

Infonote AO-IN-2022-015-I

Update of datasheet for TO39 Ambient Light Sensor BPW 21
Customer information package

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2022-06-15

Agenda

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Update of datasheet for BPW 21

Reason for change

| Item | Description |
|-----------|---|
| Datasheet | With OS-PCN-2020-015-A a new chip was introduced and characterization showed that datasheet modification is needed. Based on this, the datasheets is corrected accordingly. |

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Update of datasheet for BPW 21

Description of change

| Item | Current status | New status |
|-----------|-----------------------|-----------------------|
| Datasheet | Datasheet version 1.3 | Datasheet version 1.4 |

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Update of datasheet for BPW 21

Changes in the datasheets.

| Item | Current status | New status |
|---|-----------------------------|----------------------------|
| Photocurrent (Ordering Information) | 10 μ A | 18 μ A |
| V_{ESD} | n/a | max. 2 kV |
| Spectral sensitivity S | typ. 10 nA/lx | typ. 18 nA/lx |
| Dark current I_R at $V_R = 5$ V | typ. 2 nA | typ. 0.17 nA |
| Dark current I_R at $V_R = 10$ V | typ. 8 pA | typ. 40 pA |
| Spectral sensitivity of the chip $\lambda = 550$ nm S_λ | typ. 0.34 A/W | n/a |
| Quantum yield of the chip $\lambda = 550$ nm η | typ. 0.77 Electrons/ Photon | n/a |
| Open-circuit voltage $E_v = 1000$ lx; Std. Light A V_0 | min. 320 mV typ. 400 mV | typ. 340 mV at $V_R = 0$ V |
| Short-circuit current $E_v = 1000$ lx; Std. Light A I_{SC} | typ. 10 μ A | typ. 17.5 μ A |

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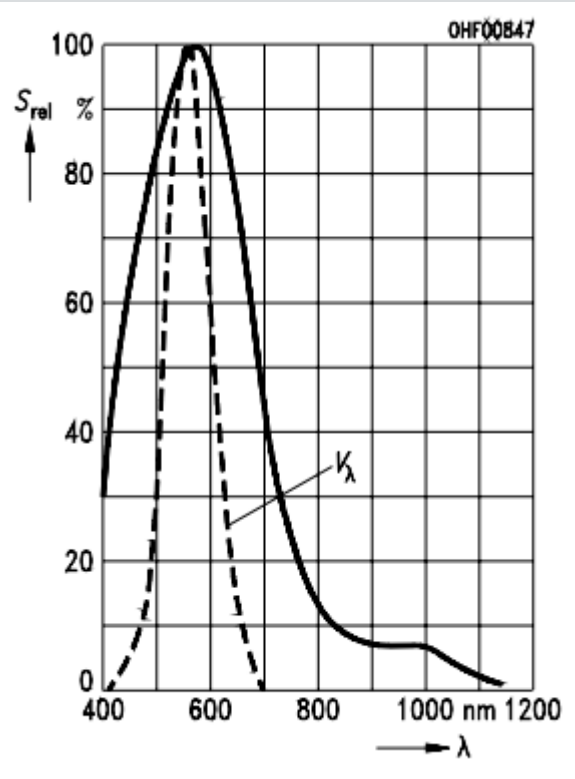
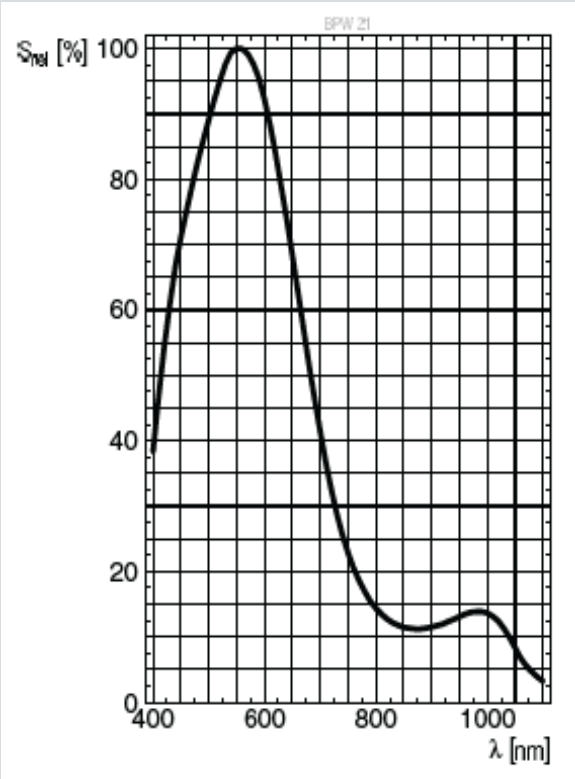
Changes in the datasheets.

