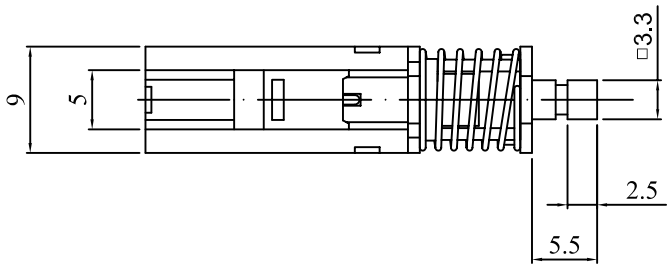
# Push Button Switch

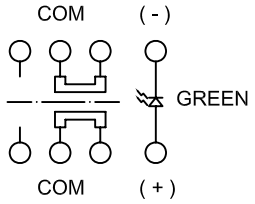
# 78-0543

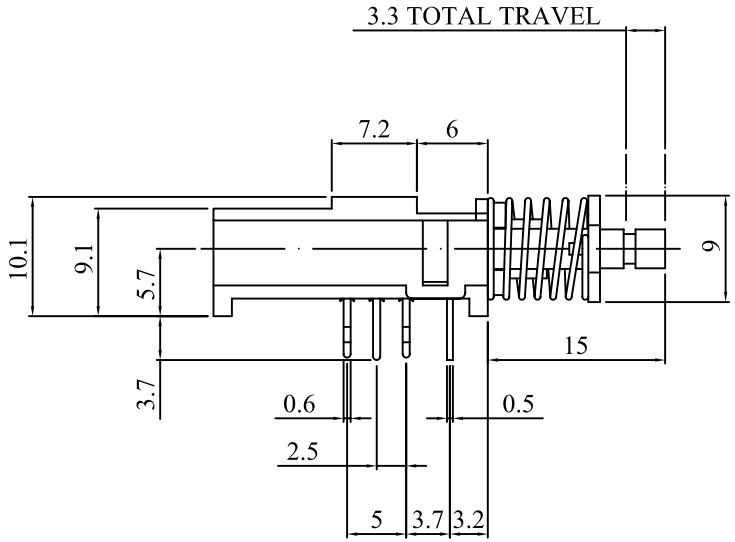
| DIMENSION | TOLERANCE |
|---|---|
| BELOW 10 mm | ± 0.3 |
| 10~100 mm | ± 0.5 |
| ABOVE 100 mm | ± 0.8 |
| ANGLE | ± 3° |

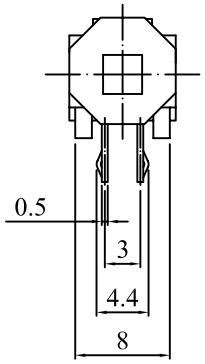



| ONE COLOR | | TWO COLOR |
|---|---|---|
| G | GREEN | ( R,G ) ( R,Y ) ( R,B ) ( G,Y ) ( G,B ) ( Y,B ) |
| R | RED | |
| Y | YELLOW | |
| B | BLUE | |
| W | WHITE | |

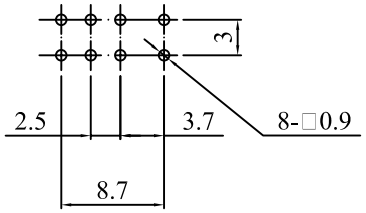
## SCHEMATIC

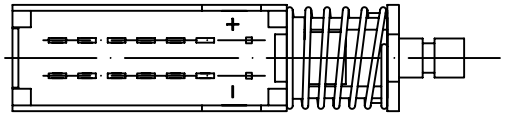



## P.C.B HOLE DETAIL




1. LOCK TYPE .
2. RATING : 30 V DC , 0.3 A .
3. CONTACT RESISTANCE : 20 mΩ MAX .
4. INSULATION RESISTANCE : 500 V DC , 100 MΩ MIN .
5. OPERATING FORCE : 200±100 gf .
6. OPERATING TEMPERATURE : -20℃ ~ 70℃ .
7. OPERATING LIFE : 10,000 CYCLES .

