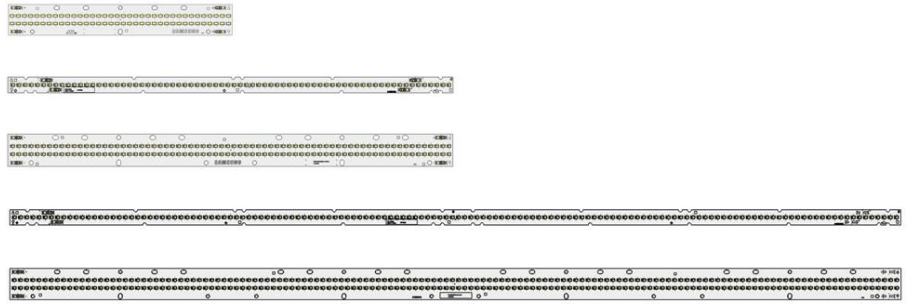


LED Module

F-Series Gen3



Features & Benefits

- Efficacy improvement, 22% from Gen2 to achieve DLC premium
- High lumen density linear board well-fit into industrial applications
- 4ft length option added

Applications

- Industrial Lighting:
 - Warehouse, Plant, Parking lot, Etc
- High ceiling Lighting
- Linear, Troffer, Etc



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1. Product Code Information

- LT-F284B

| Nominal CCT (K) | SEC Code |
|-----------------|----------------|
| 3000K | SI-B8V261280WW |
| 3500K | SI-B8U261280WW |
| 4000K | SI-B8T261280WW |
| 5000K | SI-B8R261280WW |

- LT-F562B

| Nominal CCT (K) | SEC Code |
|-----------------|----------------|
| 3000K | SI-B8V261560WW |
| 3500K | SI-B8U261560WW |
| 4000K | SI-B8T261560WW |
| 5000K | SI-B8R261560WW |

- LT-F564B

| Nominal CCT (K) | SEC Code |
|-----------------|----------------|
| 3000K | SI-B8V521560WW |
| 3500K | SI-B8U521560WW |
| 4000K | SI-B8T521560WW |
| 5000K | SI-B8R521560WW |

- LT-FB22B

| Nominal CCT (K) | SEC Code |
|-----------------|----------------|
| 3000K | SI-B8V521B20WW |
| 3500K | SI-B8U521B20WW |
| 4000K | SI-B8T521B20WW |
| 5000K | SI-B8R521B20WW |

- LT-FB24B

| Nominal CCT (K) | SEC Code |
|-----------------|----------------|
| 3000K | SI-B8VZ91B20WW |
| 3500K | SI-B8UZ91B20WW |
| 4000K | SI-B8TZ91B20WW |
| 5000K | SI-B8RZ91B20WW |

2. Characteristics

a) Maximum Rating

| Item | Rating | Unit | Remark |
|---|-----------|------|--------|
| Rated Lifetime | >50,000 | hour | L70B50 |
| Ingress Protection (IP) | no rating | - | |
| Ambient / Operating Temperature (t_{amb}) | -30 ~ +55 | °C | |
| Storage Temperature | -30 ~ +80 | °C | |

b) Electro-Optical Characteristics

- LT-F284B

| Item | Nom. CCT (K) | Rating | | | Unit | Remark |
|-----------------------------|-----------------|--------|------|------|------|---|
| | | Min | Typ. | Max | | |
| Luminous Flux (Φ_v) | 3000 | 3900 | 4335 | 4815 | lm | $I_f = 1120\text{mA}$ $t_p = 65^\circ\text{C}$ |
| | 3500 | 3960 | 4400 | 4890 | | |
| | 4000 | 4050 | 4500 | 5000 | | |
| | 5000 | 4185 | 4650 | 5165 | | |
| Luminous Efficacy | 3000 | 151 | 168 | 187 | lm/W | |
| | 3500 | 154 | 171 | 190 | | |
| | 4000 | 157 | 175 | 194 | | |
| | 5000 | 162 | 181 | 201 | | |
| CCT | 3000 | 2961 | 3050 | 3145 | K | Mac Adam 3 step |
| | 3500 | 3340 | 3454 | 3577 | | |
| | 4000 | 3809 | 3955 | 4110 | | |
| | 5000 | 4798 | 4984 | 5177 | | |
| Color Rendering Index (Ra) | - | 80 | - | - | - | Integrating Sphere |
| Operating Current (I_f) | - | - | 1120 | 1800 | mA | - |
| Operating Voltage (V_f) | - | 21.9 | 23.0 | 24.2 | Vdc | $I_f = 1120\text{mA}$ |
| Power Consumption | - | 24.5 | 25.8 | 27.1 | W | $t_p = 65^\circ\text{C}$ |

