

Technical Data Sheet

Side View LEDs (Height 1.4mm)

50-215UMC/XXXXXXXX/TR8

Features

- Side view white LED
- White SMT package
- Lead frame package with individual 2 pins
- Wide viewing angle
- Soldering methods: IR reflow soldering
- Pb-free
- The product itself will remain within RoHS compliant version.



Descriptions

- Due to the package design, 50-215 has wide viewing angle, low power consumption and white LEDs are devices that are materialized by combing blue chips and special phosphor. This feature makes the LED ideal for light guide application.

Applications

- LCD Back Light
- Mobile Phones
- Indicators
- Illuminations
- Switch Lights

Device Selection Guide

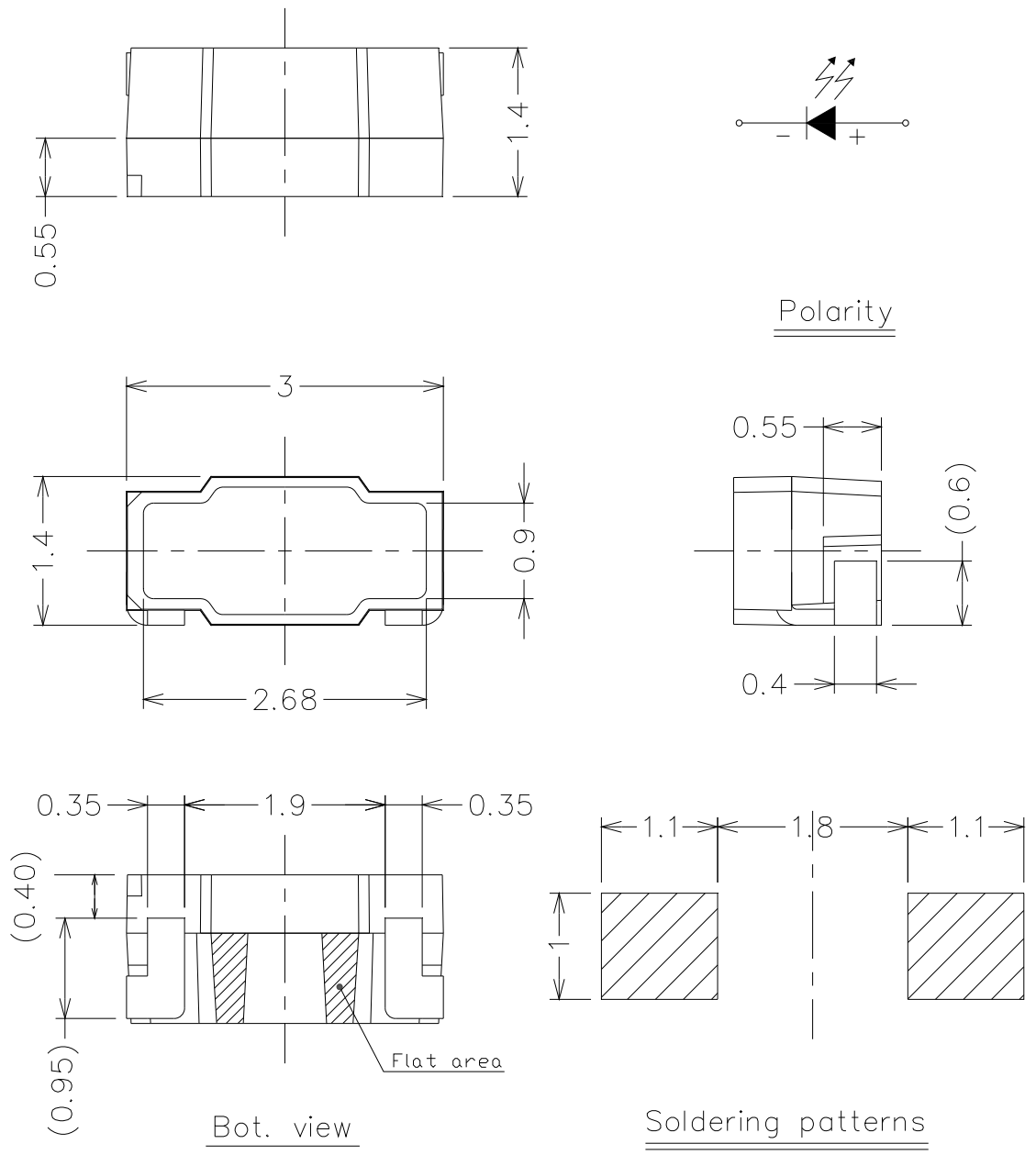
| Chip | Emitted Color | Resin Color |
|----------|---------------|-------------|
| Material | | |
| InGaN | Pure White | Water Clear |

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Package Outline Dimensions



Note: The tolerances unless dimensions are ± 0.1 mm.

