

## Features

- 4.0" (101.6mm) Digit Height
- Single Digit Display
- Black/Grey Face, White Segment
- IC compatible, Easy assembly
- Dynamic drive connects
- RoHS Compliant, Pb Free

## Applications

- Consumer Electronics
- Industrial Equipment

## Description

The INND-TS400 series is a 4.0" single digit display. It is a through hole type LED display which can be used in various applications.

## Internal Circuit Diagram

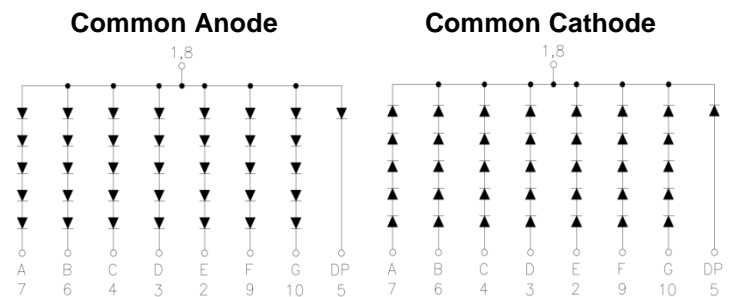


Figure 1. INND-TS400 series Internal Circuit Diagram

## Package Dimensions

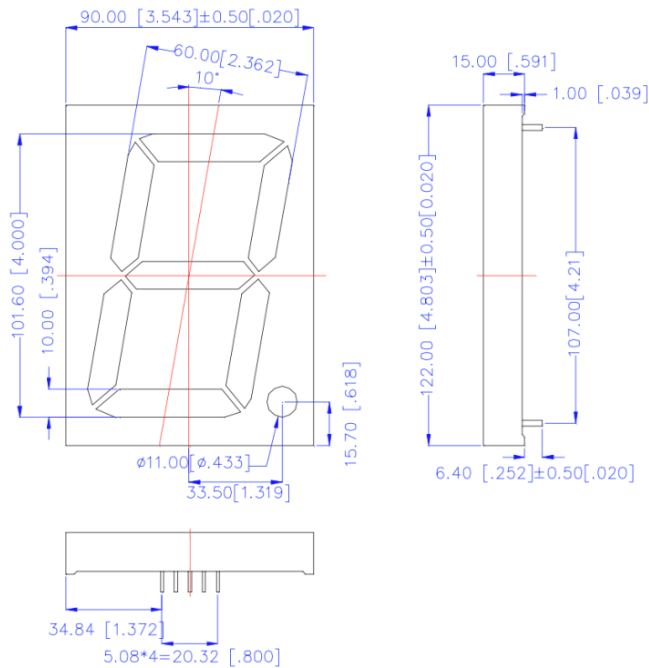
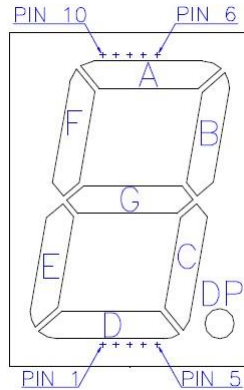


Figure 2. INND-TS400 series Package Dimensions

## Notes

1. All pins are  $\varnothing 0.60[.024]\pm 0.1[.004]$
2. Dimension in millimeter [inch], tolerance is  $\pm 0.25 [ .010]$  and angle is  $\pm 1^\circ$  unless otherwise noted.
3. Bending  $\leq$  Length\*1%.