Notes:

- t_p : temperature at which performance is specified; measured at "Tc point".
- Samsung maintains a measurement tolerance of: Luminous flux: $\pm 7\%$, CRI: ± 3.0 , Voltage: $\pm 0.3\text{ V}$, Power Consumption: $\pm 0.3\text{ W}$
- Measurement tolerance of the color coordinates is ± 0.005

- LT-F562B

| Item | Nom. CCT (K) | Rating | | | Unit | Remark |
|-----------------------------|-----------------|--------|------|------|------|---|
| | | Min | Typ. | Max | | |
| Luminous Flux (Φ_v) | 3000 | 3900 | 4335 | 4815 | lm | $I_f = 1120\text{mA}$ $t_p = 65^\circ\text{C}$ |
| | 3500 | 3960 | 4400 | 4890 | | |
| | 4000 | 4050 | 4500 | 5000 | | |
| | 5000 | 4185 | 4650 | 5165 | | |
| Luminous Efficacy | 3000 | 151 | 168 | 187 | lm/W | |
| | 3500 | 154 | 171 | 190 | | |
| | 4000 | 157 | 175 | 194 | | |
| | 5000 | 162 | 181 | 201 | | |
| CCT | 3000 | 2961 | 3050 | 3145 | K | Mac Adam 3 step |
| | 3500 | 3340 | 3454 | 3577 | | |
| | 4000 | 3809 | 3955 | 4110 | | |
| | 5000 | 4798 | 4984 | 5177 | | |
| Color Rendering Index (Ra) | - | 80 | - | - | - | Integrating Sphere |
| Operating Current (I_f) | - | - | 1120 | 1800 | mA | - |
| Operating Voltage (V_f) | - | 21.9 | 23.0 | 24.2 | Vdc | $I_f = 1120\text{mA}$ $t_p = 65^\circ\text{C}$ |
| Power Consumption | - | 24.5 | 25.8 | 27.1 | W | |

Notes:

- 4) t_p : temperature at which performance is specified; measured at "Tc point".
- 5) Samsung maintains a measurement tolerance of : Luminous flux: $\pm 7\%$, CRI: ± 3.0 , Voltage: $\pm 0.3\text{ V}$, Power Consumption: $\pm 0.3\text{ W}$
- 6) Measurement tolerance of the color coordinates is ± 0.005

- LT-F564B

| Item | Nom. CCT (K) | Rating | | | Unit | Remark |
|-----------------------------|-----------------|--------|------|-------|------|---|
| | | Min | Typ. | Max | | |
| Luminous Flux (Φ_v) | 3000 | 7805 | 8670 | 9635 | lm | $I_f = 1120\text{mA}$ $t_p = 65^\circ\text{C}$ |
| | 3500 | 7920 | 8800 | 9780 | | |
| | 4000 | 8100 | 9000 | 10000 | | |
| | 5000 | 8370 | 9300 | 10335 | | |
| Luminous Efficacy | 3000 | 151 | 168 | 187 | lm/W | |
| | 3500 | 154 | 171 | 190 | | |
| | 4000 | 157 | 175 | 194 | | |
| | 5000 | 162 | 181 | 201 | | |
| CCT | 3000 | 2961 | 3050 | 3145 | K | Mac Adam 3 step |
| | 3500 | 3340 | 3454 | 3577 | | |
| | 4000 | 3809 | 3955 | 4110 | | |
| | 5000 | 4798 | 4984 | 5177 | | |
| Color Rendering Index (Ra) | - | 80 | - | - | - | Integrating Sphere |
| Operating Current (I_f) | - | - | 1120 | 1800 | mA | - |
| Operating Voltage (V_f) | - | 43.7 | 46.0 | 48.4 | Vdc | $I_f = 1120\text{mA}$ $t_p = 65^\circ\text{C}$ |
| Power Consumption | - | 48.9 | 51.5 | 54.2 | W | |