| Item | Current status | New status |
|---------------------------------|----------------|------------|
| ESD withstand voltage V_{ESD} | n/a | 2 kV |
| Capacitance C_0 | typ. 580 pF | typ. 48 pF |

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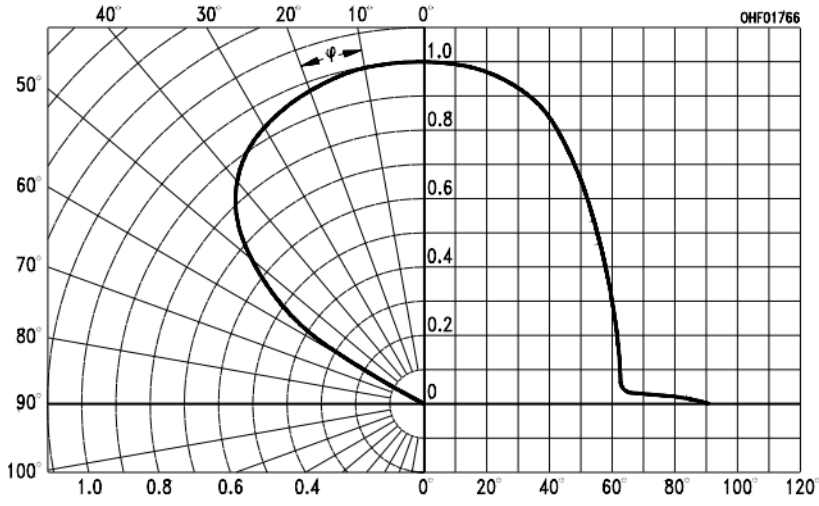
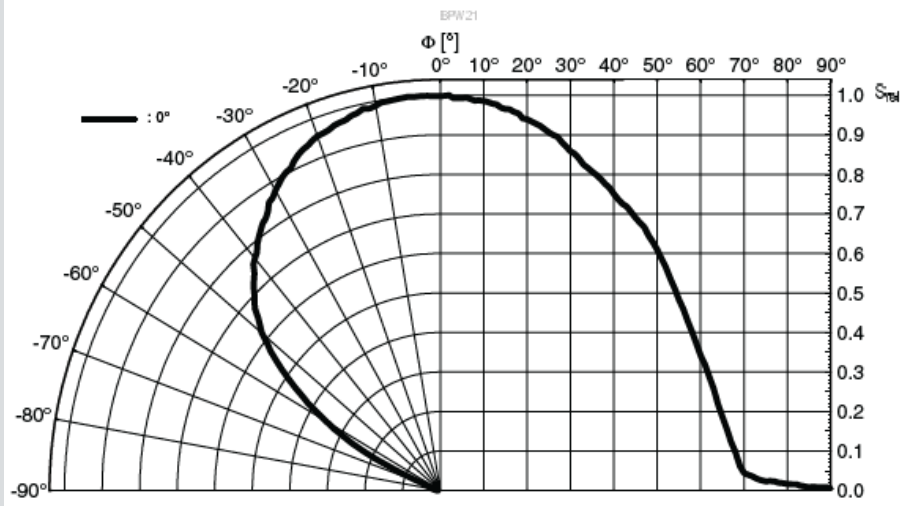
Changes in the datasheets.

| Item | Current status | New status |
|--|---|--|
| <p>Relative Spectral Sensitivity $S_{rel} = f(\lambda)$;</p> <p>Changes in the specifications and the layout</p> |  <p>The graph shows the relative spectral sensitivity S_{rel} (%) versus wavelength λ (nm) for the OHF00B47 device. The x-axis ranges from 400 to 1200 nm, and the y-axis ranges from 0 to 100%. The curve peaks at approximately 550 nm with a sensitivity of 100%. A dashed line indicates a narrower bandwidth, and a label K_λ points to the curve.</p> |  <p>The graph shows the relative spectral sensitivity S_{rel} [%] versus wavelength λ [nm] for the BPW 21 device. The x-axis ranges from 400 to 1000 nm, and the y-axis ranges from 0 to 100%. The curve peaks at approximately 550 nm with a sensitivity of 100%. The graph shows a broader bandwidth compared to the current status.</p> |