## All Light On Segments Feature & Pin Position



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

Product (Per Segment)	Emission Color	Technology	Pd (mW)	IF (mA)	IFP* (mA)	VR (V)	Derate from 25°C (mA/°C)	T <sub>OP</sub> (°C)	T <sub>ST</sub> (°C)
INND-TS400YGXX	Yellow Green	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TS400YXX	Yellow	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TS400AXX	Amber	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TS400RXX	Red	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TS400DRXX	Deep Red	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TS400GXX	Green	InGaN	114	30	100	5	0.4	-35°C~+85°C	-35°C~+85°C
INND-TS400BXX	Blue	InGaN	114	30	100	5	0.4	-35°C~+85°C	-35°C~+85°C
INND-TS400WXX	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 (Per Segment)	Emission Color	V <sub>F</sub> (V)@20mA Forward Voltage Per Segment (DP)			λ(nm)@20mA		I <sub>V</sub> (mcd)@10mA			I <sub>R</sub> (μA) @V <sub>R</sub> =5V	I <sub>V-M</sub> @ I <sub>F</sub> = 10mA
		min	typ.	max	λ <sub>D</sub>	λ <sub>P</sub>	min	typ.	max	max	max
INND-TS400YGXX	Yellow Green	-	10(2)	14(2.8)	570	572	-	111	-	100	2:1
INND-TS400YXX	Yellow	-	10(2)	14(2.8)	590	592	-	330	-	100	2:1
INND-TS400AXX	Amber	-	10(2)	14(2.8)	605	612	-	445	-	100	2:1
INND-TS400RXX	Red	-	10(2)	14(2.8)	630	644	-	180	-	100	2:1
INND-TS400DRXX	Deep Red	-	10(2)	14(2.8)	645	660	-	160	-	100	2:1
INND-TS400GXX	Green	-	16(3.2)	19(3.8)	525	-	-	1921	-	100	2:1
INND-TS400BXX	Blue	-	16(3.2)	19(3.8)	465	-	-	300	-	50	2:1
INND-TS400WXX	White	-	16(3.2)	19(3.8)	X: 0.27 Y: 0.25	-	-	1123	-	50	2:1

## Notes

1. 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).

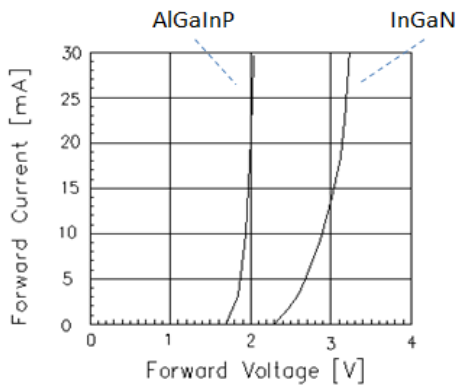
**Characteristic Curves for YG, Y, A, R, DR, G**


