

## Features

- 0.52" (13.20mm) Digit Height
- Four Digit Display
- Black/Grey Face , White Segment
- IC compatible, Easy assembly
- Dynamic drive connect
- RoHS Compliant, Pb Free

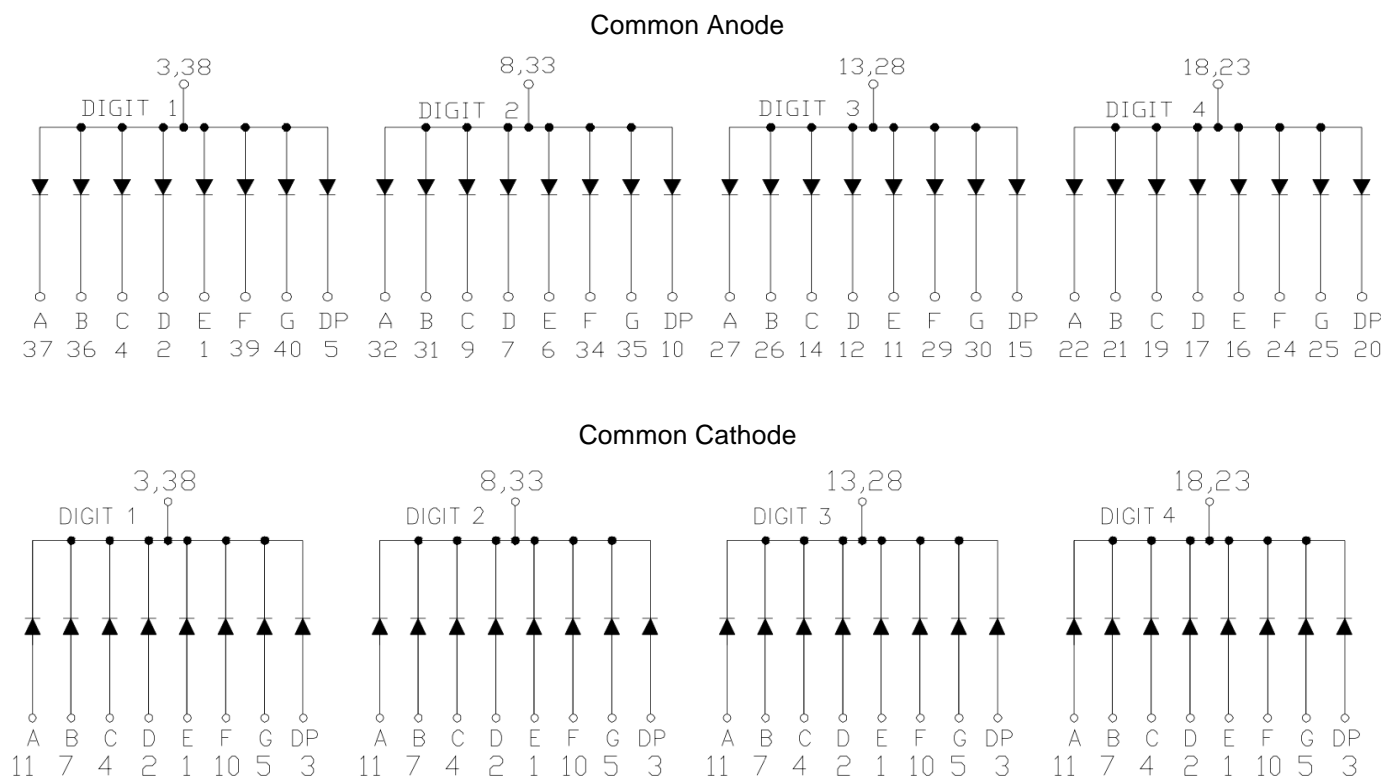
## Description

The INND-TQ52 series is a 0.52" four digit display. It is a through hole type LED display which can be used in various applications.