**Technical Data Sheet****Side View LEDs (Height 1.4mm)****50-215UMC/XXXXXXXX/TR8****Absolute Maximum Ratings (Ta=25°C)**

| Parameter | Symbol | Rating | Unit |
|--|------------------|---|------|
| Reverse Voltage | V _R | 5 | V |
| DC Forward Current | I _F | 30 | mA |
| Pulse Forward Current (Duty 1/10 @1KHz) | I _{FP} | 100 | mA |
| Electrostatic Discharge(HBM)* ¹ | ESD | 2000 | V |
| LED Junction Temperature | T _j | 125 | °C |
| Operating Temperature | T _{opr} | -30 ~ +100 | °C |
| Storage Temperature | T _{stg} | -40 ~ +100 | °C |
| Soldering Temperature | T _{sol} | Reflow Soldering: 260°C for 10sec. Hand Soldering: 350°C for 3sec. | |

Note *¹:

The products are sensitive to static electricity and must be carefully taken when handling products.

Electro-Optical Characteristics (Ta=25°C)

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Condition |
|--------------------|-------------------|------|------|------|------|----------------------|
| Luminous Intensity | I _V | 1400 | --- | 2200 | mcd | I _F =20mA |
| Viewing Angle | 2θ _{1/2} | --- | 120 | --- | deg | I _F =20mA |
| Forward Voltage | V _F | 2.95 | --- | 3.55 | V | I _F =20mA |
| Reverse Current | I _R | --- | --- | 50 | μA | V _R =5V |

Notes:

1. Tolerance of Luminous Intensity: ± 11%
2. Tolerance of Forward Voltage: ± 0.05V



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Bin Range of Luminous Intensity

| Bin Code | Min. | Max. | Unit | Condition |
|----------|------|------|------|----------------------|
| 26 | 1400 | 1450 | mcd | I _F =20mA |
| 27 | 1450 | 1500 | | |
| 28 | 1500 | 1550 | | |
| 29 | 1550 | 1600 | | |
| 30 | 1600 | 1650 | | |
| 31 | 1650 | 1700 | | |
| 32 | 1700 | 1750 | | |
| 33 | 1750 | 1800 | | |
| 34 | 1800 | 1850 | | |
| 35 | 1850 | 1900 | | |
| 36 | 1900 | 1950 | | |
| 37 | 1950 | 2000 | | |
| 38 | 2000 | 2050 | | |
| 39 | 2050 | 2100 | | |
| 40 | 2100 | 2150 | | |
| 41 | 2150 | 2200 | | |

Note: Tolerance of Luminous Intensity: ±11%



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Bin Range of Forward Voltage

| Group | | | | | | | | Bin Code | Min. | Max. | Unit | Condition |
|-------|---|-----|------|------|---|---|---|----------|------|------|------|----------------------|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 6-1 | 2.95 | 3.05 | V | I _F =20mA |
| | | | | | | | | 6-2 | 3.05 | 3.15 | | |
| | | 7-1 | 3.15 | 3.25 | | | | | | | | |
| | 8 | 7-2 | 3.25 | 3.35 | | | | | | | | |
| | | 8-1 | 3.35 | 3.45 | | | | | | | | |
| | | 8-2 | 3.45 | 3.55 | | | | | | | | |

| Group | Bin Code | Min. | Max. | Unit | Condition |
|-------|----------|------|------|------|----------------------|
| 9 | 6-11 | 3.00 | 3.05 | V | I _F =20mA |
| | 6-2 | 3.05 | 3.15 | | |
| | 7-1 | 3.15 | 3.25 | | |
| | 7-2 | 3.25 | 3.35 | | |
| | 8-1 | 3.35 | 3.45 | | |
| | 8-11 | 3.45 | 3.50 | | |

| Group | | | | Bin Code | Min. | Max. | Unit | Condition |
|-------|-------|------|------|----------|------|------|------|----------------------|
| B | C | E | F | 5-2-3 | 2.90 | 3.00 | V | I _F =20mA |
| | | | | 6-1-3 | 3.00 | 3.10 | | |
| | | | | 6-2-3 | 3.10 | 3.20 | | |
| | 7-1-3 | 3.20 | 3.30 | | | | | |
| | 7-2-3 | 3.30 | 3.40 | | | | | |
| | 8-1-3 | 3.40 | 3.50 | | | | | |