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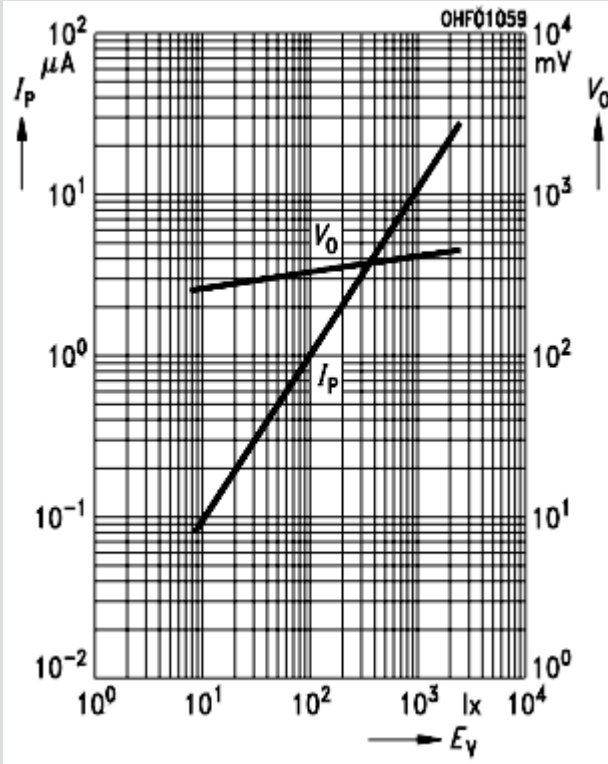
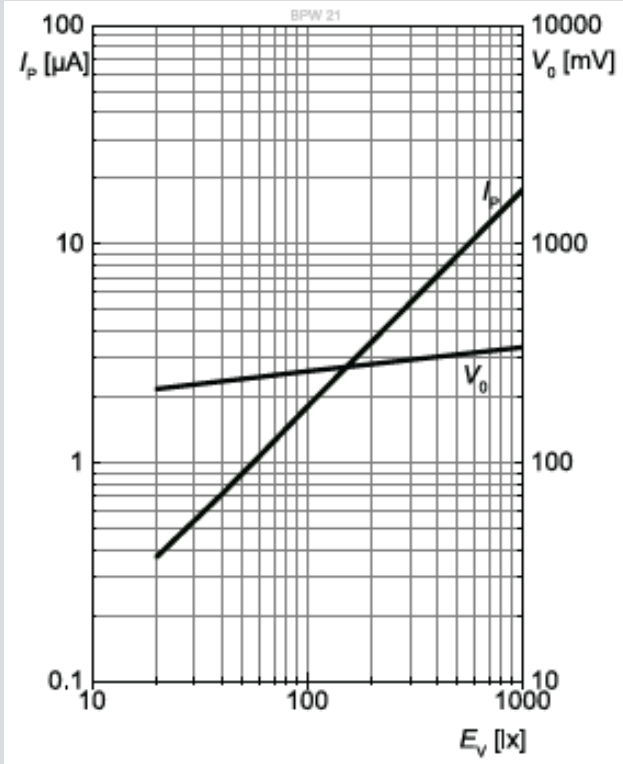
Changes in the datasheets.

| Item | Current status | New status |
|--|---|--|
| <p>Directional Characteristics $S_{rel} = f(\varphi)$;</p> <p>Changes in the specifications and the layout</p> |  |  |

