

Features

- 0.31" (8.00mm) 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-TS31 series is a 0.31" single digit display. It is a through hole type LED display which can be used in various applications.

Internal Circuit Diagram

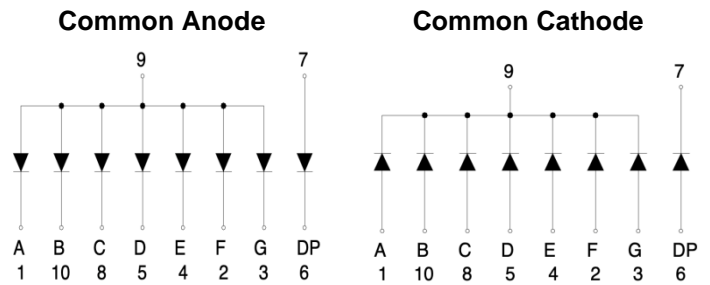


Figure 1. INND-TS31 series Internal Circuit Diagram

Package Dimensions

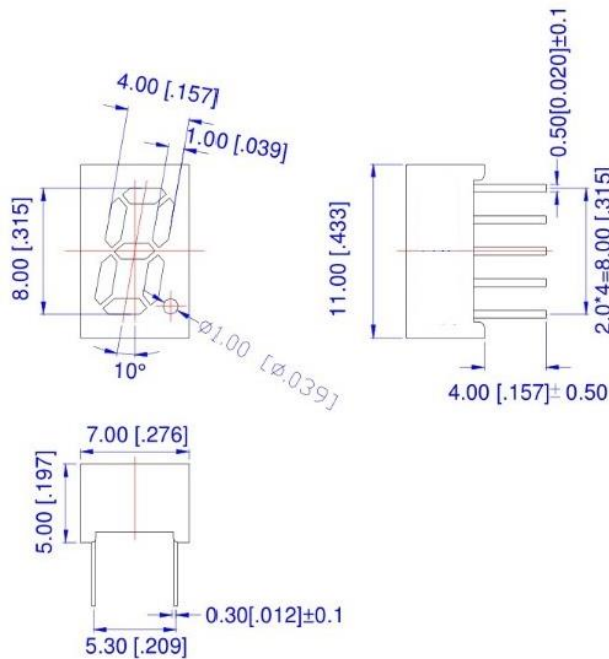
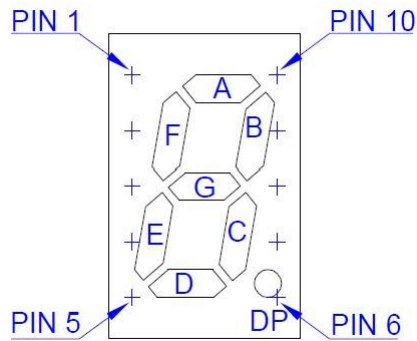


Figure 2. INND-TS31 series Package Dimensions

Notes

1. All pins are 0.5*0.3
2. Dimension in millimeter [inch], tolerance is ±0.25 [0.010] and angle is ±1° unless otherwise noted.
3. Bending≤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 _{OP} (°C)	T _{ST} (°C)
INND-TS31YGXX	Yellow Green	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TS31YXX	Yellow	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TS31AXX	Amber	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TS31RXX	Red	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TS31DRXX	Deep Red	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TS31GXX	Green	InGaN	114	30	100	5	0.4	-35°C~+85°C	-35°C~+85°C
INND-TS31BXX	Blue	InGaN	114	30	100	5	0.4	-35°C~+85°C	-35°C~+85°C
INND-TS31WXX	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 _F (V)@20mA			λ(nm)@20mA		I _V [*] (mcd)@10mA			I _R (μA)@V _R =5V	I _{V-M} @I _F =10mA
		min	typ.	max	λ _D	λ _P	min	typ.	max	λ _D	λ _P
INND-TS31YGXX	Yellow Green	-	2.0	2.8	570	572	-	12	-	100	2:1
INND-TS31YXX	Yellow	-	2.0	2.8	590	592	-	30	-	100	2:1
INND-TS31AXX	Amber	-	2.0	2.8	605	612	-	40	-	100	2:1
INND-TS31RXX	Red	-	2.0	2.8	630	644	-	18	-	100	2:1
INND-TS31DRXX	Deep Red	-	2.0	2.8	645	660	-	12	-	100	2:1
INND-TS31GXX	Green	-	3.2	3.8	525	-	-	120	-	100	2:1
INND-TS31BXX	Blue	-	3.2	3.8	465	-	-	11.8	-	50	2:1
INND-TS31WXX	White	-	3.2	3.8	X: 0.27 Y: 0.25	-	-	42.3	-	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).

