

## Features

- 0.3" (7.62mm) Matrix Height
- Single Digit Display
- Black/Grey Face , White Segment
- IC compatible, Easy assembly
- Dynamic drive connect
- RoHS Compliant, Pb Free

## Applications

- Consumer Electronics
- Industrial Equipment

## Description

The INND-TS30 series is a 0.3" single digit display. It is a through hole type LED display which can be used in various applications.

## Internal Circuit Diagram

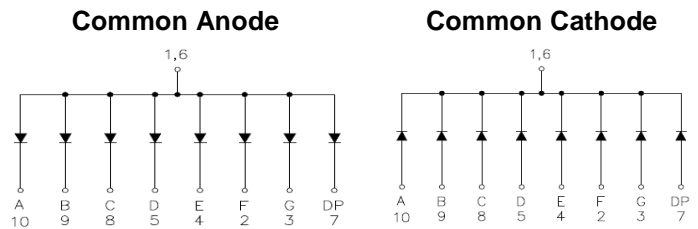


Figure 1. INND-TS30 series Internal Circuit Diagram

## Package Dimensions

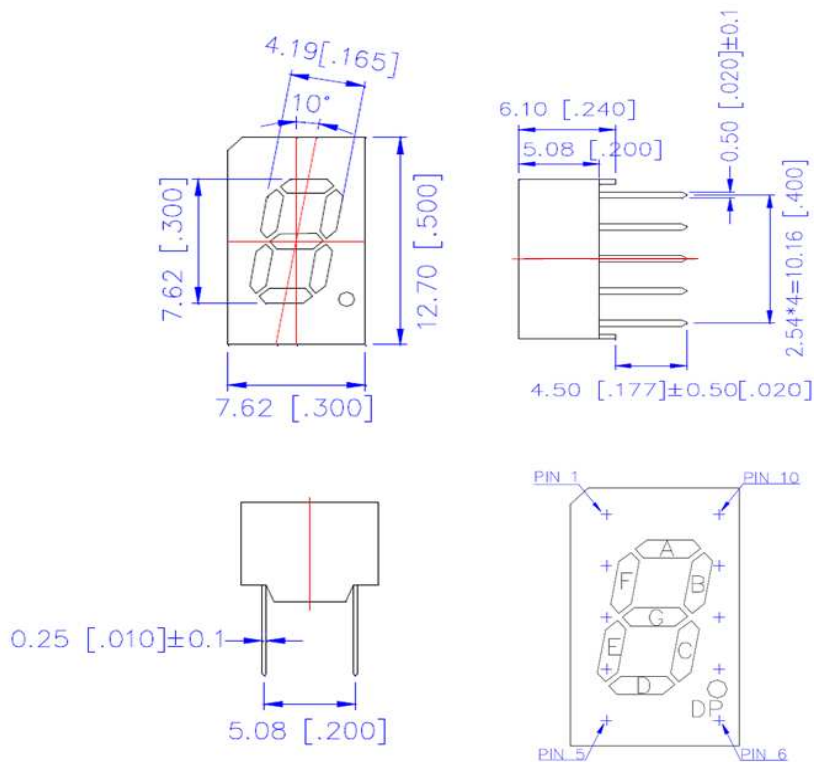


Figure 2. INND-TS30 series Package Dimensions

**Absolute Maximum Rating at 25°C** (Note 1)

| Product<br>(Per Segment) | Emission<br>Color | Technology | Pd (mW) | IF (mA) | IFP*<br>(mA) | VR (V) | Derate From<br>25°C (mA/°C) | T <sub>OP</sub> (°C) | T <sub>ST</sub> (°C) |
|--------------------------|-------------------|------------|---------|---------|--------------|--------|-----------------------------|----------------------|----------------------|
| INND-TS30YGXX            | Yellow<br>Green   | AlGaInP    | 70      | 25      | 90           | 5      | 0.33                        | -35°C~+85°C          | -35°C~+85°C          |
| INND-TS30YXX             | Yellow            | AlGaInP    | 70      | 25      | 90           | 5      | 0.33                        | -35°C~+85°C          | -35°C~+85°C          |
| INND-TS30AXX             | Amber             | AlGaInP    | 70      | 25      | 90           | 5      | 0.33                        | -35°C~+85°C          | -35°C~+85°C          |
| INND-TS30RXX             | Red               | AlGaInP    | 70      | 25      | 90           | 5      | 0.33                        | -35°C~+85°C          | -35°C~+85°C          |
| INND-TS30DRXX            | Deep Red          | AlGaInP    | 70      | 25      | 90           | 5      | 0.33                        | -35°C~+85°C          | -35°C~+85°C          |
| INND-TS30GXX             | Green             | InGaN      | 114     | 30      | 100          | 5      | 0.4                         | -35°C~+85°C          | -35°C~+85°C          |
| INND-TS30BXX             | Blue              | InGaN      | 114     | 30      | 100          | 5      | 0.4                         | -35°C~+85°C          | -35°C~+85°C          |
| INND-TS30WXX             | White             | InGaN      | 114     | 30      | 100          | 5      | 0.4                         | -35°C~+85°C          | -35°C~+85°C          |

