

## Features

- 0.56" (14.20mm) Digit Height
- Four Digit Display
- Black/Grey Face, White Segment
- IC compatible, Easy assembly
- Dynamic drive connects
- RoHS Compliant, Pb Free

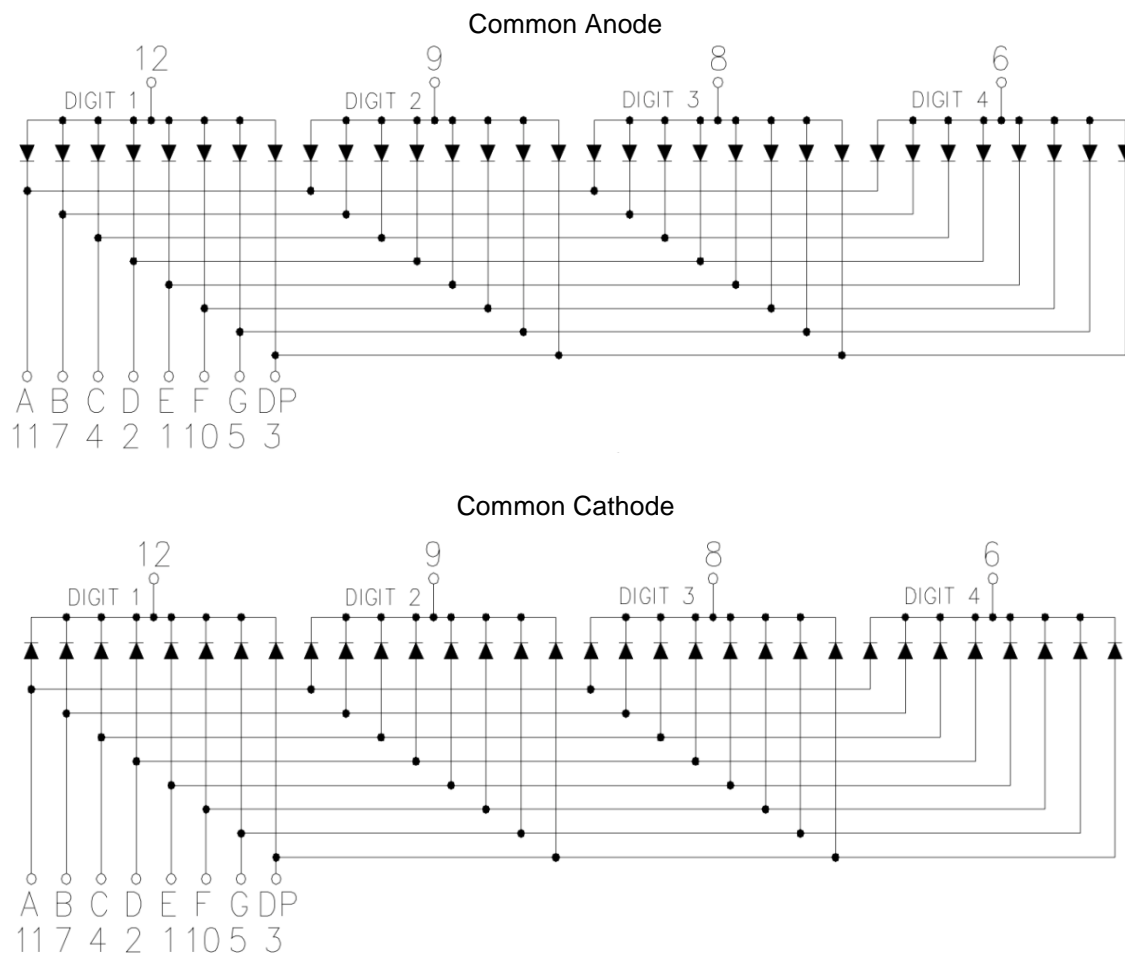
## Description

The INND-TQ56 series is a 0.56" 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-TQ56 series Internal Circuit Diagram**