Notes:

- 7) t_p : temperature at which performance is specified; measured at "Tc point".
- 8) Samsung maintains a measurement tolerance of : Luminous flux: $\pm 7\%$, CRI: ± 3.0 , Voltage: $\pm 0.3\text{ V}$, Power Consumption: $\pm 0.3\text{ W}$
- 9) Measurement tolerance of the color coordinates is ± 0.005

- LT-FB22B

| Item | Nom. CCT (K) | Rating | | | Unit | Remark |
|-----------------------------|-----------------|--------|------|-------|------|---|
| | | Min | Typ. | Max | | |
| Luminous Flux (Φ_v) | 3000 | 7805 | 8670 | 9635 | lm | $I_f = 1120\text{mA}$ $t_p = 65^\circ\text{C}$ |
| | 3500 | 7920 | 8800 | 9780 | | |
| | 4000 | 8100 | 9000 | 10000 | | |
| | 5000 | 8370 | 9300 | 10335 | | |
| Luminous Efficacy | 3000 | 151 | 168 | 187 | lm/W | |
| | 3500 | 154 | 171 | 190 | | |
| | 4000 | 157 | 175 | 194 | | |
| | 5000 | 162 | 181 | 201 | | |
| CCT | 3000 | 2961 | 3050 | 3145 | K | Mac Adam 3 step |
| | 3500 | 3340 | 3454 | 3577 | | |
| | 4000 | 3809 | 3955 | 4110 | | |
| | 5000 | 4798 | 4984 | 5177 | | |
| Color Rendering Index (Ra) | - | 80 | - | - | - | Integrating Sphere |
| Operating Current (I_f) | - | - | 1120 | 1800 | mA | - |
| Operating Voltage (V_f) | - | 43.7 | 46.0 | 48.4 | Vdc | $I_f = 1120\text{mA}$ $t_p = 65^\circ\text{C}$ |
| Power Consumption | - | 48.9 | 51.5 | 54.2 | W | |

Notes:

- 10) t_p : temperature at which performance is specified; measured at "Tc point".
- 11) Samsung maintains a measurement tolerance of : Luminous flux: $\pm 7\%$, CRI: ± 3.0 , Voltage: $\pm 0.3\text{ V}$, Power Consumption: $\pm 0.3\text{W}$
- 12) Measurement tolerance of the color coordinates is ± 0.005

- LT-FB24B

| Item | Nom. CCT (K) | Rating | | | Unit | Remark |
|-----------------------------|-----------------|--------|-------|-------|------|---|
| | | Min | Typ. | Max | | |
| Luminous Flux (Φ_v) | 3000 | 15605 | 17340 | 19265 | lm | $I_f = 2240\text{mA}$ $t_p = 65^\circ\text{C}$ |
| | 3500 | 15840 | 17600 | 19555 | | |
| | 4000 | 16200 | 18000 | 20000 | | |
| | 5000 | 16740 | 18600 | 20665 | | |
| Luminous Efficacy | 3000 | 151 | 168 | 187 | lm/W | |
| | 3500 | 154 | 171 | 190 | | |
| | 4000 | 157 | 175 | 194 | | |
| | 5000 | 162 | 181 | 201 | | |
| CCT | 3000 | 2961 | 3050 | 3145 | K | Mac Adam 3 step |
| | 3500 | 3340 | 3454 | 3577 | | |
| | 4000 | 3809 | 3955 | 4110 | | |
| | 5000 | 4798 | 4984 | 5177 | | |
| Color Rendering Index (Ra) | - | 80 | - | - | - | Integrating Sphere |
| Operating Current (I_f) | - | - | 2240 | 3600 | mA | - |
| Operating Voltage (V_f) | - | 43.7 | 46.0 | 48.4 | Vdc | $I_f = 2240\text{mA}$ $t_p = 65^\circ\text{C}$ |
| Power Consumption | - | 97.9 | 103.0 | 108.5 | W | |