Note: Tolerance of Forward Voltage: ± 0.05V

**Technical Data Sheet****Side View LEDs (Height 1.4mm)****50-215UMC/XXXXXXXX/TR8****Bin Range of Chromaticity Coordinates Block (I_F=20mA)**

| Group | Range | I _v Rank* | Group | Range | I _v Rank* |
|-------|---------------------|----------------------|-------|------------------------|----------------------|
| 01 | B5-1,B5-2,B5-3,B5-4 | 41 | 26 | A0-1, A0-3, A0-4 | 39 |
| 02 | B5-1~B5-4,A0-2,A0-4 | 41 | 27 | A0-1, A0-2, A0-3 | 39 |
| 07 | B5-1,B5-3,A0-4 | 40 | 28 | A0-2, A0-3, A0-4 | 39 |
| 08 | A0-2,A0-3,A0-4 | 39 | 29 | A0-2, B5-1, B5-3 | 40 |
| 09 | A0-1,A0-3,A0+4 | 38 | 30 | A0-2, A0-4, B5-3 | 40 |
| 10 | A0+1, A0+2, A0-1 | 38 | 31 | B5-1, A0-2, A0-4 | 40 |
| 11 | A0+2, A0-1, A0-2 | 39 | 32 | B5-1, B5-3, A0-4 | 40 |
| 12 | A0-1, A0-2, B5-1 | 40 | 33 | B5-1, B5-2, B5-4 | 41 |
| 13 | A0-2, B5-1, B5-2 | 41 | 34 | B5-1, B5-3, B5-4 | 41 |
| 14 | A0+3, A0+4, A0-3 | 38 | 35 | B5-1, B5-2, B5-3 | 41 |
| 15 | A0+4, A0-3, A0-4 | 39 | 36 | B5-2, B5-3, B5-4 | 41 |
| 16 | A0-3, A0-4, B5-3 | 40 | 37 | B5-1, B5-2 | 41 |
| 17 | A0-4, B5-3, B5-4 | 41 | 38 | A0-1, A0-3 | 38 |
| 18 | A0+1, A0+2, A0+4 | 37 | 39 | A0-2, A0-4, B5-1, B5-3 | 40 |
| 19 | A0+1, A0+3, A0+4 | 37 | 40 | A0-3,A0-4 | 39 |
| 20 | A0+1, A0+2, A0+3 | 37 | 41 | A0-4, B5-1, B5-3, B5-4 | 41 |
| 21 | A0+2, A0-1, A0-3 | 38 | 42 | A0-4, B5-3 | 40 |
| 22 | A0+2, A0+4, A0-3 | 38 | 43 | B5-2,B5-4 | 41 |
| 23 | A0-1, A0+2, A0+4 | 38 | 44 | A0-1, A0-2, A-4, B5-3 | 40 |
| 24 | A0-1, A0-3, A0+4 | 38 | 45 | B5-1, B5-3 | 40 |
| 25 | A0-1, A0-2, A0-4 | 39 | 46 | A0+1, A0+2 | 37 |

**Technical Data Sheet****Side View LEDs (Height 1.4mm)****50-215UMC/XXXXXXXX/TR8****Bin Range of Chromaticity Coordinates Block (I_F=20mA)**

| Group | Range | I _v Rank* | Group | Range | I _v Rank* |
|-------|---------------------------------|----------------------|-------|---|----------------------|
| 47 | B6-1, B6-2, B6-3, B6-4 | 42 | 65 | A0-2, A0-3, A0-4, B5-3 | 40 |
| 48 | B6-2, B6-4 | 42 | 66 | A0-3-1~A0-3-4, A0-4-1~A0-4-4 | 39 |
| 49 | A0-2, B5-1, B5-3, B5-4 | 41 | 67 | A0+2, A0-1, A0-3, A0-4 | 39 |
| 50 | A0-1~A0-4, B5-1~B5-4 | 41 | 68 | A0+4-R, A0-3, A0-4-L | 39 |
| 51 | A0-1, A0-3, A0-4-1, A0-4-3 | 39 | 69 | B5-1, 2, 3, 4 subdivision | 41 |
| 52 | A0+3, A0+4 | 37 | 70 | A0+4-2, A0+4-4, A0-3 subdivision, A0-4-1, A0-4-3 | 39 |
| 53 | B6-1, B6-2, B6-3 | 42 | 71 | A0-3 non-division, A0-4 subdivision | 39 |
| 54 | B6-1, B6-3 | 42 | 72 | A0+1~+4, A0-1~-4, B5-1~-4, B6-1~-4 | 42 |
| 55 | B5-2, B5-4, B6-1, B6-3 | 42 | 73 | A0-4, B5-1, B5-3 subdivision | 40 |
| 56 | B5-2, B6-1 | 42 | 74 | A0-4 | 39 |
| 57 | A0-2, B5-1 | 40 | 75 | B5-2 | 41 |
| 58 | A0-1, A0-2 | 39 | 76 | A0-1~A0-4; B5-1~B5-4 | 41 |
| 59 | A0-1, A0-2, A0-3, A0-4, B5-1 | 40 | 77 | B5-3, B5-4 subdivision | 41 |
| 60 | A0+2, A0+4, A0-1, A0-3 | 38 | 78 | A0-3, A0+4 | 38 |
| 61 | B5-2-1~B5-2-4, 6-1-1~B6-1-4 | 42 | 79 | B5-1, B5-2, B5-3, B5-4, B6-3 subdivision | 42 |
| 62 | B5-3, B5-4 | 41 | 80 | A0-3, A0-4, B5-3 subdivision | 40 |
| 63 | A0-1~A0-4, B5-1, B5-3 | 40 | 81 | A0-3, A0-4, B5-3 divide into 8 parts (each) | 40 |
| 64 | A0-2, A0-4 | 39 | 82 | A0-1~A0-4, A0+2, A0+4 | 39 |