# SPECIFICATIONS OF
# PUSH BUTTON SWITCH WITH LED

1. POLE - POSITION：2P2T, 4P2T, LOCK AND MOMENTARY ARE AVAILABLE.

2. OPERATING TEMPERATURE RANGE：-20℃ ~ 70℃

3. RATING：30V DC 0.3A

4. ELECTRICAL PERFORMANCE

| | ITEM | TEST CONDITIONS | CRITERIA |
|---|---|---|---|
| 4-1 | CONTACT RESISTANCE | DC 1.5V 100 mA , BY METHOD OF VOLTAGE DROP. | 20 mΩ MAX. |
| 4-2 | INSULATION RESISTANCE | DC 500V | 100 MΩ MIN. |
| 4-3 | DIELECTRIC STRENGTH | AC 500V FOR 1 MINUTE | BREAKDOWN IS NOT ALLOWABLE |

5. MECHANICAL PERFORMANCE

| | ITEM | TEST CONDITIONS | CRITERIA |
|---|---|---|---|
| 5-1 | OPERATING FORCE | 2P2T，4P2T | 200±100gf |
| 5-2 | TRAVEL | LOCK TRAVEL : 2.5 mm<br>FULL TRAVEL : 3.3 mm | |
| 5-3 | TIMING | NON-SHORTING TYPE | |
| 5-4 | ROBUSTNESS OF TERMINAL | ANY DIRECTION TO APPLY A STATIC LOAD 500gf AT END OF TERMINAL FOR 1 MINUTE. ONCE FOR A TERMINAL ONLY | TERMINAL COULD BE BENT BUT LOOSENED TERMINAL OR BOARD BROKEN IS NOT ALLOWABLE. |
| 5-5 | ROBUSTNESS OF ACTUATOR | ALONG OPERATING DIRECTION TO APPLY A STATIC LOAD 5Kgf TO PUSH/PULL ACTUATOR | ACTUATOR BROKEN OR ANY UNSUAL APPEARANCE OCCURRED ON SWITCH CONSTRUCTION IS NOT ALLOWABLE. |
| 5-6 | SOLDERABILITY | 260±5℃ IN 3 SECONDS | 75% Min. |

6. RESISTANCE OF SOLDERING HEAT

6-1 MANUAL SOLDERING：300±5℃ IN 3 SECONDS

6-2 DIP SOLDERING：260±5℃ IN 3 SECOND

7. DURABILITY：

OPERATING LIFE WITHOUT LOAD AFTER 10,000 CYCLES

7-1 CONTACT RESISTANCE：50mΩ MAX.

7-2 OPERATING FORCE：

WITHIN THE RANGE ±30% OF OPERATING FORCE SPECIFICATION.

7-3 INSULATION RESISTANCE：DC 500V 10 MΩ MIN.

