Features

- 0.28” (7.00mm) Digit Height
- Four Digit Display
- Black/Grey Face, White Segment
- IC compatible, Easy assembly
- Dynamic drive connects
- RoHS Compliant, Pb Free

Description

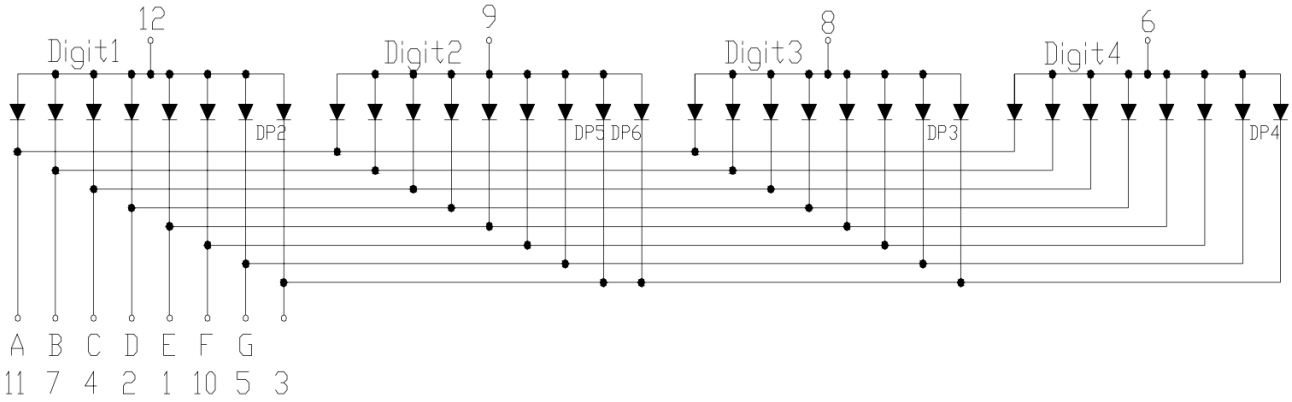
The INND-TQ28 series is a 0.28” four-digit display. It is a through hole type LED display which can be used in various applications.