## Applications

- Consumer Electronics
- Industrial Equipment

## Internal Circuit Diagram



**Figure 1. INND-TQ52 series Internal Circuit Diagram**

### Package Dimensions

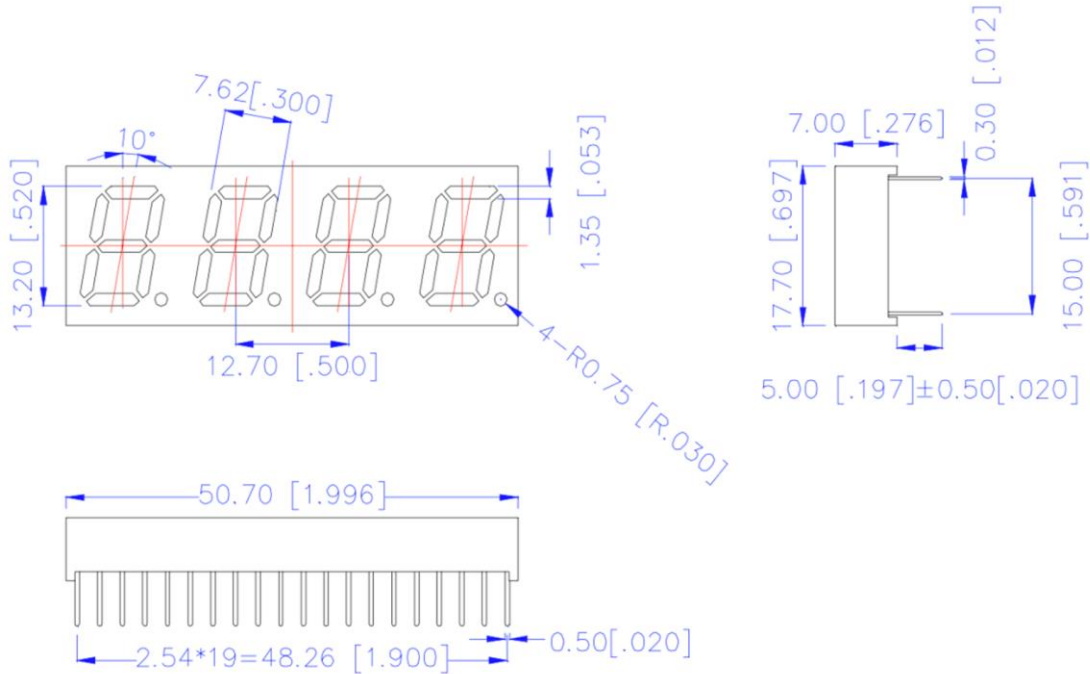


Figure 2. INND-TQ52 series Package Dimensions

#### Notes

1. All pins are  $\varnothing 0.51 [0.020] \pm 0.1 [0.004]$
2. Dimension in millimeter [inch], tolerance is  $\pm 0.25 [0.010]$  and angle is  $\pm 1^\circ$  unless otherwise noted.
3. Bending  $\leq$  Length\*1%.