7-4 DIELECTRIC STRENGTH：AC 500V FOR 1 MINUTE

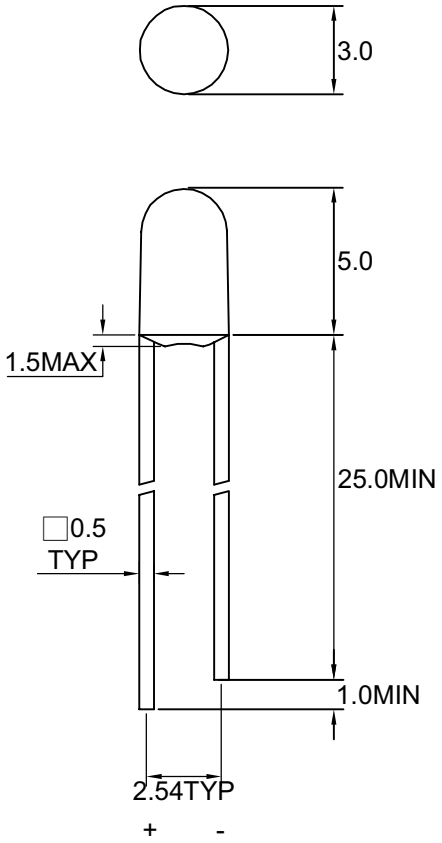
8. ENVIRONMENTAL PERFORMANCE

| | ITEM | TEST CONDITIONS | CRITERIA |
|---|---|---|---|
| 8-1 | COLD | -20±2℃ FOR 24 HOURS | 1. IT SHOULD MEET THE REQUIREMENTS OF ITEM 4.<br>2. MECHANICAL PERFORMANCE SHOULD REMAIN TO NORMAL. |
| 8-2 | DRY HEAT | 70℃±2℃ FOR 48 HOURS | 1. CONTACT RESISTANCE SHALL BE LESS THAN 50mΩ.<br>2. IT SHOULD MEET THE REQUIREMENTS OF 4-2 AND 4-3.<br>3. MECHANICAL PERFORMANCE SHOULD REMAIN TO NORMAL. |
| 8-3 | DAMP HEAT | 40℃±2℃ 90% ~ 95%RH FOR 96 HOURS | 1. CONTACT RESISTANCE SHOULD BE LESS THAN 50mΩ.<br>2. INSULATION RESISTANCE SHALL BE HIGHER THAN 10 MΩ.<br>3. DIELECTRIC STRENGTH SHOULD MEET THE REQUIREMENTS OF 4-3.<br>4. MECHANICAL PERFORMANCE SHOULD REMAIN TO NORMAL. |

9. LED SPECIFICATION

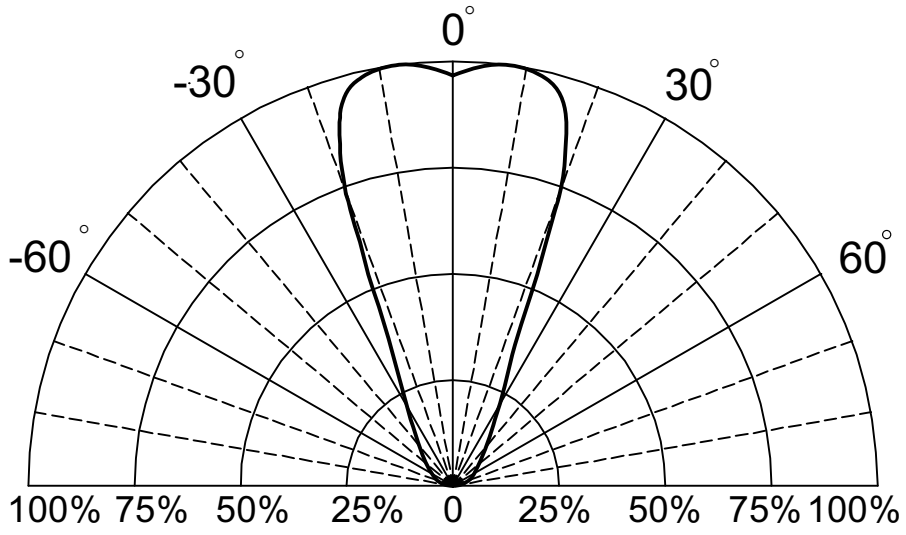
LED SPECIFICATIONS WILL BE FURNISHED SEPARATELY DEPENDING ON ITS COLOR.

Package Dimensions




Note : 1.All dimension are in millimeter tolerance is ±0.25mm unless otherwise noted.
2.Specifications are subject to change without notice.