Applications

- Consumer Electronics
- Industrial Equipment

Internal Circuit Diagram

Common Anode



Common Cathode

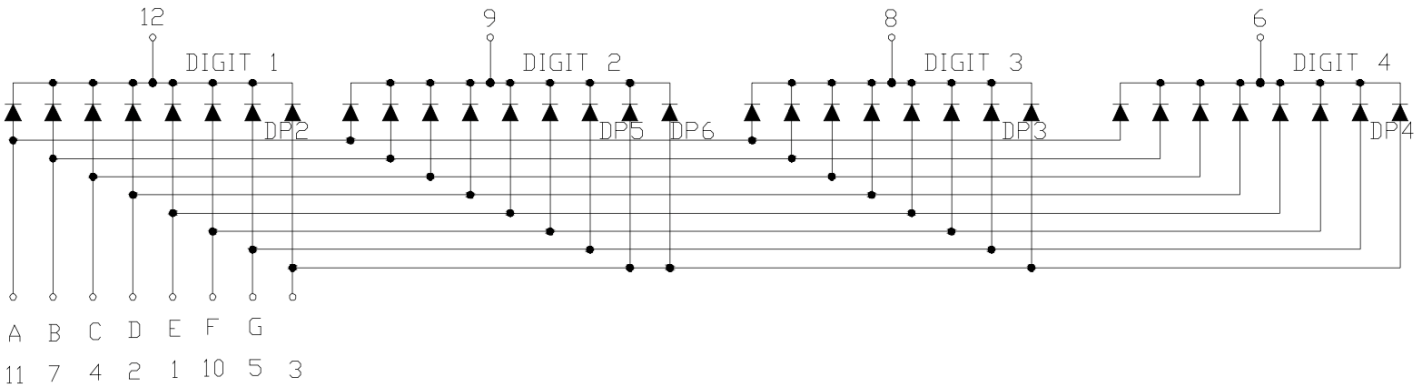


Figure 1. INND-TQ28 series Internal Circuit Diagram

Package Dimensions

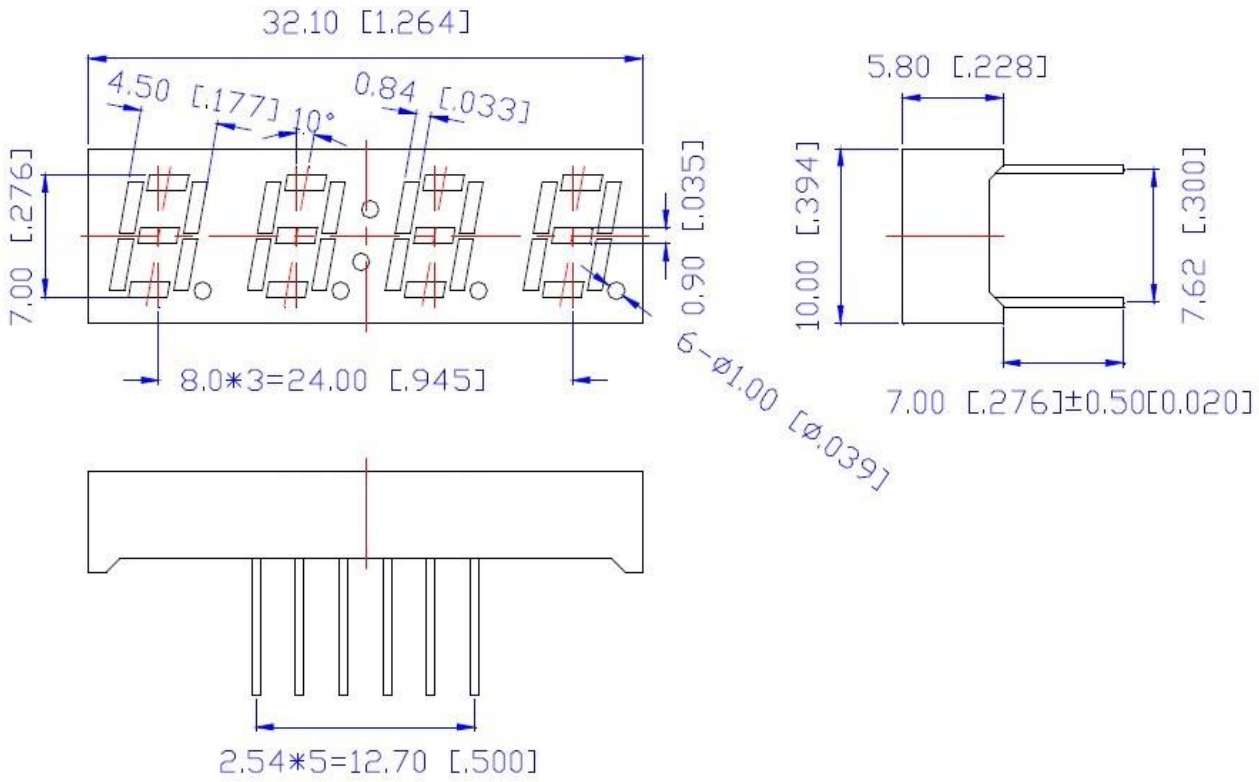


Figure 2. INND-TQ28 series Package Dimensions

Notes

1. All pins are ⌀0.51[.020]±0.1[.004]
2. Dimension in millimeter [inch], tolerance is ±0.25 [.010] and angle is ±1° unless otherwise noted.
3. Bending≤Length*1%.