### All Light On Segments Feature & Pin Position

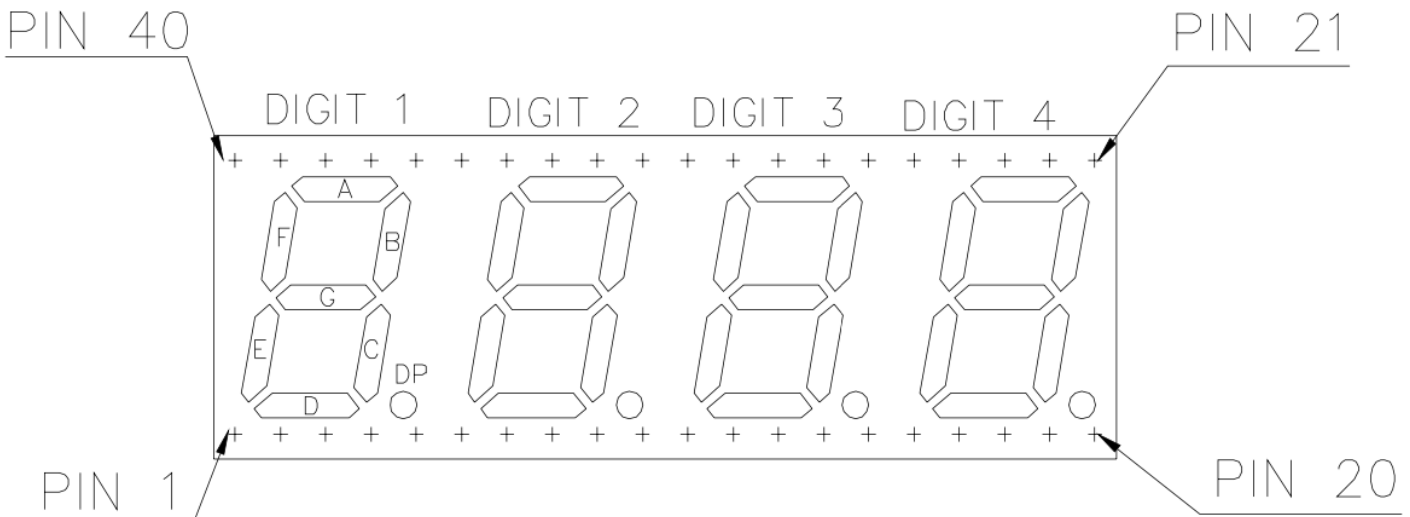


Figure 3. All Light On Segments Feature & Pin Position

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

Product (Per Segment)	Emission Color	Technology	P <sub>d</sub> (mW)	I <sub>F</sub> (mA)	I <sub>FP</sub> * (mA)	V <sub>R</sub> (V)	Derate From 25°C (mA/°C)	T <sub>OP</sub> (°C)	T <sub>ST</sub> (°C)
INND-TQ52YGXX	Yellow Green	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TQ52YXX	Yellow	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TQ52AXX	Amber	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TQ52RXX	Red	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TQ52DRXX	Deep Red	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TQ52GXX	Green	InGaN	114	30	100	5	0.4	-35°C~+85°C	-35°C~+85°C
INND-TQ52BXX	Blue	InGaN	114	30	100	5	0.4	-35°C~+85°C	-35°C~+85°C
INND-TQ52WXX	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	VF(V)@20mA			$\lambda$ (nm)@10mA		I*V(mcd)@10mA			IR( $\mu$ A)@VR=5V	IV-M @IF =10mA
		min	typ.	max	$\lambda$ D	$\lambda$ P	min	typ.	max	max	max
INND-TQ52YGXX	Yellow Green	-	2.0	2.8	570	572	-	9	-	100	2:1
INND-TQ52YXX	Yellow	-	2.0	2.8	590	592	-	42	-	100	2:1
INND-TQ52AXX	Amber	-	2.0	2.8	605	612	-	59	-	100	2:1
INND-TQ52RXX	Red	-	2.0	2.8	630	644	-	20	-	100	2:1
INND-TQ52DRXX	Deep Red	-	2.0	2.8	645	660	-	15	-	100	2:1
INND-TQ52GXX	Green	-	3.2	3.8	525	-	-	219	-	100	2:1
INND-TQ52BXX	Blue	-	3.2	3.8	465	-	-	20	-	50	2:1
INND-TQ52WXX	White	-	3.2	3.8	X: 0.27 Y: 0.25	-	-	72	-	100	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).

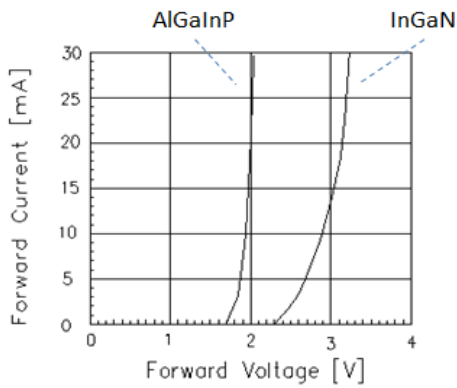
**Characteristic Curves for YG, Y, A, R, DR, G**


