

# CITILED®

世界トップレベルの品揃えとSMDの組み立てやすさで、あらゆる電子機器に展開できる、超小型チップLED。

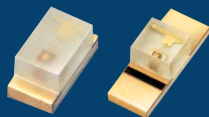
Featuring world-class product variations and ease of SMD assembly.  
Ultra-small Chip-LEDs for use in various electronic products.

情報通信機器の小型化・高性能化が進む中で、チップ型LEDへのニーズは急速に伸びています。この領域において当社のCITILED（登録商標）は、装着のオートメーション化が可能なSMD（表面実装）タイプとして、コストダウンに大きく貢献します。また、充実した品揃えやフレキシブルな納入方法によってお客様のニーズに的確にお応えし、生産量において世界トップシェアを実現しています。

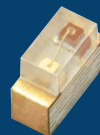
As information devices become ever more compact and sophisticated, the demand for chip-type LEDs has accelerated drastically. Citizen has this field covered as well, with its series of CITILED (Citizen trademark) products. These SMD type LEDs allow automated mounting, thereby reducing production costs. The flexible lineup contains products suitable for every need, making Citizen the leading manufacturer worldwide in this sector.



● 携帯電話のディスプレイやキーパッドに。  
For cellular phone displays and keypads.

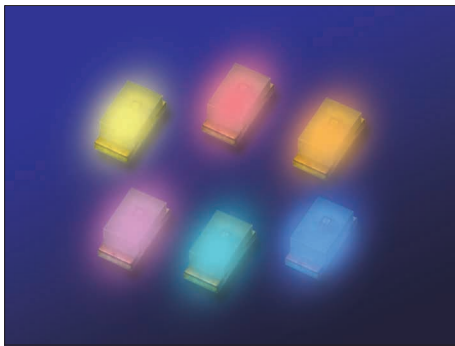


● ビデオカメラの操作パネルに。  
For video camera operation panels.



● 大型ディスプレイの表示用発光体に。  
For large display units.





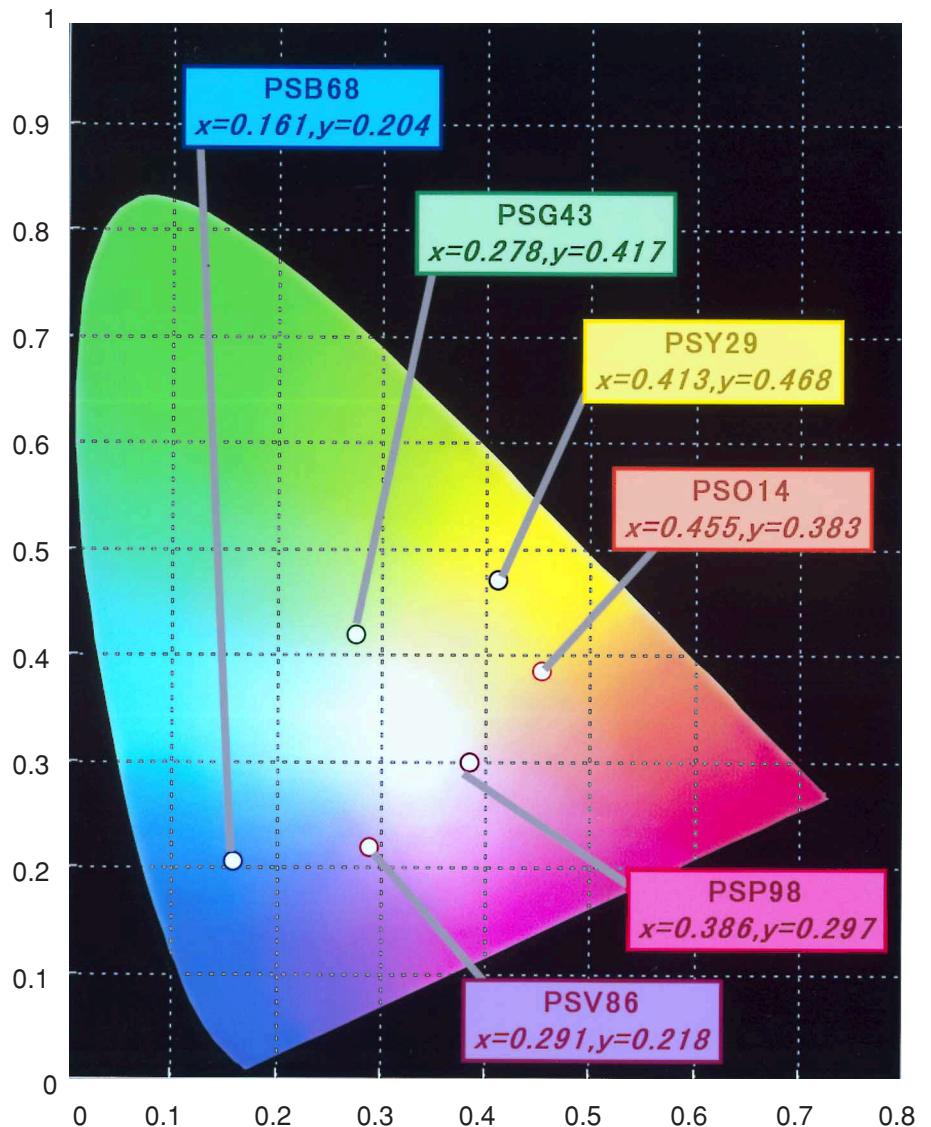
PASTELITE

■特徴

1. 世界初のパステル色発光を実現しました。
2. 低電流で高輝度発光が得られます。
3. 設計者の好みに合うよう、多彩な6色のバリエーションをそろえました。
4. 実装形態に合わせて選べる3種類のパッケージを用意しました。

■Features

1. PASTELITE is the world first pastel color chip LEDs introduced by a Citizen Electronics Co.,Ltd.
2. High brightness is achieved by low electric current.
3. Six-color variety is available to meet designers' taste.
4. Three kind of packages are available to suit your set designing.



■対応パッケージ/Available Package Nos.

| シリーズ/Series | タイプ/Type  | 外形寸法/Size(mm)             |
|-------------|---|---------------------------|
| CL-191      | 上面発光/Upward-firing type   | 1.6(L) x 0.8(W) x 0.6(H)  |
| CL-270      | 側面発光/Side-firing type   | 1.6(L) x 1.15(W) x 0.6(H) |
| CL-260      | 上面発光・裏面実装/Upward-firing type, but mountable from bottom side of PCB | 3.4(L) x 1.25(W) x 1.1(H) |

■電機的光学的特性/Electro-optical Characteristics

| 発光色/Lighting color       | カラーコード/Color code | IV(mcd) |     | V <sub>F</sub> (V) |     |
|--------------------------|-------------------|---------|-----|--------------------|-----|
|                          |                   | Typ     | Max | Typ                | Max |
| パステルピンク/Pastel pink      | PSP98             | 60      |     | 3.6                | 4.0 |
| パステルオレンジ/Pastel orange   | PSO14             | 65      |     | 3.6                | 4.0 |
| パステルイエロー/Pastel yellow   | PSY29             | 85      |     | 3.6                | 4.0 |
| パステルグリーン/Pastel green    | PSG43             | 55      |     | 3.6                | 4.0 |
| パステルブルー/Pastel blue      | PSB68             | 25      |     | 3.6                | 4.0 |
| パステルバイオレット/Pastel violet | PSV86             | 30      |     | 3.6                | 4.0 |

■ カラーコード / Code of Colors

PASTELITEのカラーコードは、3文字の英字と2桁の数字から成り立っており、2桁の数字はマンセル表色系の色相環に基づいています。

Color-codes in *PASTELITE P/N.s* consist of 3 alphabets and 2 numbers.  
The numbers in *PASTELITE P/N.s* come from Munsell system originally.

例) パステルピンク : **PSP 98**

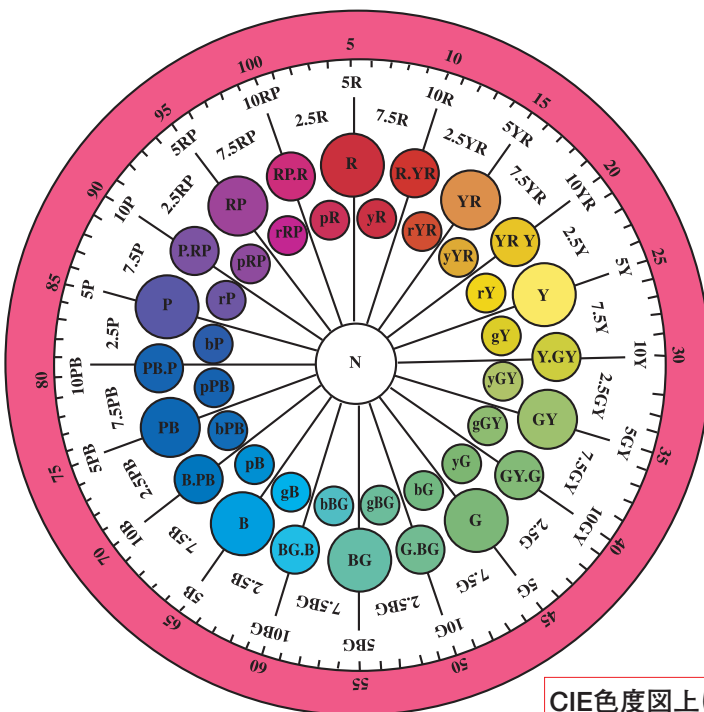
EXP) Pastel Pink

Pastel pink

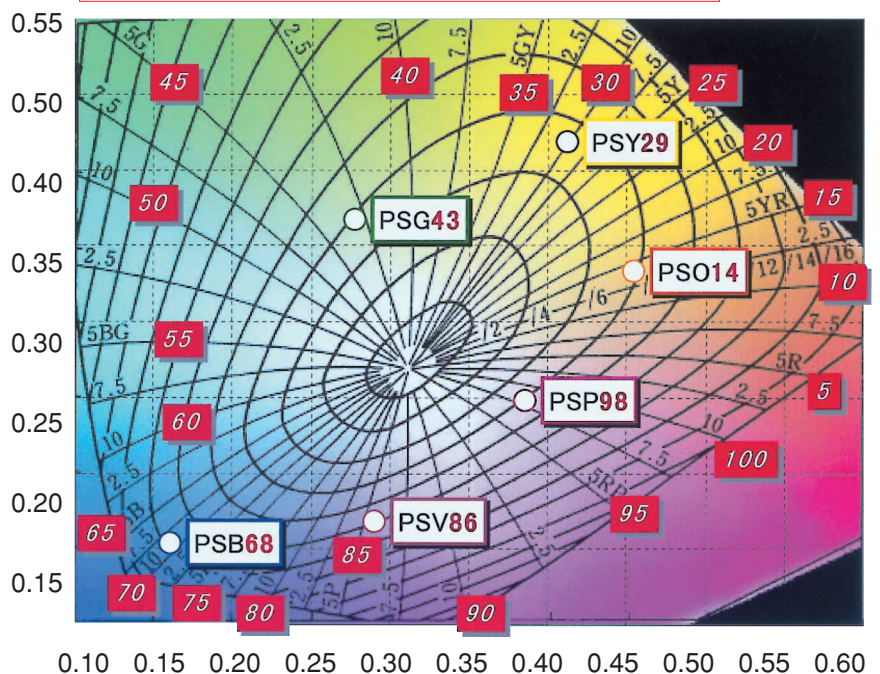
マンセル表色系の色相番号

/Coming from Munsell system

マンセル表色系の色相環 / Munsell system

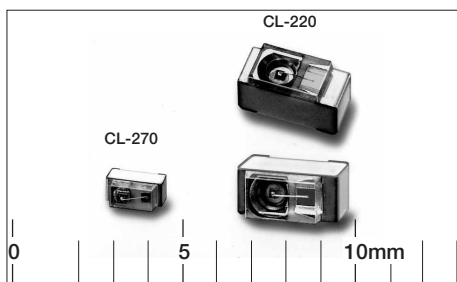
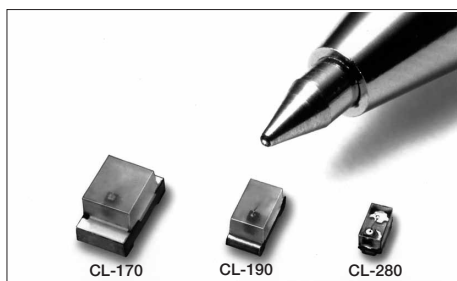


CIE色度図上におけるマンセル表色系  
CIE xy-standard colorimetric system + Munsell system



# 表面実装型小型チップLED概要

## Overview of surface mounting type miniature chip LED

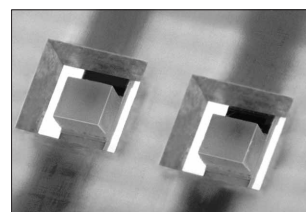


### ■特徴

1. 全機種SMD(表面実装デバイス)タイプのLEDランプです。
2. 寸法は標準型から極小型、超小型まで各種を取り揃えており、高密度実装が可能です。
3. 全機種に標準タイプ、高輝度タイプ、超高輝度タイプがあります。
4. 全てのCITILED製品は、チップマウンターによる自動マウントが可能で高い装着率が得られます。
5. 全てのCITILEDはリフローはんだが可能です。
6. バルクやテーピングの納入をはじめ、基板にアッセンブリしたユニットでの納入にもお応えします。

### ■Features

1. All are SMD(surface mount device) LED lamps.
2. Varieties range from the standard to very small and ultra-small sizes and high density mounting is available.
3. There are standard brightness type, super brightness type and ultra brightness type.
4. Automated chip machine mounting allows for efficient mounting.
5. Reflow soldering is available.
6. Shippable in bulk, on tape and mounted as an assembly.