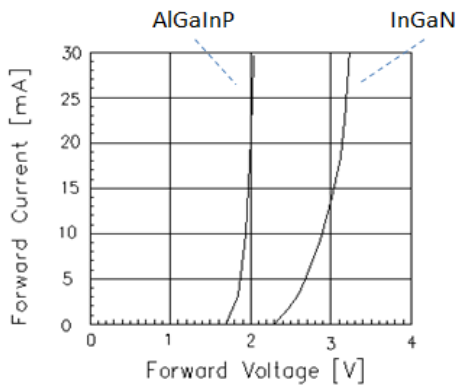
Characteristic Curves for YG, Y, A, R, DR, G


Fig 1. Forward Current vs. Forward Voltage

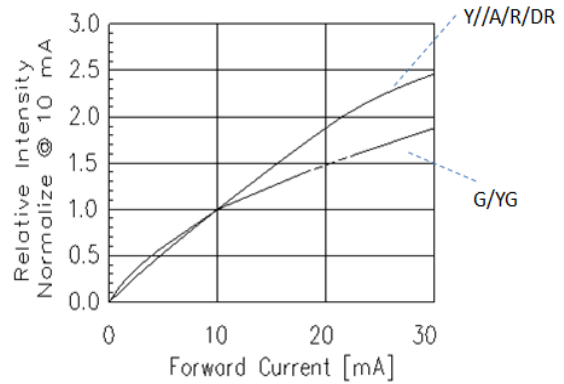


Fig 2. Relative Intensity vs. Forward Current

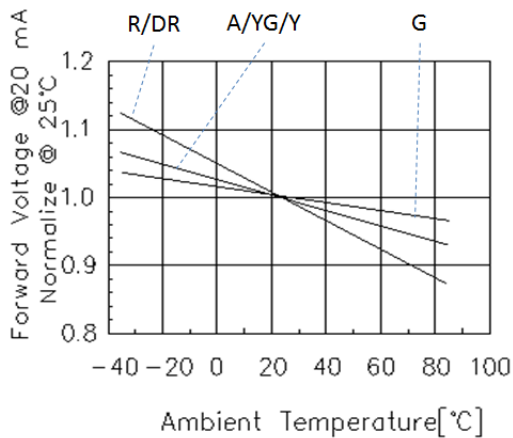


Fig 3. Forward Voltage vs. Temperature

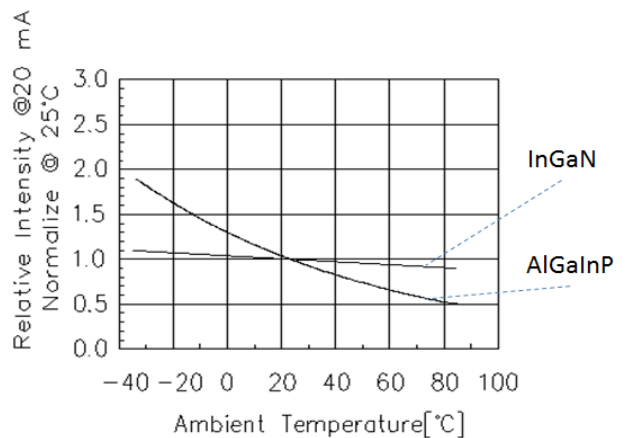


Fig 4. Relative Intensity vs. Temperature

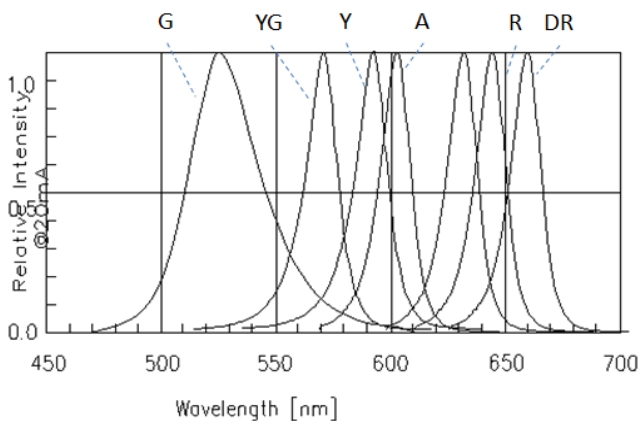


Fig 5. Relative Intensity vs. Wavelength

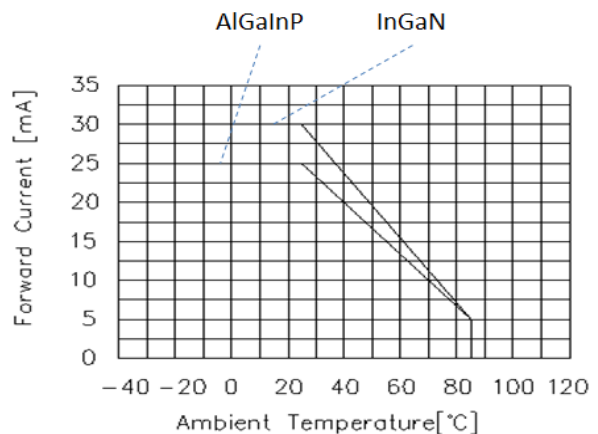


Fig 6. Forward current vs. Temperature