Fig 1. Forward Current vs. Forward Voltage

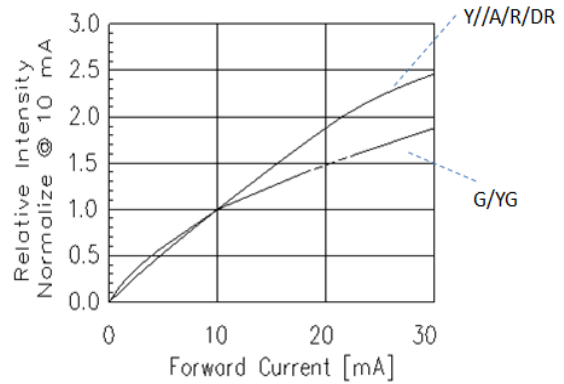


Fig 2. Relative Intensity vs. Forward Current

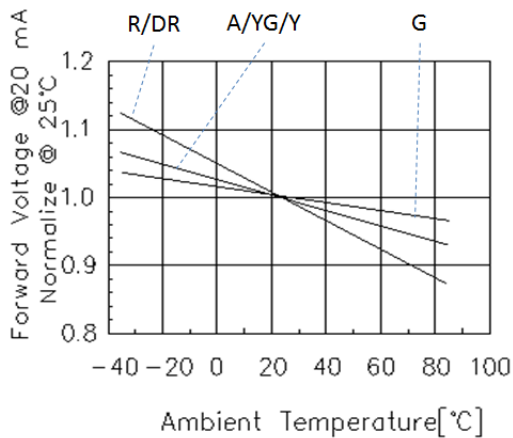


Fig 3. Forward Voltage vs. Temperature

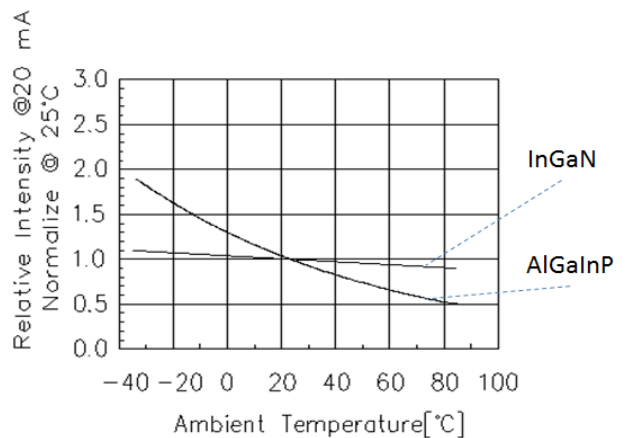


Fig 4. Relative Intensity vs. Temperature

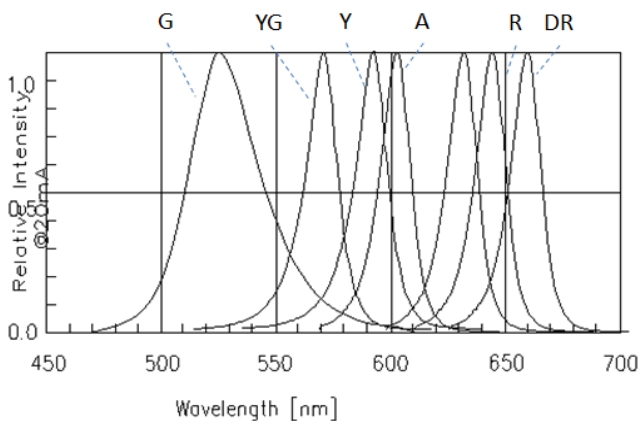


Fig 5. Relative Intensity vs. Wavelength

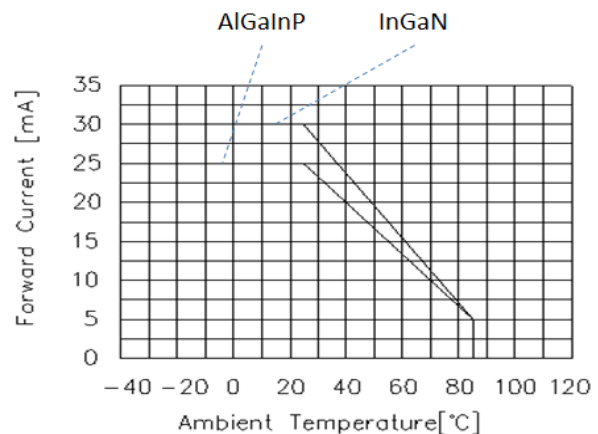


Fig 6. Forward current vs. Temperature

**Characteristic Curves for B**


Fig 1. Forward Current vs. Forward Voltage

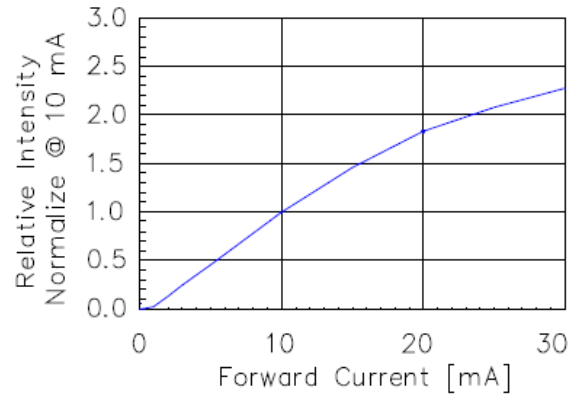


Fig 2. Relative Intensity vs. Forward Current

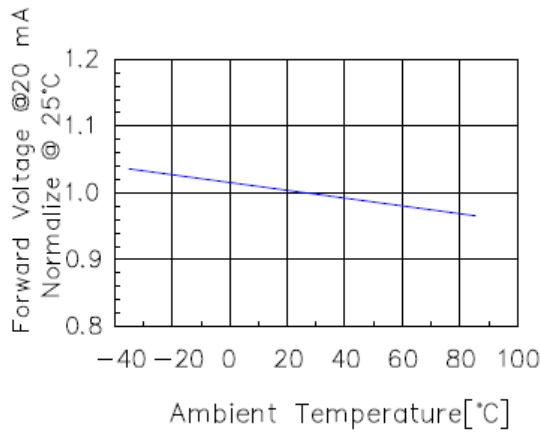


Fig 3. Forward Voltage vs. Temperature

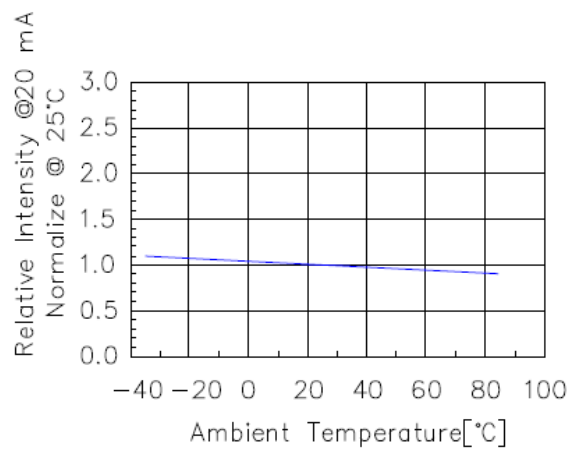


