



**Opto Plus LED Corp.**  
**Touch Button with IC Built in**  
**OPE-D-V1616LB-IC-AR-BW(H)**

● **EDIT HISTORY**

Version A: Mar. 27, 2019

Preliminary Spec.



# Opto Plus LED Corp. Touch Button with IC Built in OPE-D-V1616LB-IC-AR-BW(H)

## ● FEATURES

- Excellent character appearance.
- Case mold type.
- White face.
- RoHS compliant, Pb Free.

## ● DESCRIPTION

The OPE-D-V1616LB-IC-AR-BW(H)

is a 16.0mm x 16.0mm Capacitor touch switch LED button.

This device utilizes Super Bright Blue SMD type LED chip which are made from InGaN on a transparent GaN substrate.

The display has White face.

The display is attached with overlay

## ● DEVICE

PART NO. Super Bright Blue	DESCRIPTION
OPE-D-V1616LB-IC-AR-BW(H)	Capacitor touch switch LED button

**RoHS Compliance**



**Pb free.**





# Opto Plus LED Corp. Touch Button with IC Built in OPE-D-V1616LB-IC-AR-BW(H)

## ● INTERNAL FEATURES

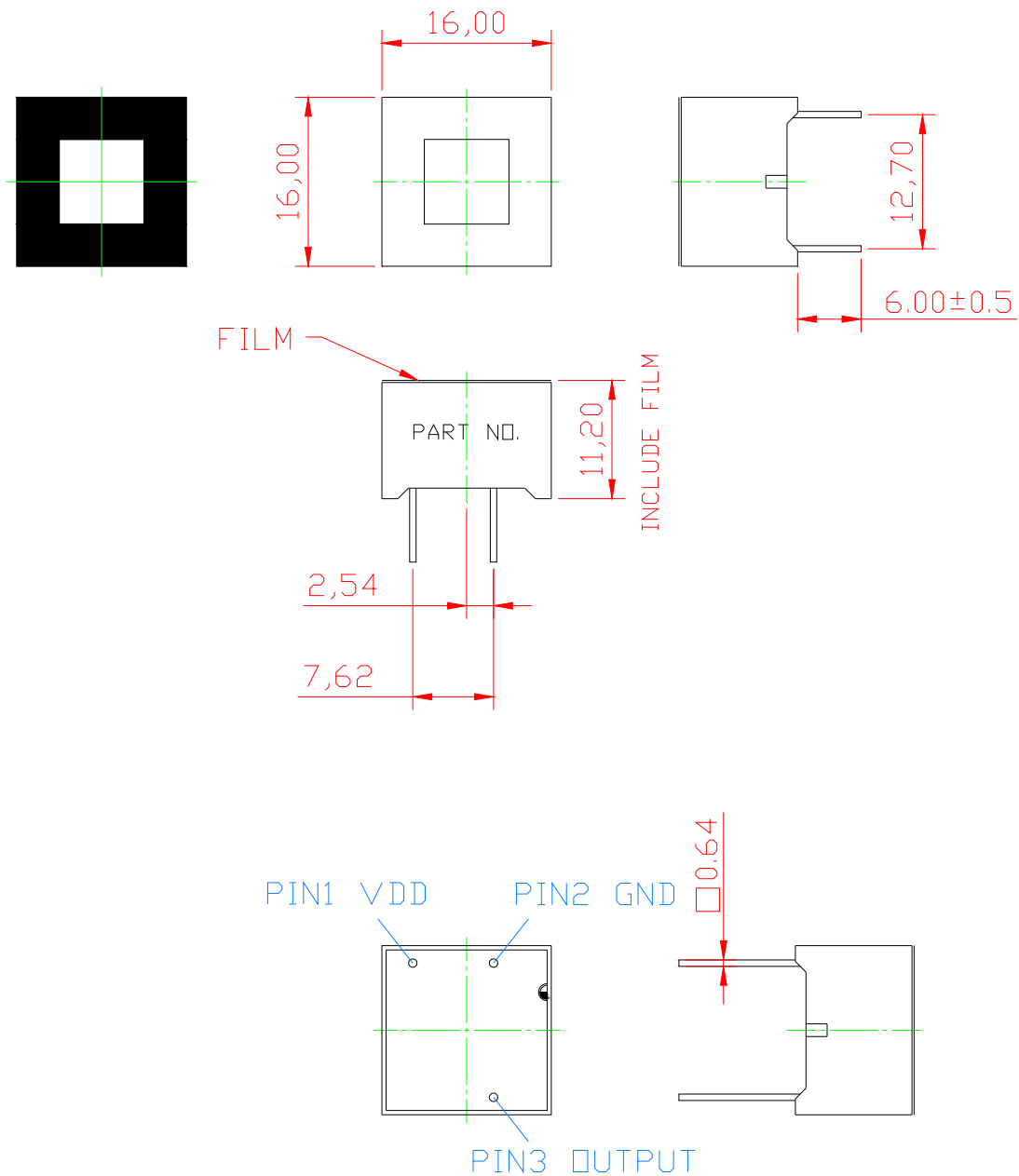
1. Capacitor touch switch LED button.
2. Output mode: GPIO.
3. Capacitor touch switch cascade.
4. Touch distance 1mm – 5mm. (sensitivity adjustable)
5. Anti-water function.
6. Anti-Electro-Magnetic Interference. (EMI)
7. Anti-Mobile Electro-Magnetic Interference.
8. Anti-5W Walky-Talky over 2CM.
9. Operating Voltage Range: 5.0V – 5.5V.
10. Low voltage reset function.
11. Operating Current Range: 100mA – 300mA.
12. Power Dissipation: 500mW.
13. Power down and wake-up functions to reduce power consumption.
14. Operating temperature: -40°C to +85°C
15. Timer Module and many other features further enhance devices functionality and flexibility.  
These touch key devices will find excellent use in a huge range of modern Touch Key product applications such as instrumentation, household appliances, electronically controlled tools to name but a few.