### Package Dimensions

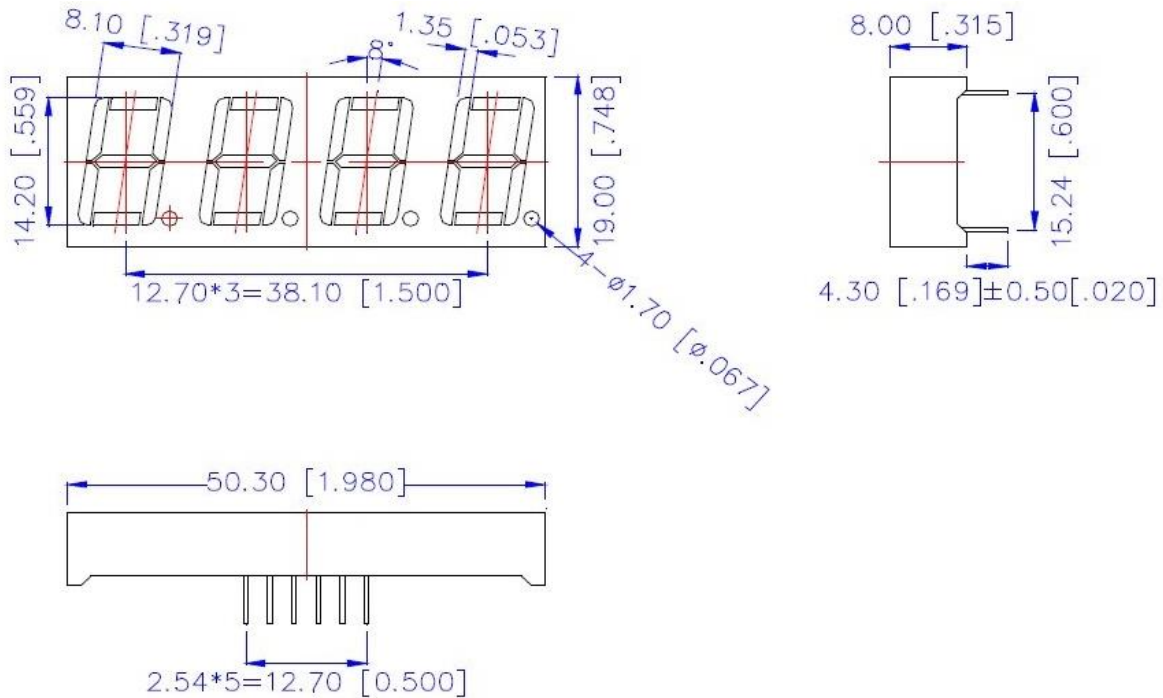


Figure 2. INND-TQ56 series Package Dimensions

#### 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  $\leq \text{Length} * 1\%$ .

### All Light On Segments Feature & Pin Position

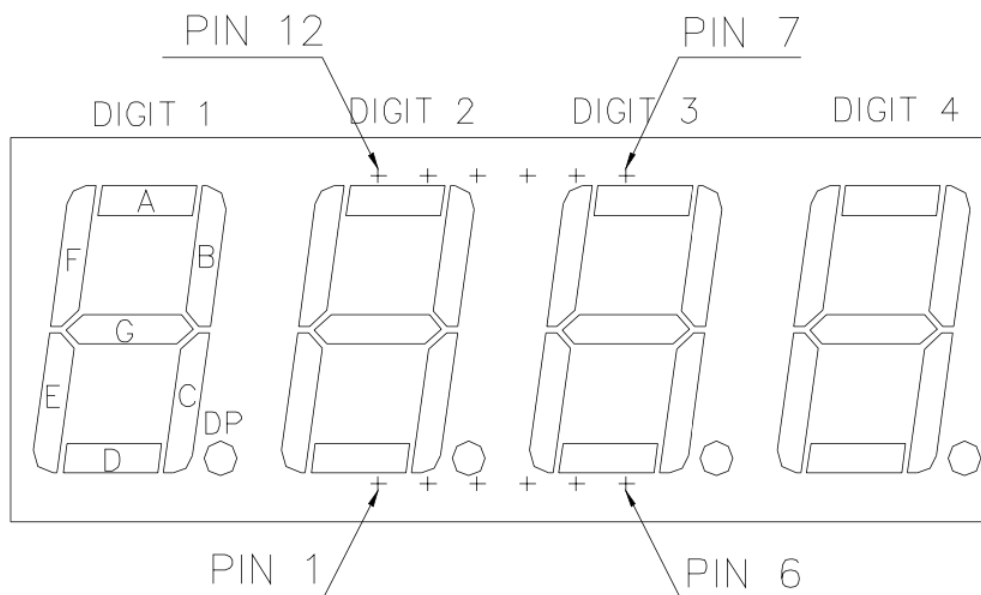


Figure 3. All Light On Segments Feature & Pin Position

### 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-TQ56YGXX	Yellow Green	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TQ56YXX	Yellow	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TQ56AXX	Amber	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TQ56RXX	Red	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TQ56DRXX	Deep Red	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TQ56GXX	