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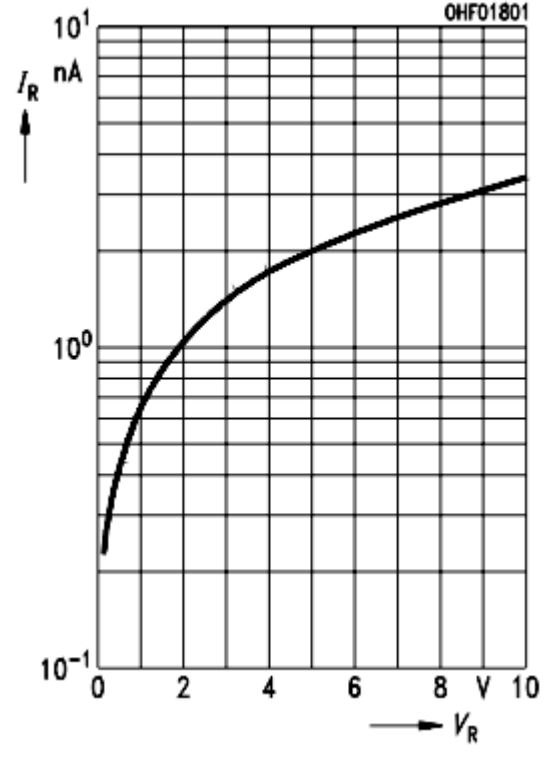
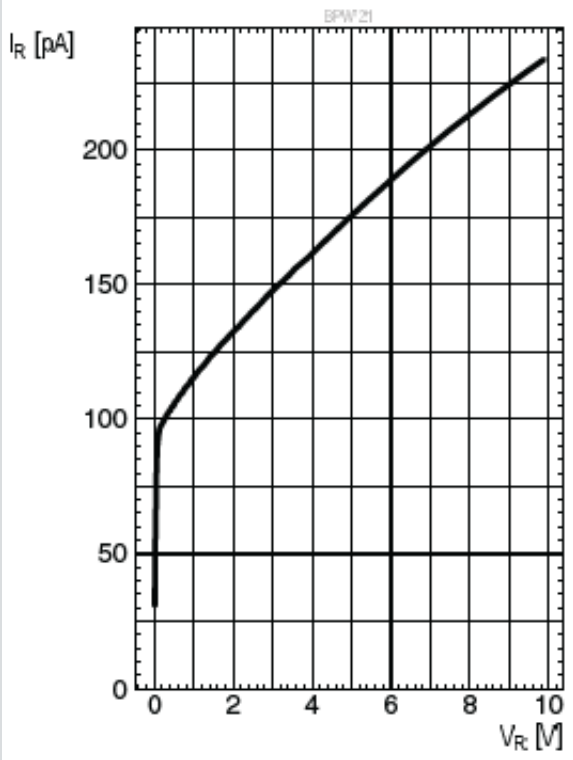
Changes in the datasheets.

| Item | Current status | New status |
|--|--|---|
| <p>Photocurrent/Open-Circuit Voltage $I_P (V_R = 5 \text{ V}) / V_O = f(E_V)$;</p> <p>Changes in the specifications and the layout</p> |  <p>A log-log plot for part number OHF01059. The x-axis is labeled $E_V [lx]$ and ranges from 10^0 to 10^4. The left y-axis is labeled $I_P [\mu A]$ and ranges from 10^{-2} to 10^2. The right y-axis is labeled $V_O [mV]$ and ranges from 10^0 to 10^4. Two lines are plotted: a steeper line for I_P and a shallower line for V_O. Both lines show an upward trend with increasing E_V.</p> |  <p>A log-log plot for part number BPW 21. The x-axis is labeled $E_V [lx]$ and ranges from 10 to 1000. The left y-axis is labeled $I_P [\mu A]$ and ranges from 0.1 to 100. The right y-axis is labeled $V_O [mV]$ and ranges from 10 to 10000. Two lines are plotted: a steeper line for I_P and a shallower line for V_O. Both lines show an upward trend with increasing E_V.</p> |