Fig 1. Forward Current vs. Forward Voltage

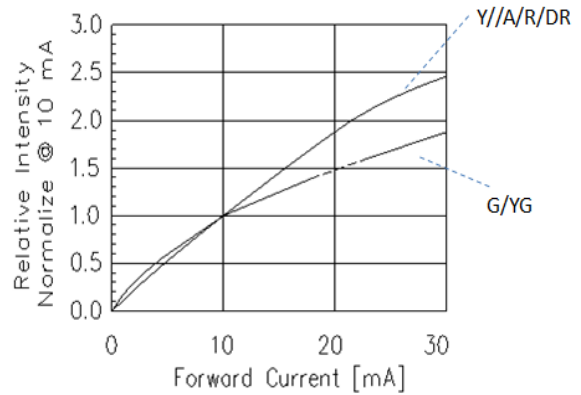


Fig 2. Relative Intensity vs. Forward Current

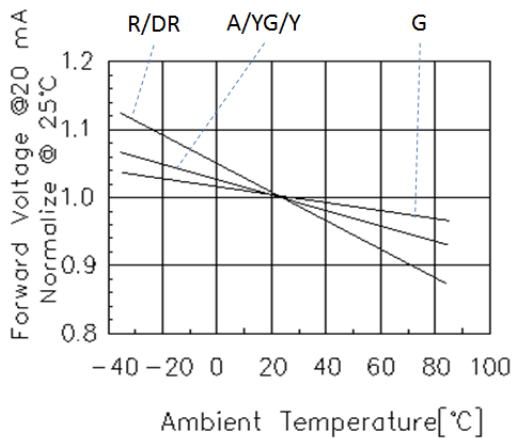


Fig 3. Forward Voltage vs. Temperature

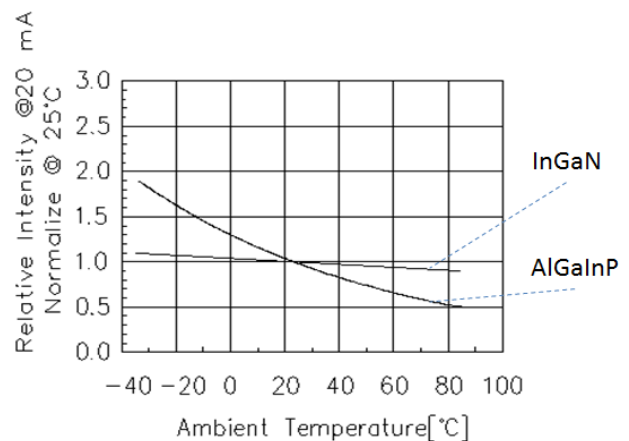


Fig 4. Relative Intensity vs. Temperature

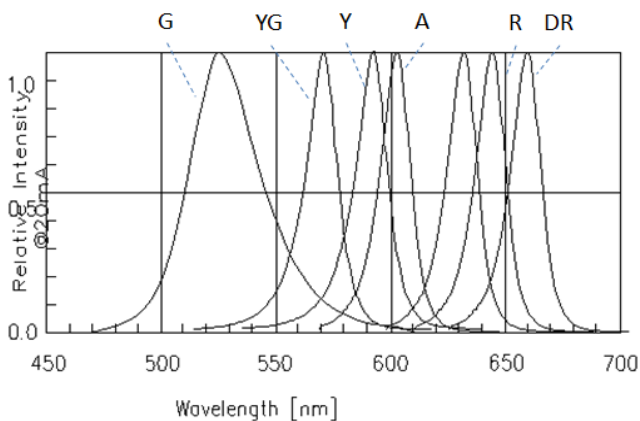


Fig 5. Relative Intensity vs. Wavelength

