------|----|-----|---|--|-----------|--|----|----|---------|----------|-------|--|
| <br>7.81mg | TPS1105WA                           | 850               | 4.8  | 11.0 | 5 | 5 | 0.1 | 10 | 1.8 / 2.6 | 10 | 100 | 2 |  | 40 / 40   |  | 12 | 20 | -40~+85 | -40~+100 | 2,000 |  |
| <br>7.81mg | TPS1195WB                           | 900 <sup>※1</sup> | 4.8  | 8.0  | 5 | 5 | 0.1 | 10 | 1.8 / 2.6 | 10 | 100 | 2 |  | 40 / 40   |  | 12 | 20 | -40~+85 | -40~+100 | 2,000 |  |
| <br>2.84mg | VTPS1102HA                          | 850               | 0.9  | 2.0  | 5 | 5 | 0.1 | 10 | 1.8 / 2.6 | 10 | 100 | 2 |  | 130 / 120 |  | 12 | 20 | -40~+85 | -40~+100 | 4,000 |  |
| <br>2.84mg | VTPS1192HB                          | 900 <sup>※1</sup> | 0.45 | 1.3  | 5 | 5 | 0.1 | 10 | 1.8 / 2.6 | 10 | 100 | 2 |  | 130 / 120 |  | 12 | 20 | -40~+85 | -40~+100 | 4,000 |  |
| <br>6.6mg  | TPS1191RB-2<br>(reverse mount type) | 900 <sup>※1</sup> | 0.7  | 1.0  | 5 | 5 | 0.1 | 10 | 1.8 / 2.6 | 10 | 100 | 2 |  | 110 / 120 |  | 30 | 20 | -40~+85 | -40~+100 | 3,000 |  |

※製品画像は代表的なものです/The pictures illustrate representative products.  
※1 可視光カット(700nm以下)/Visible radiation cut filter under 700 nm  
※2 光源色温度は2,856Kの標準タングステンランプを使用/A standard tungsten lamp with a color temperature of 2,856 K is used