プリント基板に実装された状態  
Parts mounted on P.C.board.

### ■部品コード/Code for Parts

CL - 150 R - C D - T

#### シリーズ/Series

150 : 単色発光/Mono-color    190 : 単色発光/Mono-color    196 : 単色発光/Mono-color    260 : 単色発光/Mono-color  
 155 : 2色発光/Two-color    191 : 単色発光/Mono-color    197 : 単色発光/Mono-color    270 : 単色発光/Mono-color  
 165 : 2色発光/Two-color    193 : 単色発光/Mono-color    200 : 単色発光/Mono-color    280 : 単色発光/Mono-color  
 170 : 単色発光/Mono-color    195 : 単色発光/Mono-color    220 : 単色発光/Mono-color    321 : 3色発光/Three-color

#### 発光色/Lighting color

##### 標準輝度/Standard brightness

R:赤/Red    D:橙/Orange    Y:黄/Yellow    LY:レモンイエロー/Lemon yellow    YG:黄緑/Yellow green    G:緑/Green  
 FG:新緑/Fresh green    PG:純緑/Pure green

##### 高輝度/Super brightness

SR:赤/Super brightness red    SD:橙/Super brightness Orange

##### 超高輝度/Ultra brightness

UR:赤/Ultra brightness red    HR:赤/High brightness red    TLY:黄/Top High brightness lemon yellow  
 TD:橙/Top High brightness orange    TR:赤/Top High brightness red    HB:青/High brightness blue  
 HG:緑/High brightness green    TD3:橙/Top High brightness orange    TR1:赤/Top High brightness red  
 SYG:黄緑/Super brightness yellow green    BG1:青緑/High brightness blue green    G1:緑/High brightness green  
 UB:青/Ultra brightness blue    B1:青/High brightness blue

#### 樹脂色/Color of resin

C : 着色(標準品)/Colored (standard)    X : 透明/Transparent





#### 散乱/Diffusion



D : 散乱剤入(標準品)/Diffused (standard)    無記入 : 散乱剤なし/Non-coded : Not diffused

#### 納入形態/Shipping mode

無記入 : バルク/Non-coded : Bulk packing    T : テーピング/T : Taping  
 CL-200,CL220の場合    TU : 上面テーピング    TS : 側面テーピング  
 /In case of CL-200,CL220    TU : Taping upward    TS : Taping sideways  
 CL-260の場合    TD : 下面テーピング/In case of CL-260    TD : Taping downward  
 CL-270の場合    TS : 側面テーピング/In case of CL-270    TS : Taping sideways





■CITILEDセレクションガイド/CITILED Selection Guide

| シリーズ<br>Series   | 外形寸法<br>Size(mm)                      | 輝度<br>Brightness            | 発光色<br>Lighting color          | ピーク発光波長<br>Peak wave length (nm) | 部品コード<br>Code for parts | ページ<br>Page |
|--|---------------------------------------|-----------------------------|--------------------------------|----------------------------------|-------------------------|-------------|
| CL-150<br>   | 3.2(L)<br>×<br>1.6(w)<br>×<br>1.1(H)  | 標準輝度<br>Standard brightness | 赤 Red                          | 700                              | CL-150R-CD              | 29          |
|  |                                       |                             | 橙 Orange                       | 605                              | CL-150D-CD              | 29          |
|  |                                       |                             | 黄 Yellow                       | 589                              | CL-150Y-CD              | 29          |
|  |                                       |                             | レモン<br>イエロー<br>Lemon<br>yellow | 584                              | CL-150LY-CD             | 29          |
|  |                                       |                             | 黄緑 Yellow green                | 570                              | CL-150YG-CD             | 29          |
|  |                                       |                             | 緑 Green                        | 567                              | CL-150G-CD              | 29          |
|  |                                       |                             | 新緑 Fresh green                 | 560                              | CL-150FG-CD             | 29          |
|  |                                       |                             | 純緑 Pure green                  | 557                              | CL-150PG-CD             | 29          |
|  |                                       | 高輝度<br>Super brightness     | 赤 Red                          | 650                              | CL-150SR-CD             | 29          |
|  |                                       |                             | 橙 Orange                       | 630                              | CL-150SD-CD             | 29          |
|  |                                       | 超高輝度<br>Ultra brightness    | 赤 Red                          | 660                              | CL-150UR-CD             | 29          |
|  |                                       | 超高輝度<br>High brightness     | 赤 Red                          | 660                              | CL-150HR-CD             | 29          |
| CL-155<br>   | 3.2(L)<br>×<br>2.7(w)<br>×<br>1.1(H)  | 標準輝度<br>Standard brightness | 黄 Yellow                       | 589                              | CL-155Y/PG-D            | 31          |
|  |                                       |                             | 純緑 Pure green                  | 557                              |                         |             |
|  |                                       | 標準輝度<br>Standard brightness | 橙 Orange                       | 605                              | CL-155D/PG-D            | 31          |
|  |                                       |                             | 純緑 Pure green                  | 557                              |                         |             |
| CL-165<br> | 1.5(L)<br>×<br>1.2(w)<br>×<br>0.7(H)  | 標準輝度<br>Standard brightness | 黄緑 Yellow green                | 570                              | CL-165HR/YG-D           | 30          |
|  |                                       |                             | 赤 Red                          | 660                              |                         |             |
| CL-170<br> | 2.0(L)<br>×<br>1.25(w)<br>×<br>1.1(H) | 標準輝度<br>Standard brightness | 赤 Red                          | 700                              | CL-170R-CD              | 28          |
|  |                                       |                             | 橙 Orange                       | 605                              | CL-170D-CD              | 28          |
|  |                                       |                             | 黄 Yellow                       | 589                              | CL-170Y-CD              | 28          |
|  |                                       |                             | レモン<br>イエロー<br>Lemon<br>Yellow | 584                              | CL-170LY-CD             | 28          |
|  |                                       |                             | 黄緑 Yellow green                | 570                              | CL-170YG-CD             | 28          |
|  |                                       |                             | 緑 Green                        | 567                              | CL-170G-CD              | 28          |
|  |                                       |                             | 新緑 Fresh green                 | 560                              | CL-170FG-CD             | 28          |
|  |                                       |                             | 純緑 Pure green                  | 557                              | CL-170PG-CD             | 28          |
|  |                                       | 高輝度<br>Super brightness     | 赤 Red                          | 650                              | CL-170SR-CD             | 28          |
|  |                                       |                             | 橙 Orange                       | 630                              | CL-170SD-CD             | 28          |
|  |                                       | 超高輝度<br>Ultra brightness    | 赤 Red                          | 660                              | CL-170UR-CD             | 28          |
|  |                                       | 超高輝度<br>High brightness     | 赤 Red                          | 660                              | CL-170HR-CD             | 28          |





| シリーズ<br>Series  | 外形寸法<br>Size(mm)                     | 輝度<br>Brightness            | 発光色<br>Lighting color          | ピーク発光波長<br>Peak wave length(nm) | 部品コード<br>Code for parts | ページ<br>Page |
|---|--------------------------------------|-----------------------------|--------------------------------|---------------------------------|-------------------------|-------------|
| CL-190<br>   | 1.6(L)<br>×<br>0.8(W)<br>×<br>0.8(H) | 標準輝度<br>Standard brightness | 赤 Red                          | 700                             | CL-190R-CD              | 22          |
|   |                                      |                             | 橙 Orange                       | 605                             | CL-190D-CD              | 22          |
|   |                                      |                             | 黄 Yellow                       | 589                             | CL-190Y-CD              | 22          |
|   |                                      |                             | レモン<br>イエロー<br>Lemon<br>yellow | 584                             | CL-190LY-CD             | 22          |
|   |                                      |                             | 黄緑 Yellow green                | 570                             | CL-190YG-CD             | 22          |
|   |                                      |                             | 緑 Green                        | 567                             | CL-190G-CD              | 22          |
|   |                                      |                             | 新緑 Fresh green                 | 560                             | CL-190FG-CD             | 22          |
|   |                                      |                             | 純緑 Pure green                  | 557                             | CL-190PG-CD             | 22          |
|   |                                      | 高輝度<br>Super brightness     | 赤 Red                          | 650                             | CL-190SR-CD             | 22          |
|   |                                      |                             | 橙 Orange                       | 630                             | CL-190SD-CD             | 22          |
|   |                                      | 超高輝度<br>Ultra brightness    | 赤 Red                          | 660                             | CL-190UR-CD             | 22          |
|   |                                      | 超高輝度<br>High brightness     | 赤 Red                          | 660                             | CL-190HR-CD             | 22          |
| CL-191<br> | 1.6(L)<br>×<br>0.8(W)<br>×<br>0.6(H) | 標準輝度<br>Standard brightness | 赤 Red                          | 700                             | CL-191R-CD              | 21          |
|   |                                      |                             | 橙 Orange                       | 605                             | CL-191D-CD              | 21          |
|   |                                      |                             | 黄 Yellow                       | 589                             | CL-191Y-CD              | 21          |
|   |                                      |                             | レモン<br>イエロー<br>Lemon<br>yellow | 584                             | CL-191LY-CD             | 21          |
|   |                                      |                             | 黄緑 Yellow green                | 570                             | CL-191YG-CD             | 21          |
|   |                                      |                             | 緑 Green                        | 567                             | CL-191G-CD              | 21          |
|   |                                      |                             | 新緑 Fresh green                 | 560                             | CL-191FG-CD             | 21          |
|   |                                      |                             | 純緑 Pure green                  | 557                             | CL-191PG-CD             | 21          |
|   |                                      | 高輝度<br>Super brightness     | 赤 Red                          | 650                             | CL-191SR-CD             | 21          |
|   |                                      |                             | 橙 Orange                       | 630                             | CL-191SD-CD             | 21          |
|   |                                      | 超高輝度<br>Ultra brightness    | 赤 Red                          | 660                             | CL-191UR-CD             | 21          |
|   |                                      | 超高輝度<br>High brightness     | 赤 Red                          | 660                             | CL-191HR-CD             | 21          |
|   |                                      |                             | 赤 Red                          | 624                             | CL-191TR1-CD            | 15          |
|   |                                      |                             | 橙 Orange                       | 612                             | CL-191TD-CD             | 15          |
|   |                                      |                             | 橙 Orange                       | 612                             | CL-191TD3-CD            | 15          |
|   |                                      |                             | レモン<br>イエロー<br>Lemon<br>yellow | 590                             | CL-191TLY-CD            | 14          |
|   |                                      |                             | 黄緑 Yellow green                | 574                             | CL-191SYG-CD            | 14          |
|   |                                      |                             | 緑 Green                        | 523                             | CL-191G1-C              | 13          |
|   |                                      |                             | 緑 Green                        | 515                             | CL-191HG-C              | 13          |
|   |                                      |                             | 青緑 Blue green                  | 502                             | CL-191BG1-C             | 13          |
| 青 Blue  | 428                                  |                             | CL-191UB                       | 12                              |                         |             |
| 青 Blue  | 468                                  |                             | CL-191B1                       | 12                              |                         |             |
| 青 Blue  | 470                                  |                             | CL-191HB                       | 12                              |                         |             |

※ パッケージの色については未量産の機種もございますので、ご使用の際にはご確認ください。

※ Some package colors are not mass produced, so please check at the time of use.