All Light On Segments Feature & Pin Position

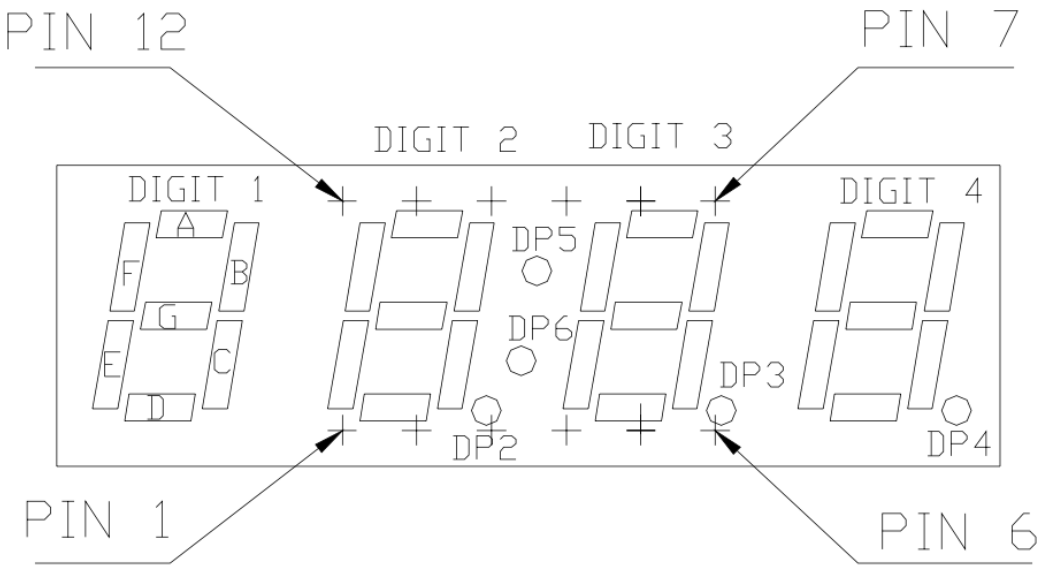


Figure 3. All Light On Segments Feature & Pin Position

Absolute Maximum Rating at 25°C (Note 1)

Product (Per Segment)	Emission Color	Technology	P_d (mW)	I_F (mA)	I_{FP}* (mA)	V_R (V)	Derate From 25°C (mA/°C)	T_{OP} (°C)	T_{ST} (°C)
INND-TQ28YGXX	Yellow Green	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TQ28YXX	Yellow	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TQ28AXX	Amber	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TQ28RXX	Red	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TQ28DRXX	Deep Red	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TQ28GXX	Green	InGaN	114	30	100	5	0.4	-35°C~+85°C	-35°C~+85°C
INND-TQ28BXX	Blue	InGaN	114	30	100	5	0.4	-35°C~+85°C	-35°C~+85°C
INND-TQ28WXX	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 $T_A = 25℃$ (Note 1)

Product (Per Segment)	Emission Color	VF(V)@20mA			λ(nm)@10mA		I*V(mcd)@10mA			IR(μA)@VR=5V	IV-M @IF =10mA
		min	typ.	max	λD	λP	min	typ.	max	max	max
INND-TQ28YGXX	Yellow Green	-	2.0	2.8	570	572	-	6	-	100	2:1
INND-TQ28YXX	Yellow	-	2.0	2.8	590	592	-	30	-	100	2:1
INND-TQ28AXX	Amber	-	2.0	2.8	605	612	-	42	-	100	2:1
INND-TQ28RXX	Red	-	2.0	2.8	630	644	-	12	-	100	2:1
INND-TQ28DRXX	Deep Red		2.0	2.8	645	660	-	10	-	100	2:1
INND-TQ28GXX	Green	-	3.2	3.8	525	-	-	120	-	100	2:1
INND-TQ28BXX	Blue	-	3.2	3.8	465	-	-	16	-	50	2:1
INND-TQ28WXX	White	-	3.2	3.8	X: 0.27 Y: 0.25	-	-	35	-	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