**Technical Data Sheet****Side View LEDs (Height 1.4mm)****50-215UMC/XXXXXXXX/TR8****Bin Range of Chromaticity Coordinates Block (I_F=20mA)**

| Group | Range | I _v Rank* | Group | Range | I _v Rank* |
|-------|---|----------------------|-------|---------------------|----------------------|
| 83 | B5-4, B6-3 | 42 | C | A0-1,A0-2,A0-3,A0-4 | 39 |
| 84 | B6-1, B6-2 | 42 | | | |
| 85 | A0-4, B5-2, B5-3, B5-4 | 41 | | | |
| 86 | B5 & B6 subdivision | 42 | | | |
| 87 | B5-3 | 40 | | | |
| 88 | B5-2-3/ B5-2-4/ B5-4 subdivision/ B6-1-2/ B6-1-3/ B6-1-4/ B6-3 subdivision/ B6-4-1 | 42 | | | |
| 89 | A0-4, B5-3 subdivision | 40 | | | |
| 90 | A0-4-R, B5-3 subdivision | 40 | | | |
| 91 | A0-3-2, A0-3-4, A0-4 subdivision, B5-3-1,B5-3-3 | 40 | | | |
| 92 | B5-2 , B6-1-1, B6-4-1, B5-3-2, B6-1-3, B6-4-3, B6-1-4, B6-4-4, B5-4, B6-3 | 42 | | | |
| 93 | A0+4, A0-3 subdivision | 38 | | | |
| 94 | A0-4-R, B5-3, B5-4 subdivision | 41 | | | |
| 95 | B5-4, B6-3 subdivision | 42 | | | |
| 96 | A0-4, B5-3, B5-4 subdivision | 41 | | | |
| A | A0+1, A0+2, A0+3, A0+4 | 37 | | | |
| B | A0+4, A0-3, A0-4 | 39 | | | |

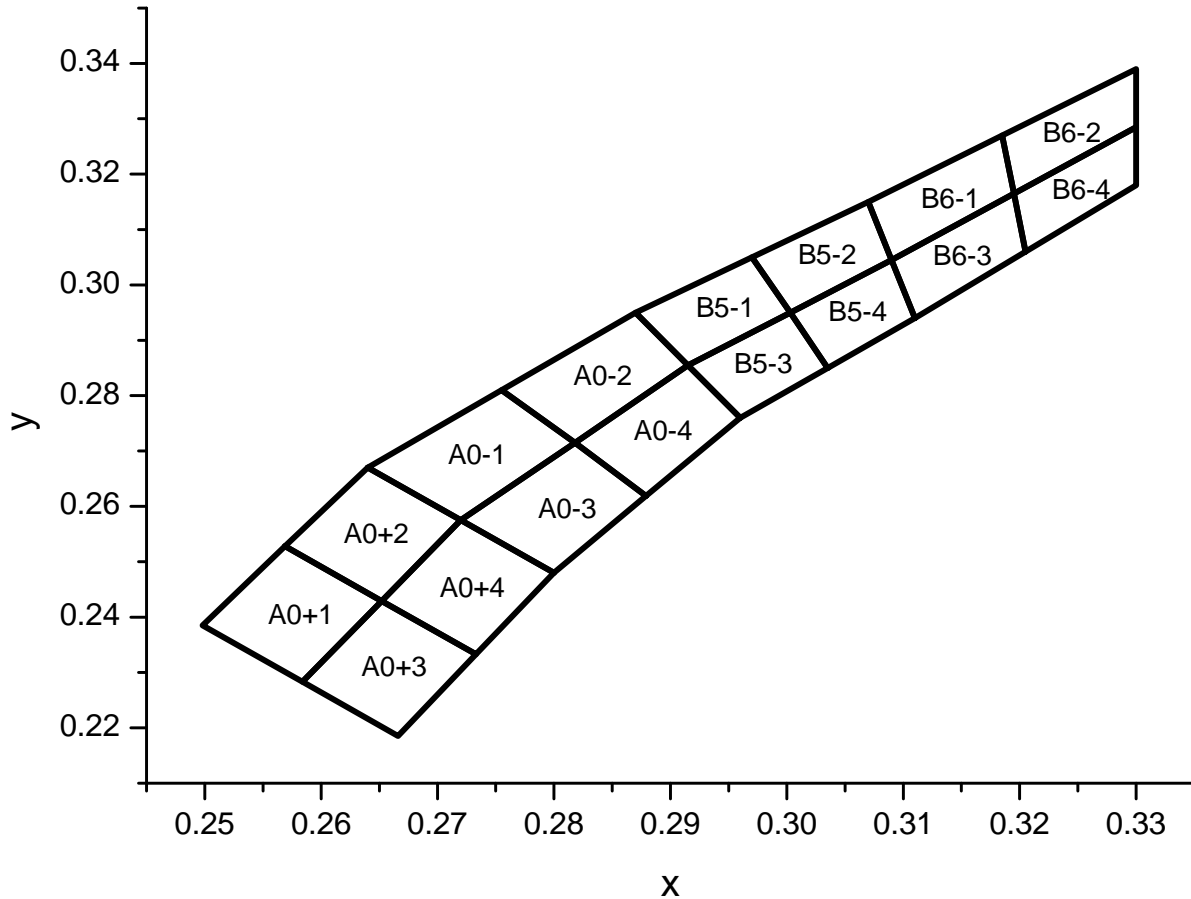
Note: The I_v rank is the highest one for relative bin range of chromaticity coordinates