Green	InGaN	114	30	100	5	0.4	-35°C~+85°C	-35°C~+85°C
INND-TQ56BXX	Blue	InGaN	114	30	100	5	0.4	-35°C~+85°C	-35°C~+85°C
INND-TQ56WXX	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-TQ56YGXX	Yellow Green	-	2.0	2.8	570	572	-	12	-	100	2:1
INND-TQ56YXX	Yellow	-	2.0	2.8	590	592	-	50	-	100	2:1
INND-TQ56AXX	Amber	-	2.0	2.8	605	612	-	68	-	100	2:1
INND-TQ56RXX	Red	-	2.0	2.8	630	644	-	24	-	100	2:1
INND-TQ56DRXX	Deep Red	-	2.0	2.8	645	660	-	18	-	100	2:1
INND-TQ56GXX	Green	-	3.2	3.8	525	-	-	220.	-	100	2:1
INND-TQ56BXX	Blue	-	3.2	3.8	465	-	-	26	-	50	2:1
INND-TQ56WXX	White	-	3.2	3.8	X: 0.27 Y: 0.25	-	-	105	-	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).

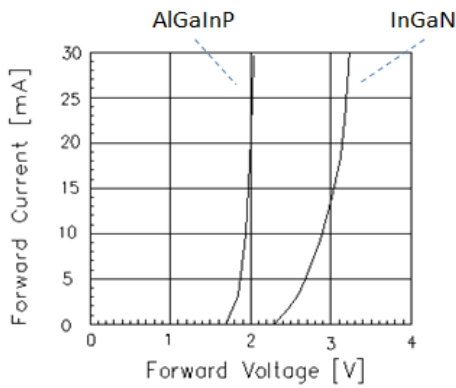
**Characteristic Curves for YG, Y, A, R, DR, G**