Notes:

- 13) t_p : temperature at which performance is specified; measured at "Tc point".
- 14) Samsung maintains a measurement tolerance of : Luminous flux: $\pm 7\%$, CRI: ± 3.0 , Voltage: $\pm 0.3\text{ V}$, Power Consumption: $\pm 0.3\text{ W}$
- 15) Measurement tolerance of the color coordinates is ± 0.005

c) Temperature Characteristics

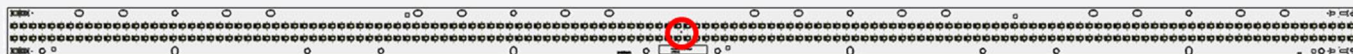
| Item | Nominal(t_p)* | Life** | Max(t_c)*** | Unit |
|-------------|-------------------|--------|-----------------|------|
| Temperature | 65 | 80 | 95 | °C |

Notes:

- * Temperature used to specify performance of the module (t_p).
 - ** Rated maximum performance temperature at which lifetime is specified.
 - *** Rated maximum temperature, highest permissible temperature to avoid safety risk (t_c).
- All temperatures are measured at the designated “Tc point” as indicated on the module. (See page 10)

d) Thermal Measurement

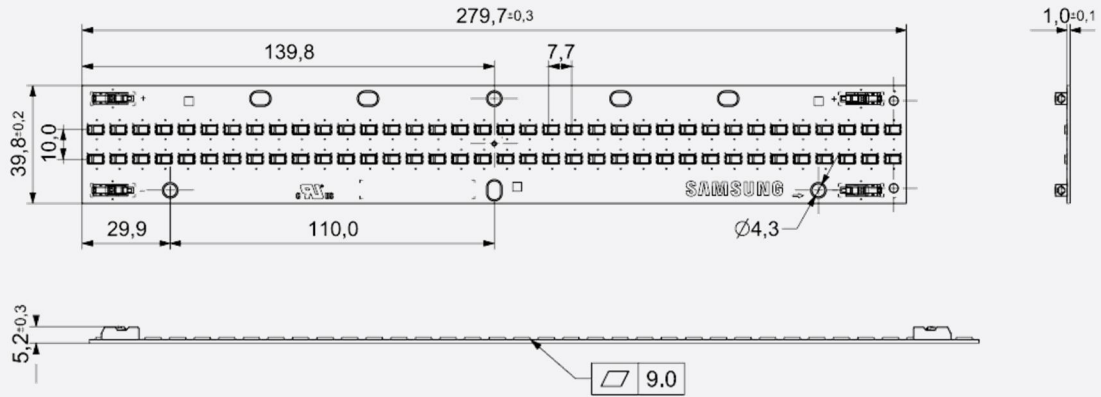
Performance temperatures are measured on “Tc point” as indicated on the module.



