

## Features

- 1.8" (45.00mm) 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-TS180 series is a 1.8" single digit display. It is a through hole type LED display which can be used in various applications.

## Internal Circuit Diagram

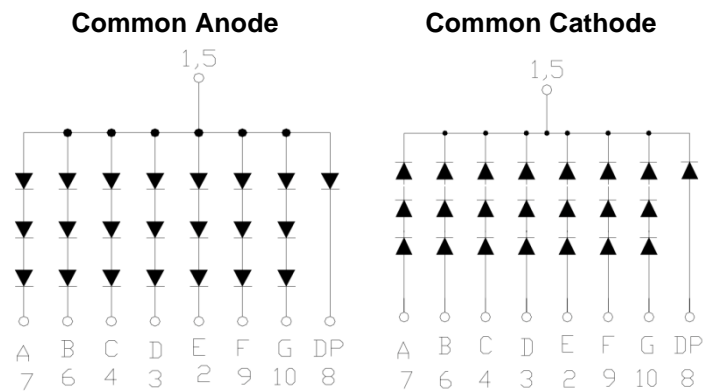


Figure 1. INND-TS180 series Internal Circuit Diagram

## Package Dimensions

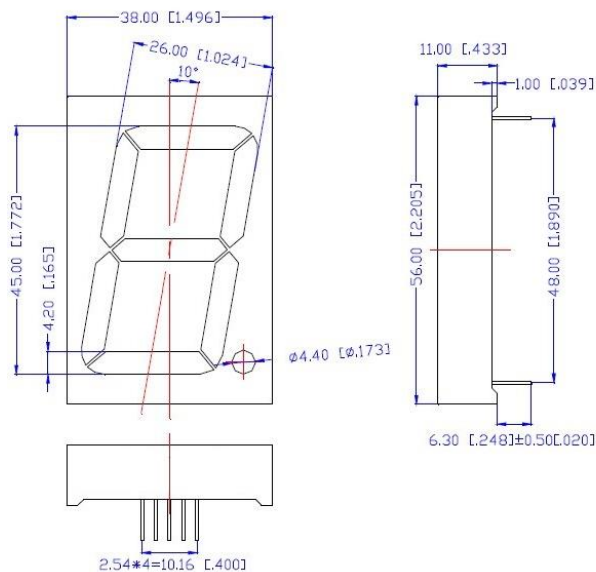
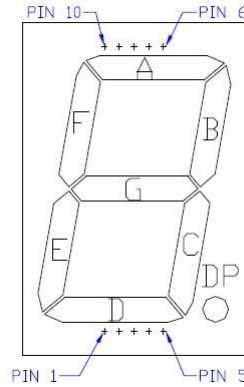


Figure 2. INND-TS180 series Package Dimensions

## 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



## 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-TS180YGXX	Yellow Green	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TS180YXX	Yellow	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TS180AXX	Amber	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TS180RXX	Red	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TS180DRXX	Deep Red	AlGaInP	70	25	90	5	0.33	-35°C~+85°C	-35°C~+85°C
INND-TS180GXX	Green	InGaN	114	30	100	5	0.4	-35°C~+85°C	-35°C~+85°C
INND-TS180BXX	Blue	InGaN	114	30	100	5	0.4	-35°C~+85°C	-35°C~+85°C
INND-TS180WXX	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-TS180YGXX	Yellow Green	-	6(2)	8.4(2.8)	570	572	-	70	-	100	2:1
INND-TS180YXX	Yellow	-	6(2)	8.4(2.8)	590	592	-	193	-	100	2:1
INND-TS180AXX	Amber	-	6(2)	8.4(2.8)	605	612	-	270	-	100	2:1
INND-TS180RXX	Red	-	6(2)	8.4(2.8)	630	644	-	100	-	100	2:1
INND-TS180DRXX	Deep Red	-	6(2)	8.4(2.8)	645	660	-	71	-	100	2:1
INND-TS180GXX	Green	-	9.6(3.2)	11.4(3.8)	525	-	-	1329	-	100	2:1
INND-TS180BXX	Blue	-	9.6(3.2)	11.4(3.8)	465	-	-	174	-	50	2:1
INND-TS180WXX	White	-	9.6(3.2)	11.4(3.8)	X: 0.27 Y: 0.25	-	-	600	-	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).