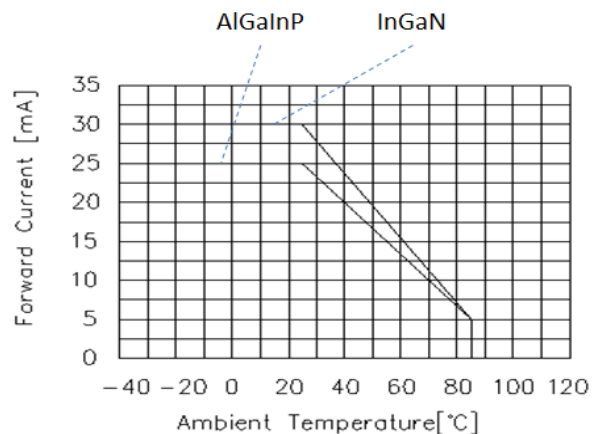


Fig 6. Forward current vs. Temperature

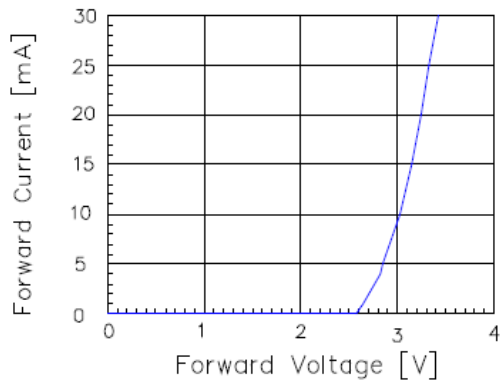
**Characteristic Curves for B**


Fig 1. Forward Current vs. Forward Voltage

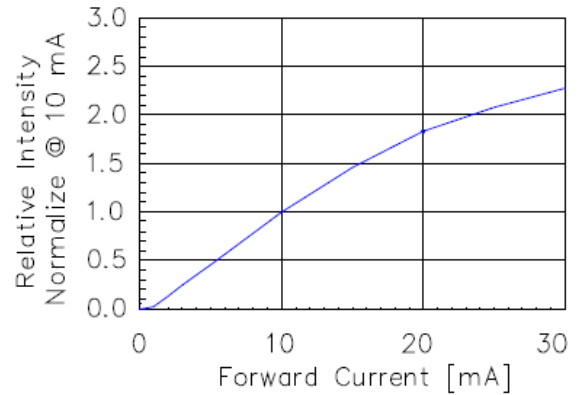


Fig 2. Relative Intensity vs. Forward Current

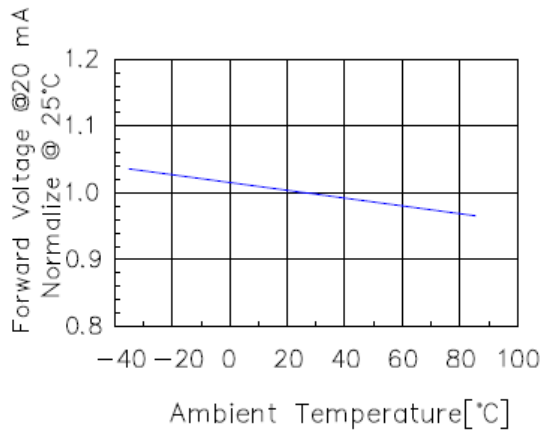


Fig 3. Forward Voltage vs. Temperature