3. Structure and Assembly

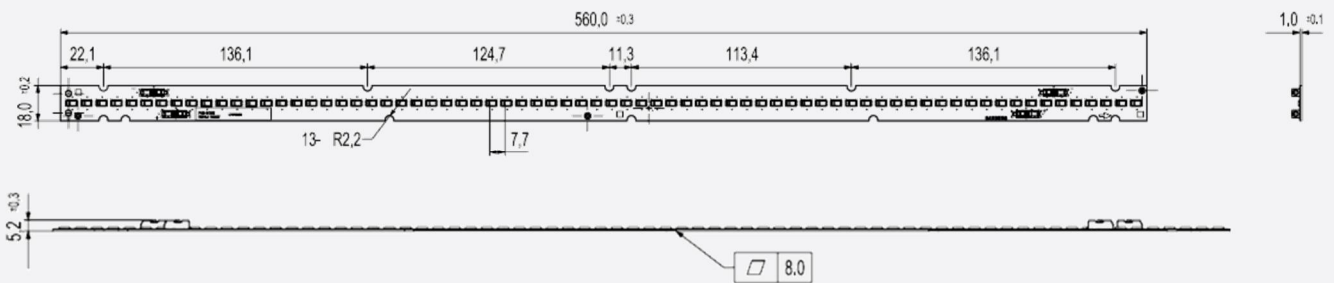
a) Appearance & Dimension

- LT-F284B



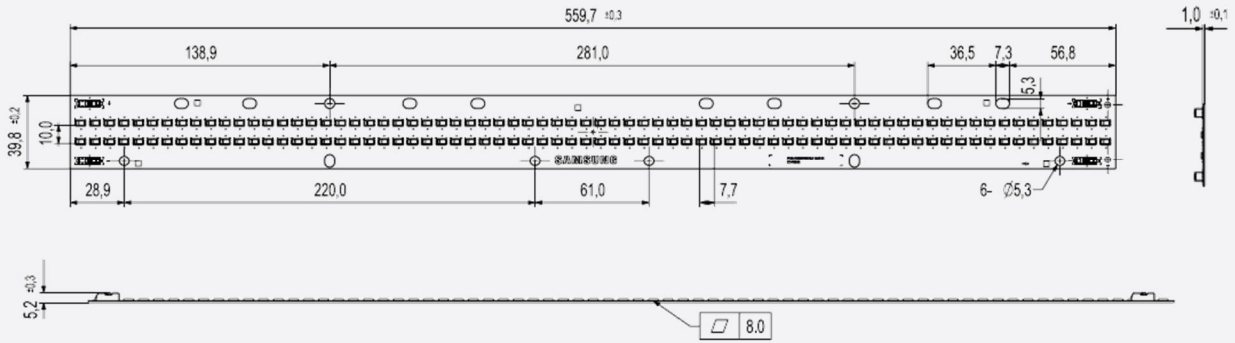
| Dimension | Specification | Tolerance | Unit |
|---------------|---------------|-----------|------|
| Module Length | 279.7 | 0.3 | mm |
| Module Width | 39.8 | 0.2 | mm |
| Module Height | 5.2 | 0.3 | mm |
| PCB Thickness | 1.0 | 0.1 | mm |
| Module Weight | 29.5 | 1.48 | g |

- LT-F562B



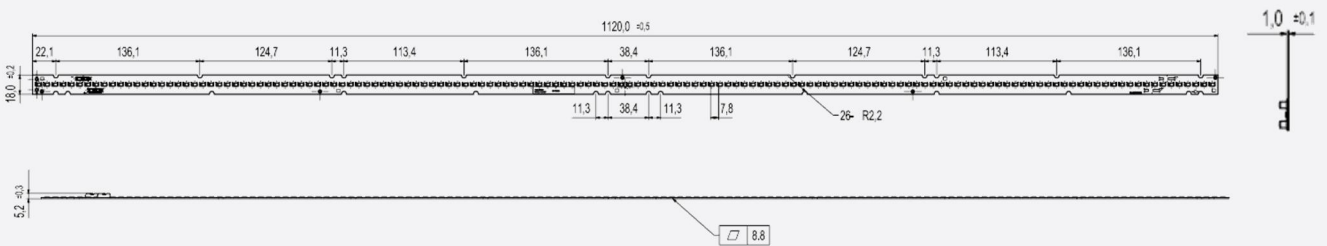
| Dimension | Specification | Tolerance | Unit |
|---------------|---------------|-----------|------|
| Module Length | 560.0 | 0.3 | mm |
| Module Width | 18.0 | 0.2 | mm |
| Module Height | 5.2 | 0.3 | mm |
| PCB Thickness | 1.0 | 0.1 | mm |
| Module Weight | 26.8 | 1.34 | g |