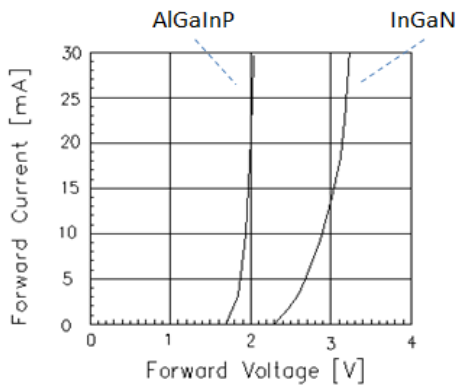
**Characteristic Curves for YG, Y, A, R, DR, G**


Fig 1. Forward Current vs. Forward Voltage

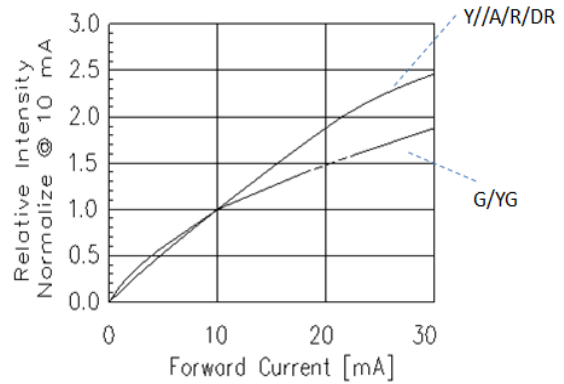


Fig 2. Relative Intensity vs. Forward Current

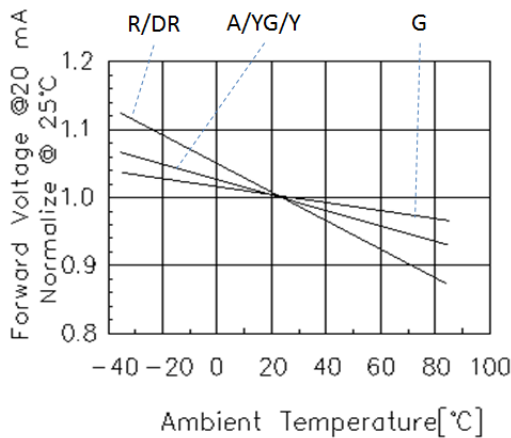


Fig 3. Forward Voltage vs. Temperature

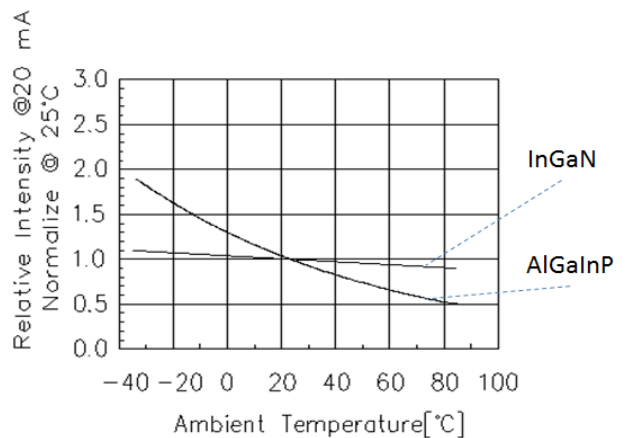


Fig 4. Relative Intensity vs. Temperature

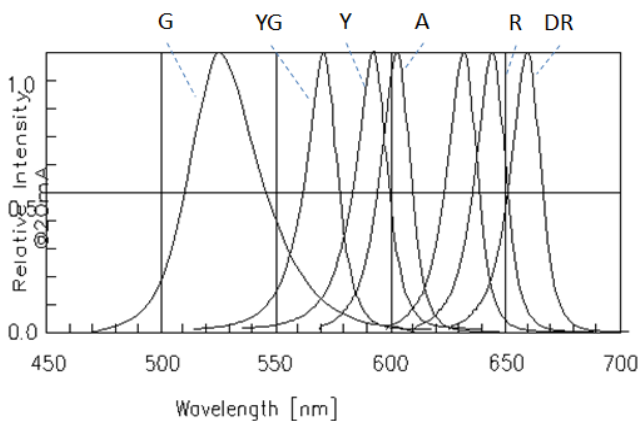


Fig 5. Relative Intensity vs. Wavelength

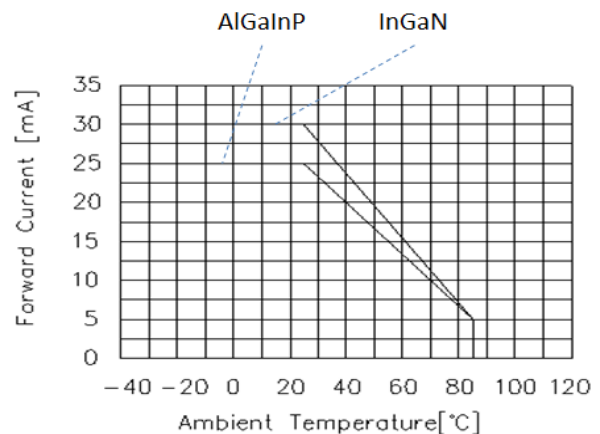


Fig 6. Forward current vs. Temperature

**Characteristic Curves for B**


Fig 1. Forward Current vs. Forward Voltage

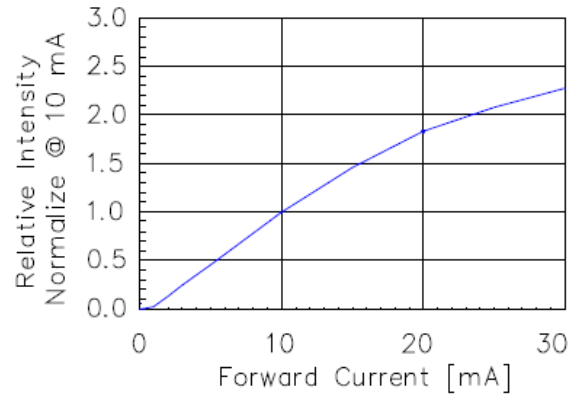


Fig 2. Relative Intensity vs. Forward Current

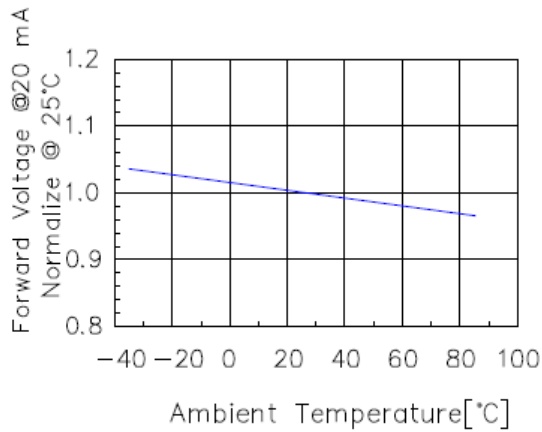


Fig 3. Forward Voltage vs. Temperature

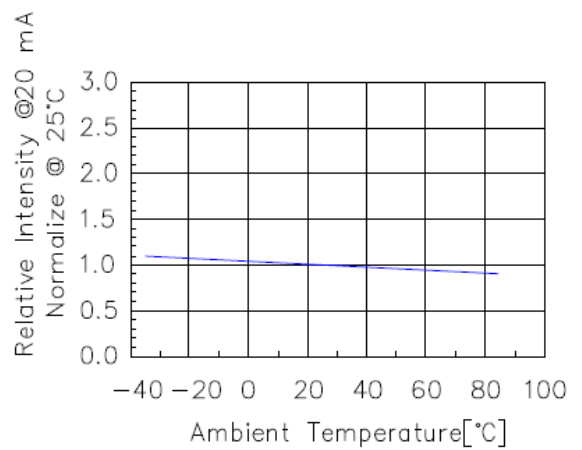


Fig 4. Relative Intensity vs. Temperature