## Directivity Radiation



## Absolute Maximum Ratings at Ta=25 ℃

| Parameter | Symbol | Ratings | UNIT |
|---|---|---|---|
| | | G | |
| Forward Current | $I_F$ | 30 | mA |
| Peak Forward Current Duty 1/10@10KHz | $I_{FP}$ | 120 | mA |
| Power Dissipation | PD | 100 | mW |
| Reverse Current @5V | Ir | 10 | μA |
| Operating Temperature | $T_{opr}$ | -40 ~ +85 | ℃ |
| Storage Temperature | Tstg | -40 ~ +100 | ℃ |

## Typical Electrical & Optical Characteristics (Ta=25 ℃)

| PART NO | MATERIAL | COLOR | | Peak wave length λ Pnm | Spectral halfwidth △λ nm | Forward voltage @20mA(V) | | Luminous intensity @10mA(mcd) | | Viewing angle 2θ 1/2 (deg) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Emitted | Lens | | | Min. | Max. | Min. | Typ. | |
| 78-0543 | GaP | Green | Green Transparent | 565 | 30 | 1.7 | 2.6 | 20 | 30 | 44 |

Note : 1.The forward voltage data did not including ±0.1V testing tolerance.
2. The luminous intensity data did not including ±15% testing tolerance.