Fig 1. Forward Current vs. Forward Voltage

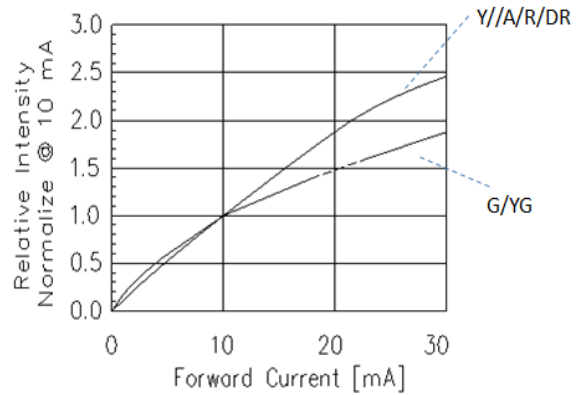


Fig 2. Relative Intensity vs. Forward Current

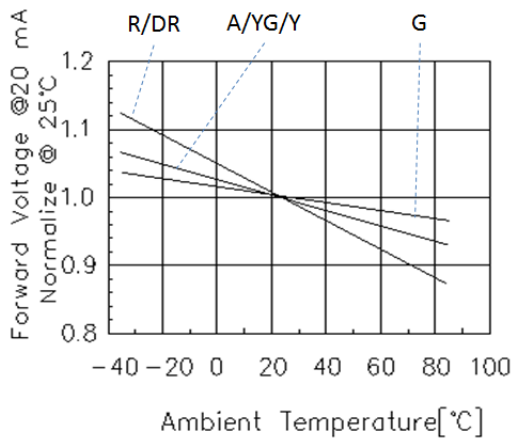


Fig 3. Forward Voltage vs. Temperature

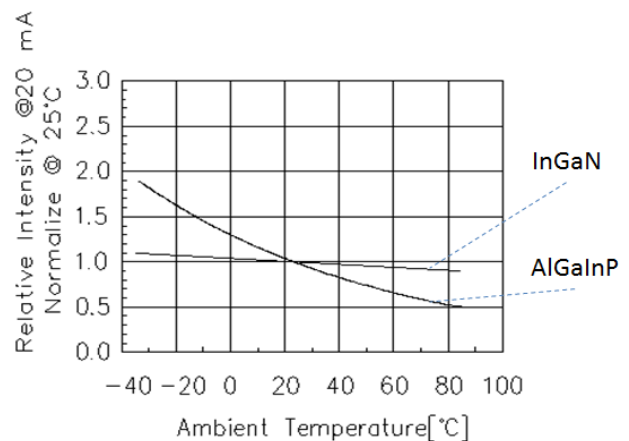


Fig 4. Relative Intensity vs. Temperature

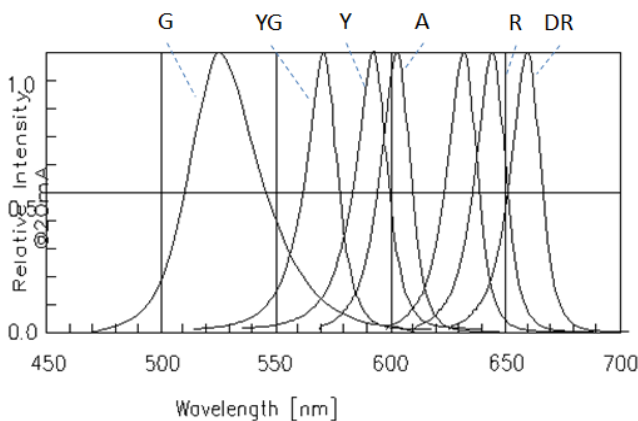


Fig 5. Relative Intensity vs. Wavelength

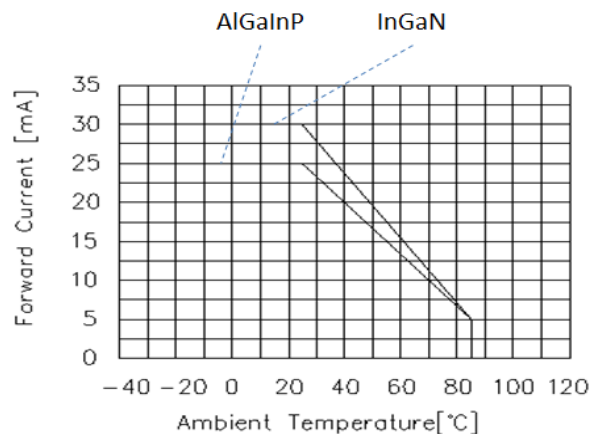