- LT-F564B



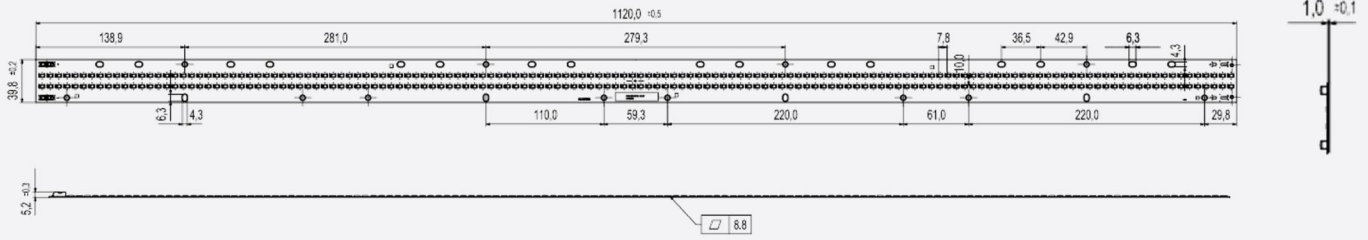
| Dimension | Specification | Tolerance | Unit |
|---------------|---------------|-----------|------|
| Module Length | 559.7 | 0.3 | mm |
| Module Width | 39.8 | 0.2 | mm |
| Module Height | 5.2 | 0.3 | mm |
| PCB Thickness | 1.0 | 0.1 | mm |
| Module Weight | 58.7 | 2.94 | g |

- LT-FB22B



| Dimension | Specification | Tolerance | Unit |
|---------------|---------------|-----------|------|
| Module Length | 1120.0 | 0.5 | mm |
| Module Width | 18.0 | 0.2 | mm |
| Module Height | 5.2 | 0.3 | mm |
| PCB Thickness | 1.0 | 0.1 | mm |
| Module Weight | T.B.D | | g |

- LT-FB24B



| Dimension | Specification | Tolerance | Unit |
|---------------|---------------|-----------|------|
| Module Length | 1120.0 | 0.5 | mm |
| Module Width | 39.8 | 0.2 | mm |
| Module Height | 5.2 | 0.3 | mm |
| PCB Thickness | 1.0 | 0.1 | mm |
| Module Weight | T.B.D | | g |

b) Structure

| Item | Specification |
|-----------|---|
| LED | LM561C Middle Power LED |
| PCB | Material : copper, solder mask, epoxy |
| Connector | Reworkable poke-in connector type |
| Wire | 24~18 AWG ; terminal strip length of 7.5~8.5 mm (Appendix 1) |

c) Schematic Circuit

- LT-F284B : 8S x 9P
- LT-F562B : 8S x 9P
- LT-F564B : 16S x 9P
- LT-FB22B : 16S x 9P
- LT-FB24B : 16S x 18P

4. Certification and Declaration

| Item | Compliant to | Remark |
|----------------------|--------------------------------------|--------------------------------|
| Test & Certification | UL / cUL | T.B.D |
| | Photo biological Safety (LM561C LED) | IEC / EN 62471 |
| Declaration | RoHS | Hazardous Substance & Material |
| | REACH | Hazardous Substance & Material |

5. Label Structure

a) Module Label

Ex) LT-F284B



| Number | Item | Remark |
|--------|----------------------------------|--|
| ① | Model Code | Refer to page 3 X = V, U, T, R |
| ② | Product name | |
| ③ | Color temperature | ZZ = 30, 35, 40, 50 |
| ④ | LED Maker | -S (Samsung) |
| ⑤ | SMT date | N321 (2013-March -21th) |
| ⑥ | Serial No. | 00001~99999; Setting "00001" every working day |
| ⑦ | Operating Current & Voltage Typ. | |
| ⑧ | Product Revision | |
| ⑨ | QR Code | SI-B8X261280WW_ N321100001ZZ00K-S01 |



b) TRAY & MBB bag LABEL

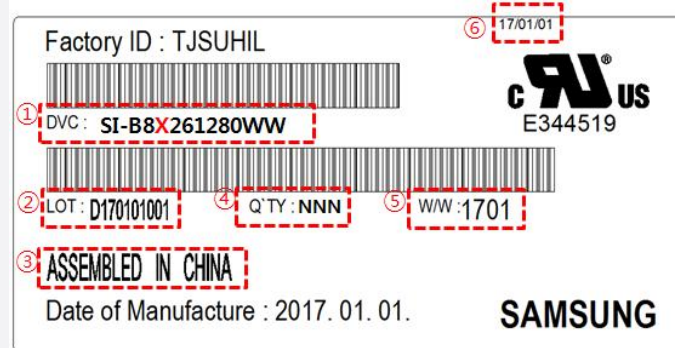
Ex) LT-F284B



| Number | Item | Remark |
|--------|--------------------|------------------|
| ① | Model Code | Refer to page 3 |
| ② | LOT ID | |
| ③ | Quantity | Refer to page 17 |
| ④ | Date of production | |
| ⑤ | Date of Issue | |