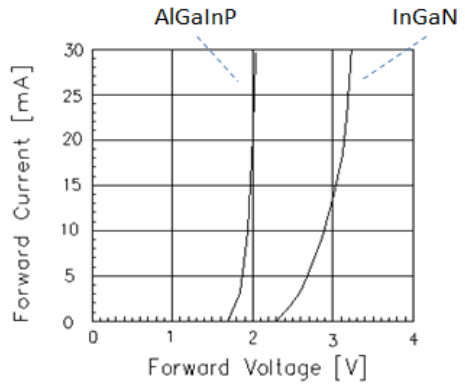


Fig 1. Forward Current vs. Forward Voltage

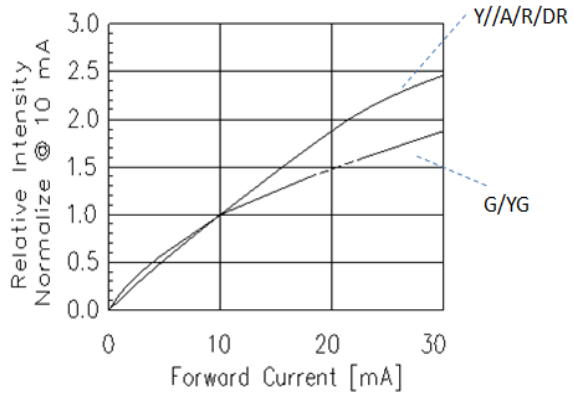


Fig 2. Relative Intensity vs. Forward Current

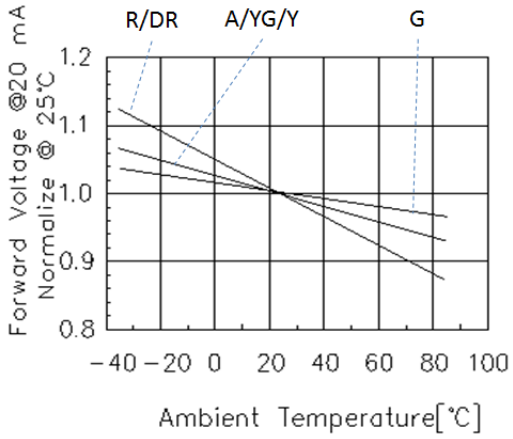


Fig 3. Forward Voltage vs. Temperature

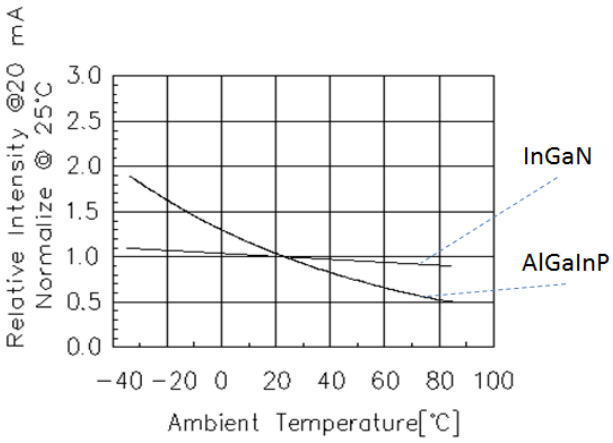


Fig 4. Relative Intensity vs. Temperature

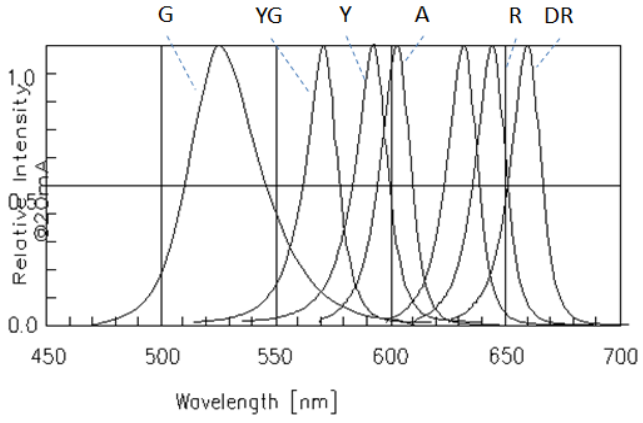


Fig 5. Relative Intensity vs. Wavelength

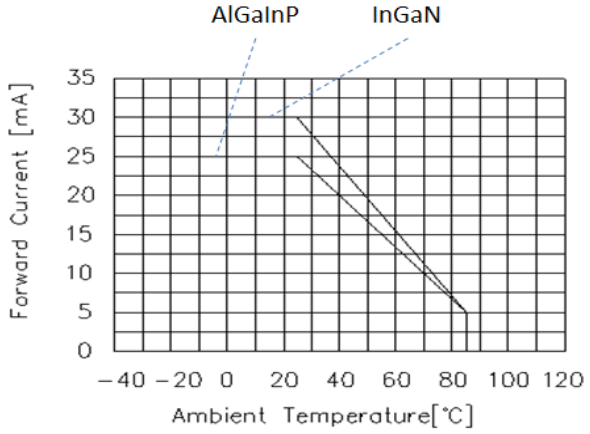


Fig 6. Forward current vs. Temperature

Characteristic Curves for B

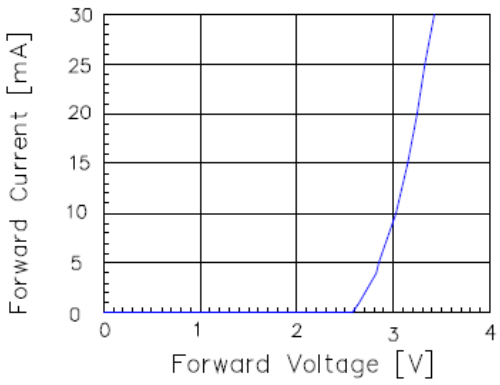


Fig 1. Forward Current vs. Forward Voltage

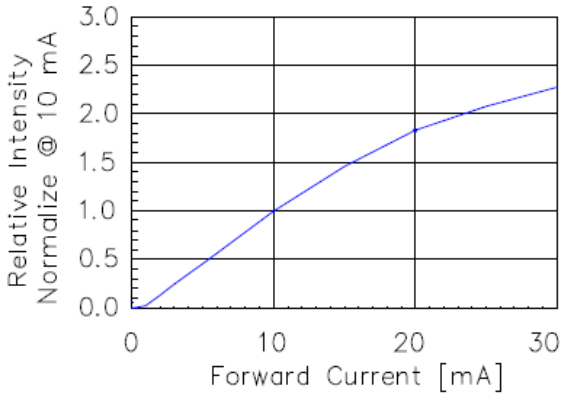