Fig 6. Forward current vs. Temperature

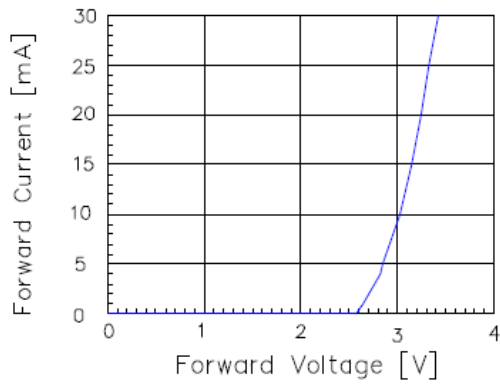
**Characteristic Curves for B**


Fig 1. Forward Current vs. Forward Voltage

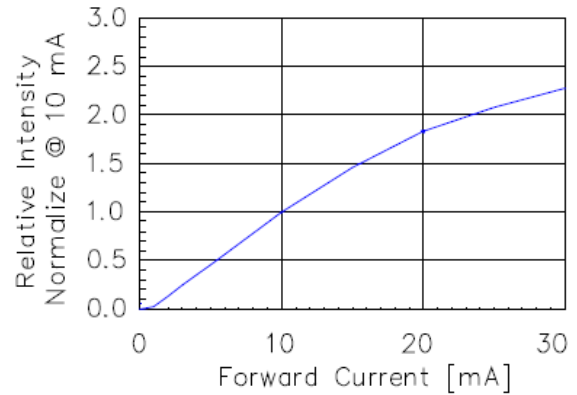


Fig 2. Relative Intensity vs. Forward Current

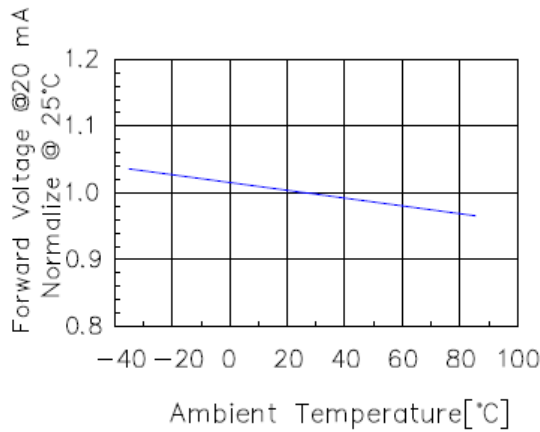


Fig 3. Forward Voltage vs. Temperature

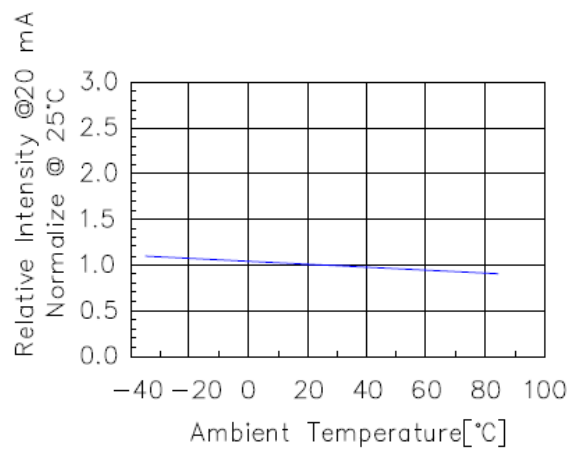


Fig 4. Relative Intensity vs. Temperature

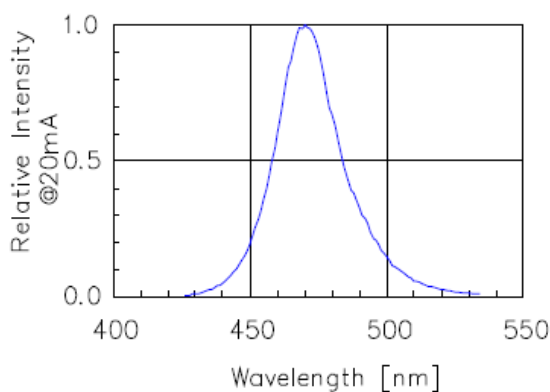