C) Box Label

Ex) LT-F284B



| Number | Item | Remark |
|--------|--------------------------|------------------|
| ① | Model Code | Refer to page 3 |
| ② | LOT ID | |
| ③ | Place of origin | |
| ④ | Quantity | Refer to page 17 |
| ⑤ | Describe production week | |
| ⑥ | Date of Issue | |

6. Packing Structure

| Product | Packing | Quantity (modules) | Dimension (mm) | | |
|----------|-----------|--------------------|----------------|-------|--------|
| | | | Length | Width | Height |
| LT-F284B | Tray | 32 ea | 380 | 355 | 46.5 |
| | Outer Box | 160 ea | 385 | 360 | 225 |
| | Pallet | 3840 ea | 1200 | 800 | 130 |
| LT-F562B | Tray | 40 ea | 600 | 444 | 25 |
| | Outer Box | 280 ea | 605 | 449 | 165 |
| | Pallet | 5600 ea | 1100 | 1100 | 130 |
| LT-F564B | Tray | 30 ea | 580 | 380 | 50.7 |
| | Outer Box | 150 ea | 585 | 385 | 225 |
| | Pallet | 2400 ea | 1200 | 800 | 130 |
| LT-FB22B | Tray | | | | |
| | Outer Box | | | | T.B.D |
| | Pallet | | | | |
| LT-FB24B | Tray | | | | |
| | Outer Box | | | | T.B.D |
| | Pallet | | | | |

7. Precautions in Handling & Use

A. The LED Lighting Modules for white light are devices which are materialized by combining white LEDs.

The color of white light can differ a little unusually to diffuser plate(sign-board panel).

Also when the LEDs are illuminating, operating current should be decided after considering the ambient maximum temperature.

B. Handling

To prevent the LED Lighting Modules from making any defectives, please handle the LED Lighting Modules with care as follows.

- (1) Don't drop the unit and don't give the unit any shocks.
- (2) Don't bend the PCB and don't touch the LED Resin.
- (3) Don't storage the Module in a dusty place or room.
- (4) Don't take the product apart.
- (5) Don't touch the LED and also PCB and other circuit parts of Module with your naked fingers or sharpness things.
- (6) Take care so that do not pull wire with hand in case of carries or moves LED Lighting Modules.

C. Cleaning

The LED Lighting Modules should not be used in any type of fluid such as water, oil, organic solvent, etc.

It is recommended that IPA (Isopropyl Alcohol) be used as a solvent for cleaning the LED Lighting Modules.

When using other solvents, it should be confirmed beforehand whether the solvents will dissolve the package and the resin or not. Freon solvents should not be used to clean the LEDs because of worldwide regulations. Do not clean the LED Lighting Modules by the ultrasonic.

Before cleaning, a pre-test should be done to confirm whether any damage to the LED Lighting Modules will occur.

D. Static Electricity

Static electricity or surge voltage damages the LED Lighting Modules. Please keep the working process anti-static electricity condition to prevent the Lighting from destroying, as following.

- (1) Anyone who handles the unit should be well grounded.(earth ring or anti-static glove)
- (2) Anyone who handles the unit should wear anti-electrostatic working clothes.
- (3) All kinds of device and instruments, such as working table, measuring instruments and assembly jigs in your production lines should be well grounded.

E. Storage

The LED Lighting Modules must be stored to insert a package of a moisture absorbent material(silica gel) in a box.

F. Others

If over voltage which exceeds the absolute maximum rating is applied to LED Lighting Modules.

It will cause damage Circuits(that LED is included) and result in destruction.

Do not directly look into lighted LED with naked eyes.