Note: These are stress ratings only. Stresses exceeding the range specified under "Absolute Maximum Ratings" may cause substantial damage to the device. Functional operation of the devices at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.



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## ● MECHANICAL DIMENSIONS

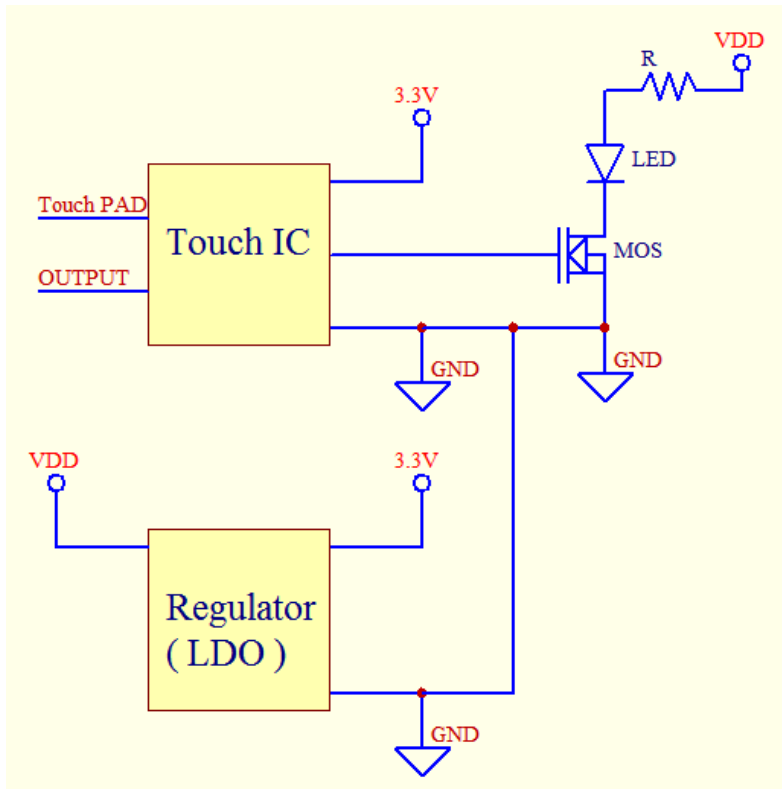


NOTES: All dimensions are in millimeters. Tolerances are  $\pm 0.25$  mm unless otherwise noted.



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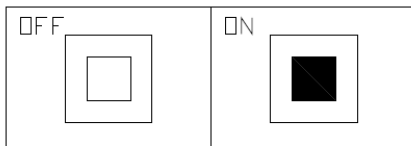
## ● TYPICAL INTERNAL EQUIVALENT CIRCUIT