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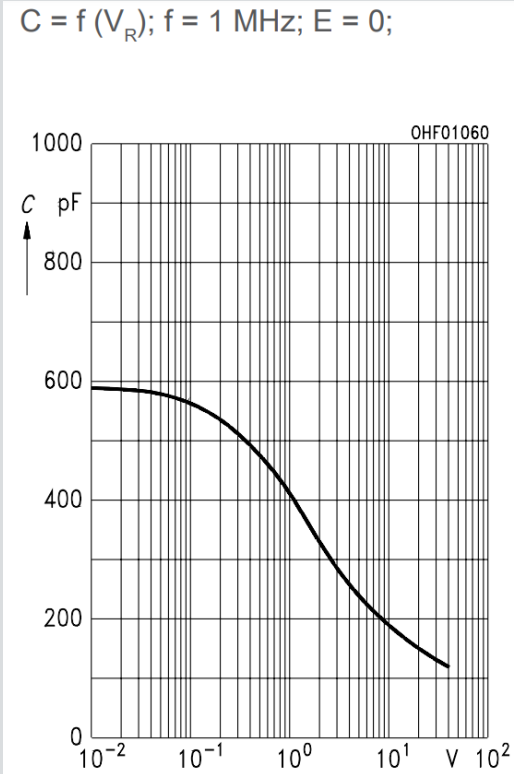
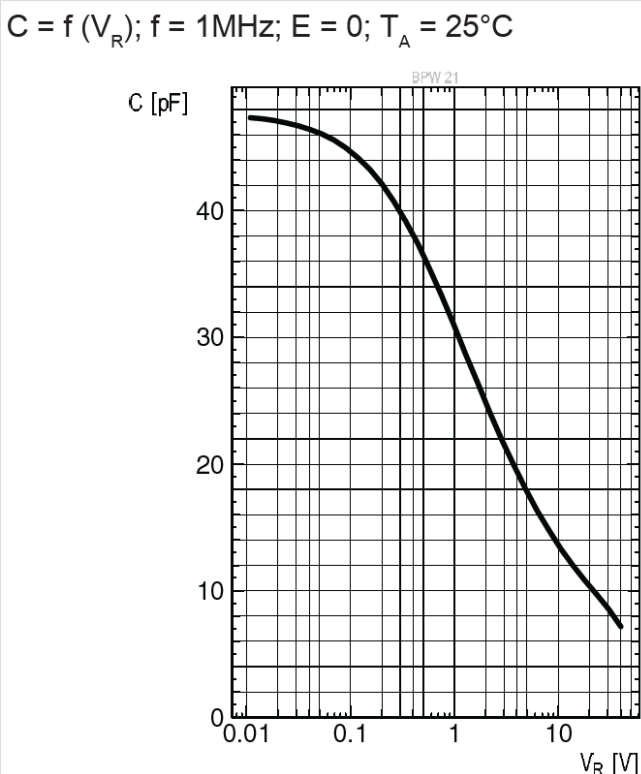
Changes in the datasheets.

| Item | Current status | New status |
|---|---|--|
| <p>Dark Current $I_R = f(V_R) ; E = 0;$</p> <p>Changes in the specifications and the layout</p> |  <p>OHF01801</p> |  <p>BPW 21</p> |

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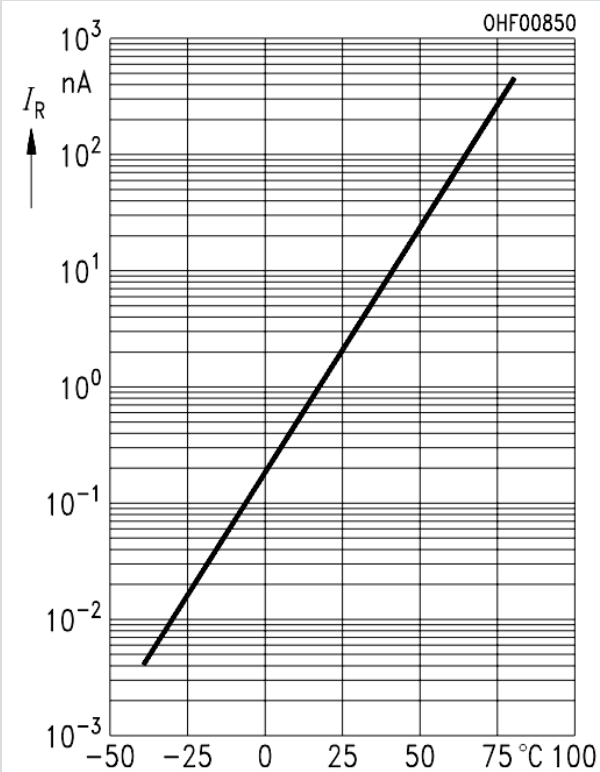
Changes in the datasheets.

| Item | Current status | New status |
|---|---|---|
| <p>Capacitance;</p> <p>Changes in the specifications and the layout</p> | <p>$C = f(V_R); f = 1 \text{ MHz}; E = 0;$</p>  | <p>$C = f(V_R); f = 1 \text{ MHz}; E = 0; T_A = 25^\circ\text{C}$</p>  |