| シリーズ<br>Series   | 外形寸法<br>Size(mm)                     | 輝度<br>Brightness   | 発光色<br>Lighting color                | ピーク発光波長<br>Peak wave length(nm) | 部品コード<br>Code for parts | ページ<br>Page |
|--|--------------------------------------|--|--------------------------------------|---------------------------------|-------------------------|-------------|
| CL-193<br>   | 1.6(L)<br>x<br>0.8(W)<br>x<br>0.4(H) | 標準輝度<br>Standard brightness  | 黄緑 Yellow green                      | 570                             | CL-193YG-CD             | 20          |
| CL-195<br>   | 1.6(L)<br>x<br>0.8(W)<br>x<br>0.8(H) | 標準輝度<br>Standard brightness  | 赤 Red                                | 700                             | CL-195R-CD              | 19          |
|  |                                      |  | 橙 Orange                             | 605                             | CL-195D-CD              | 19          |
|  |                                      |  | 黄 Yellow                             | 589                             | CL-195Y-CD              | 19          |
|  |                                      |  | レモン<br>イエロー<br>Lemon<br>yellow       | 584                             | CL-195LY-CD             | 19          |
|  |                                      |  | 黄緑 Yellow green                      | 570                             | CL-195YG-CD             | 19          |
|  |                                      |  | 緑 Green                              | 567                             | CL-195G-CD              | 19          |
|  |                                      |  | 新緑 Fresh green                       | 560                             | CL-195FG-CD             | 19          |
|  |                                      |  | 純緑 Pure green                        | 557                             | CL-195PG-CD             | 19          |
|  |                                      | 高輝度<br>Super brightness  | 赤 Red                                | 650                             | CL-195SR-CD             | 19          |
|  |                                      |  | 橙 Orange                             | 630                             | CL-195SD-CD             | 19          |
|  |                                      |  | 超高輝度<br>Ultra brightness             | 赤 Red                           | 660                     | CL-195UR-CD |
| 超高輝度<br>High brightness  | 赤 Red                                | 660  | CL-195HR-CD                          | 19                              |                         |             |
| CL-196<br> | 1.6(L)<br>x<br>0.8(w)<br>x<br>0.6(H) | 標準輝度<br>Standard brightness  | 赤 Red                                | 700                             | CL-196R-CD              | 18          |
|  |                                      |  | 橙 Orange                             | 605                             | CL-196D-CD              | 18          |
|  |                                      |  | 黄 Yellow                             | 589                             | CL-196Y-CD              | 18          |
|  |                                      |  | レモン<br>イエロー<br>Lemon<br>yellow       | 584                             | CL-196LY-CD             | 18          |
|  |                                      |  | 黄緑 Yellow green                      | 570                             | CL-196YG-CD             | 18          |
|  |                                      |  | 緑 Green                              | 567                             | CL-196G-CD              | 18          |
|  |                                      |  | 新緑 Fresh green                       | 560                             | CL-196FG-CD             | 18          |
|  |                                      |  | 純緑 Pure green                        | 557                             | CL-196PG-CD             | 18          |
|  |                                      | 高輝度<br>Super brightness  | 赤 Red                                | 650                             | CL-196SR-CD             | 18          |
|  |                                      |  | 橙 Orange                             | 630                             | CL-196SD-CD             | 18          |
|  |                                      | 超高輝度<br>Ultra brightness   | 赤 Red                                | 660                             | CL-196UR-CD             | 18          |
|  |                                      | 超高輝度<br>High brightness  | 赤 Red                                | 660                             | CL-196HR-CD             | 18          |
|  |                                      | CL-197<br> | 1.6(L)<br>x<br>0.8(w)<br>x<br>0.4(H) | 標準輝度<br>Standard brightness     | 黄緑 Yellow green         | 570         |

※ パッケージの色については未量産の機種もございますので、ご使用の際にはご確認ください。  
 ※ Some package colors are not mass produced, so please check at the time of use.

| シリーズ<br>Series  | 外形寸法<br>Size(mm)                     | 輝度<br>Brightness               | 発光色<br>Lighting color  | ピーク発光波長<br>Peak wave length(nm)      | 部品コード<br>Code for parts     | ページ<br>Page |            |           |    |
|---|--------------------------------------|--------------------------------|--|--------------------------------------|-----------------------------|-------------|------------|-----------|----|
| CL-200<br><br> | 3.2(L)<br>x<br>2.4(W)<br>x<br>2.4(H) | 標準輝度<br>Standard brightness    | 赤 Red  | 700                                  | CL-200R-C                   | 27          |            |           |    |
|   |                                      |                                | 橙 Orange   | 605                                  | CL-200D-C                   | 27          |            |           |    |
|   |                                      |                                | 黄 Yellow   | 589                                  | CL-200Y-C                   | 27          |            |           |    |
|   |                                      |                                | レモン<br>イエロー<br>Lemon<br>yellow   | 584                                  | CL-200LY-C                  | 27          |            |           |    |
|   |                                      |                                | 黄緑 Yellow green  | 570                                  | CL-200YG-C                  | 27          |            |           |    |
|   |                                      |                                | 緑 Green  | 567                                  | CL-200G-C                   | 27          |            |           |    |
|   |                                      |                                | 新緑 Fresh green   | 560                                  | CL-200FG-C                  | 27          |            |           |    |
|   |                                      |                                | 純緑 Pure green  | 557                                  | CL-200PG-C                  | 27          |            |           |    |
|   |                                      | 高輝度<br>Super brightness        | 赤 Red  | 650                                  | CL-200SR-C                  | 27          |            |           |    |
|   |                                      |                                | 橙 Orange   | 630                                  | CL-200SD-C                  | 27          |            |           |    |
|   |                                      | 超高輝度<br>Ultra brightness       | 赤 Red  | 660                                  | CL-200UR-C                  | 27          |            |           |    |
|   |                                      | 超高輝度<br>High brightness        | 赤 Red  | 660                                  | CL-200HR-C                  | 27          |            |           |    |
|   |                                      |                                | 赤 Red  | 624                                  | CL-200TR1-C                 | 15          |            |           |    |
|   |                                      |                                | 橙 Orange   | 612                                  | CL-200TD-C                  | 15          |            |           |    |
|   |                                      |                                | 橙 Orange   | 612                                  | CL-200TD3-C                 | 15          |            |           |    |
|   |                                      |                                | レモン<br>イエロー<br>Lemon<br>yellow   | 590                                  | CL-200TLY-C                 | 14          |            |           |    |
|   |                                      |                                | 黄緑 Yellow green  | 574                                  | CL-200SYG-C                 | 14          |            |           |    |
|   |                                      |                                | 緑 Green  | 523                                  | CL-200G1-C                  | 13          |            |           |    |
|   |                                      |                                | 緑 Green  | 515                                  | CL-200HG-C                  | 13          |            |           |    |
|   |                                      |                                | 青緑 Blue Green  | 502                                  | CL-200BG1-C                 | 13          |            |           |    |
|   |                                      |                                | 青 Blue   | 428                                  | CL-200UB                    | 12          |            |           |    |
|   |                                      |                                | 青 Blue   | 468                                  | CL-200B1                    | 12          |            |           |    |
|   |                                      |                                | 青 Blue   | 470                                  | CL-200HB                    | 12          |            |           |    |
|   |                                      |                                | CL-220<br><br> | 2.7(L)<br>x<br>1.2(W)<br>x<br>1.3(H) | 標準輝度<br>Standard brightness | 赤 Red       | 700        | CL-220R-C | 26 |
|   |                                      |                                |  |                                      |                             | 橙 Orange    | 605        | CL-220D-C | 26 |
|   |                                      | 黄 Yellow                       |  |                                      |                             | 589         | CL-220Y-C  | 26        |    |
|   |                                      | レモン<br>イエロー<br>Lemon<br>yellow |  |                                      |                             | 584         | CL-220LY-C | 26        |    |
| 黄緑 Yellow green   | 570                                  | CL-220YG-C                     |  |                                      |                             | 26          |            |           |    |
| 緑 Green   | 567                                  | CL-220G-C                      |  |                                      |                             | 26          |            |           |    |
| 新緑 Fresh green  | 560                                  | CL-220FG-C                     |  |                                      |                             | 26          |            |           |    |
| 純緑 Pure green   | 557                                  | CL-220PG-C                     |  |                                      |                             | 26          |            |           |    |
| 高輝度<br>Super brightness   | 赤 Red                                | 650                            |  |                                      | CL-220SR-C                  | 26          |            |           |    |
|   | 橙 Orange                             | 630                            |  |                                      | CL-220SD-C                  | 26          |            |           |    |
| 超高輝度<br>Ultra brightness  | 赤 Red                                | 660                            |  |                                      | CL-220UR-C                  | 26          |            |           |    |

CL-220超高輝度は次ページの表へ続く  
 CL-220 ultra brightness information continues on the table of the next page.

| シリーズ<br>Series | 外形寸法<br>Size(mm)                      | 輝度<br>Brightness            | 発光色<br>Lighting color  | ピーク発光波長<br>Peak wave length(nm) | 部品コード<br>Code for parts | ページ<br>Page |
|----------------|---------------------------------------|-----------------------------|------------------------|---------------------------------|-------------------------|-------------|
| CL-220         | 2.7(L)<br>×<br>1.2(W)<br>×<br>1.3(H)  | 超高輝度<br>High brightness     | 赤 Red                  | 660                             | CL-220HR-C              | 26          |
|                |                                       |                             | 赤 Red                  | 624                             | CL-220TR1-C             | 15          |
|                |                                       |                             | 橙 Orange               | 612                             | CL-220TD-C              | 15          |
|                |                                       |                             | 橙 Orange               | 612                             | CL-220TD3-C             | 15          |
|                |                                       |                             | レモン<br>イエロー-<br>Yellow | 590                             | CL-220TLY-C             | 14          |
|                |                                       |                             | 黄緑 Yellow green        | 574                             | CL-220SYG-C             | 14          |
|                |                                       |                             | 緑 Green                | 523                             | CL-220G1-C              | 13          |
|                |                                       |                             | 青緑 Blue Green          | 502                             | CL-220BG1-C             | 13          |
|                |                                       |                             | 青 Blue                 | 428                             | CL-220UB                | 12          |
|                |                                       |                             | 青 Blue                 | 468                             | CL-220B1                | 12          |
| CL-260         | 3.4(L)<br>×<br>1.25(w)<br>×<br>1.1(H) | 標準輝度<br>Standard brightness | 赤 Red                  | 700                             | CL-260R-CD              | 25          |
|                |                                       |                             | 橙 Orange               | 605                             | CL-260D-CD              | 25          |
|                |                                       |                             | 黄 Yellow               | 589                             | CL-260Y-CD              | 25          |
|                |                                       |                             | レモン<br>イエロー-<br>Yellow | 584                             | CL-260LY-CD             | 25          |
|                |                                       |                             | 黄緑 Yellow green        | 570                             | CL-260YG-X              | 25          |
|                |                                       |                             | 緑 Green                | 567                             | CL-260G-CD              | 25          |
|                |                                       |                             | 新緑 Fresh green         | 560                             | CL-260FG-CD             | 25          |
|                |                                       |                             | 純緑 Pure green          | 557                             | CL-260PG-CD             | 25          |
|                |                                       | 高輝度<br>Super brightness     | 赤 Red                  | 650                             | CL-260SR-CD             | 25          |
|                |                                       |                             | 橙 Orange               | 630                             | CL-260SD-CD             | 25          |
|                |                                       | 超高輝度<br>Ultra brightness    | 赤 Red                  | 660                             | CL-260UR-CD             | 25          |
|                |                                       | 超高輝度<br>High brightness     | 赤 Red                  | 660                             | CL-260HR-CD             | 25          |
|                |                                       |                             | 赤 Red                  | 624                             | CL-260TR1-CD            | 15          |
|                |                                       |                             | 橙 Orange               | 612                             | CL-260TD-CD             | 15          |
|                |                                       |                             | 橙 Orange               | 612                             | CL-260TD3-CD            | 15          |
|                |                                       |                             | レモン<br>イエロー-<br>Yellow | 590                             | CL-260TLY-CD            | 14          |
|                |                                       |                             | 黄緑 Yellow green        | 574                             | CL-260SYG-CD            | 14          |
|                |                                       |                             | 緑 Green                | 523                             | CL-260G1-C              | 13          |
|                |                                       |                             | 緑 Green                | 515                             | CL-260HG-C              | 13          |
|                |                                       |                             | 青緑 Blue Green          | 502                             | CL-260BG1-C             | 13          |
| 青 Blue         | 428                                   |                             | CL-260UB               | 12                              |                         |             |
| 青 Blue         | 468                                   | CL-260B1                    | 12                     |                                 |                         |             |
| 青 Blue         | 470                                   | CL-260HB                    | 12                     |                                 |                         |             |
| CL-270         | 1.6(L)<br>×<br>1.15(W)<br>×<br>0.6(H) | 標準輝度<br>Standard brightness | 赤 Red                  | 700                             | CL-270R-C               | 24          |
|                |                                       |                             | 橙 Orange               | 605                             | CL-270D-C               | 24          |
|                |                                       |                             | 黄 Yellow               | 589                             | CL-270Y-C               | 24          |
|                |                                       |                             | レモン<br>イエロー-<br>Yellow | 584                             | CL-270LY-C              | 24          |
|                |                                       |                             | 黄緑 Yellow green        | 570                             | CL-270YG-C              | 24          |