Fig 5. Relative Intensity vs. Wavelength

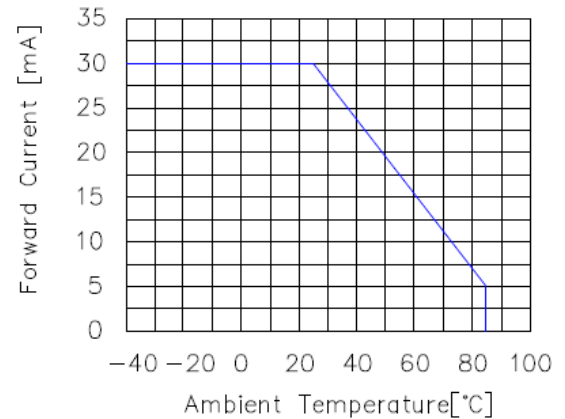


Fig 6. Forward current vs. Temperature

### Characteristic Curves for W

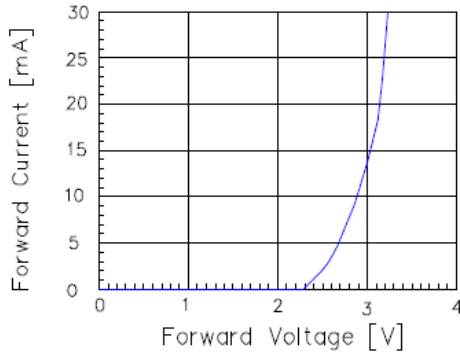


Fig 1. Forward Current vs. Forward Voltage

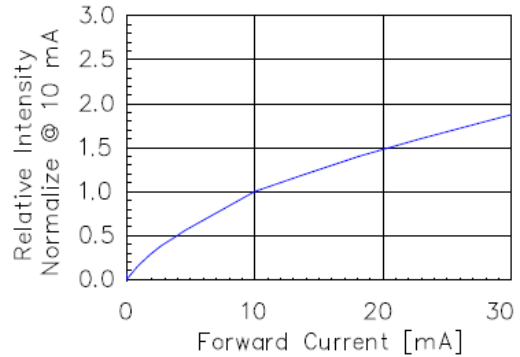


Fig 2. Relative Intensity vs. Forward Current

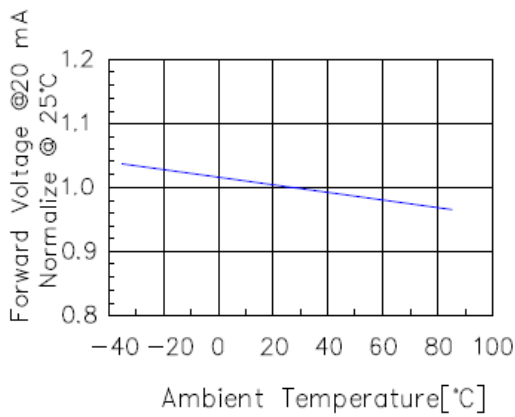


Fig 3. Forward Voltage vs. Temperature