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The C.I.E. 1931 Chromaticity Diagram





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Side View LEDs (Height 1.4mm)

50-215UMC/XXXXXXXX/TR8

Chromaticity Coordinates of Bin Code

| Bin Code | CIE_x | CIE_y | Bin Code | CIE_x | CIE_y |
|----------|--------|--------|----------|--------|--------|
| A0+1 | 0.2569 | 0.2528 | A0+3 | 0.2652 | 0.2429 |
| | 0.2498 | 0.2385 | | 0.2584 | 0.2283 |
| | 0.2584 | 0.2283 | | 0.2666 | 0.2185 |
| | 0.2652 | 0.2429 | | 0.2733 | 0.2333 |
| A0+2 | 0.2640 | 0.2670 | A0+4 | 0.2720 | 0.2575 |
| | 0.2569 | 0.2528 | | 0.2652 | 0.2429 |
| | 0.2652 | 0.2429 | | 0.2733 | 0.2333 |
| | 0.2720 | 0.2575 | | 0.2800 | 0.2480 |
| A0-1 | 0.2720 | 0.2575 | A0-3 | 0.2800 | 0.2480 |
| | 0.2640 | 0.2670 | | 0.2720 | 0.2575 |
| | 0.2755 | 0.2810 | | 0.2818 | 0.2715 |
| | 0.2818 | 0.2715 | | 0.2879 | 0.2619 |
| A0-2 | 0.2818 | 0.2715 | A0-4 | 0.2879 | 0.2619 |
| | 0.2755 | 0.2810 | | 0.2818 | 0.2715 |
| | 0.2870 | 0.2950 | | 0.2915 | 0.2855 |
| | 0.2915 | 0.2855 | | 0.2960 | 0.2760 |

Note: Tolerance of Chromaticity Coordinates: ±0.01



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Chromaticity Coordinates of Bin Code

| Bin Code | CIE_x | CIE_y | Bin Code | CIE_x | CIE_y |
|----------|--------|--------|----------|--------|--------|
| B5-1 | 0.2915 | 0.2855 | B5-3 | 0.2960 | 0.2760 |
| | 0.2870 | 0.2950 | | 0.2915 | 0.2855 |
| | 0.2970 | 0.3050 | | 0.3003 | 0.2950 |
| | 0.3003 | 0.2950 | | 0.3035 | 0.2850 |
| B5-2 | 0.3003 | 0.2950 | B5-4 | 0.3035 | 0.2850 |
| | 0.2970 | 0.3050 | | 0.3003 | 0.2950 |
| | 0.3070 | 0.3150 | | 0.3090 | 0.3045 |
| | 0.3090 | 0.3045 | | 0.3110 | 0.2940 |
| B6-1 | 0.3090 | 0.3045 | B6-3 | 0.3110 | 0.2940 |
| | 0.3070 | 0.3150 | | 0.3090 | 0.3045 |
| | 0.3185 | 0.3270 | | 0.3195 | 0.3165 |
| | 0.3195 | 0.3165 | | 0.3205 | 0.3060 |
| B6-2 | 0.3195 | 0.3165 | B6-4 | 0.3205 | 0.3060 |
| | 0.3185 | 0.3270 | | 0.3195 | 0.3165 |
| | 0.3300 | 0.3390 | | 0.3300 | 0.3285 |
| | 0.3300 | 0.3285 | | 0.3300 | 0.3180 |