| シリーズ<br>Series | 外形寸法<br>Size(mm)                      | 輝度<br>Brightness            | 発光色<br>Lighting color  | ピーク発光波長<br>Peak wave length(nm) | 部品コード<br>Code for parts | ページ<br>Page |
|----------------|---------------------------------------|-----------------------------|------------------------|---------------------------------|-------------------------|-------------|
| CL-270         | 1.6(L)<br>×<br>1.15(W)<br>×<br>0.6(H) | 標準輝度<br>Standard brightness | 緑 Green                | 567                             | CL-270G-C               | 24          |
|                |                                       |                             | 新緑 Fresh green         | 560                             | CL-270FG-C              | 24          |
|                |                                       |                             | 純緑 Pure green          | 557                             | CL-270PG-C              | 24          |
|                |                                       | 高輝度<br>Super brightness     | 赤 Red                  | 650                             | CL-270SR-C              | 24          |
|                |                                       |                             | 橙 Orange               | 630                             | CL-270SD-C              | 24          |
|                |                                       | 超高輝度<br>Ultra brightness    | 赤 Red                  | 660                             | CL-270UR-C              | 24          |
|                |                                       | 超高輝度<br>High brightness     | 赤 Red                  | 660                             | CL-270HR-C              | 24          |
|                |                                       |                             | 赤 Red                  | 624                             | CL-270TR1-C             | 15          |
|                |                                       |                             | 橙 Orange               | 612                             | CL-270TD-C              | 15          |
|                |                                       |                             | 橙 Orange               | 612                             | CL-270TD3-C             | 15          |
|                |                                       |                             | レモン<br>イエロー-<br>Yellow | 590                             | CL-270TLY-C             | 14          |
|                |                                       |                             | 黄緑 Yellow green        | 574                             | CL-270SYG-C             | 14          |
|                |                                       |                             | 緑 Green                | 523                             | CL-270G1-C              | 13          |
|                |                                       |                             | 緑 Green                | 515                             | CL-270HG-C              | 13          |
|                |                                       |                             | 青緑 Blue Green          | 502                             | CL-270BG1-C             | 13          |
|                |                                       |                             | 青 Blue                 | 428                             | CL-270UB                | 12          |
|                |                                       |                             | 青 Blue                 | 468                             | CL-270B1                | 12          |
|                |                                       |                             | 青 Blue                 | 470                             | CL-270HB                | 12          |
| CL-280         | 1.0(L)<br>×<br>0.5(W)<br>×<br>0.6(H)  | 標準輝度<br>Standard brightness | 赤 Red                  | 700                             | CL-280R-C               | 23          |
|                |                                       |                             | 橙 Orange               | 605                             | CL-280D-C               | 23          |
|                |                                       |                             | 黄 Yellow               | 589                             | CL-280Y-C               | 23          |
|                |                                       |                             | レモン<br>イエロー-<br>Yellow | 584                             | CL-280LY-C              | 23          |
|                |                                       |                             | 黄緑 Yellow green        | 570                             | CL-280YG-C              | 23          |
|                |                                       |                             | 緑 Green                | 567                             | CL-280G-C               | 23          |
|                |                                       |                             | 新緑 Fresh green         | 560                             | CL-280FG-C              | 23          |
|                |                                       |                             | 純緑 Pure green          | 557                             | CL-280PG-C              | 23          |
|                |                                       | 高輝度<br>Super brightness     | 赤 Red                  | 650                             | CL-280SR-C              | 23          |
|                |                                       |                             | 橙 Orange               | 630                             | CL-280SD-C              | 23          |
|                |                                       | 超高輝度<br>Ultra brightness    | 赤 Red                  | 660                             | CL-280UR-C              | 23          |
|                |                                       | 超高輝度<br>High brightness     | 赤 Red                  | 660                             | CL-280HR-C              | 23          |
| CL-321         | 3.1(L)<br>×<br>1.6(W)<br>×<br>0.7(H)  | 超高輝度<br>High brightness     | 橙 Orange               | 612                             | CL-321A                 | 16          |
|                |                                       |                             | 緑 Green                | 515                             |                         |             |
|                |                                       |                             | 青 Blue                 | 470                             |                         |             |
|                |                                       |                             | 赤 Red                  | 624                             | CL-321B                 | 16          |
|                |                                       |                             | 緑 Green                | 523                             |                         |             |
|                |                                       |                             | 青 Blue                 | 468                             |                         |             |
| 赤 Red          | 624                                   | CL-321C                     | 16                     |                                 |                         |             |
| 緑 Green        | 515                                   |                             |                        |                                 |                         |             |
| 青 Blue         | 470                                   |                             |                        |                                 |                         |             |

CL-270標準輝度は右の表へ続く▶

CL-270 standard brightness information continues on the table to the right.

# 超高輝度青色LED UB・B1・HB

High brightness Chip LED UB,B1,HB

## ■特徴

1. InGaN系LED素子を用いた超高輝度チップLEDです。
2. 発光色は青色。

## ■Features

1. A chip LED of super-luminance using InGaN type LED elements.
2. Light emitted is blue.

## ■取扱上の注意

本LEDは、静電気に対して非常に敏感です。取扱い時には十分な静電気・サージ対策を施して下さい。

## ■Precautions

These LEDs are highly susceptible to static electricity. Take thorough precautions against static electricity and surges when handling these chip LEDs.

## ■絶対最大定格/Absolute Maximum Rating

(Ta 25°C)

| 発光色<br>Lighting color | Pd<br>(mW) | IF<br>(mA) | IFP<br>(mA) | VR<br>(V) | Top<br>(°C) | Tst<br>(°C) |
|-----------------------|------------|------------|-------------|-----------|-------------|-------------|
| UB                    | 92         | 20         | 100*1       | 4         | -25~+80     | -30~+85     |
| BI                    | 80         |            |             |           |             |             |
| HB                    | 78         |            |             |           |             |             |

\*1 IFPの条件はduty 1/10、パルス巾0.1msecです。

\*1 Condition for IFP is pulse of 1/10 duty and 0.1msec width.

## ■電氣的・光学的特性/Electro-optical Characteristics

### <UB>

(Ta 25°C)

| 部品コード<br>Code for parts | VF         |            |            | λP<br>typ<br>(nm) | Δλ<br>typ<br>(nm) | IV*        |              |              | 外形寸法図<br>Outline drawing |
|-------------------------|------------|------------|------------|-------------------|-------------------|------------|--------------|--------------|--------------------------|
|                         | IF<br>(mA) | typ<br>(V) | max<br>(V) |                   |                   | IF<br>(mA) | min<br>(mcd) | typ<br>(mcd) |                          |
| CL-191UB                | 20         | 3.8        | 4.6        | 428               | 65                | 20         | 2.7          | 6.9          | P.21                     |
| CL-200UB                | 20         | 3.8        | 4.6        | 428               | 65                | 20         | 6.3          | 16.5         | P.27                     |
| CL-220UB                | 20         | 3.8        | 4.6        | 428               | 65                | 20         | 4.0          | 11           | P.26                     |
| CL-260UB                | 20         | 3.8        | 4.6        | 428               | 65                | 20         | 2.7          | 6.9          | P.25                     |
| CL-270UB                | 20         | 3.8        | 4.6        | 428               | 65                | 20         | 2.7          | 6.9          | P.24                     |

\*NIST規格に準拠/Per NIST standards

### <B1>

(Ta 25°C)

| 部品コード<br>Code for parts | VF         |            |            | λP<br>typ<br>(nm) | Δλ<br>typ<br>(nm) | IV*        |              |              | 外形寸法図<br>Outline drawing |
|-------------------------|------------|------------|------------|-------------------|-------------------|------------|--------------|--------------|--------------------------|
|                         | IF<br>(mA) | typ<br>(V) | max<br>(V) |                   |                   | IF<br>(mA) | min<br>(mcd) | typ<br>(mcd) |                          |
| CL-191B1                | 20         | 3.5        | 4.0        | 468               | 26                | 20         | 11.5         | 30           | P.21                     |
| CL-200B1                | 20         | 3.5        | 4.0        | 468               | 26                | 20         | 16.5         | 70           | P.27                     |
| CL-220B1                | 20         | 3.5        | 4.0        | 468               | 26                | 20         | 13.5         | 48           | P.26                     |
| CL-260B1                | 20         | 3.5        | 4.0        | 468               | 26                | 20         | 11.5         | 30           | P.25                     |
| CL-270B1                | 20         | 3.5        | 4.0        | 468               | 26                | 20         | 11.5         | 30           | P.24                     |

\*NIST規格に準拠/Per NIST standards

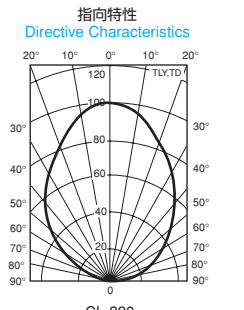
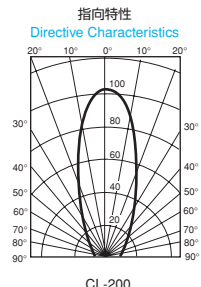
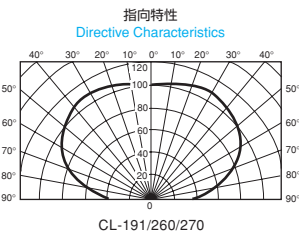
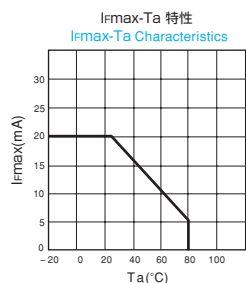
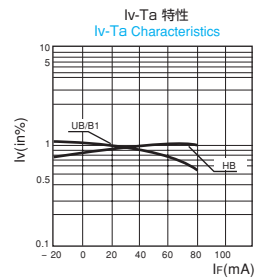
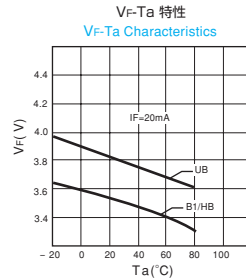
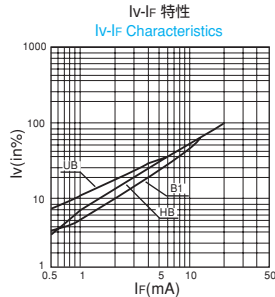
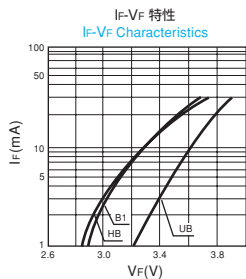
### <HB>

(Ta 25°C)

| 部品コード<br>Code for parts | VF         |            |            | λP<br>typ<br>(nm) | Δλ<br>typ<br>(nm) | IV*        |              |              | 外形寸法図<br>Outline drawing |
|-------------------------|------------|------------|------------|-------------------|-------------------|------------|--------------|--------------|--------------------------|
|                         | IF<br>(mA) | typ<br>(V) | max<br>(V) |                   |                   | IF<br>(mA) | min<br>(mcd) | typ<br>(mcd) |                          |
| CL-191HB                | 20         | 3.5        | 3.9        | 470               | 35                | 20         | 15           | 53           | P.21                     |
| CL-200HB                | 20         | 3.5        | 3.9        | 470               | 35                | 20         | 21.4         | 85           | P.27                     |
| CL-260HB                | 20         | 3.5        | 3.9        | 470               | 35                | 20         | 15           | 53           | P.25                     |
| CL-270HB                | 20         | 3.5        | 3.9        | 470               | 35                | 20         | 15           | 53           | P.24                     |

\*NIST規格に準拠/Per NIST standards

## ■諸特性/Characteristics





# 超高輝度緑色チップLED BG1・G1・HG

## High brightness Chip LED BG1,G1,HG

### ■特徴

1. InGaN系LED素子を用いた超高輝度チップLEDです。
2. 発光色は青緑色、緑色。

### ■Features

1. A chip LED of super-luminance using InGaN type LED elements.
2. Light emitted is blue-green or green.

### ■取扱上の注意

本LEDは、静電気に対して非常に敏感です。取扱い時には十分な静電気・サージ対策を施して下さい。

### ■Precautions

These LEDs are highly susceptible to static electricity. Take thorough precautions against static electricity and surges when handling these chip LEDs.