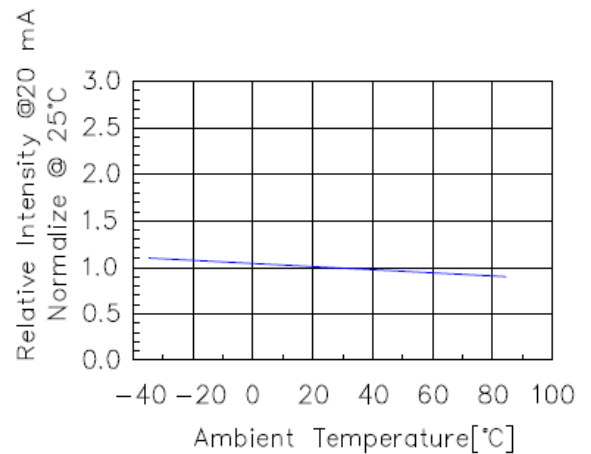


Fig 4. Relative Intensity vs. Temperature

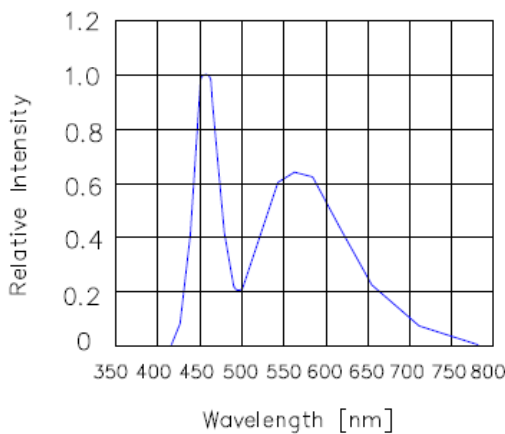


Fig 5. Relative Intensity vs. Wavelength

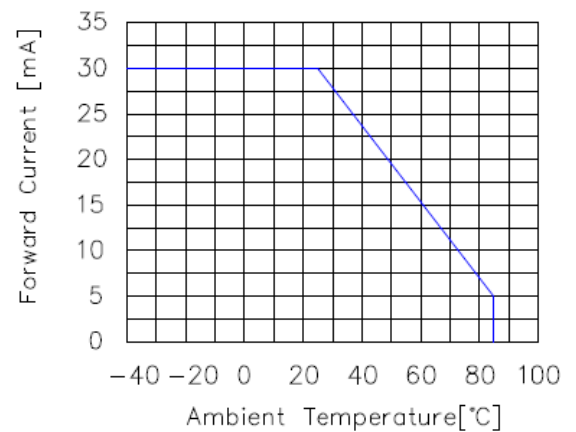
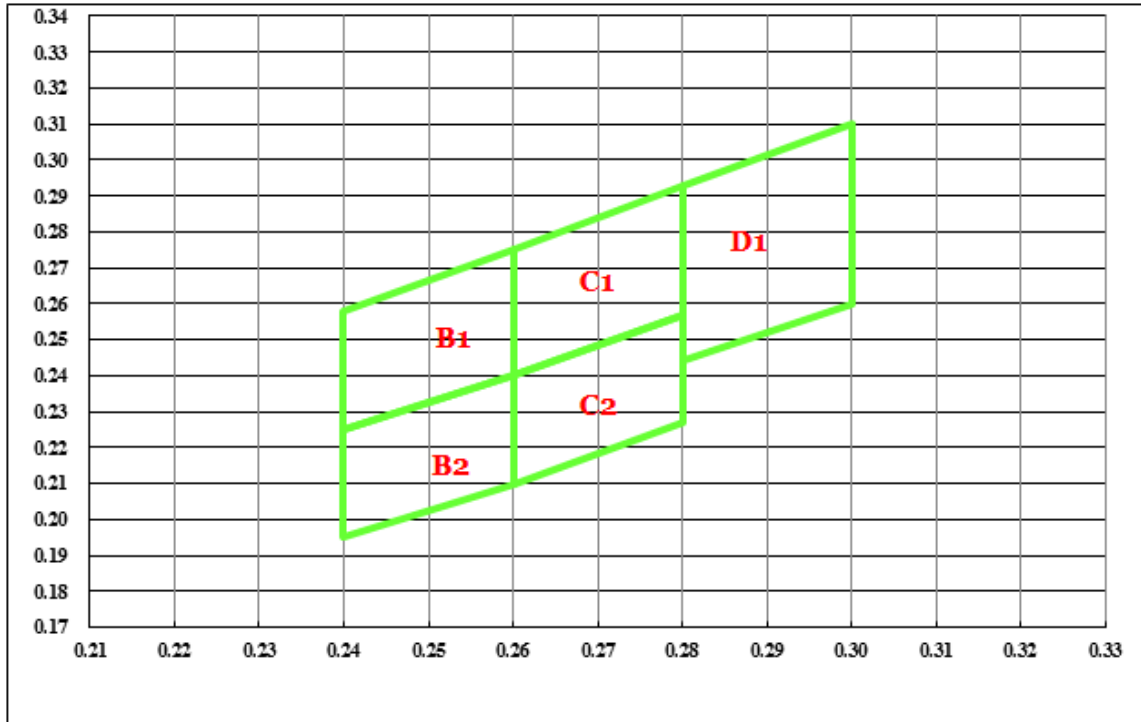


Fig 6. Forward current vs. Temperature

**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

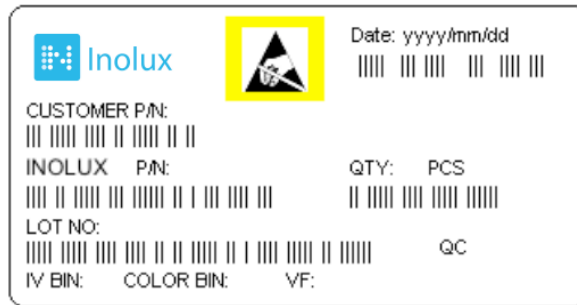
D1				
X	0.280	0.280	0.300	0.300
Y	0.244	0.293	0.310	0.260