Fig 4. Relative Intensity vs. Temperature

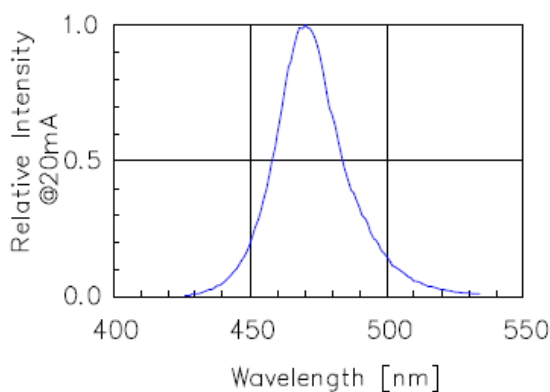


Fig 5. Relative Intensity vs. Wavelength

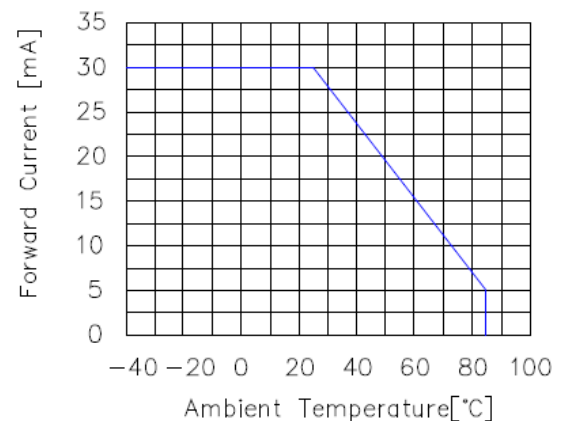


Fig 6. Forward current vs. Temperature

### Characteristic Curves for W



Fig 1. Forward Current vs. Forward Voltage

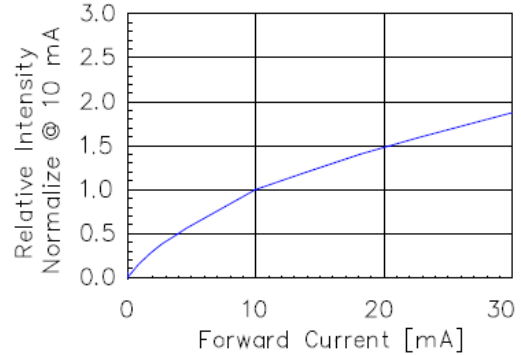


Fig 2. Relative Intensity vs. Forward Current



Fig 3. Forward Voltage vs. Temperature



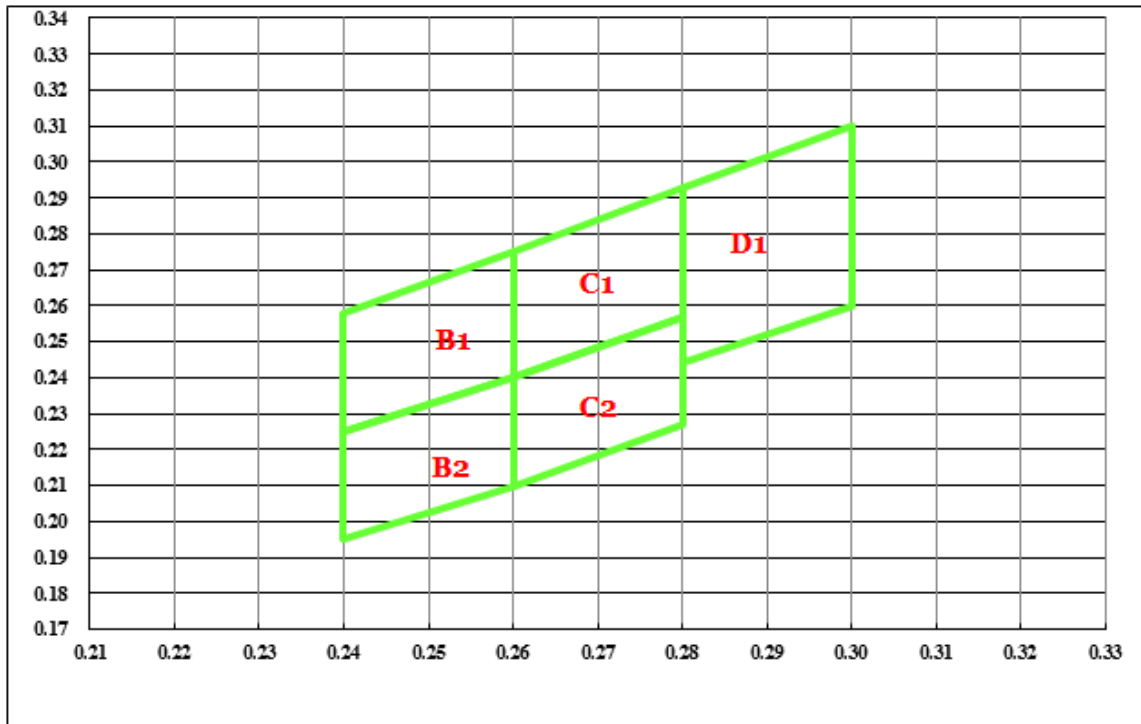
Fig 4. Relative Intensity vs. Temperature



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

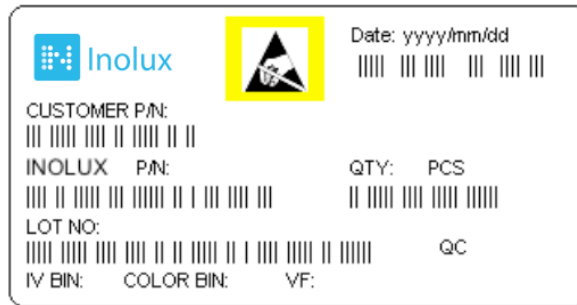
## Ordering Information

Product	Emission Color	Technology	I*V(mcd) @10mA	VF(V) @20mA	Polarity	Face Color	Orderable Part Number
INND-TS400YGXX	Yellow Green	AlGaInP	111	10(2)	Common Anode	Black	INND-TS400YGAB
					Common Cathode	Black	INND-TS400YGCB
					Common Anode	Grey	INND-TS400YGAG
					Common Cathode	Grey	INND-TS400YGCG
INND-TS400YXX	Yellow	AlGaInP	330	10(2)	Common Anode	Black	INND-TS400YAB
					Common Cathode	Black	INND-TS400YCB
					Common Anode	Grey	INND-TS400YAG
					Common Cathode	Grey	INND-TS400YCG
INND-TS400AXX	Amber	AlGaInP	445	10(2)	Common Anode	Black	INND-TS400AAB
					Common Cathode	Black	INND-TS400ACB
					Common Anode	Grey	INND-TS400AAG
					Common Cathode	Grey	INND-TS400ACG
INND-TS400RXX	Red	AlGaInP	180	10(2)	Common Anode	Black	INND-TS400RAB
					Common Cathode	Black	INND-TS400RCB
					Common Anode	Grey	INND-TS400RAG
					Common Cathode	Grey	INND-TS400RCG