### ■絶対最大定格/Absolute Maximum Rating

(Ta 25°C)

| 発光色<br>Lighting color | Pd<br>(mW) | I <sub>F</sub><br>(mA) | I <sub>FP</sub><br>(mA) | V <sub>R</sub><br>(V) | Top<br>(°C) | Tst<br>(°C) |
|-----------------------|------------|------------------------|-------------------------|-----------------------|-------------|-------------|
| BG1/G1                | 80         | 20                     | 100*1                   | 4                     | -25~+80     | -30~+85     |
| HG                    | 78         |                        |                         |                       |             |             |

\*1 I<sub>FP</sub>の条件はduty 1/10、パルス巾0.1msecです。

\*1 Condition for I<sub>FP</sub> is pulse of 1/10 duty and 0.1msec width.

### ■電氣的・光学的特性/Electro-optical Characteristics

#### <BG1>

(Ta 25°C)

| 部品コード<br>Code for parts | V <sub>F</sub>         |            |            | λ <sub>P</sub><br>typ<br>(nm) | Δλ<br>typ<br>(nm) | I <sub>V</sub> *       |              |              | 外形寸法図<br>Outline drawing |
|-------------------------|------------------------|------------|------------|-------------------------------|-------------------|------------------------|--------------|--------------|--------------------------|
|                         | I <sub>F</sub><br>(mA) | typ<br>(V) | max<br>(V) |                               |                   | I <sub>F</sub><br>(mA) | min<br>(mcd) | typ<br>(mcd) |                          |
| CL-191BG1               | 20                     | 3.5        | 4.0        | 502                           | 30                | 20                     | 29.5         | 80           | P.21                     |
| CL-200BG1               | 20                     | 3.5        | 4.0        | 502                           | 30                | 20                     | 65           | 185          | P.27                     |
| CL-220BG1               | 20                     | 3.5        | 4.0        | 502                           | 30                | 20                     | 38.5         | 120          | P.26                     |
| CL-260BG1               | 20                     | 3.5        | 4.0        | 502                           | 30                | 20                     | 29.5         | 80           | P.25                     |
| CL-270BG1               | 20                     | 3.5        | 4.0        | 502                           | 30                | 20                     | 29.5         | 80           | P.24                     |

※NIST規格に準拠/Per NIST standards

#### <G1>

(Ta 25°C)

| 部品コード<br>Code for parts | V <sub>F</sub>         |            |            | λ <sub>P</sub><br>typ<br>(nm) | Δλ<br>typ<br>(nm) | I <sub>V</sub> *       |              |              | 外形寸法図<br>Outline drawing |
|-------------------------|------------------------|------------|------------|-------------------------------|-------------------|------------------------|--------------|--------------|--------------------------|
|                         | I <sub>F</sub><br>(mA) | typ<br>(V) | max<br>(V) |                               |                   | I <sub>F</sub><br>(mA) | min<br>(mcd) | typ<br>(mcd) |                          |
| CL-191G1                | 20                     | 3.5        | 4.0        | 523                           | 36                | 20                     | 38.5         | 100          | P.21                     |
| CL-200G1                | 20                     | 3.5        | 4.0        | 523                           | 36                | 20                     | 85           | 230          | P.27                     |
| CL-220G1                | 20                     | 3.5        | 4.0        | 523                           | 36                | 20                     | 50           | 150          | P.26                     |
| CL-260G1                | 20                     | 3.5        | 4.0        | 523                           | 36                | 20                     | 38.5         | 100          | P.25                     |
| CL-270G1                | 20                     | 3.5        | 4.0        | 523                           | 36                | 20                     | 38.5         | 100          | P.24                     |

※NIST規格に準拠/Per NIST standards

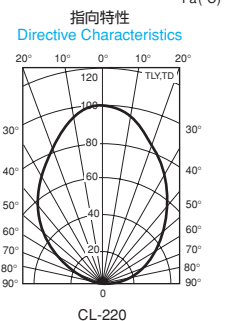
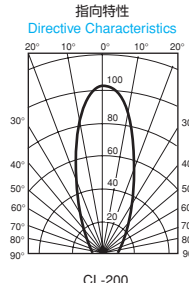
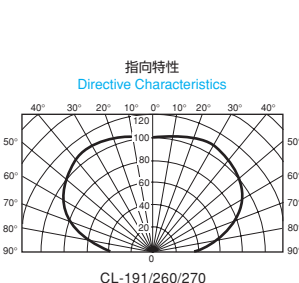
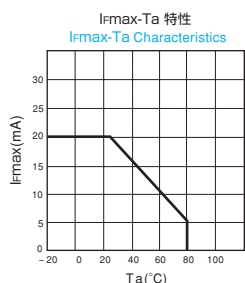
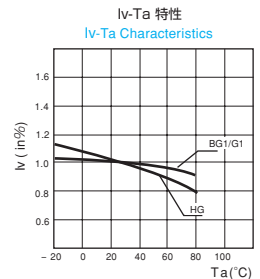
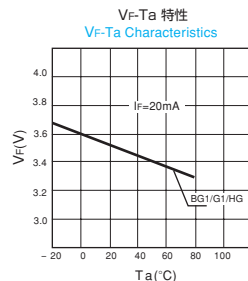
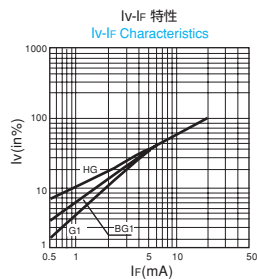
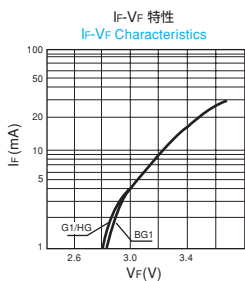
#### <HG>

(Ta 25°C)

| 部品コード<br>Code for parts | V <sub>F</sub>         |            |            | λ <sub>P</sub><br>typ<br>(nm) | Δλ<br>typ<br>(nm) | I <sub>V</sub> *       |              |              | 外形寸法図<br>Outline drawing |
|-------------------------|------------------------|------------|------------|-------------------------------|-------------------|------------------------|--------------|--------------|--------------------------|
|                         | I <sub>F</sub><br>(mA) | typ<br>(V) | max<br>(V) |                               |                   | I <sub>F</sub><br>(mA) | min<br>(mcd) | typ<br>(mcd) |                          |
| CL-191HG                | 20                     | 3.5        | 3.9        | 515                           | 45                | 20                     | 50           | 160          | P.21                     |
| CL-200HG                | 20                     | 3.5        | 3.9        | 515                           | 45                | 20                     | 150          | 400          | P.27                     |
| CL-260HG                | 20                     | 3.5        | 3.9        | 515                           | 45                | 20                     | 50           | 160          | P.25                     |
| CL-270HG                | 20                     | 3.5        | 3.9        | 515                           | 45                | 20                     | 50           | 160          | P.24                     |

※NIST規格に準拠/Per NIST standards

### ■諸特性/Characteristics



# 4元素系超高輝度LED SYG・TLY

Four element type LED of super-luminance SYG,TLY

## ■特徴

1. 4元素LED素子を用いた超高輝度チップLED。
2. 発光色は黄緑色・黄色。

## ■Features

1. A chip LED of super-luminance using four types of LED elements.
2. Light emitted is yellow-green or yellow.

## ■取扱上の注意

本LEDは、静電気に対して非常に敏感です。取扱い時には十分な静電気・サージ対策を施して下さい。

## ■Precautions

These LEDs are highly susceptible to static electricity. Take thorough precautions against static electricity and surges when handling these chip LEDs.

## ■絶対最大定格/Absolute Maximum Rating

(Ta 25°C)

| Pd<br>(mW) | I <sub>F</sub><br>(mA) | I <sub>FP</sub><br>(mA) | V <sub>R</sub><br>(V) | Top<br>(°C) | Tst<br>(°C) |
|------------|------------------------|-------------------------|-----------------------|-------------|-------------|
| 78         | 30                     | 100                     | 4*1                   | -25~+80     | -30~+85     |

\*1 I<sub>FP</sub>の条件はduty 1/10、パルス巾0.1msecです。

\*1 Condition for I<sub>FP</sub> is pulse of 1/10 duty and 0.1msec width.

## ■電気的光学的特性/Electro-optical Characteristics

<SYG>

(Ta 25°C)

| 部品コード<br>Code for parts | V <sub>F</sub>         |            |            | λ <sub>P</sub><br>typ<br>(nm) | Δλ<br>typ<br>(nm) | I <sub>V</sub> <sup>*</sup> |              |              | 外形寸法図<br>Outline drawing |
|-------------------------|------------------------|------------|------------|-------------------------------|-------------------|-----------------------------|--------------|--------------|--------------------------|
|                         | I <sub>F</sub><br>(mA) | typ<br>(V) | max<br>(V) |                               |                   | I <sub>F</sub><br>(mA)      | min<br>(mcd) | typ<br>(mcd) |                          |
| CL-191SYG               | 20                     | 2.2        | 2.6        | 574                           | 12                | 20                          | 20           | 50           | P.21                     |
| CL-200SYG               | 20                     | 2.2        | 2.6        | 574                           | 12                | 20                          | 33.5         | 84.5         | P.27                     |
| CL-220SYG               | 20                     | 2.2        | 2.6        | 574                           | 12                | 20                          | 26           | 65           | P.26                     |
| CL-260SYG               | 20                     | 2.2        | 2.6        | 574                           | 12                | 20                          | 20           | 50           | P.25                     |
| CL-270SYG               | 20                     | 2.2        | 2.6        | 574                           | 12                | 20                          | 20           | 50           | P.24                     |

※NIST規格に準拠

※Per NIST standards

## ■電気的光学的特性/Electro-optical Characteristics

<TLY>

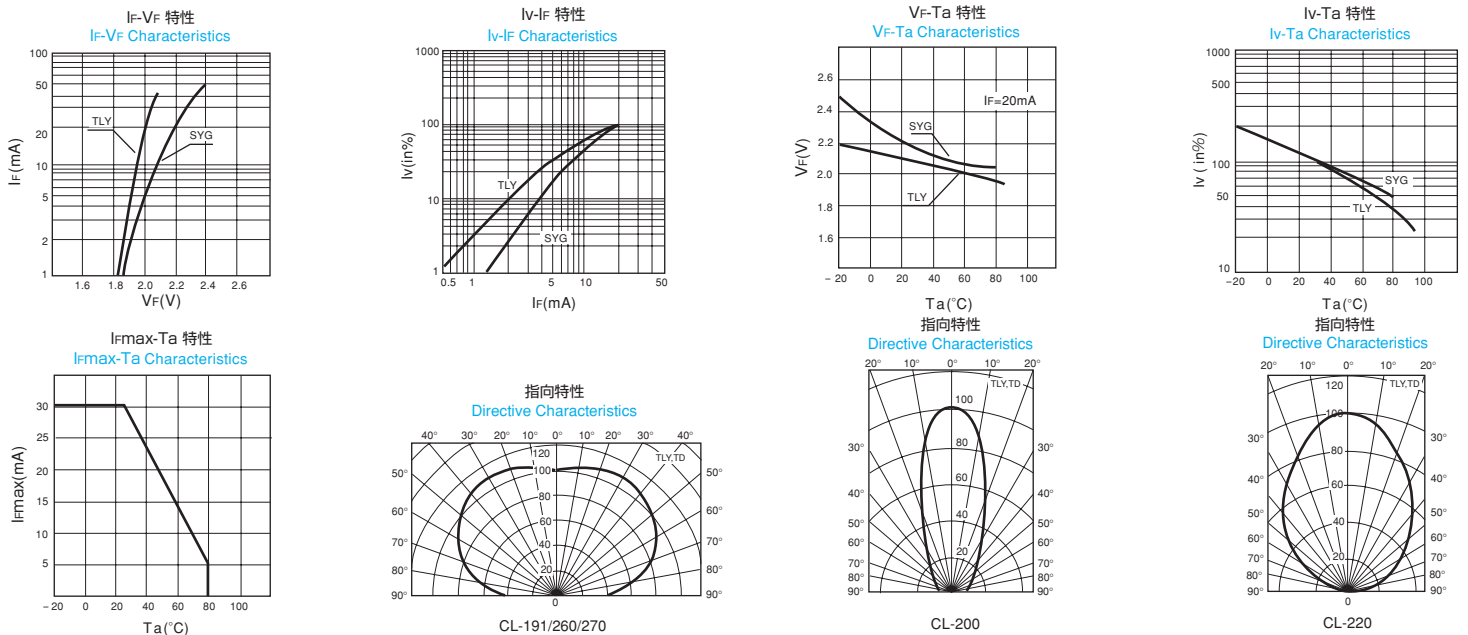
(Ta 25°C)

| 部品コード<br>Code for parts | V <sub>F</sub>         |            |            | λ <sub>P</sub><br>typ<br>(nm) | Δλ<br>typ<br>(nm) | I <sub>V</sub> <sup>*</sup> |              |              | 外形寸法図<br>Outline drawing |
|-------------------------|------------------------|------------|------------|-------------------------------|-------------------|-----------------------------|--------------|--------------|--------------------------|
|                         | I <sub>F</sub><br>(mA) | typ<br>(V) | max<br>(V) |                               |                   | I <sub>F</sub><br>(mA)      | min<br>(mcd) | typ<br>(mcd) |                          |
| CL-191TLY               | 20                     | 2.0        | 2.6        | 590                           | 13                | 20                          | 16           | 60           | P.21                     |
| CL-200TLY               | 20                     | 2.0        | 2.6        | 590                           | 13                | 20                          | 40           | 130          | P.27                     |
| CL-220TLY               | 20                     | 2.0        | 2.6        | 590                           | 13                | 20                          | 25           | 90           | P.26                     |
| CL-260TLY               | 20                     | 2.0        | 2.6        | 590                           | 13                | 20                          | 16           | 60           | P.25                     |
| CL-270TLY               | 20                     | 2.0        | 2.6        | 590                           | 13                | 20                          | 16           | 60           | P.24                     |

※NIST規格に準拠

※Per NIST standards

## ■諸特性/Characteristics



# 4元素系超高輝度LED TD・TD3・TR1

Four element type LED of super-luminance TD,TD3,TR1

## ■特徴

1. 4元素LED素子を用いた超高輝度チップLED。
2. 発光色は橙色・赤色。

## ■Features

1. A chip LED of super-luminance using four types of LED elements.
2. Light emitted is orange or red.

## ■取扱上の注意

本LEDは、静電気に対して非常に敏感です。取扱い時には十分な静電気・サージ対策を施して下さい。

## ■Precautions

These LEDs are highly susceptible to static electricity. Take thorough precautions against static electricity and surges when handling these chip LEDs.