Please use this product within 5 months, which is kept in its original packaging unopened when Stocked

Appendix

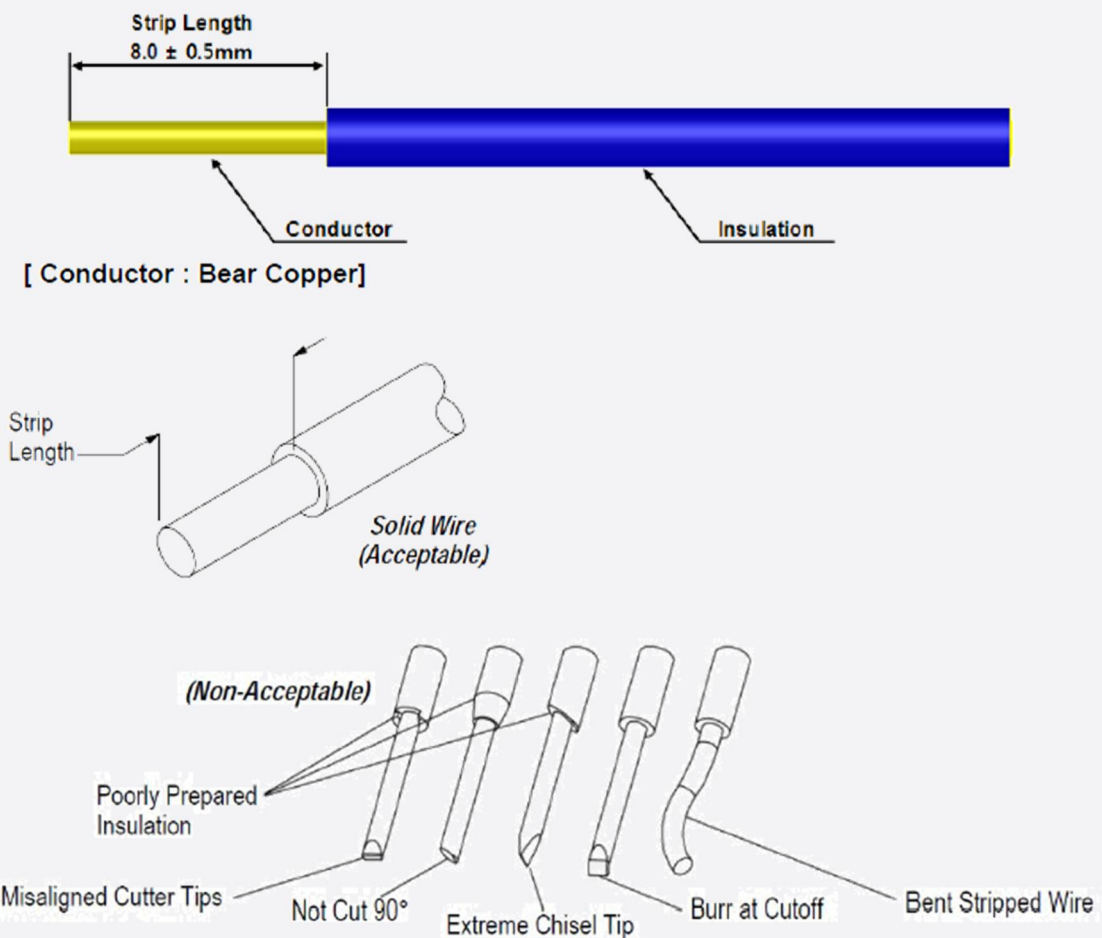
1. Applicable Solid Wires

a) Applicable solid wires only

| Wire Range AWG NO. | Number of Conductors / Diameter of a conductors (NO. / mm) | Insulation Diameter (mm) | Conductor Type |
|-----------------------|--|-----------------------------|----------------|
| 24 | 1 / 0.51 | 1.35 | Solid |
| 22 | 1 / 0.64 | 1.48 | |
| 20 | 1 / 0.81 | 1.65 | |
| 18 | 1 / 1.02 | 1.86 | |

※ outside insulation diameter $\Phi 2.1\text{mm}$ Max.

b) Wire strip length



Legal and additional information.

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