OPTICAL SENSORS



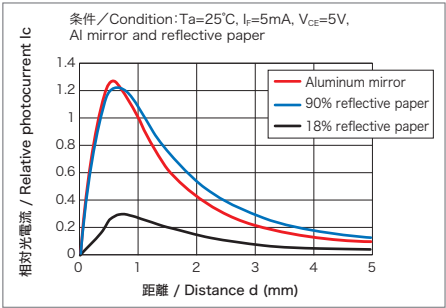
Ta=25°C

| パッケージ<br>Package                                                                                                       | 品名<br>Part name | 電氣的光学的特性／Electro-optical characteristics |      |                                             |                     |                                                         |                               |    |      |                               |     |      |                                           |      |    |    |    | 絶対最大定格／Absolute maximum ratings |                                                    |                                                  |                                                               |                                                          |                                      |                                                |                                        |     |    | 標準梱包<br>数量<br>Standard<br>qty.<br>/Reel | WEB |          |          |       |                                                                                     |
|------------------------------------------------------------------------------------------------------------------------|-----------------|------------------------------------------|------|---------------------------------------------|---------------------|---------------------------------------------------------|-------------------------------|----|------|-------------------------------|-----|------|-------------------------------------------|------|----|----|----|---------------------------------|----------------------------------------------------|--------------------------------------------------|---------------------------------------------------------------|----------------------------------------------------------|--------------------------------------|------------------------------------------------|----------------------------------------|-----|----|-----------------------------------------|-----|----------|----------|-------|-------------------------------------------------------------------------------------|
|                                                                                                                        |                 | LED                                      |      |                                             | Photo transistor    |                                                         | 結合特性／Coupling characteristics |    |      |                               |     |      |                                           |      |    |    |    | LED                             |                                                    |                                                  |                                                               | Photo transistor                                         |                                      | 動作温度<br>Operating<br>temperature<br>Topr<br>※4 | 保存温度<br>Storage<br>temperature<br>Tstg |     |    |                                         |     |          |          |       |                                                                                     |
|                                                                                                                        |                 | 順電圧<br>Forward<br>voltage<br>VF          |      | ピーク発光波長<br>Peak<br>wavelength<br>λp<br>Typ. | 暗電流<br>Dark current | ピーク感度波長<br>Peak sensitivity<br>wavelength<br>λp<br>Typ. | 光電流<br>Photocurrent<br>※1     |    |      | 漏れ電流<br>Leakage current<br>※2 |     |      | 応答速度<br>Response<br>time<br>tr/tf<br>Typ. | Typ. | VF | RL | IF | 順電流<br>Forward<br>current<br>IF | 順電流低減率<br>Forward current<br>reduction rate<br>ΔIF | パルス順電流<br>Pulse<br>forward current<br>※3<br>IFRM | パルス順電流低減率<br>Pulse forward current<br>reduction rate<br>ΔIFRM | コレクタ・<br>エミッタ間電圧<br>Collector-emitter<br>voltage<br>VCEO | コレクタ電流<br>Collector<br>current<br>IC |                                                |                                        |     |    |                                         |     |          |          |       |                                                                                     |
|                                                                                                                        |                 | Min.                                     | Typ. |                                             | Max.                |                                                         | VCE                           | IF | Max. | VCE                           | IF  |      |                                           |      |    |    |    |                                 |                                                    |                                                  |                                                               |                                                          |                                      |                                                |                                        |     |    |                                         |     |          |          |       |                                                                                     |
|                                                                                                                        |                 |                                          |      |                                             |                     |                                                         |                               |    |      |                               |     | Max. |                                           |      |    |    |    |                                 |                                                    |                                                  |                                                               |                                                          |                                      |                                                |                                        | VCE | IF |                                         |     |          |          |       |                                                                                     |
| 単位 (Units)                                                                                                             |                 | V                                        |      | nm                                          | μA                  | V                                                       | nm                            | μA |      | V                             | mA  | μA   |                                           |      |    |    |    |                                 |                                                    |                                                  |                                                               |                                                          |                                      | V                                              | mA                                     | μS  | V  | Ω                                       | mA  | mA       | mA/℃     | ℃     | mA                                                                                  |
| <div><div></div><div>15mg</div></div> |                 | KUA0121C                                 | 0.9  | 1.1                                         | 1.5                 | 940                                                     | 0.1                           | 10 | 920  | 130                           | 300 | 735  | 5                                         | 5    | 2  | 5  | 5  | 10 / 10                         | 10                                                 | 100                                              | 5                                                             | 20                                                       | 0.20                                 | 25                                             | 300                                    | 3.6 | 25 | 20                                      | 10  | -40～+100 | -40～+120 | 2,500 |  |

※製品画像は代表的なものです/The pictures illustrate representative products.  
※1 検知距離 1mm/d=1mm ※2 反射物無し/No reflector ※3 I<sub>FRM</sub>の測定条件/Pulse width≤0.1ms, Duty≤1/100  
※4 Ta=85°C以上で使用される場合は、暗電流(I<sub>CEO</sub>)の増加をご考慮の上ご使用ください。/Please pay careful attention to the rise of dark current (I<sub>CEO</sub>) when using at Ta=85°C or more.