## ■絶対最大定格/Absolute Maximum Rating

(Ta 25°C)

| Pd<br>(mW) | I <sub>F</sub><br>(mA) | I <sub>FP</sub><br>(mA) | V <sub>R</sub><br>(V) | Top<br>(°C) | Tst<br>(°C) |
|------------|------------------------|-------------------------|-----------------------|-------------|-------------|
| 78         | 30                     | 100                     | 4*1                   | -25~+80     | -30~+85     |

\*1 I<sub>FP</sub>の条件はduty 1/10、パルス巾0.1msecです。

\*1 Condition for I<sub>FP</sub> is pulse of 1/10 duty and 0.1msec width.

## ■電気的光学的特性/Electro-optical Characteristics

<TD>

(Ta 25°C)

| 部品コード<br>Code for parts | V <sub>F</sub>         |            |            | λ <sub>P</sub><br>typ<br>(nm) | Δλ<br>typ<br>(nm) | I <sub>V</sub> *       |              |              | 外形寸法図<br>Outline drawing |
|-------------------------|------------------------|------------|------------|-------------------------------|-------------------|------------------------|--------------|--------------|--------------------------|
|                         | I <sub>F</sub><br>(mA) | typ<br>(V) | max<br>(V) |                               |                   | I <sub>F</sub><br>(mA) | min<br>(mcd) | typ<br>(mcd) |                          |
| CL-191TD                | 20                     | 2.1        | 2.6        | 612                           | 15                | 20                     | 16           | 60           | P.21                     |
| CL-200TD                | 20                     | 2.1        | 2.6        | 612                           | 15                | 20                     | 40           | 130          | P.27                     |
| CL-220TD                | 20                     | 2.1        | 2.6        | 612                           | 15                | 20                     | 25           | 90           | P.26                     |
| CL-260TD                | 20                     | 2.1        | 2.6        | 612                           | 15                | 20                     | 16           | 60           | P.25                     |
| CL-270TD                | 20                     | 2.1        | 2.6        | 612                           | 15                | 20                     | 16           | 60           | P.24                     |

※NIST規格に準拠

※Per NIST standards

<TD3>

(Ta 25°C)

| 部品コード<br>Code for parts | V <sub>F</sub>         |            |            | λ <sub>P</sub><br>typ<br>(nm) | Δλ<br>typ<br>(nm) | I <sub>V</sub> *       |              |              | 外形寸法図<br>Outline drawing |
|-------------------------|------------------------|------------|------------|-------------------------------|-------------------|------------------------|--------------|--------------|--------------------------|
|                         | I <sub>F</sub><br>(mA) | typ<br>(V) | max<br>(V) |                               |                   | I <sub>F</sub><br>(mA) | min<br>(mcd) | typ<br>(mcd) |                          |
| CL-191TD3               | 20                     | 2.1        | 2.6        | 612                           | 15                | 20                     | 83           | 180          | P.21                     |
| CL-200TD3               | 20                     | 2.1        | 2.6        | 612                           | 15                | 20                     | 200          | 390          | P.27                     |
| CL-220TD3               | 20                     | 2.1        | 2.6        | 612                           | 15                | 20                     | 130          | 270          | P.26                     |
| CL-260TD3               | 20                     | 2.1        | 2.6        | 612                           | 15                | 20                     | 83           | 180          | P.25                     |
| CL-270TD3               | 20                     | 2.1        | 2.6        | 612                           | 15                | 20                     | 83           | 180          | P.24                     |

※NIST規格に準拠

※Per NIST standards

<TR1>

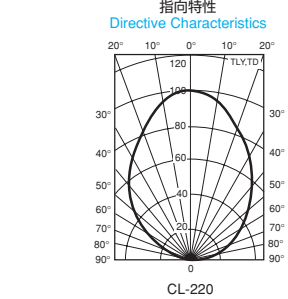
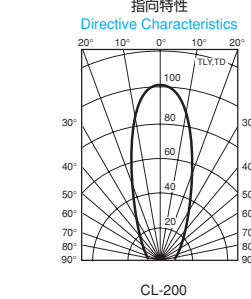
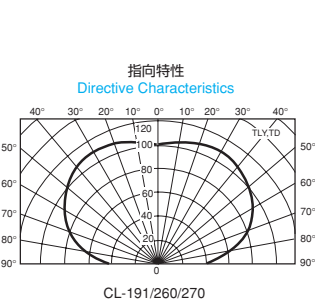
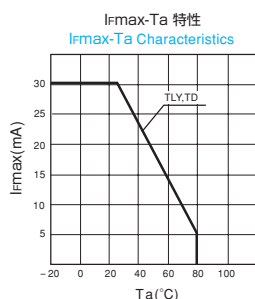
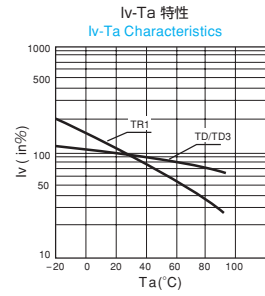
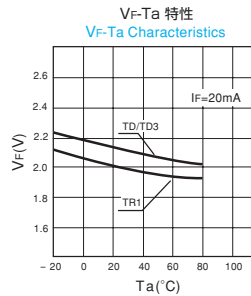
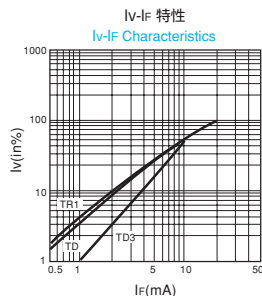
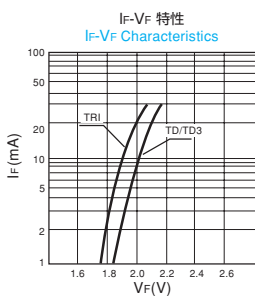
(Ta 25°C)

| 部品コード<br>Code for parts | V <sub>F</sub>         |            |            | λ <sub>P</sub><br>typ<br>(nm) | Δλ<br>typ<br>(nm) | I <sub>V</sub> *       |              |              | 外形寸法図<br>Outline drawing |
|-------------------------|------------------------|------------|------------|-------------------------------|-------------------|------------------------|--------------|--------------|--------------------------|
|                         | I <sub>F</sub><br>(mA) | typ<br>(V) | max<br>(V) |                               |                   | I <sub>F</sub><br>(mA) | min<br>(mcd) | typ<br>(mcd) |                          |
| CL-191TR1               | 20                     | 2.0        | 2.6        | 624                           | 13                | 20                     | 25           | 80           | P.21                     |
| CL-200TR1               | 20                     | 2.0        | 2.6        | 624                           | 13                | 20                     | 63           | 175          | P.27                     |
| CL-220TR1               | 20                     | 2.0        | 2.6        | 624                           | 13                | 20                     | 40           | 120          | P.26                     |
| CL-260TR1               | 20                     | 2.0        | 2.6        | 624                           | 13                | 20                     | 25           | 80           | P.25                     |
| CL-270TR1               | 20                     | 2.0        | 2.6        | 624                           | 13                | 20                     | 25           | 80           | P.24                     |

※NIST規格に準拠

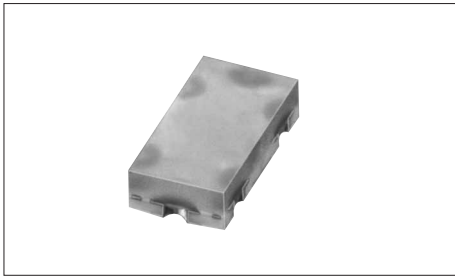
※Per NIST standards

## ■諸特性/Characteristics

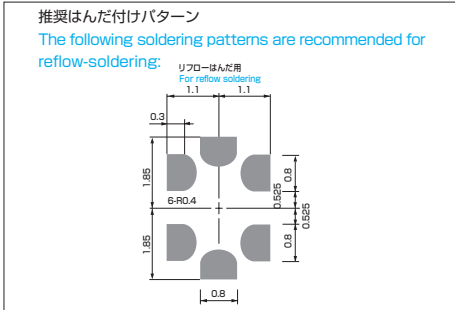
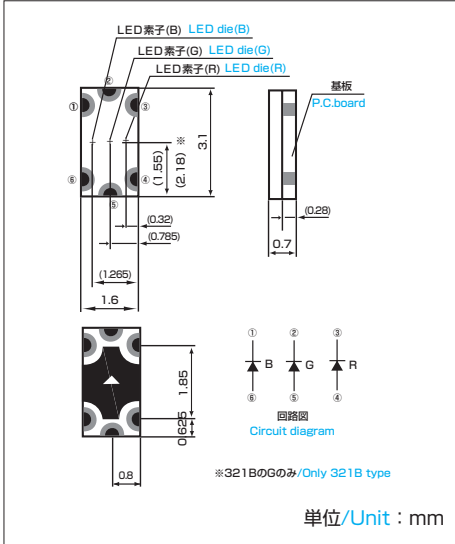


# CL-321シリーズ **NEW**

## CL-321 Series



### ■外形寸法図/Outline drawing



### ■特徴

1. 赤、青、緑、3色を同一パッケージにしたチップLEDです。
2. 外形寸法は3.1(L)×1.6(W)×0.7(H) mmの小型サイズです。

### ■Features

1. This chip LED comprises the 3 colors of red, blue, and green in the same package.
2. Dimensions: 3.1 (L) × 1.6 (W) × 0.7 (H) mm, being small size

### ■絶対最大定格/Absolute Maximum Rating

(Ta 25°C)

| シリーズ<br>Series | 発光色<br>Lighting color | P*1<br>(mW) | Pd<br>(mW) | IF<br>(mA) | IFP<br>(mA) | VR<br>(V) | Top<br>(°C) | TSt<br>(°C) |
|----------------|-----------------------|-------------|------------|------------|-------------|-----------|-------------|-------------|
| CL-321         | TD3/TR1               | 125         | 78         | 30         | 100*2       | 4         | -25~+80     | -30~+85     |
|                | HB/HG/B1/G1           |             | 78         | 20         |             |           |             |             |

※1 Pは同時点灯時の全許容損失を示します。

※1 P means total value of power dissipation when both colors are on.

※2 IFPの条件はduty 1/10、パルス巾0.1 msecです。

※2 Condition for IFP is pulse of 1/10 duty and 0.1 msec width.