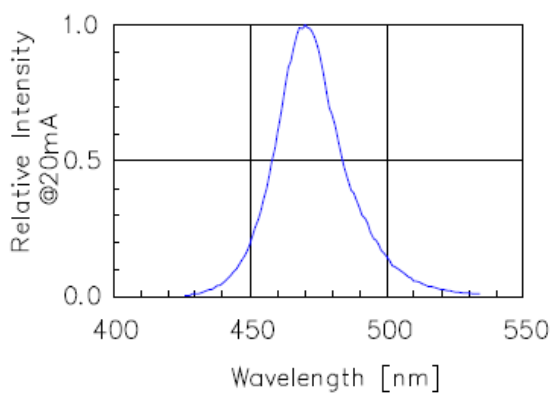


Fig 5. Relative Intensity vs. Wavelength

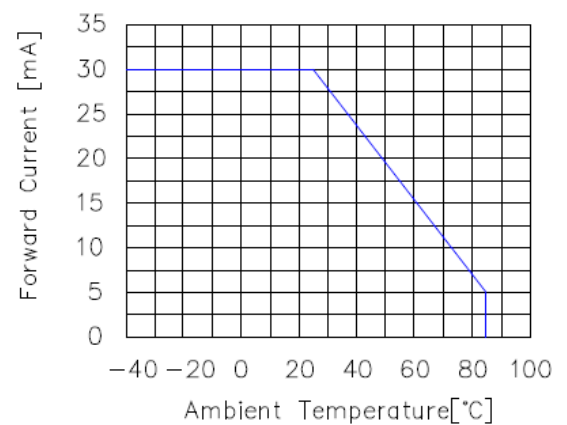


Fig 6. Forward current vs. Temperature

### Characteristic Curves for W



Fig 1. Forward Current vs. Forward Voltage

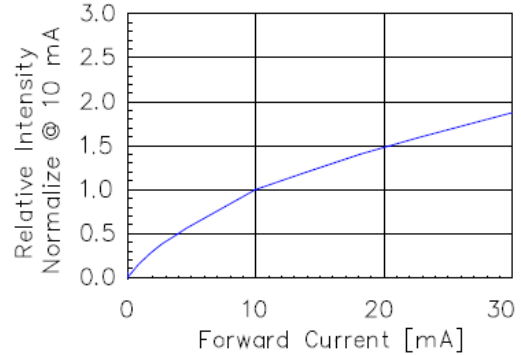


Fig 2. Relative Intensity vs. Forward Current



Fig 3. Forward Voltage vs. Temperature

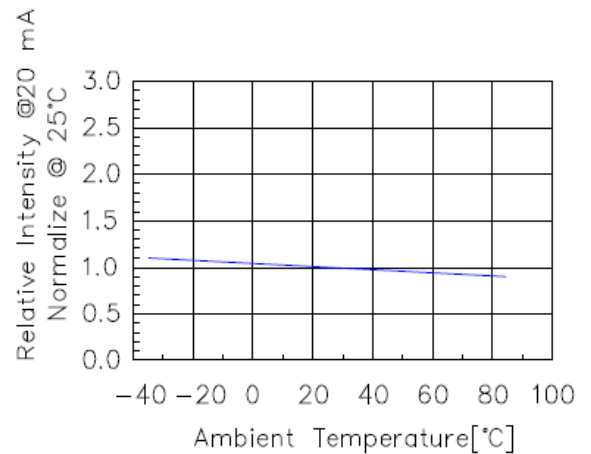


Fig 4. Relative Intensity vs. Temperature



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

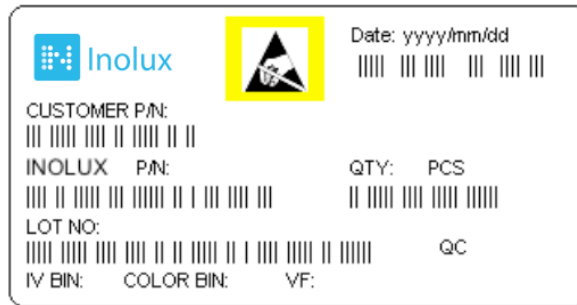
**Ordering Information**

Product	Emission Color	Technology	I*V(mcd) @10mA	VF(V) @20mA	Polarity	Face Color	Orderable Part Number
INND-TS180YGXX	Yellow Green	AlGaInP	70	6(2)	Common Anode	Black	INND-TS180YGAB
					Common Cathode	Black	INND-TS180YGCB
					Common Anode	Grey	INND-TS180YGAG