**Notes**

1. Condition for IFP is pulse of 1/10 duty and 0.1msec width

### Electrical Characteristics $T_A = 25^\circ\text{C}$ (Note 1)

| Product<br>(Per Segment) | Emission<br>Color | $V_F(\text{V})@20\text{mA}$ |      |     | $\lambda(\text{nm})@20\text{mA}$ |             | $I_V(\text{mcd})@10\text{mA}$ |      |     | $I_R(\mu\text{A})@V_R=5\text{V}$ | $I_{V-M}@I_F=10\text{mA}$ |
|--------------------------|-------------------|-----------------------------|------|-----|----------------------------------|-------------|-------------------------------|------|-----|----------------------------------|---------------------------|
|                          |                   | min                         | typ. | max | $\lambda_D$                      | $\lambda_P$ | min                           | typ. | max | max                              | max                       |
| INND-TS30YGXX            | Yellow<br>Green   | -                           | 2.0  | 2.8 | 570                              | 572         | -                             | 12   | -   | 100                              | 2:1                       |
| INND-TS30YXX             | Yellow            | -                           | 2.0  | 2.8 | 590                              | 592         | -                             | 30   | -   | 100                              | 2:1                       |
| INND-TS30AXX             | Amber             | -                           | 2.0  | 2.8 | 605                              | 612         | -                             | 40   | -   | 100                              | 2:1                       |
| INND-TS30RXX             | Red               | -                           | 2.0  | 2.8 | 630                              | 644         | -                             | 18   | -   | 100                              | 2:1                       |
| INND-TS30DRXX            | Deep Red          | -                           | 2.0  | 2.8 | 645                              | 660         | -                             | 12   | -   | 100                              | 2:1                       |
| INND-TS30GXX             | Green             | -                           | 3.2  | 3.8 | 525                              | -           | -                             | 120  | -   | 100                              | 2:1                       |
| INND-TS30BXX             | Blue              | -                           | 3.2  | 3.8 | 465                              | -           | -                             | 17   | -   | 50                               | 2:1                       |
| INND-TS30WXX             | White             | -                           | 3.2  | 3.8 | X: 0.27<br>Y: 0.25               | -           | -                             | 42.3 | -   | 50                               | 2:1                       |

### Notes

- Performance guaranteed only under conditions listed in above tables.

### ESD Precaution

ATTENTION: Electrostatic Discharge (ESD) protection



The symbol above denotes that ESD precaution is needed. ESD protection for GaP and AlGaAs based chips is necessary even though they are relatively safe in the presence of low static-electric discharge. Parts built with AlInGaP, GaN, or/and InGaN based chips are STATIC SENSITIVE devices. ESD precaution must be taken during design and assembly. If manual work or processing is needed, please ensure the device is adequately protected from ESD during the process.

Please be advised that normal static precautions should be taken in the handling and assembly of this device to prevent damage or degradation which may be induced by electrostatic discharge (ESD).

**Characteristic Curves for YG, Y, A, R, DR, G**


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. Forward current vs. Temperature