### ■電気的光学的特性/Electro-optical Characteristics

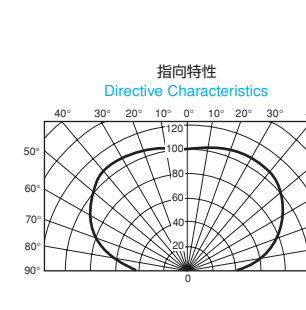
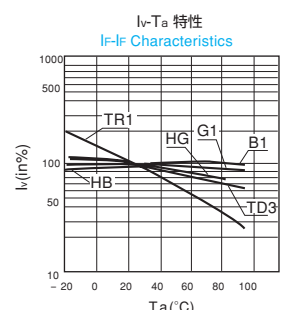
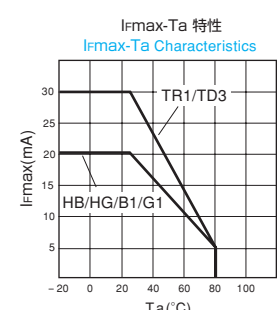
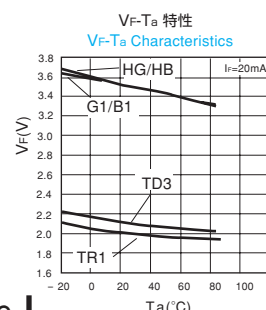
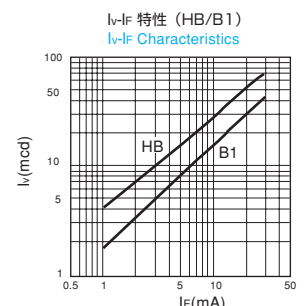
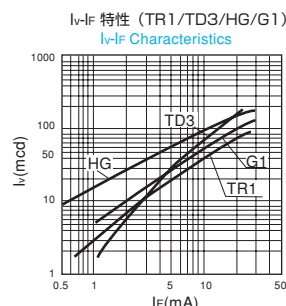
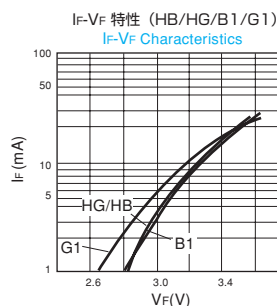
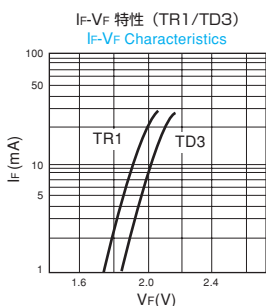
(Ta 25°C)

| 部品コード<br>Code for parts | 発光色<br>Lighting color | VF         |            |            | λP<br>typ<br>(nm) | Δλ<br>typ<br>(nm) | IV*        |              |              |
|-------------------------|-----------------------|------------|------------|------------|-------------------|-------------------|------------|--------------|--------------|
|                         |                       | IF<br>(mA) | typ<br>(V) | max<br>(V) |                   |                   | IF<br>(mA) | min<br>(mcd) | typ<br>(mcd) |
| CL-321A                 | TD3                   | 20         | 2.1        | 2.6        | 612               | 15                | 20         | 83           | 180          |
|                         | HG                    | 20         | 3.5        | 3.9        | 515               | 35                | 20         | 50           | 160          |
|                         | HB                    | 20         | 3.5        | 3.9        | 470               | 35                | 20         | 15           | 53           |
| CL-321B                 | TR1                   | 20         | 2.0        | 2.6        | 624               | 15                | 20         | 25           | 80           |
|                         | G1                    | 20         | 3.5        | 4          | 523               | 30                | 20         | 38.5         | 100          |
|                         | B1                    | 20         | 3.5        | 4          | 468               | 26                | 20         | 11.5         | 30           |
| CL-321C                 | TR1                   | 20         | 2.1        | 2.6        | 624               | 15                | 20         | 25           | 80           |
|                         | HG                    | 20         | 3.5        | 3.9        | 515               | 35                | 20         | 50           | 160          |
|                         | HB                    | 20         | 3.5        | 3.9        | 470               | 35                | 20         | 15           | 53           |

※NIST規格に準拠

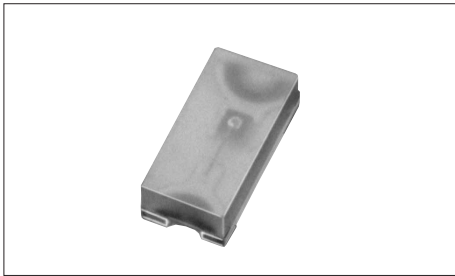
※Per NIST standards

### ■諸特性/Characteristics



# CL-197シリーズ

## CL-197 Series



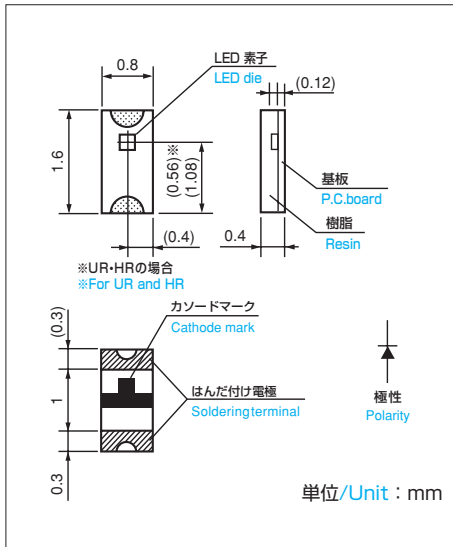
### ■特徴

1. 各々の構成部材を見直して極限まで厚さを抑えた1.6(L)×0.8(W)×0.4(H)mmの超薄型LEDです。
2. 薄型であっても光度等、CL-190と同等の特性を有しています。
3. 黄緑色(YG)のみの対応です。
4. CL-193シリーズとコンパチです。

### ■Features

1. Every component part and material has been reviewed to minimize thickness. The resulting LED(1.6(L)×0.8(W)×0.4(H)mm) is extraordinarily thin.
2. Despite its thinness, brightness and other properties are the same as the CL-190.
3. Only available in Yellow-green (YG).
4. Compatible with the CL-193 series.

### ■外形寸法図/Outline drawing



### ■絶対最大定格/Absolute Maximum Rating

(Ta 25°C)

| シリーズ<br>Series | Pd<br>(mW) | I <sub>F</sub><br>(mA) | I <sub>FP</sub><br>(mA) | V <sub>R</sub><br>(V) | Top<br>(°C) | Tst<br>(°C) |
|----------------|------------|------------------------|-------------------------|-----------------------|-------------|-------------|
| CL-197         | 50         | 20                     | 100*1                   | 5                     | -25~+80     | -30~+85     |

\*1 I<sub>FP</sub>の条件はduty 1/10、パルス巾0.1msecです。

\*1 Condition for I<sub>FP</sub> is pulse of 1/10 duty and 0.1msec width.

### ■電気的光学的特性/Elector-optical Characteristics

(Ta 25°C)

| 部品コード<br>Code for parts | 発光色<br>Lighting color | V <sub>F</sub>         |         |         | λ <sub>P</sub><br>typ (nm) | Δλ<br>typ (nm) | I <sub>V</sub> *       |           |           |
|-------------------------|-----------------------|------------------------|---------|---------|----------------------------|----------------|------------------------|-----------|-----------|
|                         |                       | I <sub>F</sub><br>(mA) | typ (V) | max (V) |                            |                | I <sub>F</sub><br>(mA) | min (mcd) | typ (mcd) |
| CL-197YG                | Yellow green          | 20                     | 2.2     | 2.6     | 570                        | 30             | 20                     | 5         | 18        |

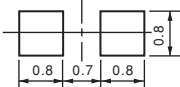
※NIST規格に準拠

※Per NIST standards

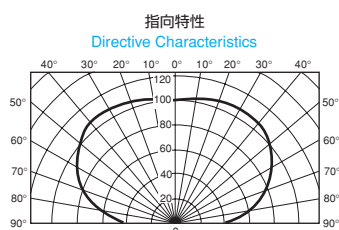
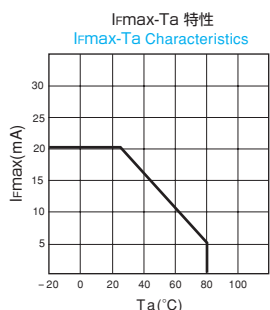
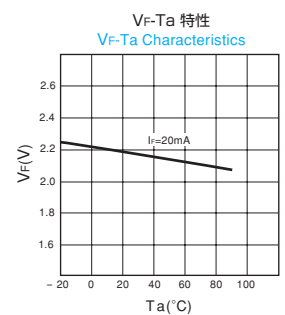
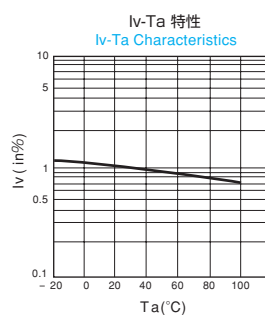
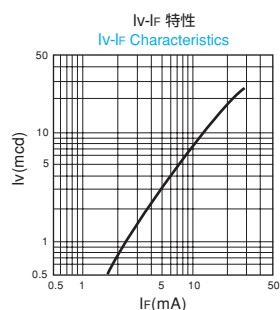
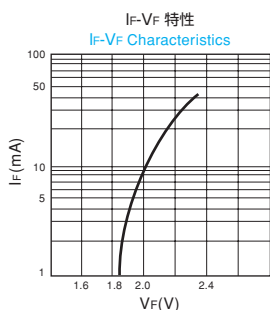
#### 推奨はんだ付けパターン

The following soldering patterns are recommended for reflow-soldering:

リフローはんだ用  
For reflow soldering

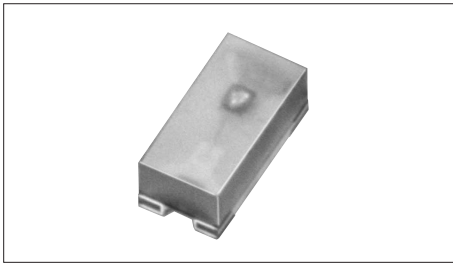


### ■諸特性/Characteristics

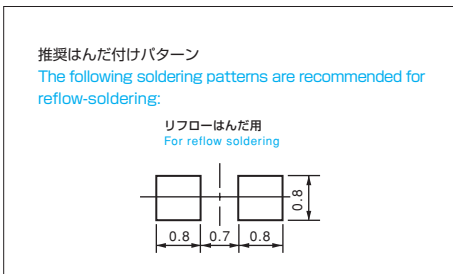
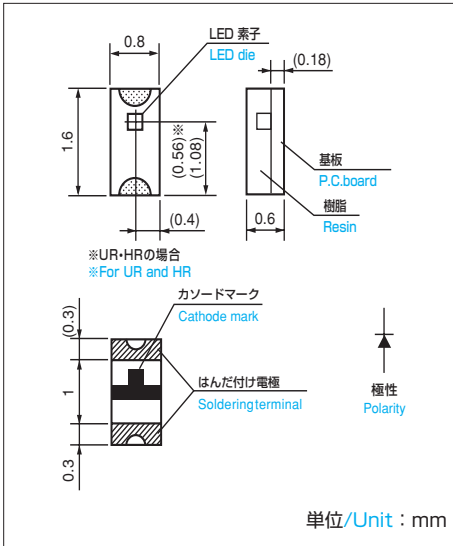


# CL-196シリーズ

## CL-196 Series



### 外形寸法図/Outline drawing



### 特徴

1. 超小型チップLED CL-190の厚み(0.8 mm)を更に薄くした1.6(L)×0.8(W)×0.6(H)mmの超小型チップLEDです。
2. 単色発光タイプです。
3. CL-191シリーズとコンパチです。

### Features

1. Ultra-small-sized chip LED even thinner than CL-190(0.8mm thick), dimensions: 1.6 (L)×0.8(W)×0.6(H)mm
2. Mono-color type
3. Compatible with the CL-191 series.

### 絶対最大定格/Absolute Maximum Rating

(Ta 25°C)

| シリーズ<br>Series                        | Pd<br>(mW) | I <sub>F</sub><br>(mA) | I <sub>FP</sub><br>(mA) | V <sub>R</sub><br>(V) | Top<br>(°C) | Tst<br>(°C) |
|---------------------------------------|------------|------------------------|-------------------------|-----------------------|-------------|-------------|
| CL-196 (UR,HRを除く<br>Except UR and HR) | 50         | 20                     | 100*1                   | 5                     | -25~+80     | -30~+85     |
| CL-196UR/HR                           | 78         | 30                     |                         |                       |             |             |

\*1 I<sub>FP</sub>の条件はduty 1/10、パルス巾0.1msecです。

\*1 Condition for I<sub>FP</sub> is pulse of 1/10 duty and 0.1msec width.