**Ordering Information**

Product	Emission Color	Technology	I*V(mcd) @10mA	VF(V) @20mA	Polarity	Face Color	Orderable Part Number
INND-TQ56YGXX	Yellow Green	AlGaInP	12	2.0	Common Anode	Black	INND-TQ56YGAB
					Common Cathode	Black	INND-TQ56YGCB
					Common Anode	Grey	INND-TQ56YGAG
					Common Cathode	Grey	INND-TQ56YGCG
INND-TQ56YXX	Yellow	AlGaInP	50	2.0	Common Anode	Black	INND-TQ56YAB
					Common Cathode	Black	INND-TQ56YCB
					Common Anode	Grey	INND-TQ56YAG
					Common Cathode	Grey	INND-TQ56YCG
INND-TQ56AXX	Amber	AlGaInP	68	2.0	Common Anode	Black	INND-TQ56AAB
					Common Cathode	Black	INND-TQ56ACB
					Common Anode	Grey	INND-TQ56AAG
					Common Cathode	Grey	INND-TQ56ACG
INND-TQ56RXX	Red	AlGaInP	24	2.0	Common Anode	Black	INND-TQ56RAB
					Common Cathode	Black	INND-TQ56RCB
					Common Anode	Grey	INND-TQ56RAG
					Common Cathode	Grey	INND-TQ56RCG

Product	Emission Color	Technology	I*V(mcd) @10mA	VF(V) @20mA	Polarity	Face Color	Orderable Part Number
INND-TQ56DRXX	Deep Red	AlGaInP	18	2.0	Common Anode	Black	INND-TQ56DRAB
					Common Cathode	Black	INND-TQ56DRCB
					Common Anode	Grey	INND-TQ56DRAG
					Common Cathode	Grey	INND-TQ56DRCG
INND-TQ56GXX	Green	InGaN	220	3.2	Common Anode	Black	INND-TQ56GAB
					Common Cathode	Black	INND-TQ56GCB
					Common Anode	Grey	INND-TQ56GAG
					Common Cathode	Grey	INND-TQ56GCG
INND-TQ56BXX	Blue	InGaN	26	3.2	Common Anode	Black	INND-TQ56BAB
					Common Cathode	Black	INND-TQ56BCB
					Common Anode	Grey	INND-TQ56BAG
					Common Cathode	Grey	INND-TQ56BCG
INND-TQ56WXX	White	InGaN	105	3.2	Common Anode	Black	INND-TQ56WAB
					Common Cathode	Black	INND-TQ56WCB
					Common Anode	Grey	INND-TQ56WAG
					Common Cathode	Grey	INND-TQ56WCG

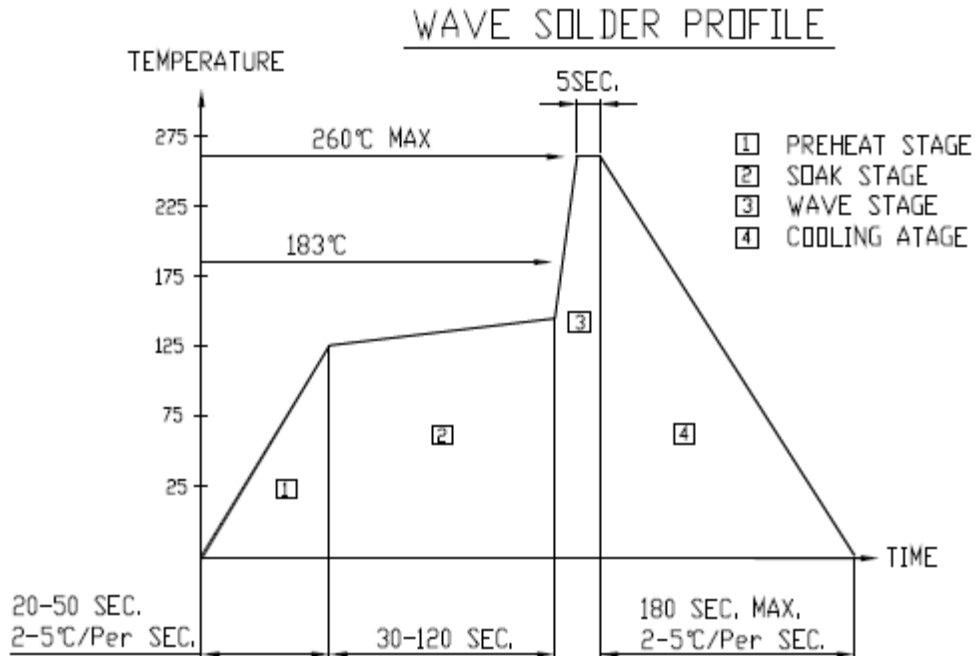
**Label Specifications**

**Inolux P/N:**

I	N	N	D	-	T	Q	5	6	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			56 = 0.56" 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.