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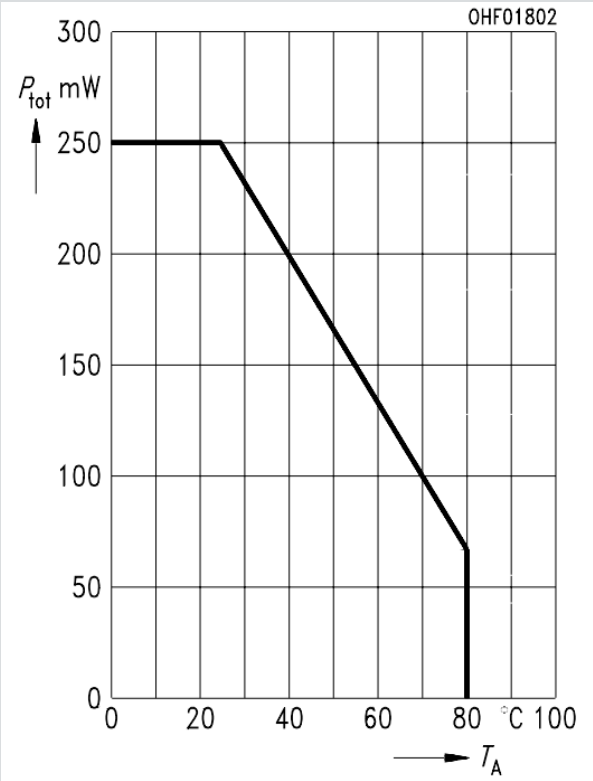
Changes in the datasheets.

| Item | Current status | New status |
|---|---|-----------------------|
| Dark Current $R = f(T_A); E = 0; V_R = 5\text{ V}$ |  <p>The graph shows the dark current I_R in nA as a function of ambient temperature T_A in °C. The y-axis is logarithmic, ranging from 10^{-3} to 10^3 nA. The x-axis is linear, ranging from -50 to 100 °C. The data points form a straight line with a positive slope, indicating an exponential increase in dark current with temperature. The label 'OHF00850' is in the top right corner.</p> | Graph will be removed |

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Changes in the datasheets.

| Item | Current status | New status | | | | | | | | | | |
|--|--|------------|-----------------------|---|-----|----|-----|----|----|----|---|-----------------------|
| Power Consumption $P_{\text{tot}} = f(T_A)$; |  <p>The graph shows the relationship between total power consumption (P_{tot}) in mW and ambient temperature (T_A) in °C. The y-axis ranges from 0 to 300 mW, and the x-axis ranges from 0 to 100 °C. The power is constant at 250 mW from 0°C to 25°C. From 25°C to 80°C, the power decreases linearly to 65 mW. At 80°C, there is a vertical drop to 0 mW, indicating a maximum operating temperature.</p> <table border="1"><caption>Data points from the graph</caption><thead><tr><th>T_A (°C)</th><th>P_{tot} (mW)</th></tr></thead><tbody><tr><td>0</td><td>250</td></tr><tr><td>25</td><td>250</td></tr><tr><td>80</td><td>65</td></tr><tr><td>80</td><td>0</td></tr></tbody></table> | T_A (°C) | P_{tot} (mW) | 0 | 250 | 25 | 250 | 80 | 65 | 80 | 0 | Graph will be removed |
| T_A (°C) | P_{tot} (mW) | | | | | | | | | | | |
| 0 | 250 | | | | | | | | | | | |
| 25 | 250 | | | | | | | | | | | |
| 80 | 65 | | | | | | | | | | | |
| 80 | 0 | | | | | | | | | | | |

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Update of Datasheet for BPW 21

15.06.2022

Dear Customer,

please take note of this **Infonote**.

This customer notification is for information only and does not require customer approval.

| | | |
|-------------------------------|---|-----------------------|
| Objective: | Update of Datasheet for BPW 21 | |
| Affected products: | BPW 21 | |
| Reason for change: | With OS-PCN-2020-015-A a new chip was introduced and characterization showed that datasheet modification is needed. Based on this, the datasheets is corrected accordingly. | |
| Description of change: | <u>Current status</u> | <u>New status</u> |
| | Datasheet Version 1.3 | Datasheet Version 1.4 |
| | For details refer to 2_cip_AO-IN-2022-015-I | |
| Time schedule: | Updated datasheets are available | |
| Assessment: | No changes in fit, form and reliability | |
| Documentation: | Customer information package 2_cip_AO-IN-2022-015-I | |