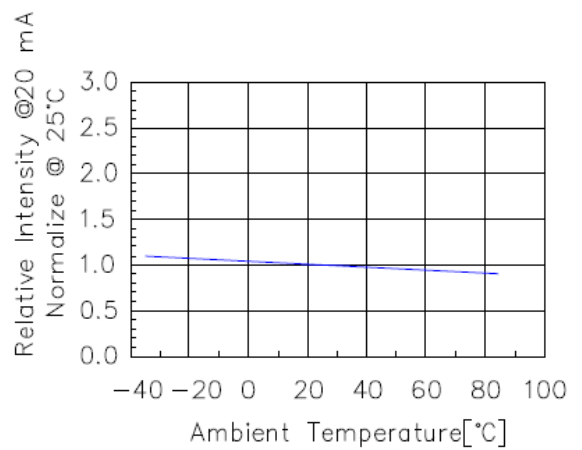


Fig 4. Relative Intensity vs. Temperature

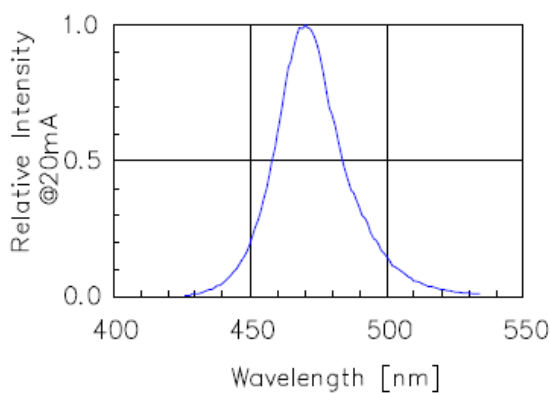


Fig 5. Relative Intensity vs. Wavelength

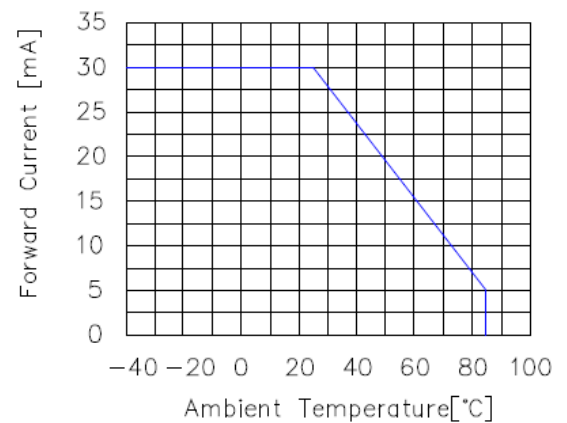


Fig 6. Forward current vs. Temperature

### Characteristic Curves for W

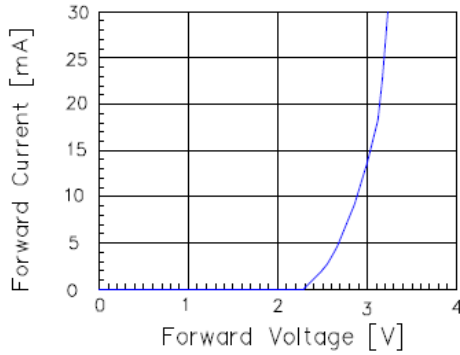


Fig 1. Forward Current vs. Forward Voltage

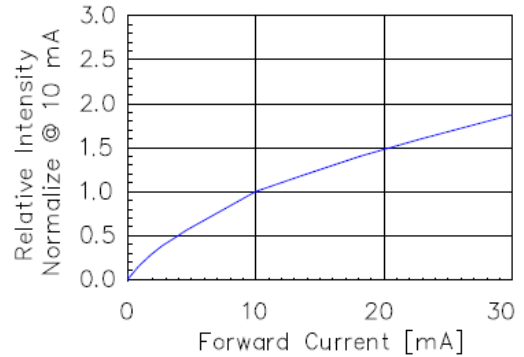