Fig 2. Relative Intensity vs. Forward Current

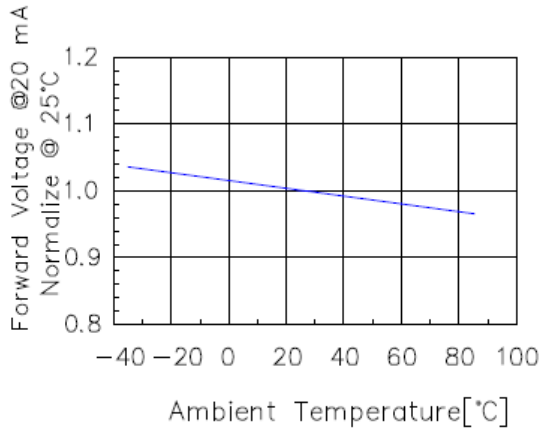


Fig 3. Forward Voltage vs. Temperature

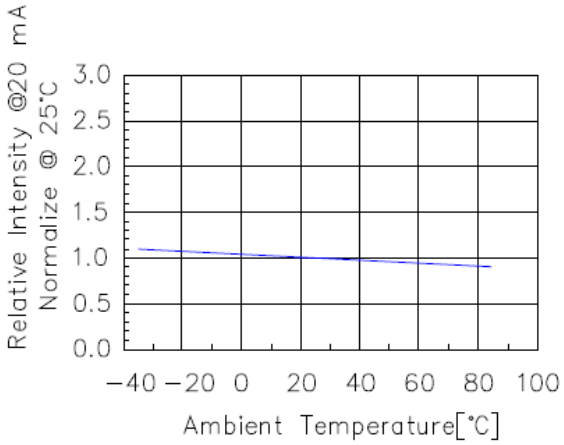


Fig 4. Relative Intensity vs. Temperature

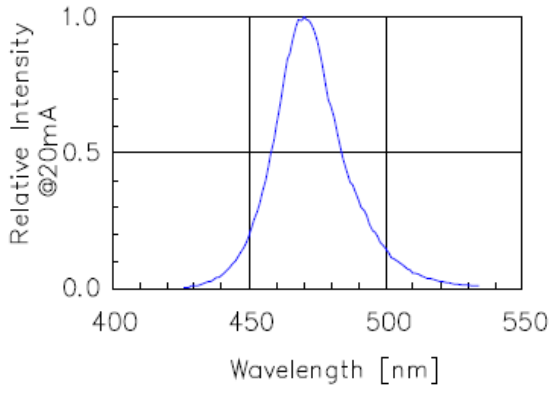


Fig 5. Relative Intensity vs. Wavelength

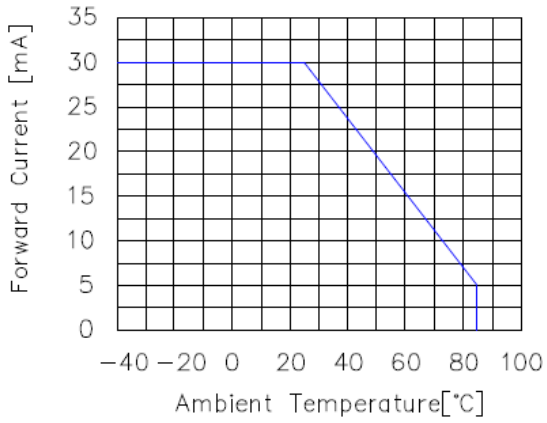


Fig 6. Forward current vs. Temperature

Characteristic Curves for W

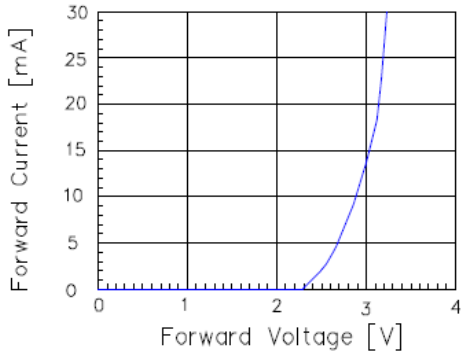


Fig 1. Forward Current vs. Forward Voltage

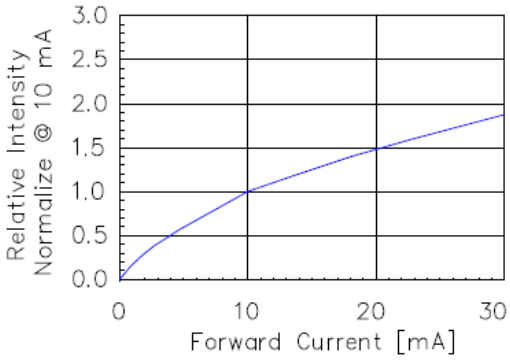


Fig 2. Relative Intensity vs. Forward Current

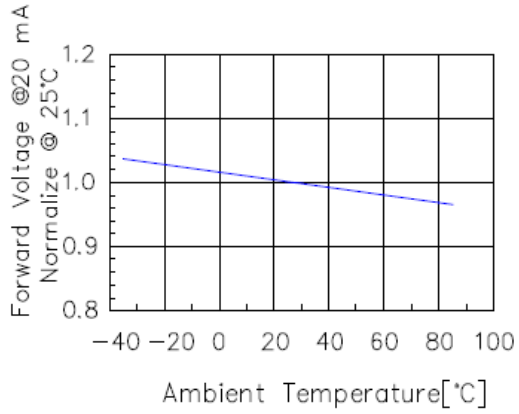