## ● TOUCHED

SENSOR	PIN #OUTPUT
NOT TOUCHED	LOW
TOUCHED	HIGH

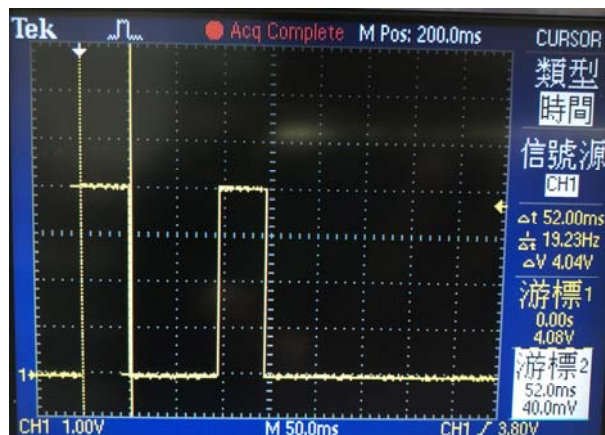
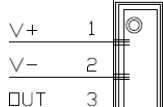
STATUS



Pin 1: V+

Pin 2: V-

Pin 3: OUT





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## ● Internal IC Electrical Characteristics(D.C.)

For data in the following tables, note that factors such as oscillator type, operating voltage, operating frequency, pin load conditions, temperature and program instruction type, etc., can all exert an influence on the measured values.

Symbol	Parameter	Conditions	Min.	Typ.	Max. 85°C	Unit
<b>Operating Voltage Characteristics</b> <span style="float: right;">Ta=-40°C~85°C</span>						
V <sub>DD</sub>	Operating Voltage – High Level		0.8V <sub>DD</sub>	-	V <sub>DD</sub>	V
	Operating Voltage – Low Level		-	-	0.2V <sub>DD</sub>	V
<b>Standby Current Characteristics</b> <span style="float: right;">Ta=25°C</span>						
I <sub>SUB</sub>	SLEEP Mode	Watch Dag Time on @V <sub>DD</sub> = 5V	-	5	10	μA
<b>Operating Current Characteristics</b> <span style="float: right;">Ta=25°C</span>						
I <sub>DD</sub>	Operating Current	V <sub>DD</sub> = 5V, No load Watch Dag Time Enable	-	35	-	μA
I <sub>DD</sub>	Operating Current	V <sub>DD</sub> = 5V, No load , f=8MHz , Watch Dag Time Enable	-	3	-	mA
<b>Output Current Characteristics</b> <span style="float: right;">Ta=25°C</span>						
I <sub>OL</sub>	Sink Current	V <sub>DD</sub> = 5V, V <sub>OL</sub> =0.1V <sub>DD</sub>	-	20	-	mA
I <sub>OH</sub>	Sink Current	V <sub>DD</sub> = 5V, V <sub>OL</sub> =0.9V <sub>DD</sub>	-	-10	-	mA



## Opto Plus LED Corp. Touch Button with IC Built in OPE-D-V1616LB-IC-AR-BW(H)

### ● LB: SUPER BRIGHT BLUE (InGaN/GaN)

ABSOLUTE MAXIMUM RATING AT Ta=25°C

Parameter	Symbol	Super Bright White	Unit
Power dissipation per SMD	$P_{AD}$	15.75	mW
Continuous forward current per SMD	$I_{AF}$	5	mA
Peak current per dice (duty cycle 1/10, 1kHz)	$I_{PF}$	60	mA
Reverse voltage per SMD	$V_R$	5	V
Operating temperature	$T_{OPR}$	-25 to +85	°C
Storage temperature	$T_{STG}$	-25 to +85	°C