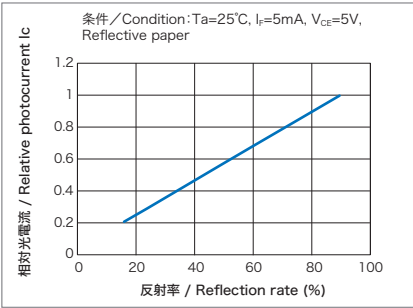
距離 - 相対光電流 特性

Distance vs. relative photocurrent



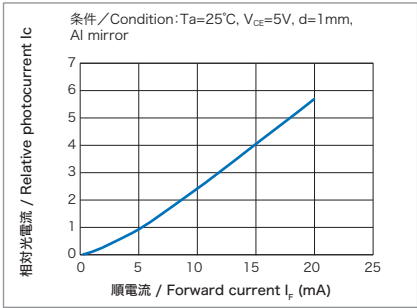
反射率 - 相対光電流 特性

Reflection rate vs. relative photocurrent



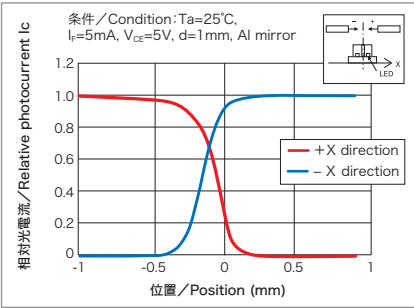
順電流 - 相対光電流 特性

Forward current vs. relative photocurrent



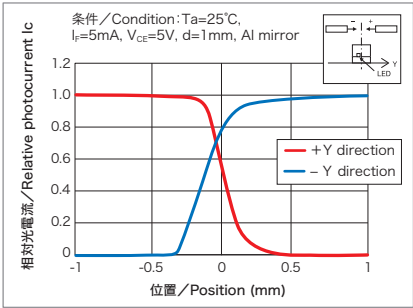
検知範囲 特性 (X方向)

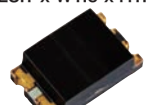
Detection range (X direction)



検知範囲 特性 (Y方向)

Detection range (Y direction)

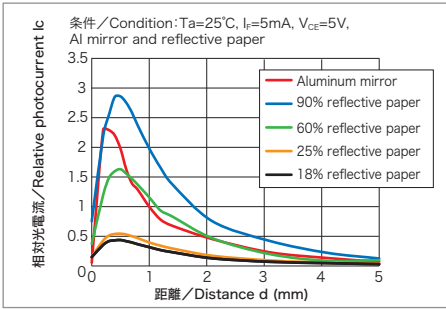


| パッケージ<br>Package                                                                                  | 品名<br>Part name | 電氣的光学的特性／Electro-optical characteristics |      |      |                                             |                             |                               |                                                         |                                 |      |     |                                        |    |    |                                           |      |     | 絶対最大定格／Absolute maximum ratings |         |                                 |                                                    |                         |                                                  |                                                               |                                          |                                        |                         | 標準梱包<br>数量<br>Standard<br>qty.<br>/Reel | WEB |                                                          |                                      |          |       |                                                                                       |
|---------------------------------------------------------------------------------------------------|-----------------|------------------------------------------|------|------|---------------------------------------------|-----------------------------|-------------------------------|---------------------------------------------------------|---------------------------------|------|-----|----------------------------------------|----|----|-------------------------------------------|------|-----|---------------------------------|---------|---------------------------------|----------------------------------------------------|-------------------------|--------------------------------------------------|---------------------------------------------------------------|------------------------------------------|----------------------------------------|-------------------------|-----------------------------------------|-----|----------------------------------------------------------|--------------------------------------|----------|-------|---------------------------------------------------------------------------------------|
|                                                                                                   |                 | LED                                      |      |      | Photo transistor                            |                             | 結合特性／Coupling characteristics |                                                         |                                 |      |     |                                        |    |    |                                           |      |     | LED                             |         |                                 |                                                    |                         | Photo transistor                                 |                                                               | 動作温度<br>Operating<br>temperature<br>Topr | 保存温度<br>Storage<br>temperature<br>Tstg |                         |                                         |     |                                                          |                                      |          |       |                                                                                       |
|                                                                                                   |                 | 順電圧<br>Forward<br>voltage<br>VF          |      |      | ピーク発光波長<br>Peak<br>wavelength<br>λp<br>Typ. | 暗電流<br>Dark current<br>ICEO |                               | ピーク感度波長<br>Peak sensitivity<br>wavelength<br>λp<br>Typ. | 光電流<br>Photocurrent<br>※1<br>IC |      |     | 漏れ電流<br>Leakage current<br>※2<br>ILEAK |    |    | 応答速度<br>Response<br>time<br>tr/τf<br>Typ. | Typ. | VCE | RL                              | IF      | 順電流<br>Forward<br>current<br>IF | 順電流低減率<br>Forward current<br>reduction rate<br>ΔIF | Derating<br>start temp. | パルス順電流<br>Pulse<br>forward current<br>※3<br>IFRM | パルス順電流低減率<br>Pulse forward current<br>reduction rate<br>ΔIFRM |                                          |                                        | Derating<br>start temp. |                                         |     | コレクタ・<br>エミッタ間電圧<br>Collector-emitter<br>voltage<br>VCEO | コレクタ電流<br>Collector<br>current<br>IC |          |       |                                                                                       |
|                                                                                                   |                 | Min.                                     | Typ. | Max. |                                             | Max.                        | VCE                           |                                                         | IF                              | Max. | VCE | IF                                     |    |    |                                           |      |     |                                 |         |                                 |                                                    |                         |                                                  |                                                               |                                          |                                        |                         |                                         |     |                                                          |                                      |          |       |                                                                                       |
| 単位 (Units)                                                                                        |                 | V                                        |      |      | nm                                          | μA                          | V                             | nm                                                      | μA                              |      |     | V                                      | mA | μA |                                           |      |     |                                 |         |                                 |                                                    |                         |                                                  |                                                               | V                                        | mA                                     |                         | μS                                      | V   |                                                          |                                      | Ω        | mA    | mA                                                                                    |
| <div>9mg</div> |                 | KU163C                                   | 0.9  | 1.1  | 1.5                                         | 940                         | 0.1                           | 10                                                      | 850                             | 115  | 200 | 425                                    | 5  | 5  | 2                                         | 5    | 5   |                                 | 10 / 10 | 10                              | 100                                                | 5                       | 20                                               | 0.17                                                          | 25                                       | 300                                    | 4                       | 25                                      | 20  | 20                                                       | -30～+85                              | -40～+100 | 2,500 |  |