Fig 3. Forward Voltage vs. Temperature

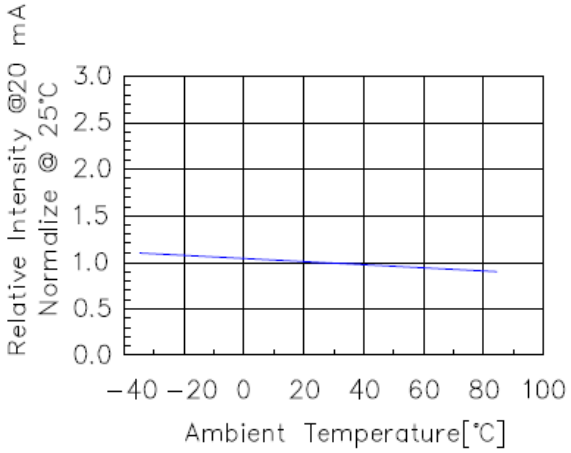


Fig 4. Relative Intensity vs. Temperature

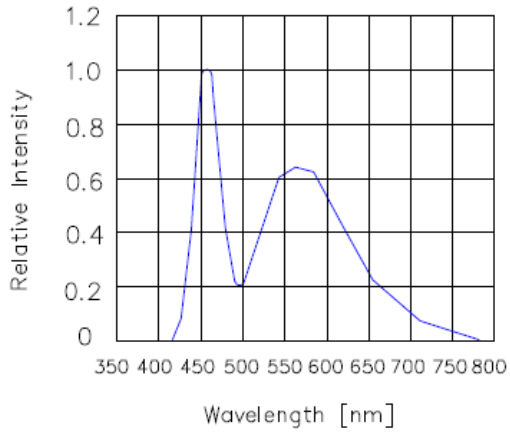


Fig 5. Relative Intensity vs. Wavelength

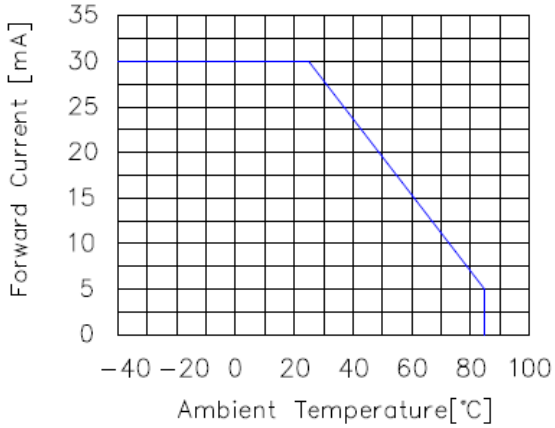
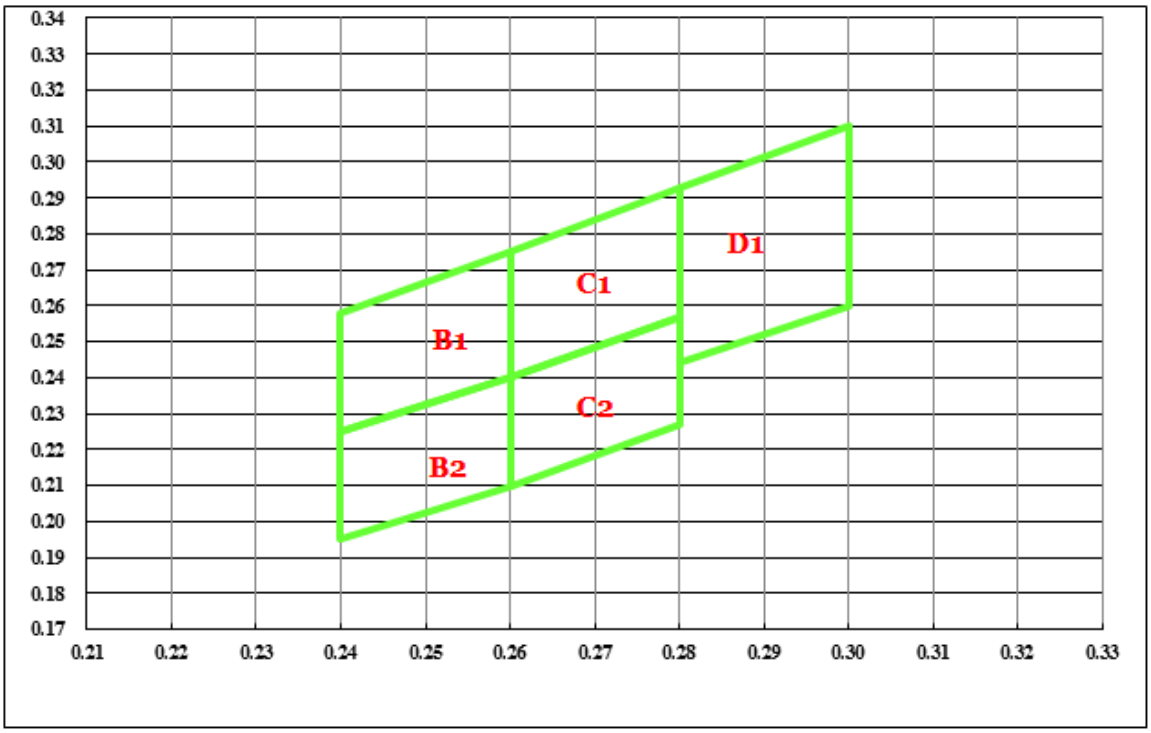


Fig 6. Forward current vs. Temperature

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

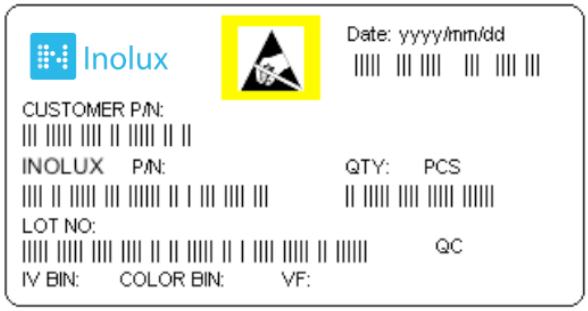
D1				
X	0.280	0.280	0.300	0.300
Y	0.244	0.293	0.310	0.260

Ordering Information

Product	Emission Color	Technology	I*V(mcd) @10mA	VF(V) @20mA	Polarity	Face Color	Orderable Part Number
INND-TQ28YGXX	Yellow Green	AlGaInP	6	2.0	Common Anode	Black	INND-TQ28YGAB
					Common Cathode	Black	INND-TQ28YGCB
					Common Anode	Grey	INND-TQ28YGAG
					Common Cathode	Grey	INND-TQ28YGCG
INND-TQ28YXX	Yellow	AlGaInP	30	2.0	Common Anode	Black	INND-TQ28YAB
					Common Cathode	Black	INND-TQ28YCB
					Common Anode	Grey	INND-TQ28YAG
					Common Cathode	Grey	INND-TQ28YCG
INND-TQ28AXX	Amber	AlGaInP	42	2.0	Common Anode	Black	INND-TQ28AAB
					Common Cathode	Black	INND-TQ28ACB
					Common Anode	Grey	INND-TQ28AAG
					Common Cathode	Grey	INND-TQ28ACG
INND-TQ28RXX	Red	AlGaInP	12	2.0	Common Anode	Black	INND-TQ28RAB
					Common Cathode	Black	INND-TQ28RCB
					Common Anode	Grey	INND-TQ28RAG
					Common Cathode	Grey	INND-TQ28RCG