ELECTRICAL - OPTICAL CHARACTERISTICS AT Ta=25°C

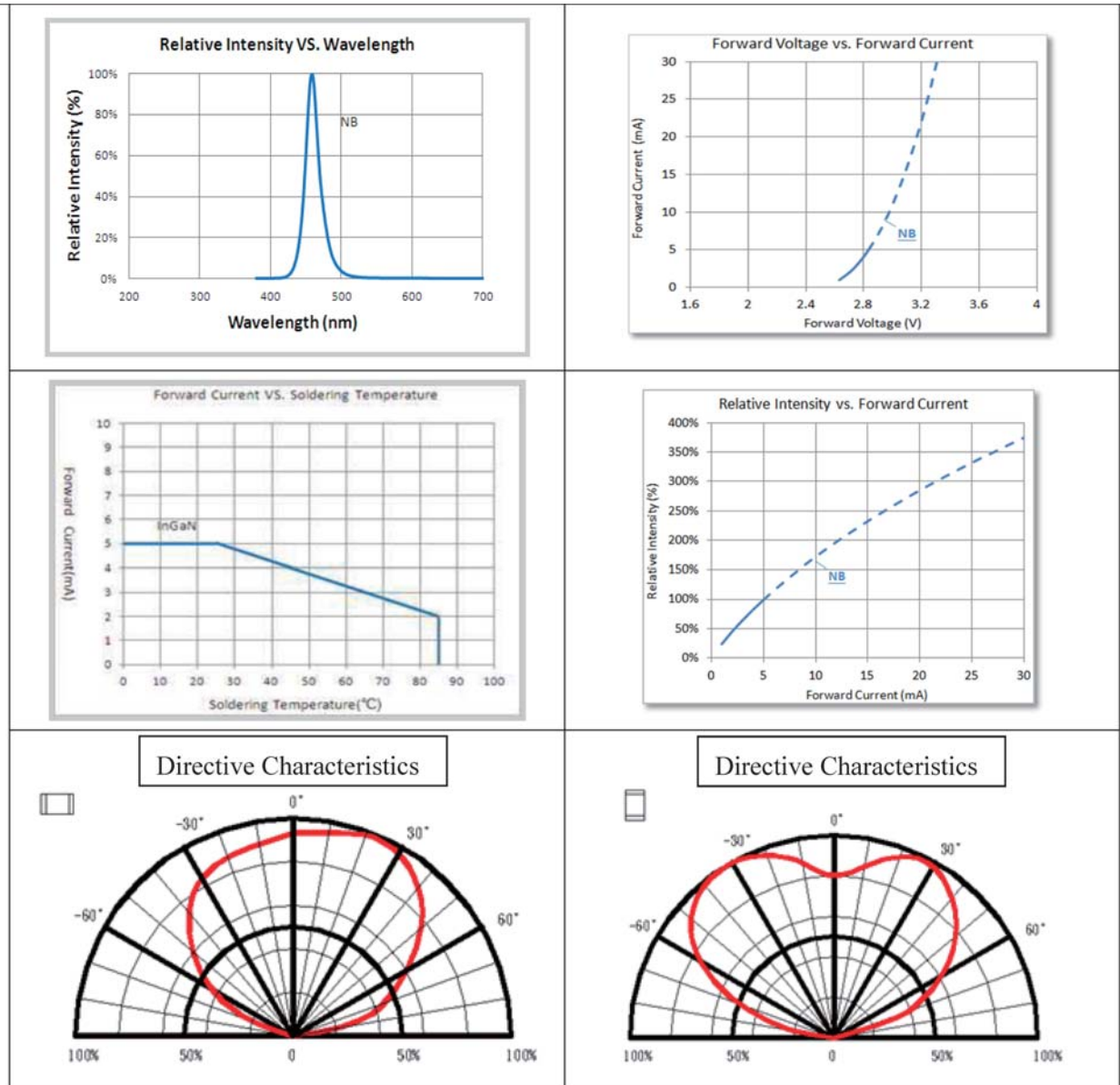
Characteristic	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse Current	$I_R$	$V_R = 5V$	-	-	10	$\mu A$
Dominant Wavelength	$\lambda_D$	$I_F = 20mA$	-	472	-	nm
Average Luminous Intensity	$I_V$	$I_F = 20mA$	-	25	-	mcd
Spectral radiation bandwidth	$\Delta\lambda$	$I_F = 20mA$	-	40	-	nm



# Opto Plus LED Corp. Touch Button with IC Built in OPE-D-V1616LB-IC-AR-BW(H)

## ● LB: SUPER BRIGHT BLUE (INGAN/GAN)

Typical Electro-optical Characteristic Curves  
(25 °C Free Air Temperature Unless Otherwise Specified)