Characteristic Curves for B


Fig 1. Forward Current vs. Forward Voltage

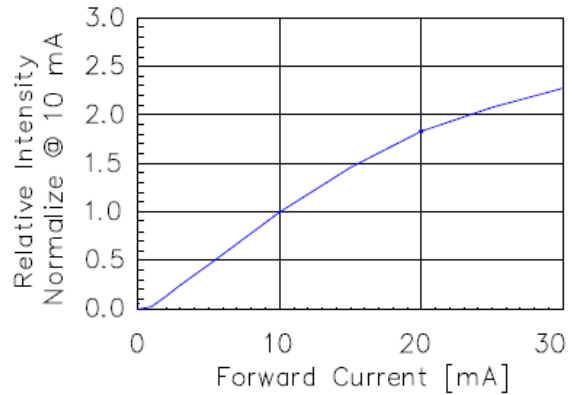


Fig 2. Relative Intensity vs. Forward Current

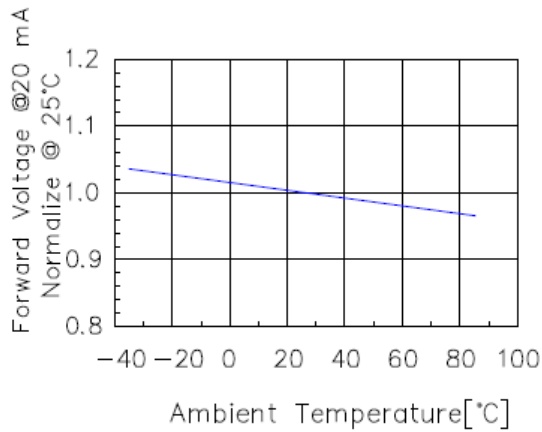


Fig 3. Forward Voltage vs. Temperature

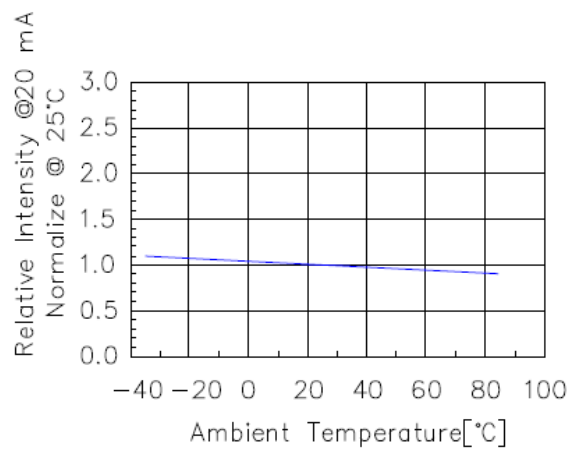


Fig 4. Relative Intensity vs. Temperature

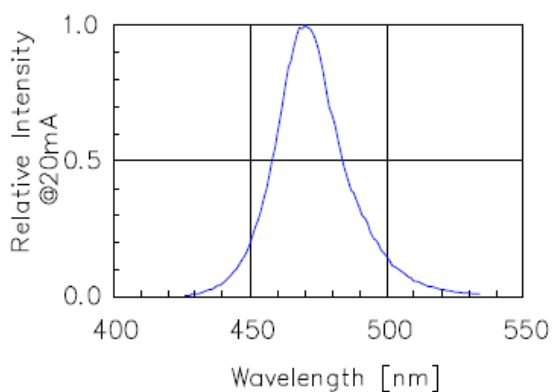


Fig 5. Relative Intensity vs. Wavelength

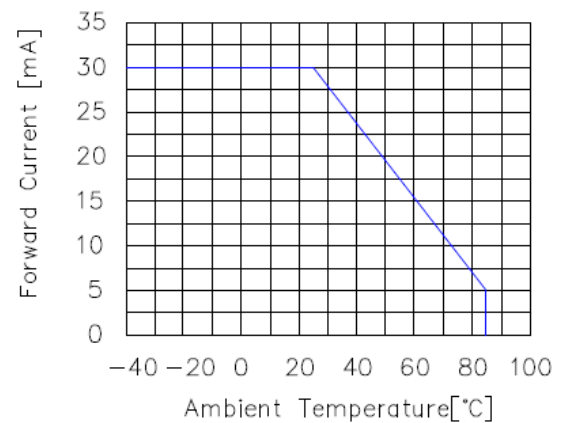


Fig 6. Forward current vs. Temperature

Characteristic Curves for W