Product	Emission Color	Technology	I*V(mcd) @10mA	VF(V) @20mA	Polarity	Face Color	Orderable Part Number
INND-TQ28DRXX	Deep Red	AlGaInP	10	2.0	Common Anode	Black	INND-TQ28DRAB
					Common Cathode	Black	INND-TQ28DRCB
					Common Anode	Grey	INND-TQ28DRAG
					Common Cathode	Grey	INND-TQ28DRCG
INND-TQ28GXX	Green	InGaN	120	3.2	Common Anode	Black	INND-TQ28GAB
					Common Cathode	Black	INND-TQ28GCB
					Common Anode	Grey	INND-TQ28GAG
					Common Cathode	Grey	INND-TQ28GCG
INND-TQ28BXX	Blue	InGaN	16	3.2	Common Anode	Black	INND-TQ28BAB
					Common Cathode	Black	INND-TQ28BCB
					Common Anode	Grey	INND-TQ28BAG
					Common Cathode	Grey	INND-TQ28BCG
INND-TQ28WXX	White	InGaN	35	3.2	Common Anode	Black	INND-TQ28WAB
					Common Cathode	Black	INND-TQ28WCB
					Common Anode	Grey	INND-TQ28WAG
					Common Cathode	Grey	INND-TQ28WCG

Label Specifications



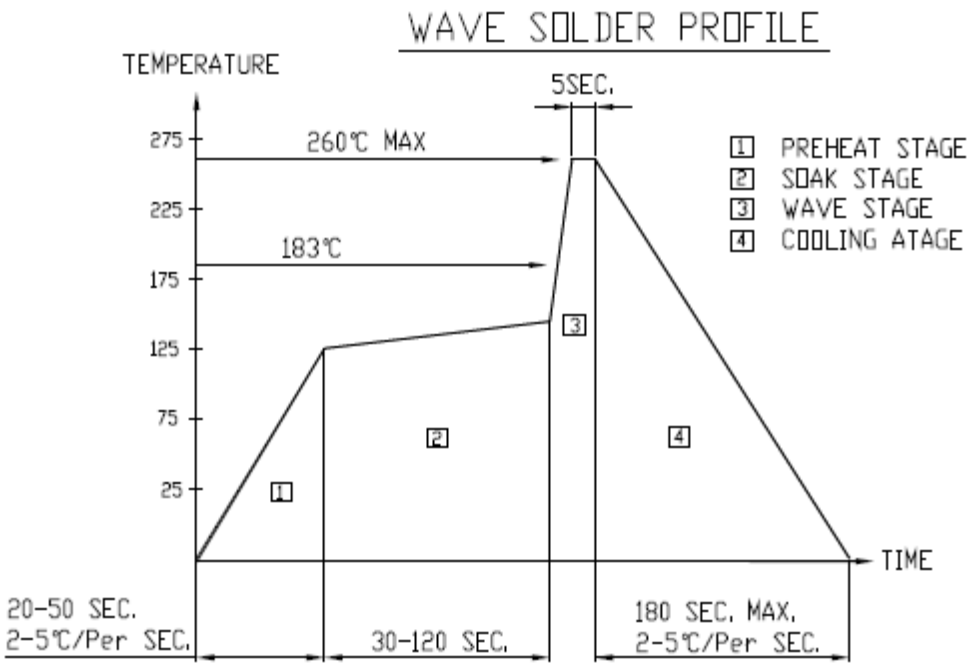
Inolux P/N:

I	N	N	D	-	T	Q	2	8	X	X	X	-	X	X	X	X
		Display Type			Display Type		Dimension		Color	Polarity	Face Color		Customized Stamp-off			
Inolux		ND = Numeric Display			T: Through hole Q: Four Digit		28 = 0.28” 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 ≦ 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

DISCLAIMER

INOLUX reserves the right to make changes without further notice to any products herein to improve reliability, function or design. INOLUX does not assume any liability arising out of the application or use of any product or circuit described herein; neither does it convey any license under its patent rights, nor the rights of others.

LIFE SUPPORT POLICY

INOLUX’s products are not authorized for use as critical components in life support devices or systems without the express written approval of the President of INOLUX or INOLUX CORPORATION. As used herein:
1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.
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.