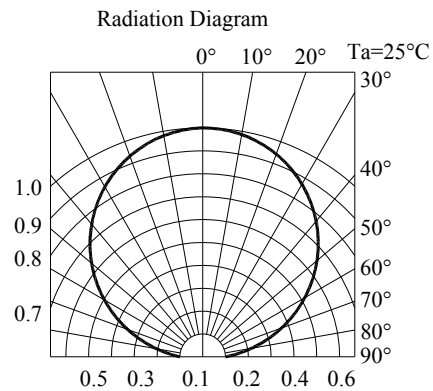
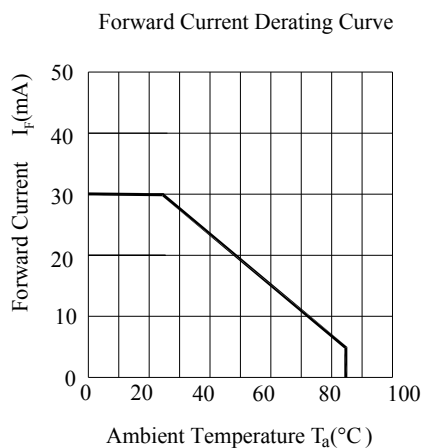
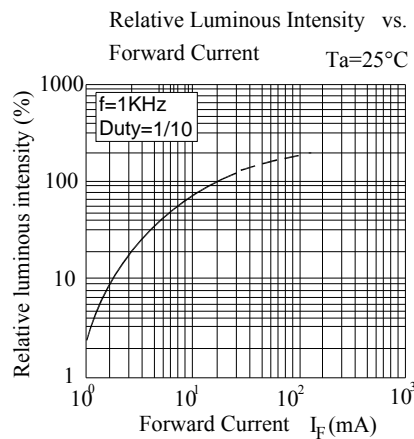
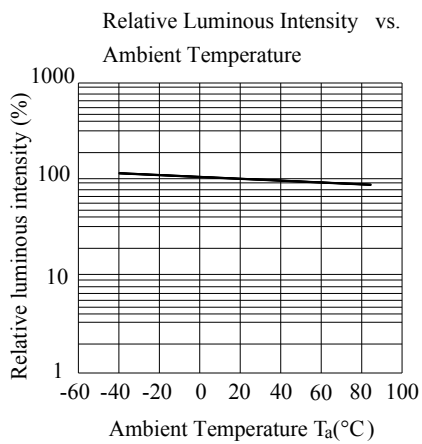
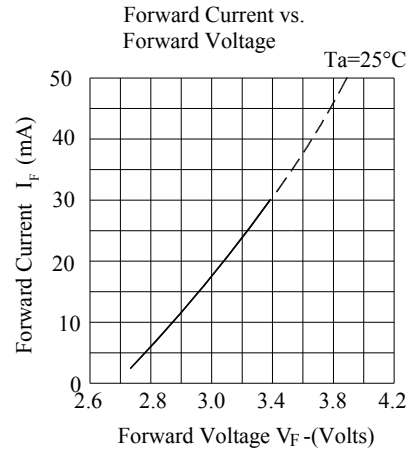
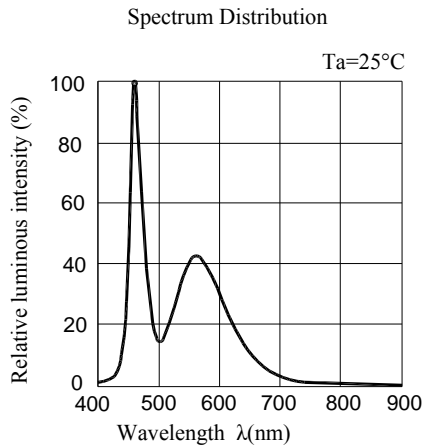
Note: Tolerance of Chromaticity Coordinates: ±0.01

Technical Data Sheet

Side View LEDs (Height 1.4mm)

50-215UMC/XXXXXXXX/TR8

Typical Electro-Optical Characteristics Curves





Technical Data Sheet

Side View LEDs (Height 1.4mm)

