Inolux Technologies 0.50” Single Digit Numeric Display
HNTS50 Series

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Official Product | HNTS50 Series | Customer Part No. | Data Sheet No.
-----------------|--------------|-------------------|----------------
*             | ************ | ************      | HNTS50 Series

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DISCLAIMER

- The information contained herein is presented only as a guide for the applications of our products.
  No responsibility is assumed by INOLUX for any infringements of intellectual property or other rights of the third parties which may result from its use.
- Inolux is continually effort to improve the quality of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing INOLUX products, to comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such INOLUX products cause loss of human life, bodily injury or damage to property.
- The INOLUX products listed in this document are intended for usage in general electronics (computer, personal equipment, office equipment, industrial robotics, domestic, etc…) These products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury.
- In developing your designs, please ensure that INOLUX products are used within specified operating ranges as set forth in the most recent INOLUX products specifications.
- Also, please keep in mind the precautions listed in this document.

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Orderable Information

HNTS
H: Inolux Technologies
N: Numeric
T: Through Hole
S: Single

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<tr>
<th>Series Name</th>
<th>Digit Height</th>
<th>Color Code</th>
<th>Polarity</th>
<th>Customer Code</th>
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Features

- 0.5” (12.7mm) Digit Height
- Through Hole Display
- Black Face, White Segment
- RoHS Compliant, Pb Free

Note: Dimension is in millimeters. Tolerance is ±0.25mm unless otherwise noted.
Schematic Drawing

Common Anode

Common Cathode

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Product Characteristic

**Absolute Maximum Rating**

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<tr>
<th>Product</th>
<th>Emission Color</th>
<th>( P_{AD} ) (mW)</th>
<th>( I_{AF} ) (mA)</th>
<th>( I_{PF} ) (mA)</th>
<th>( V_{R} ) (V)</th>
<th>( T_{OP}(°C) )</th>
<th>( T_{ST}(°C) )</th>
<th>Derate From 25°C (mA/°C)</th>
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</thead>
<tbody>
<tr>
<td>HNTS50UBCA/HNTS50UBCC</td>
<td>Blue</td>
<td>120</td>
<td>30</td>
<td>100</td>
<td>5</td>
<td>-25 ~ +85</td>
<td>-25 ~ +85</td>
<td>0.4</td>
</tr>
<tr>
<td>HNTS50UtGA/HNTS50UTGC</td>
<td>True Green</td>
<td>120</td>
<td>30</td>
<td>100</td>
<td>5</td>
<td>-25 ~ +85</td>
<td>-25 ~ +85</td>
<td>0.3</td>
</tr>
<tr>
<td>HNTS50UYGA/HNTS50UYGC</td>
<td>Yellow Green</td>
<td>85</td>
<td>30</td>
<td>120</td>
<td>5</td>
<td>-25 ~ +85</td>
<td>-25 ~ +85</td>
<td>0.42</td>
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<tr>
<td>HNTS50UYA/HNTS50UYC</td>
<td>Yellow</td>
<td>70</td>
<td>25</td>
<td>90</td>
<td>5</td>
<td>-25 ~ +85</td>
<td>-25 ~ +85</td>
<td>0.28</td>
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<tr>
<td>HNTS50UAA/HNTS50UAC</td>
<td>Amber</td>
<td>70</td>
<td>25</td>
<td>90</td>
<td>5</td>
<td>-25 ~ +85</td>
<td>+25 ~ +85</td>
<td>0.33</td>
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<tr>
<td>HNTS50URA/HNTS50URC</td>
<td>Hyper Red</td>
<td>70</td>
<td>25</td>
<td>90</td>
<td>5</td>
<td>-25 ~ +85</td>
<td>-25 ~ +85</td>
<td>0.33</td>
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<tr>
<td>HNTS50USRA/HNTS50USRC</td>
<td>Super Red</td>
<td>70</td>
<td>25</td>
<td>90</td>
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<td>-25 ~ +85</td>
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### Electrical and Optical Characteristic

(T<sub>s</sub> = 25°C)

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<tr>
<th>Product</th>
<th>Emission Color</th>
<th>I&lt;sub&gt;F&lt;/sub&gt; (mA)</th>
<th>V&lt;sub&gt;F&lt;/sub&gt; (V)</th>
<th>λ (nm)</th>
<th>I&lt;sub&gt;V&lt;/sub&gt; (mcd)</th>
<th>I&lt;sub&gt;R&lt;/sub&gt; (µA)</th>
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<tr>
<td>HNTS50UBCA/</td>
<td>Blue</td>
<td>20</td>
<td>3.2</td>
<td>4.0</td>
<td>470</td>
<td>30</td>
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<tr>
<td>HNTS50UBCC</td>
<td></td>
<td></td>
<td></td>
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<td>10 (V&lt;sub&gt;R&lt;/sub&gt;=8V)</td>
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<tr>
<td>HNTS50UTGA/</td>
<td>True Green</td>
<td>20</td>
<td>3.2</td>
<td>4.0</td>
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<td>HNTS50UTGC</td>
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<td>10 (V&lt;sub&gt;R&lt;/sub&gt;=5V)</td>
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<td>2.0</td>
<td>2.6</td>
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<td>2.6</td>
<td>639</td>
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<td></td>
<td></td>
<td>10 (V&lt;sub&gt;R&lt;/sub&gt;=5V)</td>
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Luminous Intensity tolerance = +/- 15%
### Characteristic Curves for UB