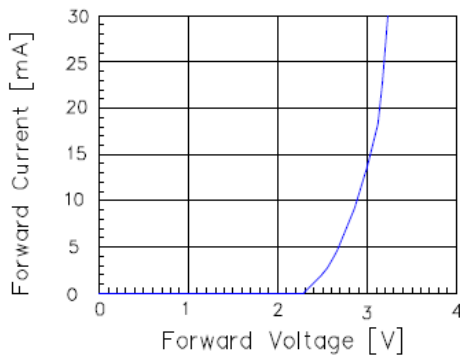


Fig 1. Forward Current vs. Forward Voltage

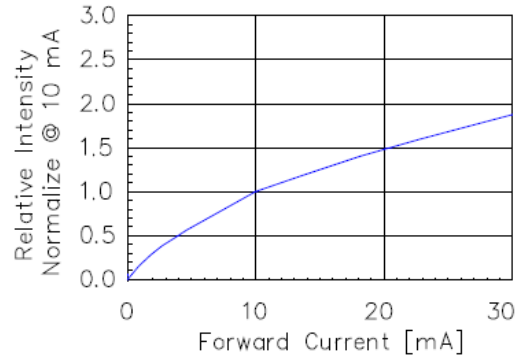


Fig 2. Relative Intensity vs. Forward Current



Fig 3. Forward Voltage vs. Temperature

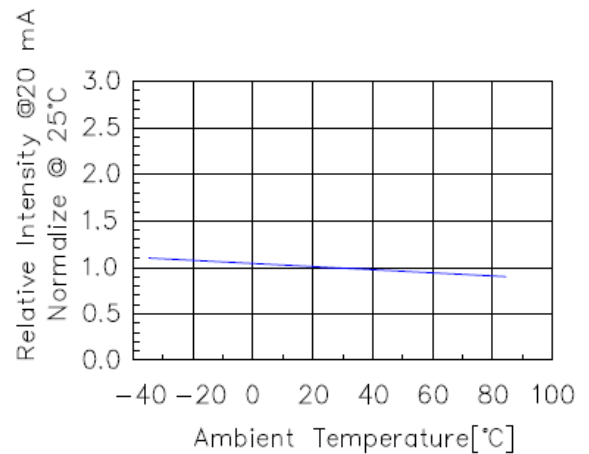


Fig 4. Relative Intensity vs. Temperature

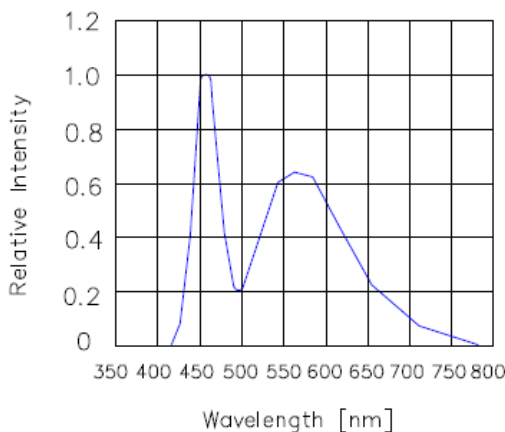


Fig 5. Relative Intensity vs. Wavelength



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

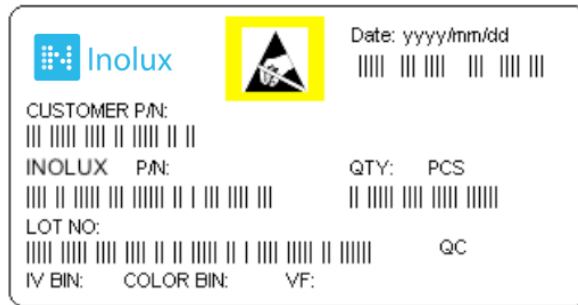
D1				
X	0.280	0.280	0.300	0.300
Y	0.244	0.293	0.310	0.260