# Typical Electro-Optical Characteristics Curve

## G CHIP

Fig.1 Forward current vs. Forward Voltage

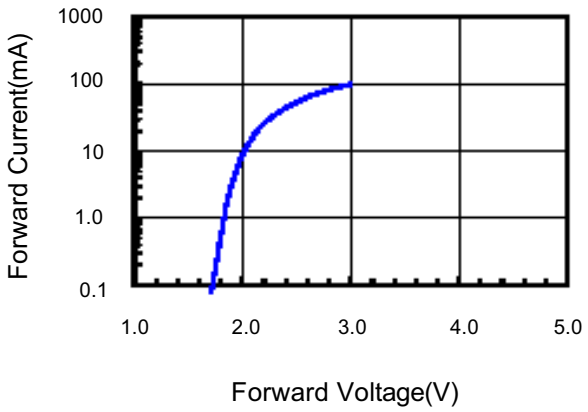



Fig.2 Relative Intensity vs. Forward Current

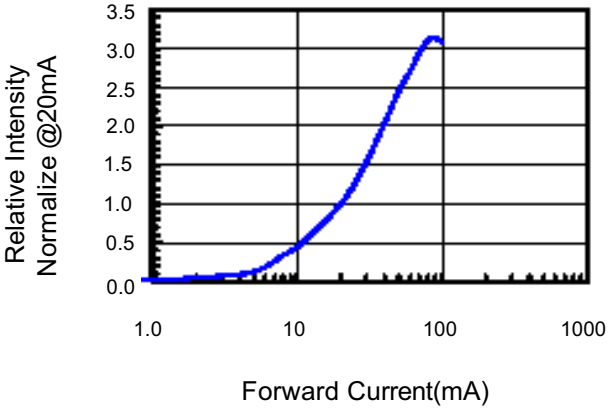



Fig.3 Forward Voltage vs. Temperature

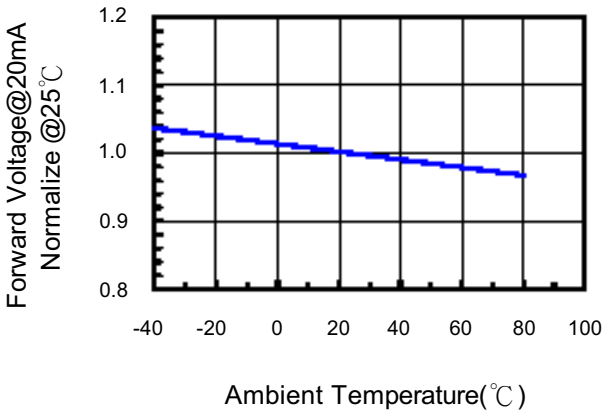



Fig.4 Relative Intensity vs. Temperature

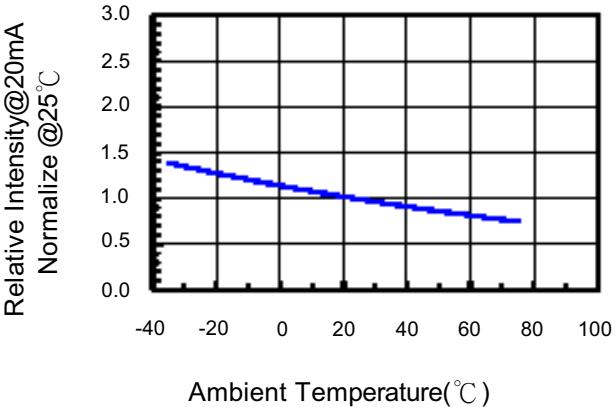
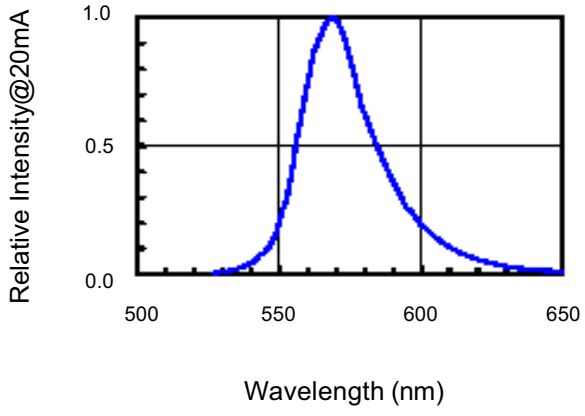



Fig.5 Relative Intensity vs. Wavelength



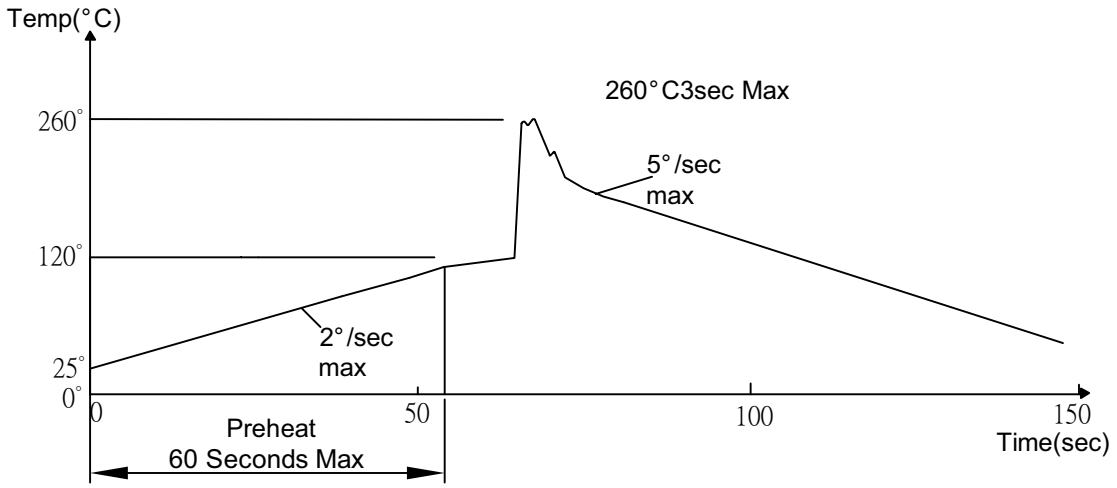
## Soldering Condition(Pb-Free)

1.Iron:

Soldering Iron:30W Max
Temperature 350°C Max
Soldering Time:3 Seconds Max(One Time)
Distance:2mm Min(From solder joint to body)

2.Wave Soldering Profile

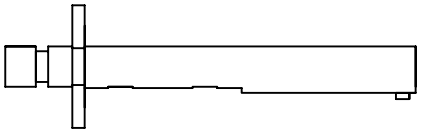
Dip Soldering
Preheat: 120°C Max
Preheat time: 60seconds Max
Ramp-up
2°C/sec(max)
Ramp-Down:-5°C/sec(max)
Solder Bath:260°C Max
Dipping Time:3 seconds Max
Distance:2mm Min(From solder joint to body)