					Common Cathode	Grey	INND-TS180YGCG
INND-TS180YXX	Yellow	AlGaInP	193	6(2)	Common Anode	Black	INND-TS180YAB
					Common Cathode	Black	INND-TS180YCB
					Common Anode	Grey	INND-TS180YAG
					Common Cathode	Grey	INND-TS180YCG
INND-TS180AXX	Amber	AlGaInP	270	6(2)	Common Anode	Black	INND-TS180AAB
					Common Cathode	Black	INND-TS180ACB
					Common Anode	Grey	INND-TS180AAG
					Common Cathode	Grey	INND-TS180ACG
INND-TS180RXX	Red	AlGaInP	100	6(2)	Common Anode	Black	INND-TS180RAB
					Common Cathode	Black	INND-TS180RCB
					Common Anode	Grey	INND-TS180RAG
					Common Cathode	Grey	INND-TS180RCG



Product	Emission Color	Technology	I*V(mcd) @10mA	VF(V) @20mA	Polarity	Face Color	Orderable Part Number
INND-TS180DRXX	Deep Red	AlGaInP	71	6(2)	Common Anode	Black	INND-TS180DRAB
					Common Cathode	Black	INND-TS180DRCB
					Common Anode	Grey	INND-TS180DRAG
					Common Cathode	Grey	INND-TS180DRCG