Ordering Information

Product	Emission Color	Technology	I*V(mcd) @10mA	VF(V) @20mA	Polarity	Face Color	Orderable Part Number
INND-TS31YGXX	Yellow Green	AlGaInP	12	2.0	Common Anode	Black	INND-TS31YGAB
					Common Cathode	Black	INND-TS31YGCB
					Common Anode	Grey	INND-TS31YGAG
					Common Cathode	Grey	INND-TS31YGCG
INND-TS31YXX	Yellow	AlGaInP	30	2.0	Common Anode	Black	INND-TS31YAB
					Common Cathode	Black	INND-TS31YCB
					Common Anode	Grey	INND-TS31YAG
					Common Cathode	Grey	INND-TS31YCG
INND-TS31AXX	Amber	AlGaInP	40	2.0	Common Anode	Black	INND-TS31AAB
					Common Cathode	Black	INND-TS31ACB
					Common Anode	Grey	INND-TS31AAG
					Common Cathode	Grey	INND-TS31ACG
INND-TS31RXX	Red	AlGaInP	18	2.0	Common Anode	Black	INND-TS31RAB
					Common Cathode	Black	INND-TS31RCB
					Common Anode	Grey	INND-TS31RAG
					Common Cathode	Grey	INND-TS31RCG

Product	Emission Color	Technology	I*V(mcd) @10mA	VF(V) @20mA	Polarity	Face Color	Orderable Part Number
INND-TS31DRXX	Deep Red	AlGaInP	12	2.0	Common Anode	Black	INND-TS31DRAB
					Common Cathode	Black	INND-TS31DRCB
					Common Anode	Grey	INND-TS31DRAG
					Common Cathode	Grey	INND-TS31DRCG
INND-TS31GXX	Green	InGaN	120	3.2	Common Anode	Black	INND-TS31GAB
					Common Cathode	Black	INND-TS31GCB
					Common Anode	Grey	INND-TS31GAG
					Common Cathode	Grey	INND-TS31GCG
INND-TS31BXX	Blue	InGaN	11.8	3.2	Common Anode	Black	INND-TS31BAB
					Common Cathode	Black	INND-TS31BCB
					Common Anode	Grey	INND-TS31BAG
					Common Cathode	Grey	INND-TS31BCG
INND-TS31WXX	White	InGaN	42.3	3.2	Common Anode	Black	INND-TS31WAB
					Common Cathode	Black	INND-TS31WCB
					Common Anode	Grey	INND-TS31WAG
					Common Cathode	Grey	INND-TS31WCG

Label Specifications



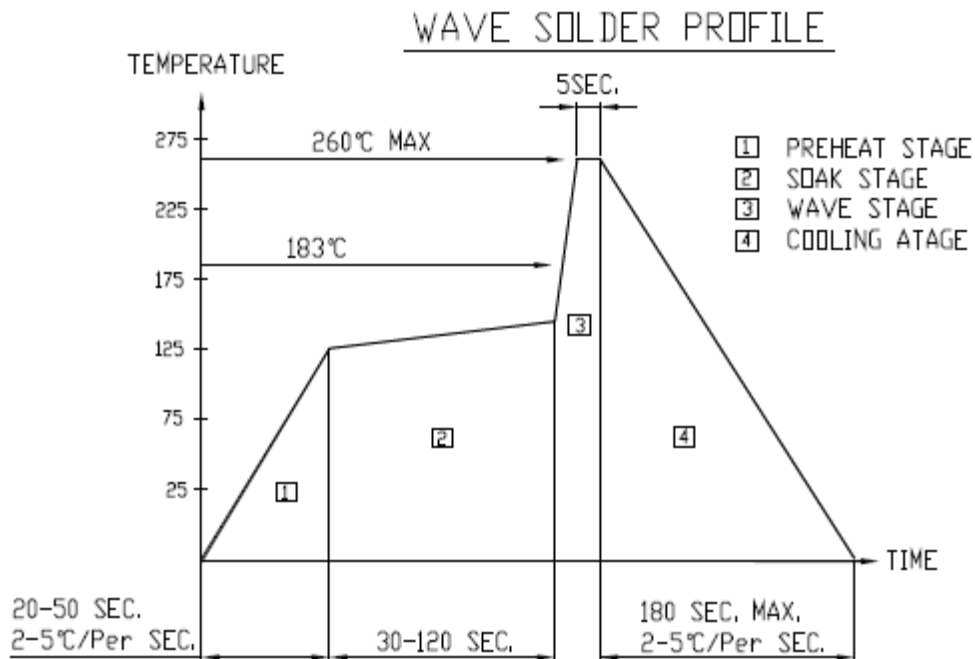
Inolux P/N:

I	N	N	D	-	T	S	3	1	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	31 = 0.31" 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 ≤ 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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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.