# Reliability Test:

| Test Item | Test Condition | Description | Reference Standard |
|---|---|---|---|
| Operating Life Test | 1.Under Room Temperature<br>2.If=20mA<br>3.t=1000 hrs (-24hrs, +72hrs) | This test is conducted for the purpose of detemining the resistance of a part in electrical and themal stressed. | MIL-STD-750: 1026<br>MIL-STD-883: 1005<br>JIS C 7021: B-1 |
| High Temperature Storage Test | 1.Ta=105℃±5℃<br>2.t=1000 hrs (-24hrs, +72hrs) | The purpose of this is the resistance of the device which is laid under condition of high temperature for hours. | MIL-STD-883:1008<br>JIS C 7021: B-10 |
| Low Temperature Storage Test | 1.Ta=-40℃±5℃<br>2.t=1000 hrs (-24hrs, +72hrs) | The purpose of this is the resistance of the device which is laid under condition of low temperature for hours. | JIS C 7021: B-12 |
| High Temperature High Humidity Test | 1.Ta=65℃±5℃<br>2.RH=90％~95％<br>3.t=240hrs±2hrs | The purpose of this test is the resistance of the device under tropical for hours. | MIL-STD-202:103B<br>JIS C 7021: B-11 |
| Thermal Shock Test | 1.Ta=105℃±5℃&-40℃±5℃<br>(10min) (10min)<br>2.total 10 cycles | The purpose of this is the resistance of the device to sudden extreme changes in high and low temperature. | MIL-STD-202: 107D<br>MIL-STD-750: 1051<br>MIL-STD-883: 1011 |
| Solder Resistance Test | 1.T.Sol=260℃±5℃<br>2.Dwell time= 10±1sec. | This test intended to determine the thermal characteristic resistance of the device to sudden exposures at extreme changes in temperature when soldering the lead wire. | MIL-STD-202: 210A<br>MIL-STD-750: 2031<br>JIS C 7021: A-1 |
| Solderability Test | 1.T.Sol=230℃±5℃<br>2.Dwell time=5±1sec | This test intended to see soldering well performed or not. | MIL-STD-202: 208D<br>MIL-STD-750: 2026<br>MIL-STD-883: 2003<br>JIS C 7021: A-2 |

| DIMENSION | TOLERANCE |
|---|---|
| BELOW 10 mm | ± 0.3 |
| 10~100 mm | ± 0.5 |
| ABOVE 100 mm | ± 0.8 |
| ANGLE | ± 3° |



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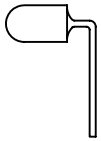

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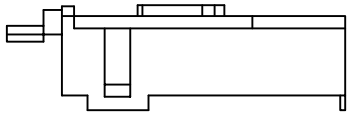

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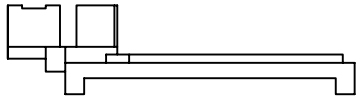

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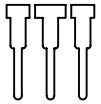

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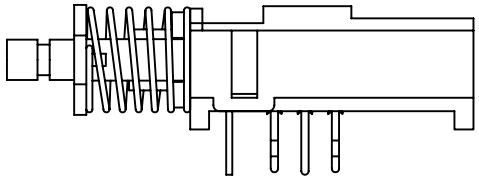

| NO. | PART NAME | QTY | MATERIAL | SPECIAL DEAL | RoHS REPORT No. |
|---|---|---|---|---|---|
| 1 | ACTUATOR | 1 | PC | TRANSPARENT | CE/2008/85709 |
| 2 | SPRING | 1 | STAINLESS STEEL | | REFERENCE APPENDIX (BASF REPORT) |
| 3 | LED | 1 | | GREEN | SZHH0026598701;SZHH0031899305 |
| 4 | BASE FRAME | 1 | POM | WHITE | CE/2008/22528 |
| 5 | CLIP | 2 | PHOSPHOR BRONZE | SILVER CLAD | CE/2008/B0423 ; CE/2009/10480 |
| 6 | TERMINAL BOARD | 1 | PBT + GF 15% | WHITE | CE/2007/C6971 |
| 7 | TERMINAL | 6 | BRASS | SILVER PLATING | CE/2009/23994A ; CE/2009/10480 |