### Characteristic Curves for B



Fig 1. Forward Current vs. Forward Voltage



Fig 2. Relative Intensity vs. Forward Current

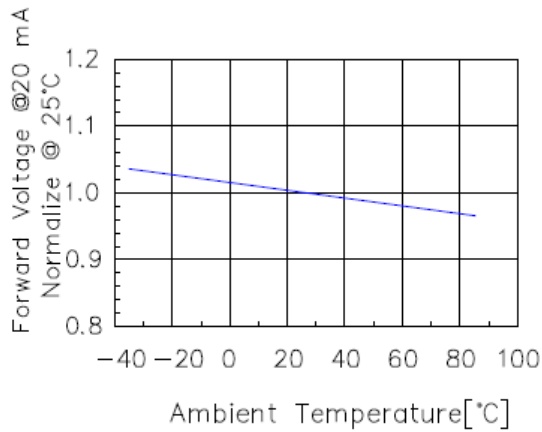


Fig 3. Forward Voltage vs. Temperature



Fig 4. Relative Intensity vs. Temperature



Fig 5. Relative Intensity vs. Wavelength



Fig 6. Forward current vs. Temperature

### Characteristic Curves for W



Fig 1. Forward Current vs. Forward Voltage

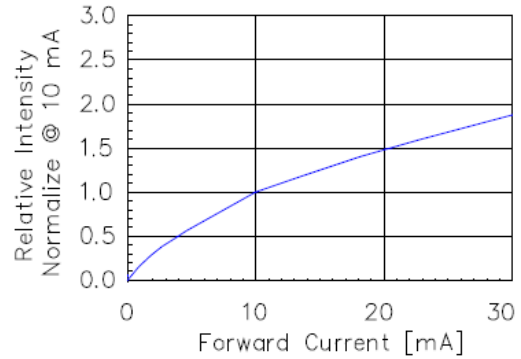


Fig 2. Relative Intensity vs. Forward Current



Fig 3. Forward Voltage vs. Temperature

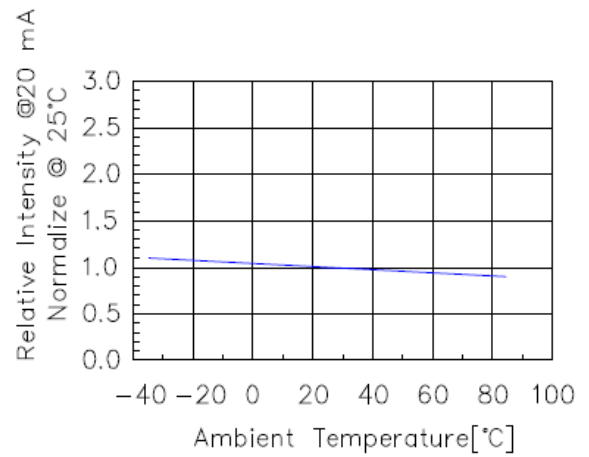


Fig 4. Relative Intensity vs. Temperature



Fig 5. Relative Intensity vs. Wavelength



Fig 6. Forward current vs. Temperature

**Chromaticity Bin (for White only)**


| B1 |       |       |       |       |
|----|-------|-------|-------|-------|
| X  | 0.240 | 0.240 | 0.260 | 0.260 |
| Y  | 0.225 | 0.258 | 0.275 | 0.240 |

| B2 |       |       |       |       |
|----|-------|-------|-------|-------|
| X  | 0.240 | 0.240 | 0.260 | 0.260 |
| Y  | 0.195 | 0.225 | 0.240 | 0.210 |

| C1 |       |       |       |       |
|----|-------|-------|-------|-------|
| X  | 0.260 | 0.260 | 0.280 | 0.280 |
| Y  | 0.240 | 0.275 | 0.293 | 0.257 |

| C2 |       |       |       |       |
|----|-------|-------|-------|-------|
| X  | 0.260 | 0.260 | 0.280 | 0.280 |
| Y  | 0.210 | 0.240 | 0.257 | 0.227 |

| D1 |       |       |       |       |
|----|-------|-------|-------|-------|
| X  | 0.280 | 0.280 | 0.300 | 0.300 |
| Y  | 0.244 | 0.293 | 0.310 | 0.260 |

**Ordering Information**

| Product       | Emission Color | Technology | I*V(mcd)<br>@10mA | VF(V)<br>@20mA | Polarity       | Face Color | Orderable Part Number |
|---------------|----------------|------------|-------------------|----------------|----------------|------------|-----------------------|
| INND-TS30YGXX | Yellow Green   | AlGaInP    | 12                | 2.0            | Common Anode   | Black      | INND-TS30YGAB         |
|               |                |            |                   |                | Common Cathode | Black      | INND-TS30YGCB         |
|               |                |            |                   |                | Common Anode   | Grey       | INND-TS30YGAG         |
|               |                |            |                   |                | Common Cathode | Grey       | INND-TS30YGCG         |
| INND-TS30YXX  | Yellow         | AlGaInP    | 30                | 2.0            | Common Anode   | Black      | INND-TS30YAB          |
|               |                |            |                   |                | Common Cathode | Black      | INND-TS30YCB          |
|               |                |            |                   |                | Common Anode   | Grey       | INND-TS30YAG          |
|               |                |            |                   |                | Common Cathode | Grey       | INND-TS30YCG          |
| INND-TS30AXX  | Amber          | AlGaInP    | 40                | 2.0            | Common Anode   | Black      | INND-TS30AAB          |
|               |                |            |                   |                | Common Cathode | Black      | INND-TS30ACB          |
|               |                |            |                   |                | Common Anode   | Grey       | INND-TS30AAG          |
|               |                |            |                   |                | Common Cathode | Grey       | INND-TS30ACG          |
| INND-TS30RXX  | Red            | AlGaInP    | 18                | 2.0            | Common Anode   | Black      | INND-TS30RAB          |
|               |                |            |                   |                | Common Cathode | Black      | INND-TS30RCB          |
|               |                |            |                   |                | Common Anode   | Grey       | INND-TS30RAG          |
|               |                |            |                   |                | Common Cathode | Grey       | INND-TS30RCG          |