Fig 2. Relative Intensity vs. Forward Current

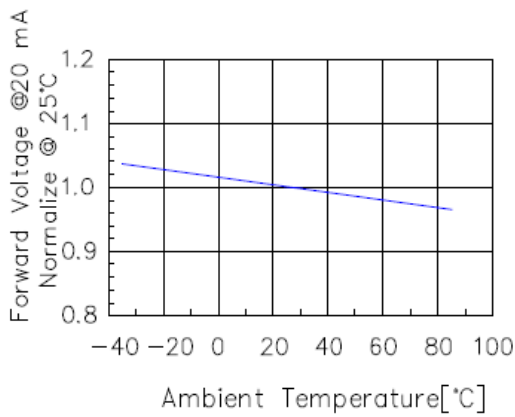


Fig 3. Forward Voltage vs. Temperature

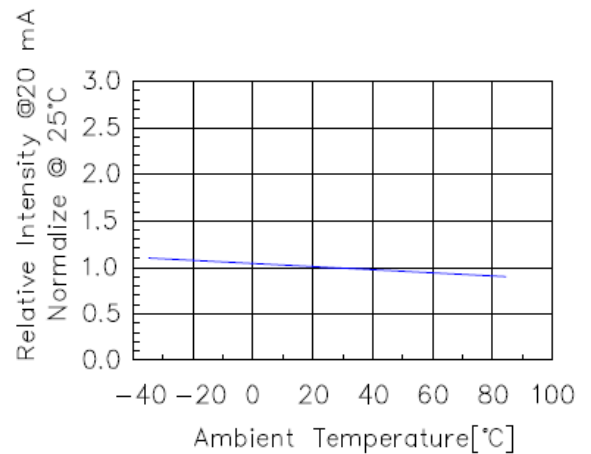


Fig 4. Relative Intensity vs. Temperature

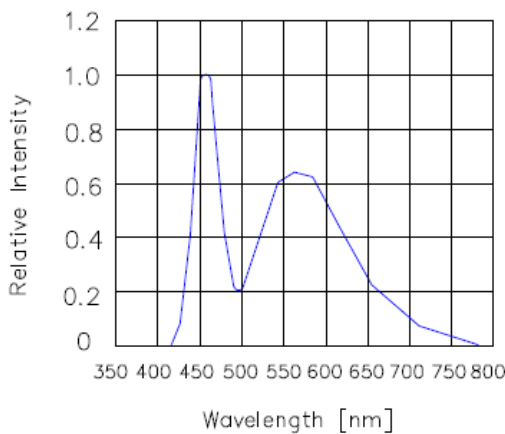


Fig 5. Relative Intensity vs. Wavelength

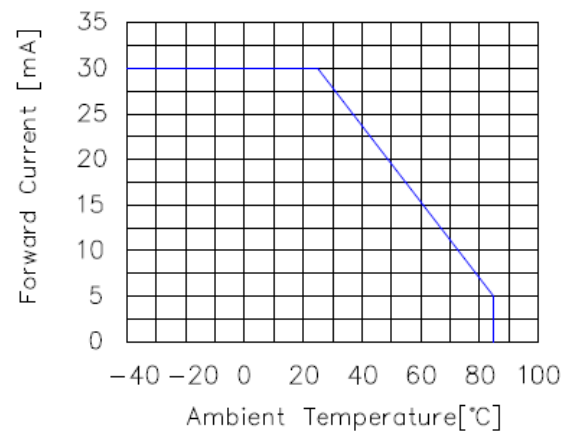
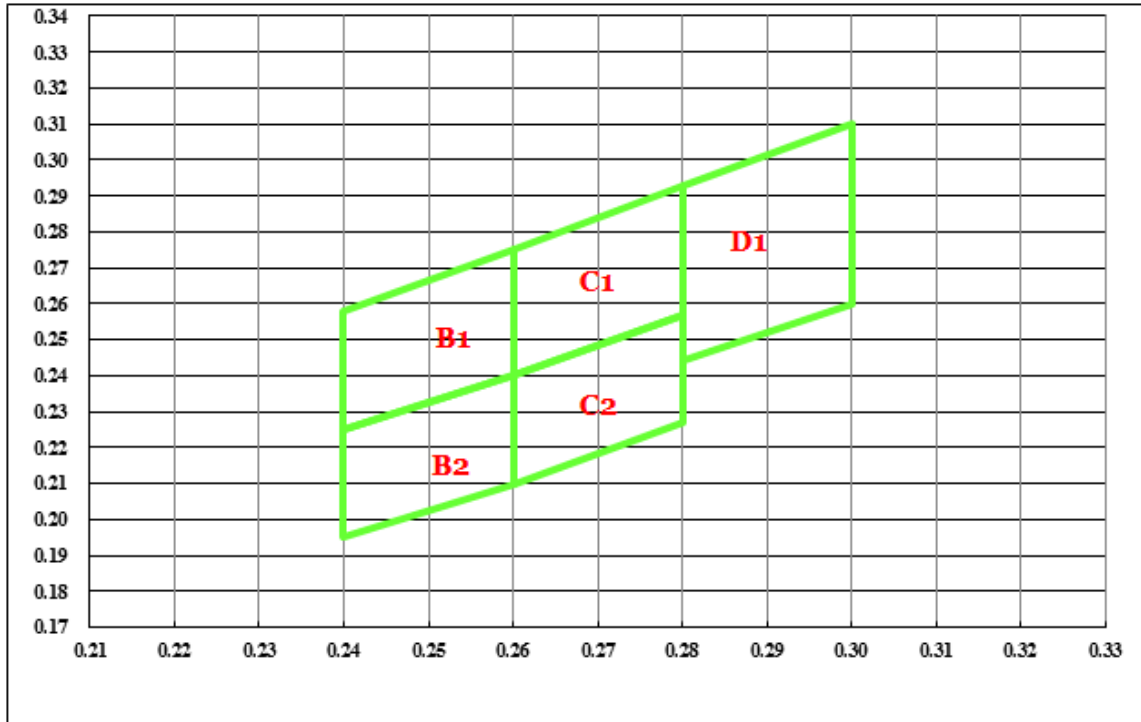