**Fig. 1** RELATIVE INTENSITY VS. FORWARD CURRENT

**Fig. 2** FORWARD CURRENT VS. FORWARD VOLTAGE

**Fig. 3** RELATIVE INTENSITY VS. LEAD TEMPERATURE (PULSED 20 mA; 300μs PULSE, 10ms PERIOD)

**Fig. 4** PEAK FORWARD VOLTAGE VS. FORWARD CURRENT (100μs TEST PULSE, 1% DUTY CYCLE)

**Fig. 5** RELATIVE INTENSITY VS. WAVELENGTH

**Fig. 6** MAX. ALLOWABLE DC CURRENT VS. AMBIENT TEMPERATURE

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Characteristic Curves for UTG

**Fig. 1 RELATIVE INTENSITY VS. FORWARD CURRENT**

**Fig. 2 FORWARD CURRENT VS. FORWARD VOLTAGE**

**Fig. 3 RELATIVE INTENSITY VS. LEAD TEMPERATURE**

(PULSED: 20 mA; 300µs PULSE, 10ms PERIOD)

**Fig. 4 PEAK FORWARD VOLTAGE VS. FORWARD**

(100µs TEST PULSE, 1% DUTY CYCLE)

**Fig. 5 RELATIVE INTENSITY VS. WAVELENGTH**

**Fig. 6 MAX. ALLOWABLE DC CURRENT VS. AMBIENT TEMPERATURE**
Characteristic Curves for UYG

FORWARD CURRENT (mA)

Fig. 1 FORWARDED CURRENT VS. FORWARD VOLTAGE

FORWARD VOLTAGE (V)

Fig. 2 RELATIVE INTENSITY VS. FORWARD CURRENT

AMBIENT TEMPERATURE (°C)

Fig. 3 FORWARD VOLTAGE VS. TEMPERATURE

AMBIENT TEMPERATURE (°C)

Fig. 4 RELATIVE INTENSITY VS. TEMPERATURE

WAVELENGTH (nm)

Fig. 5 RELATIVE INTENSITY VS. WAVELENGTH

MAX. DC CURRENT (mA)

Fig. 6 MAX. ALLOWABLE DC CURRENT VS. AMBIENT TEMPERATURE

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Characteristic Curves for UY

![Forward Voltage vs. Forward Current](image1)

**FORWARD VOLTAGE (V)**
Fig.1 FORWARD CURRENT VS. FORWARD VOLTAGE

![Relative Intensity vs. Forward Current](image2)

**FORWARD CURRENT (mA)**
Fig.2 RELATIVE INTENSITY VS. FORWARD CURRENT

![Forward Voltage vs. Temperature](image3)

**AMBIENT TEMPERATURE (°C)**
Fig.3 FORWARD VOLTAGE VS. TEMPERATURE

![Relative Intensity vs. Temperature](image4)

**AMBIENT TEMPERATURE (°C)**
Fig.4 RELATIVE INTENSITY VS. TEMPERATURE

![Relative Intensity vs. Wavelength](image5)

**WAVELENGTH (nm)**
Fig.5 RELATIVE INTENSITY VS. WAVELENGTH

![Max. DC Current vs. Temperature](image6)

**AMBIENT TEMPERATURE (TA) °C**
Fig.6 MAX. ALLOWABLE DC CURRENT VS. AMBIENT TEMPERATURE

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Characteristic Curves for UA

**Forward Voltage (V)**

![Graph showing forward voltage vs. forward current]

**Forward Current (mA)**

![Graph showing relative intensity vs. forward current]

**Ambient Temperature (°C)**

![Graph showing forward voltage vs. ambient temperature]

![Graph showing relative intensity vs. ambient temperature]

**Wavelength (nm)**

![Graph showing relative intensity vs. wavelength]

![Graph showing max. allowable DC current vs. ambient temperature]

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### Characteristic Curves for UR

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0.5” Single Digit
Seven Segment Numeric Display
HNTS50 Series

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**Fig.1** FORWARD CURRENT vs. FORWARD VOLTAGE

**Fig.2** RELATIVE INTENSITY vs. FORWARD CURRENT

**Fig.3** FORWARD VOLTAGE vs. TEMPERATURE

**Fig.4** RELATIVE INTENSITY vs. TEMPERATURE

**Fig.5** RELATIVE INTENSITY vs. WAVELENGTH

**Fig.6** MAX. ALLOWABLE DC CURRENT vs. AMBIENT TEMPERATURE

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Characteristic Curves for USR

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<th>Forward Voltage (V)</th>
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- **Fig.1** Forward Current vs. Forward Voltage
- **Fig.2** Relative Intensity vs. Forward Current

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<th>Forward Voltage @ 25°C</th>
<th>Relative Intensity @ 20 mA</th>
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- **Fig.3** Forward Voltage vs. Temperature
- **Fig.4** Relative Intensity vs. Temperature

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<th>Wavelength (nm)</th>
<th>Max. DC Current (mA)</th>
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- **Fig.5** Relative Intensity vs. Wavelength
- **Fig.6** Max. Allowable DC Current vs. Ambient Temperature

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Reflow Soldering

WAVE SOLDER PROFILE

Temperature

275
225
175
125
75
25

260°C MAX
183°C

TIME

5SEC.

20-50 SEC.
2-5°C/Per SEC.

30-120 SEC.

180 SEC. MAX,
2-5°C/Per SEC.

Soldering Iron

Basic Spec is \( \leq 4 \) sec. when \( 260°C (+10°C \rightarrow -1 \text{ second}) \). Power dissipation of Iron should be less than 15W. Surface temperature should be under 236°C

Rework

Rework should be completed within 4 second under 245°C

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## Revision History

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