INND-TS180GX	Green	InGaN	1329	9.6(3.2)	Common Anode	Black	INND-TS180GAB
					Common Cathode	Black	INND-TS180GCB
					Common Anode	Grey	INND-TS180GAG
					Common Cathode	Grey	INND-TS180GCG
INND-TS180BXX	Blue	InGaN	174	9.6(3.2)	Common Anode	Black	INND-TS180BAB
					Common Cathode	Black	INND-TS180BCB
					Common Anode	Grey	INND-TS180BAG
					Common Cathode	Grey	INND-TS180BCG
INND-TS180WXX	White	InGaN	600	9.6(3.2)	Common Anode	Black	INND-TS180WAB
					Common Cathode	Black	INND-TS180WCB
					Common Anode	Grey	INND-TS180WAG
					Common Cathode	Grey	INND-TS180WCG

**Label Specifications**



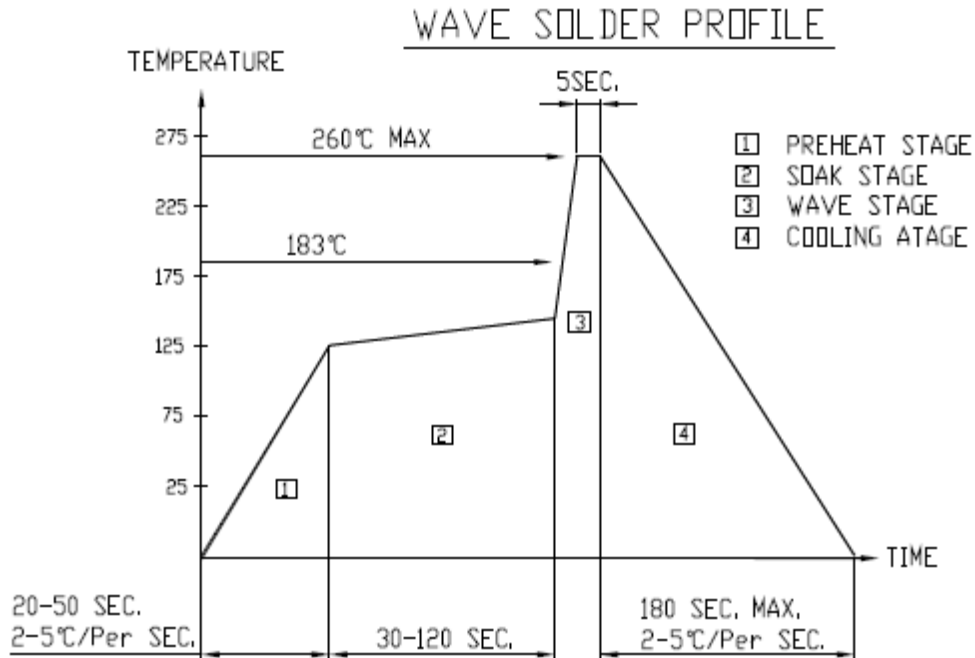
**Inolux P/N:**

I	N	N	D	-	T	S	1	8	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	180 = 1.8" 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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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.