※製品画像は代表的なものです/The pictures illustrate representative products.  
※1 検知距離 1mm/d=1mm ※2 反射物無し/No reflector ※3 I<sub>FRM</sub>の測定条件/Pulse width≤0.1ms, Duty≤1/100

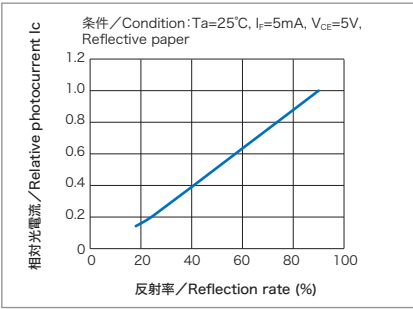
距離 - 相対光電流 特性

Distance vs. relative photocurrent



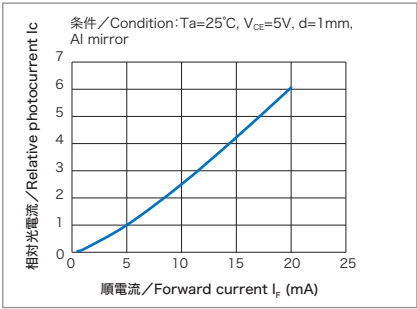
反射率 - 相対光電流 特性

Reflection rate vs. relative photocurrent



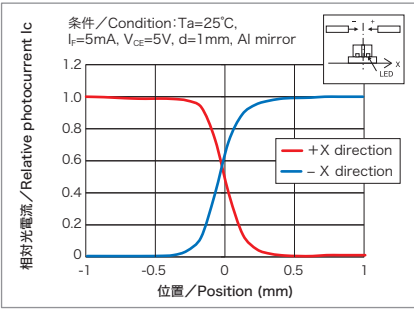
順電流 - 相対光電流 特性

Forward current vs. relative photocurrent



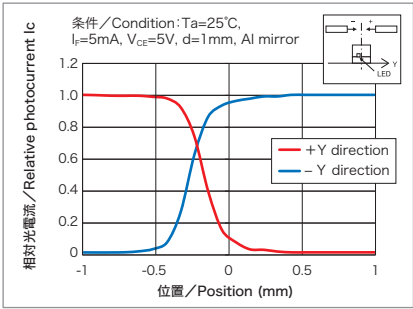
検知範囲 特性 (X方向)

Detection range (X direction)



検知範囲 特性 (Y方向)

Detection range (Y direction)



赤外LEDとフォトトランジスタを超小型パッケージにまとめた面実装タイプの反射センサです。カメラのレンズ系制御、フィルム検出、テープエンド検出、DVDやBDのピックアップ制御・ディスク検出など、物体検出、制御一般にご使用になれます。

This surface mount reflective sensor integrates an IR LED and a phototransistor in an ultra-compact package. This device can be used for substance detection or controllers in general, including camera lens system controllers, film detectors, tape-end detectors, DVD and Blu-ray Disc pick-up controllers and disc detectors, etc.