Fig 6. Forward current vs. Temperature

**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

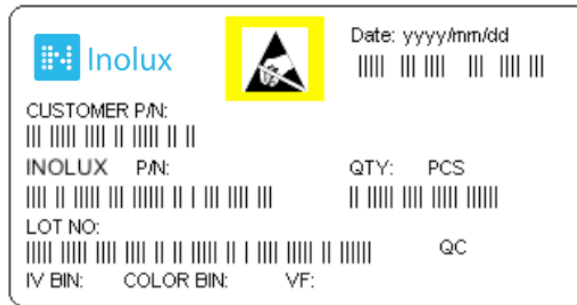


**Ordering Information**

Product	Emission Color	Technology	I*V(mcd) @10mA	VF(V) @20mA	Polarity	Face Color	Orderable Part Number
INND-TQ52YGXX	Yellow Green	AlGaInP	9	2.0	Common Anode	Black	INND-TQ52YGAB
					Common Cathode	Black	INND-TQ52YGCB
					Common Anode	Grey	INND-TQ52YGAG
					Common Cathode	Grey	INND-TQ52YGCG
INND-TQ52YXX	Yellow	AlGaInP	43	2.0	Common Anode	Black	INND-TQ52YAB
					Common Cathode	Black	INND-TQ52YCB
					Common Anode	Grey	INND-TQ52YAG
					Common Cathode	Grey	INND-TQ52YCG
INND-TQ52AXX	Amber	AlGaInP	59	2.0	Common Anode	Black	INND-TQ52AAB
					Common Cathode	Black	INND-TQ52ACB
					Common Anode	Grey	INND-TQ52AAG
					Common Cathode	Grey	INND-TQ52ACG
INND-TQ52RXX	Red	AlGaInP	20	2.0	Common Anode	Black	INND-TQ52RAB
					Common Cathode	Black	INND-TQ52RCB
					Common Anode	Grey	INND-TQ52RAG
					Common Cathode	Grey	INND-TQ52RCG

Product	Emission Color	Technology	I*V(mcd) @10mA	VF(V) @20mA	Polarity	Face Color	Orderable Part Number
INND-TQ52DRXX	Deep Red	AlGaInP	15	2.0	Common Anode	Black	INND-TQ52DRAB
					Common Cathode	Black	INND-TQ52DRCB
					Common Anode	Grey	INND-TQ52DRAG
					Common Cathode	Grey	INND-TQ52DRCG
INND-TQ52GXX	Green	InGaN	219	3.2	Common Anode	Black	INND-TQ52GAB
					Common Cathode	Black	INND-TQ52GCB
					Common Anode	Grey	INND-TQ52GAG
					Common Cathode	Grey	INND-TQ52GCG
INND-TQ52BXX	Blue	InGaN	20	3.2	Common Anode	Black	INND-TQ52BAB
					Common Cathode	Black	INND-TQ52BCB
					Common Anode	Grey	INND-TQ52BAG
					Common Cathode	Grey	INND-TQ52BCG
INND-TQ52WXX	White	InGaN	72	3.2	Common Anode	Black	INND-TQ52WAB
					Common Cathode	Black	INND-TQ52WCB
					Common Anode	Grey	INND-TQ52WAG
					Common Cathode	Grey	INND-TQ52WCG

**Label Specifications**



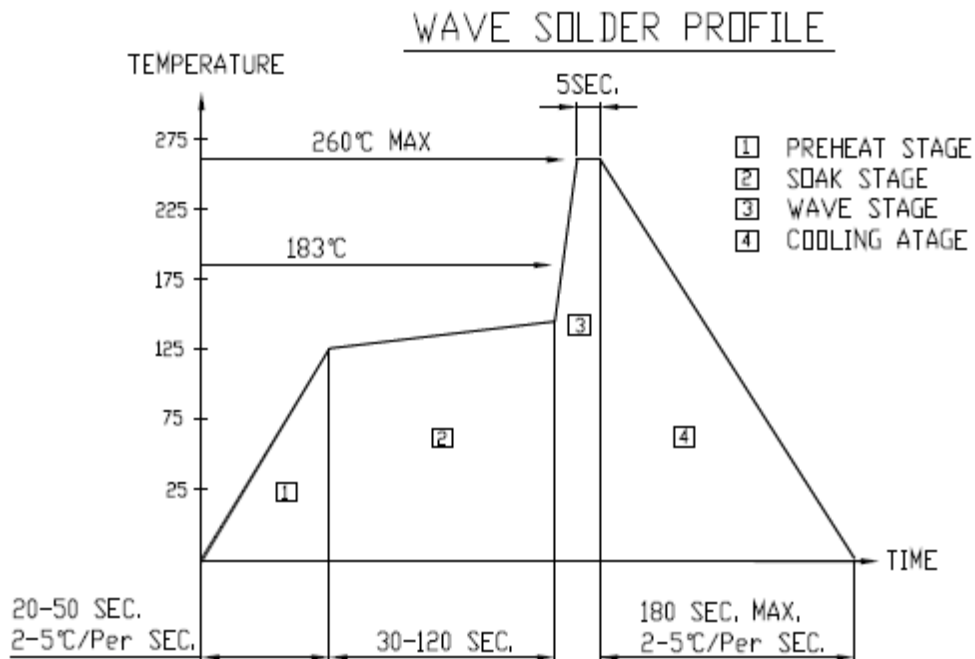
**Inolux P/N:**

I	N	N	D	-	T	Q	5	2	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 Q: Four Digit		52 = 0.52" Display Height		YG: 570 nm Y: 590 nm A: 605 nm R: 624 nm DR:645 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	12-27-2019

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2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.