Product	Emission Color	Technology	I*V(mcd) @10mA	VF(V) @20mA	Polarity	Face Color	Orderable Part Number
INND-TS400DRXX	Deep Red	AlGaInP	160	10(2)	Common Anode	Black	INND-TS400DRAB
					Common Cathode	Black	INND-TS400DRCB
					Common Anode	Grey	INND-TS400DRAG
					Common Cathode	Grey	INND-TS400DRCG
INND-TS400GXX	Green	InGaN	1921	16(3.2)	Common Anode	Black	INND-TS400GAB
					Common Cathode	Black	INND-TS400GCB
					Common Anode	Grey	INND-TS400GAG
					Common Cathode	Grey	INND-TS400GCG
INND-TS400BXX	Blue	InGaN	300	16(3.2)	Common Anode	Black	INND-TS400BAB
					Common Cathode	Black	INND-TS400BCB
					Common Anode	Grey	INND-TS400BAG
					Common Cathode	Grey	INND-TS400BCG
INND-TS400WXX	White	InGaN	1123	16(3.2)	Common Anode	Black	INND-TS400WAB
					Common Cathode	Black	INND-TS400WCB
					Common Anode	Grey	INND-TS400WAG
					Common Cathode	Grey	INND-TS400WCG

**Label Specifications**



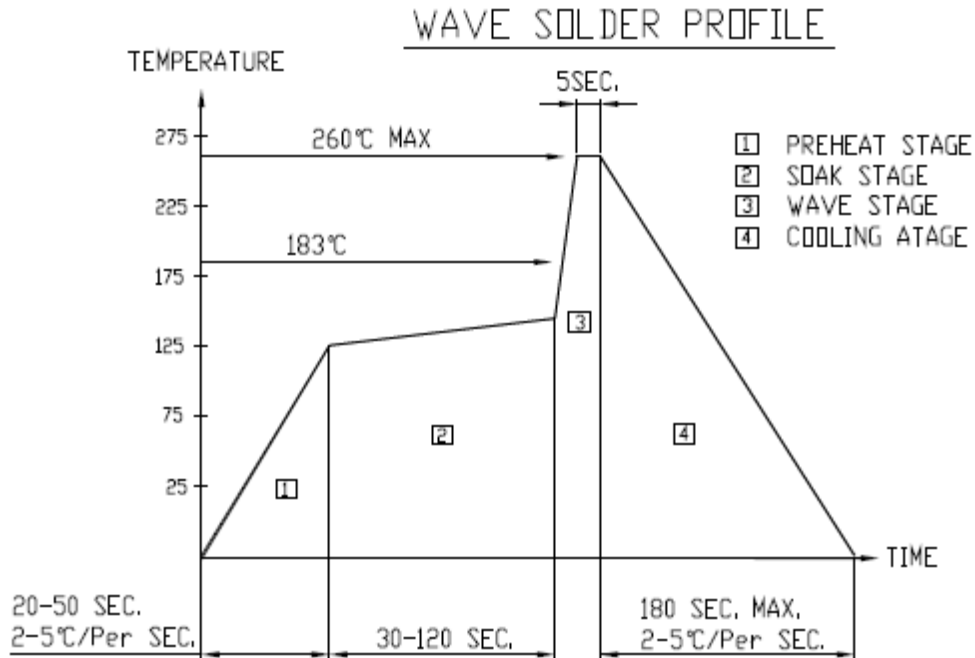
**Inolux P/N:**

I	N	N	D	-	T	S	4	0	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 S: Single	400 = 4" Display Height		YG: 570 nm Y: 590 nm A: 605 nm R: 624 nm DR: 660 nm G: 520 nm B: 470 nm W: X: 0.27 Y: 0.25	A = Common Anode  C=Common Cathode	B = Black 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	12-26-2019

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