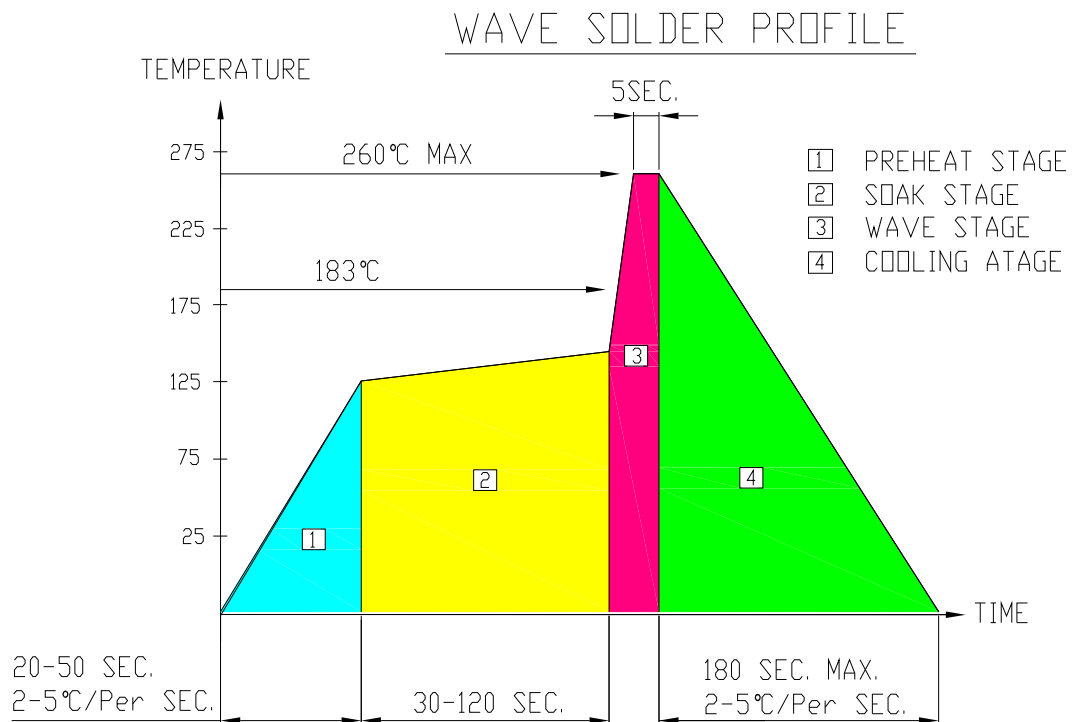






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## ● RECOMMEND SOLDERING PROFILE



## ● Note:

- Recommend pre-heat temperature of 105°C or less (as measured with a thermocouple attached to the LED pins) prior to immersion in the solder wave with a maximum solder bath temperature of 260°C
- Peak wave soldering temperature between 245°C ~ 225°C for 3 sec (5 sec max)
- No more than one wave soldering pass

## ● SOLDERING IRON

Basic spec is  $\leq 4$  sec when 260°C. If temperature is higher, time should be shorter (+10°C → 1 sec). Power dissipation of Iron should be smaller than 15W, and temperature should be controllable. Surface temperature of the device should be under 230°C.

## ● REWORK

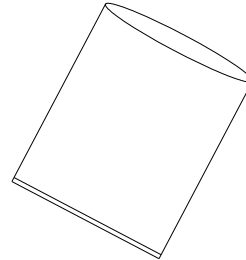
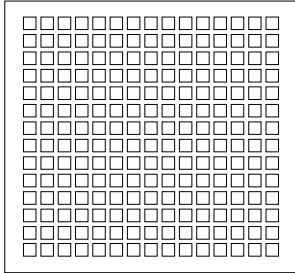
Customer must finish rework within  $\leq 3$  sec under 350°C.  
The head of soldering iron cannot touch copper foil.



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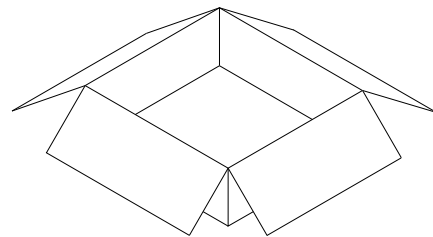
## ● PACKAGE DIMENSIONS

210 PCS ( 14 X 15 ) / 1 ANTISTATIC E. PE. FOAM SHEET



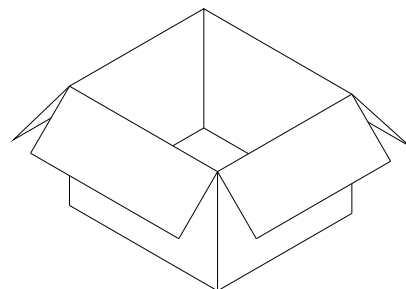
ESD BAG SIZE : 650 x 550 mm

4 ANTISTATIC E. PE. FOAM SHEET & 1 CARDBOARD / 1 PINK ESD BAG  
840 PCS /1Inner Carton



INNER BOX SIZE : 394 x 370 x 138 mm

1680 PCS / 2 Inner Carton / 1 Outer Carton



OUTER BOX SIZE : 430 x 390 x 300 mm

## ● Note:

### LED DISPLAY STANDARD STORAGED CONDITION

Product in the original packaging material state is the recommended storage conditions.

TERATURE CONDITION	HUMIDITY CONDITION
5°C ~ 30°C	Below 60%RH

If the storage conditions do not meet specification standards, the component pins may become oxidized requiring re-plating and re-sorting before use. Suggest customers consume LEDs as soon as possible, and avoid long-term storage of large inventories.