50-215UMC/XXXXXXXX/TR8

Label Explanation

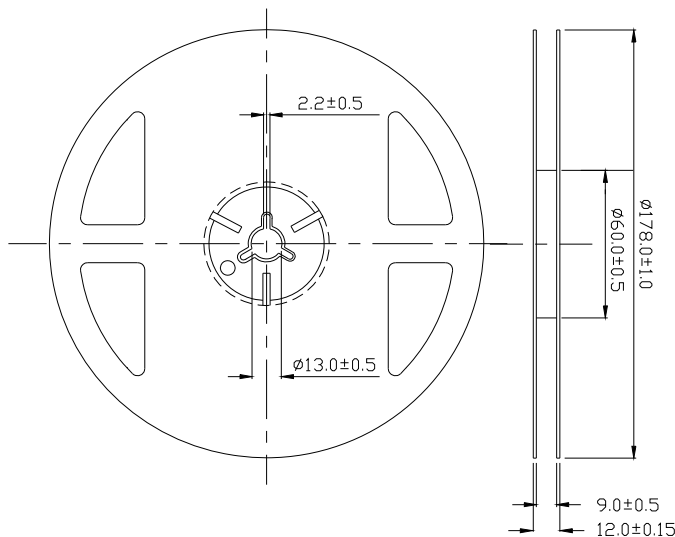
CAT: Luminous Intensity Rank

HUE: Chromaticity Coordinates

REF: Forward Voltage Rank



Reel Dimensions



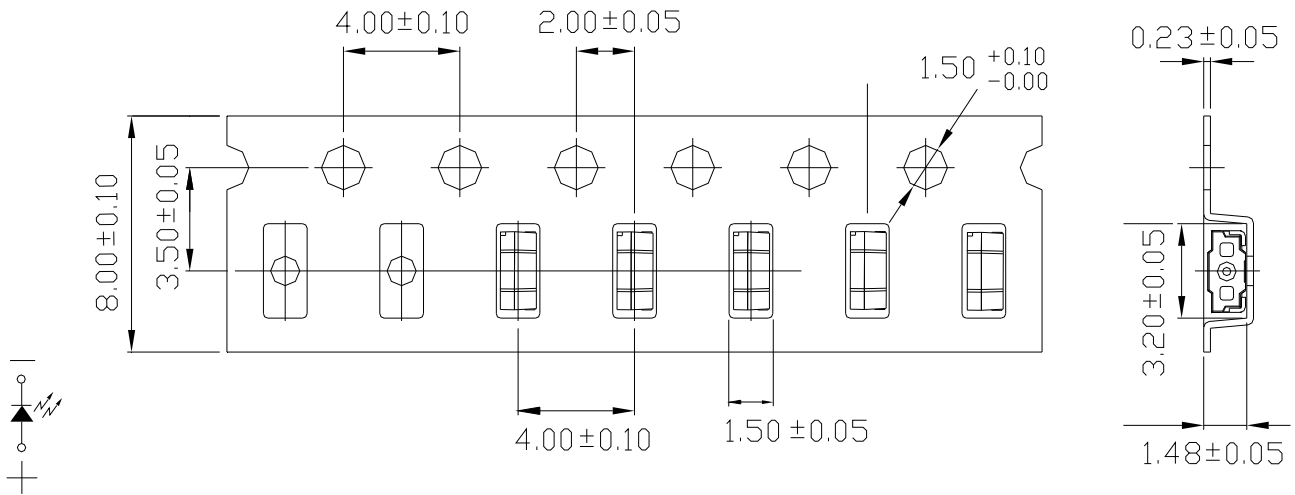
Note: The tolerances unless dimensions are ± 0.1mm.

Technical Data Sheet

Side View LEDs (Height 1.4mm)

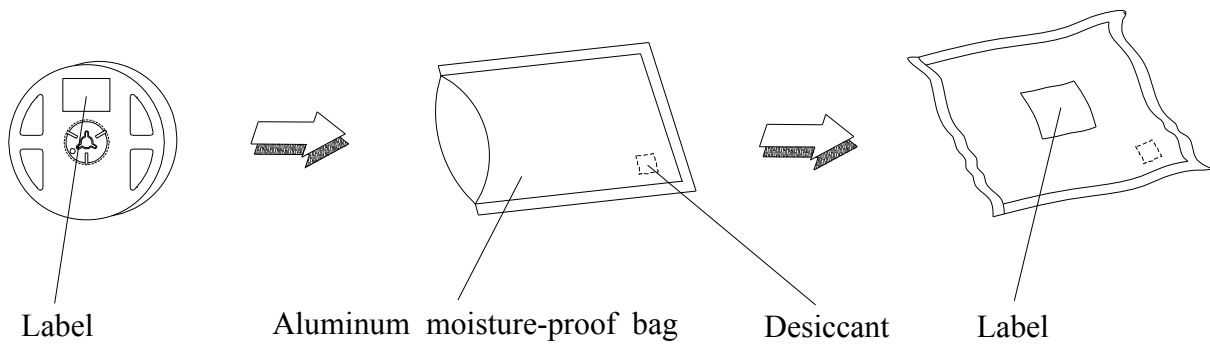
50-215UMC/XXXXXXXX/TR8

Carrier Tape Dimensions: Loaded Quantity 2000 pcs. Per Reel



Note: The tolerances unless dimensions are ± 0.1 mm.

Moisture Resistant Packaging



**Technical Data Sheet****Side View LEDs (Height 1.4mm)****50-215UMC/XXXXXXXX/TR8****Reliability Test Items and Conditions**

The reliability of products shall be satisfied with items listed below.