| Product       | Emission Color | Technology | I*V(mcd)<br>@10mA | VF(V)<br>@20mA | Polarity       | Face Color | Orderable Part Number |
|---------------|----------------|------------|-------------------|----------------|----------------|------------|-----------------------|
| INND-TS30DRXX | Deep Red       | AlGaInP    | 12                | 2.0            | Common Anode   | Black      | INND-TS30DRAB         |
|               |                |            |                   |                | Common Cathode | Black      | INND-TS30DRCB         |
|               |                |            |                   |                | Common Anode   | Grey       | INND-TS30DRAG         |
|               |                |            |                   |                | Common Cathode | Grey       | INND-TS30DRCG         |
| INND-TS30GXX  | Green          | InGaN      | 120               | 3.2            | Common Anode   | Black      | INND-TS30GAB          |
|               |                |            |                   |                | Common Cathode | Black      | INND-TS30GCB          |
|               |                |            |                   |                | Common Anode   | Grey       | INND-TS30GAG          |
|               |                |            |                   |                | Common Cathode | Grey       | INND-TS30GCC          |
| INND-TS30BXX  | Blue           | InGaN      | 17                | 3.2            | Common Anode   | Black      | INND-TS30BAB          |
|               |                |            |                   |                | Common Cathode | Black      | INND-TS30BCB          |
|               |                |            |                   |                | Common Anode   | Grey       | INND-TS30BAG          |
|               |                |            |                   |                | Common Cathode | Grey       | INND-TS30BCG          |
| INND-TS30WXX  | White          | InGaN      | 42.3              | 3.2            | Common Anode   | Black      | INND-TS30WAB          |
|               |                |            |                   |                | Common Cathode | Black      | INND-TS30WCB          |
|               |                |            |                   |                | Common Anode   | Grey       | INND-TS30WAG          |
|               |                |            |                   |                | Common Cathode | Grey       | INND-TS30WCG          |

**Label Specifications**

**Inolux P/N:**

| I      | N                    | N                            | D | -                            | T | S   | 3 | 0  | X | X                     | X | -                    | X | X | X | X |
|--------|----------------------|------------------------------|---|------------------------------|---|---|---|--|---|-----------------------|---|----------------------|---|---|---|---|
| Inolux | Display Type         | Display Type                 |   | Dimension                    |   | Color   |   | Polarity                                 |   | Face Color            |   | Customized Stamp-off |   |   |   |   |
|        | ND = Numeric Display | T: Through hole<br>S: Single |   | 30 = 0.30"<br>Display Height |   | YG: 570 nm<br>Y: 590 nm<br>A: 605 nm<br>R: 630 nm<br>DR: 660 nm<br>G: 525 nm<br>B: 465 nm<br>W:<br>X: 0.27<br>Y: 0.25 |   | A = Common Anode<br><br>C=Common Cathode |   | B = Black<br>G = Grey |   |                      |   |   |   |   |

**Lot No.:**

|                  |                          |   |   |   |       |      |        |
|------------------|--------------------------|---|---|---|-------|------|--------|
| Z                | 2                        | 0 | 1 | 7 | 01    | 24   | 001    |
| Internal Tracker | Year (2017, 2018, .....) |   |   |   | Month | Date | Serial |

## Reflow Soldering



## Soldering Iron

Basic Spec is  $\leq 4$  sec. when 260°C (+10°C → -1 second). Power dissipation of Iron should be less than 15W. Surface temperature should be under 230°C

## Rework

Rework should be completed within 4 second under 245°C

## Revision History

| Changes since last revision | Page | Version No. | Revision Date |
|-----------------------------|------|-------------|---------------|
| Initial Release             |      | 1.0         | 07-12-2017    |
|                             |      |             |               |
|                             |      |             |               |
|                             |      |             |               |
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|                             |      |             |               |
|                             |      |             |               |
|                             |      |             |               |
|                             |      |             |               |

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Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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