Confidence level: 90%

LTPD: 10%

| No. | Items | Test Condition | Test Hours/Cycles | Sample Qty' | Ac/Re |
|-----|----------------------------------|---|-------------------|-------------|-------|
| 1 | Reflow Soldering | Temp.: 260°C±5°C Min. 5 sec. | 6 Min. | 22 pcs. | 0/1 |
| 2 | Temperature Cycle | H: +100°C 15min. ↓ 5 min. L: -40°C 15min. | 300 cycles | 22 pcs. | 0/1 |
| 3 | Thermal Shock | H: +100°C 5min. ↓ 10 sec. L: -10°C 5min. | 300 cycles | 22 pcs. | 0/1 |
| 4 | High Temperature Storage | Temp.: 100°C±5°C | 1000 hrs. | 22 pcs. | 0/1 |
| 5 | Low Temperature Storage | Temp.: -40°C±5°C | 1000 hrs. | 22 pcs. | 0/1 |
| 6 | DC Operating Life | I _F = 20 mA / 25°C | 1000 hrs. | 22 pcs. | 0/1 |
| 7 | High Temperature / High Humidity | 85°C±5°C / 85%RH | 1000 hrs. | 22 pcs. | 0/1 |

Technical Data Sheet**Side View LEDs (Height 1.4mm)**

50-215UMC/XXXXXXXX/TR8**Precautions for Use**

1. Over-current-proof

Customer must apply resistors for protection; otherwise slight voltage shift will cause big current change (Burn out will happen).

2. Storage

2.1 Don't open moisture proof bag before the products are ready to use.

2.2 Before opening the package: The LEDs should be kept at 30°C or less and 90%RH or less.

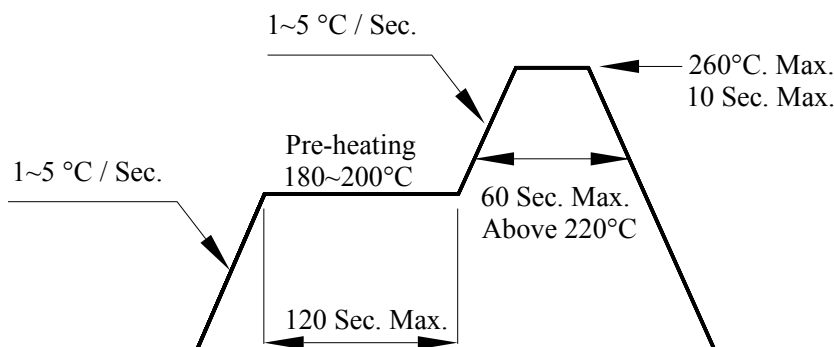
2.3 After opening the package: The LED's floor life is 1 year under 30°C or less and 60% RH or less. If unused LEDs remain, it should be stored in moisture proof packages.

2.4 If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions.

baking treatment: 60±5°C for 24 hours

3. Soldering Condition

3.1 Pb-free solder temperature profile:



3.2 Reflow soldering should not be done more than two times.

3.3 When soldering, do not put stress on the LEDs during heating.

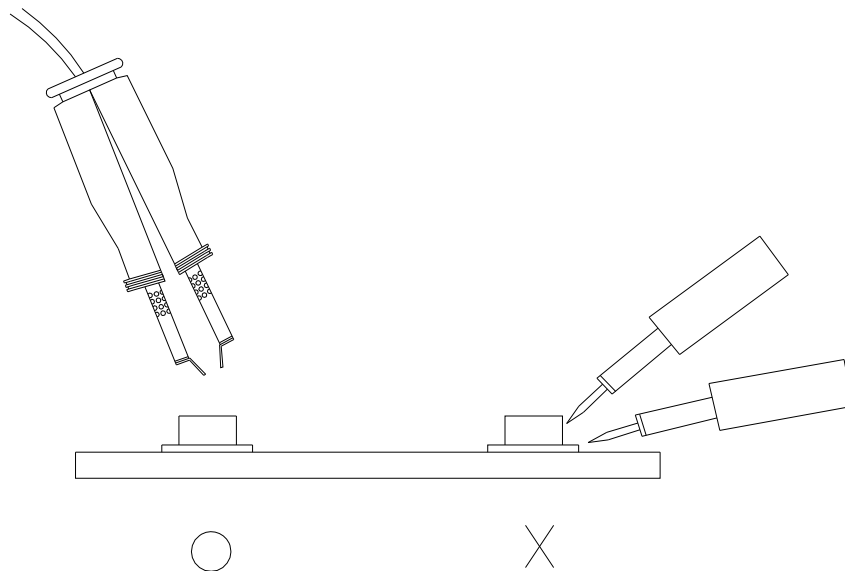
3.4 After soldering, do not warp the circuit board.

Technical Data Sheet**Side View LEDs (Height 1.4mm)****50-215UMC/XXXXXXXX/TR8****4. Soldering Iron**

Each terminal is to go to the tip of soldering iron temperature less than 350°C for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

5. Repairing

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.



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