### 電気的光学的特性/Electro-optical Characteristics

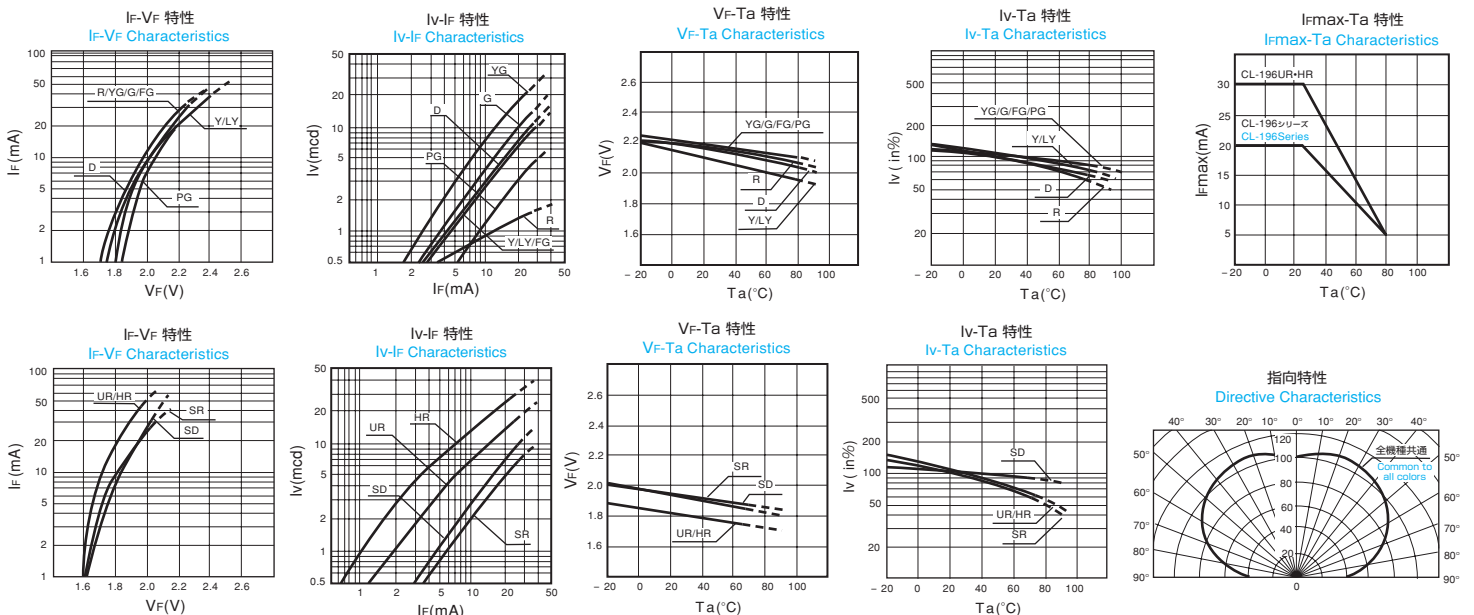
(Ta 25°C)

| 部品コード<br>Code for parts | 発光色<br>Lighting color   | V <sub>F</sub>         |            |            | λ <sub>P</sub><br>typ<br>(nm) | Δλ<br>typ<br>(nm) | I <sub>v</sub> *       |              |              |
|-------------------------|-------------------------|------------------------|------------|------------|-------------------------------|-------------------|------------------------|--------------|--------------|
|                         |                         | I <sub>F</sub><br>(mA) | typ<br>(V) | max<br>(V) |                               |                   | I <sub>F</sub><br>(mA) | min<br>(mcd) | typ<br>(mcd) |
| CL-196R                 | Red                     | 20                     | 2.2        | 2.6        | 700                           | 100               | 20                     | 0.5          | 1.3          |
| CL-196D                 | Orange                  | 20                     | 2.2        | 2.6        | 605                           | 40                | 20                     | 2.4          | 7.1          |
| CL-196Y                 | Yellow                  | 20                     | 2.1        | 2.6        | 589                           | 40                | 20                     | 2.6          | 6.4          |
| CL-196LY                | Lemon yellow            | 20                     | 2.1        | 2.6        | 584                           | 40                | 20                     | 2.6          | 6.4          |
| CL-196YG                | Yellow green            | 20                     | 2.2        | 2.6        | 570                           | 30                | 20                     | 5            | 18           |
| CL-196G                 | Green                   | 20                     | 2.2        | 2.6        | 567                           | 26                | 20                     | 2.5          | 10           |
| CL-196FG                | Fresh green             | 20                     | 2.2        | 2.6        | 560                           | 26                | 20                     | 2.2          | 6.5          |
| CL-196PG                | Pure green              | 20                     | 2.2        | 2.6        | 557                           | 24                | 20                     | 1            | 3            |
| CL-196SR                | Super brightness red    | 20                     | 2          | 2.6        | 650                           | 40                | 20                     | 1.5          | 4.3          |
| CL-196SD                | Super brightness orange | 20                     | 2          | 2.6        | 630                           | 40                | 20                     | 2            | 6.2          |
| CL-196UR                | Ultra brightness red    | 20                     | 1.8        | 2.6        | 660                           | 20                | 20                     | 3.5          | 13           |
| CL-196HR                | High brightness red     | 20                     | 1.8        | 2.6        | 660                           | 20                | 20                     | 5            | 23           |

\*NIST規格に準拠

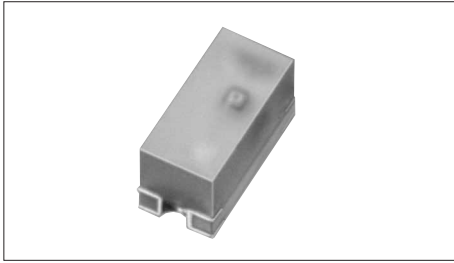
\*Per NIST standards

### 諸特性/Characteristics

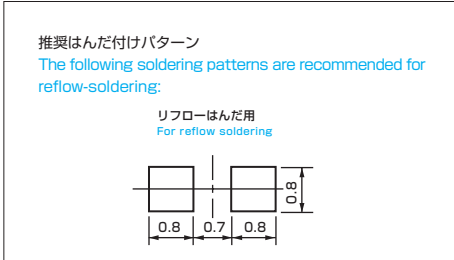
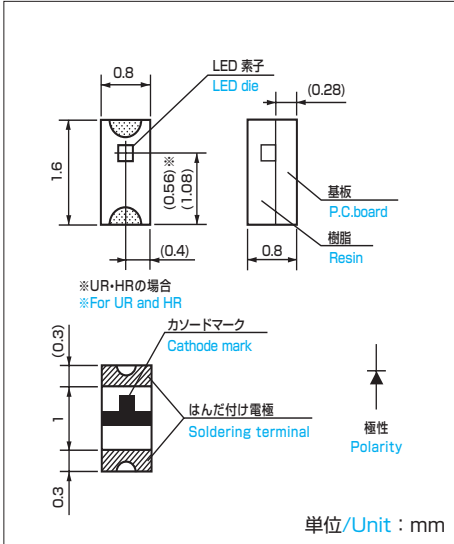


# CL-195シリーズ

## CL-195 Series



### 外形寸法図/Outline drawing



### 特徴

1. 単色発光タイプです。
2. 外形寸法は1.6(L)×0.8(W)×0.8(H) mmの超小型サイズです。
3. CL-190シリーズとコンパチです。

### Features

1. Mono-color type
2. Dimensions: 1.6(L)×0.8(W)×0.8(H)mm, being Ultra-small size
3. Compatible with the CL-190 series

### 絶対最大定格/Absolute Maximum Rating

(Ta 25°C)

| シリーズ<br>Series                        | Pd<br>(mW) | I <sub>F</sub><br>(mA) | I <sub>FP</sub><br>(mA) | V <sub>R</sub><br>(V) | Top<br>(°C) | Tst<br>(°C) |
|---------------------------------------|------------|------------------------|-------------------------|-----------------------|-------------|-------------|
| CL-195 (UR,HRを除く)<br>Except UR and HR | 50         | 20                     | 100*1                   | 5                     | -25~+80     | -30~+85     |
| CL-195UR/HR                           | 78         | 30                     |                         |                       |             |             |

\*1 I<sub>FP</sub>の条件はduty 1/10、パルス巾0.1msecです。

\*1 Condition for I<sub>FP</sub> is pulse of 1/10 duty and 0.1msec width.

### 電気的光学的特性/Electro-optical Characteristics

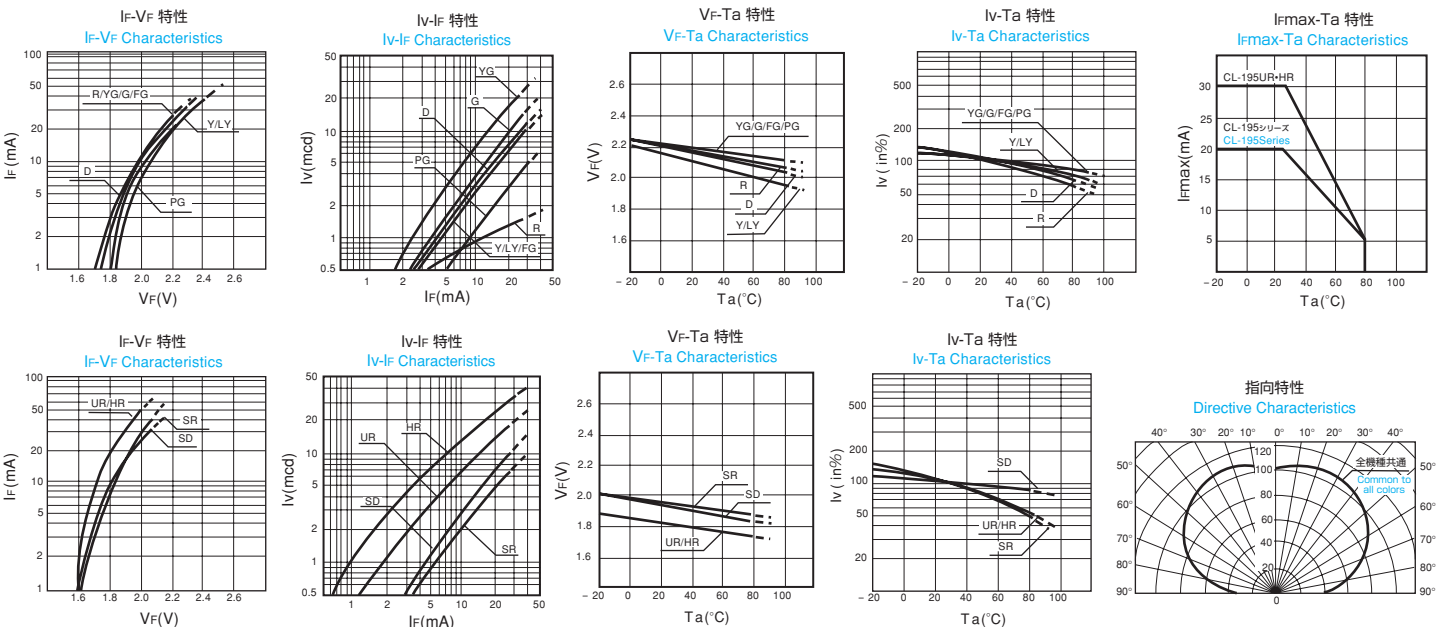
(Ta 25°C)

| 部品コード<br>Code for parts | 発光色<br>Lighting color   | V <sub>F</sub>         |         |         | λ <sub>P</sub><br>typ (nm) | Δλ<br>typ (nm) | I <sub>v</sub> *       |           |           |
|-------------------------|-------------------------|------------------------|---------|---------|----------------------------|----------------|------------------------|-----------|-----------|
|                         |                         | I <sub>F</sub><br>(mA) | typ (V) | max (V) |                            |                | I <sub>F</sub><br>(mA) | min (mcd) | typ (mcd) |
| CL-195R                 | Red                     | 20                     | 2.2     | 2.6     | 700                        | 100            | 20                     | 0.5       | 1.3       |
| CL-195D                 | Orange                  | 20                     | 2.2     | 2.6     | 605                        | 40             | 20                     | 2.4       | 7.1       |
| CL-195Y                 | Yellow                  | 20                     | 2.1     | 2.6     | 589                        | 40             | 20                     | 2.6       | 6.4       |
| CL-195LY                | Lemon yellow            | 20                     | 2.1     | 2.6     | 584                        | 40             | 20                     | 2.6       | 6.4       |
| CL-195YG                | Yellow green            | 20                     | 2.2     | 2.6     | 570                        | 30             | 20                     | 5         | 18        |
| CL-195G                 | Green                   | 20                     | 2.2     | 2.6     | 567                        | 26             | 20                     | 2.5       | 10        |
| CL-195FG                | Fresh green             | 20                     | 2.2     | 2.6     | 560                        | 26             | 20                     | 2.2       | 6.5       |
| CL-195PG                | Pure green              | 20                     | 2.2     | 2.6     | 557                        | 24             | 20                     | 1         | 3         |
| CL-195SR                | Super brightness red    | 20                     | 2       | 2.6     | 650                        | 40             | 20                     | 1.5       | 4.3       |
| CL-195SD                | Super brightness orange | 20                     | 2       | 2.6     | 630                        | 40             | 20                     | 2         | 6.2       |
| CL-195UR                | Ultra brightness red    | 20                     | 1.8     | 2.6     | 660                        | 20             | 20                     | 3.5       | 13        |
| CL-195HR                | High brightness red     | 20                     | 1.8     | 2.6     | 660                        | 20             | 20                     | 5         | 23        |

\*NIST規格に準拠

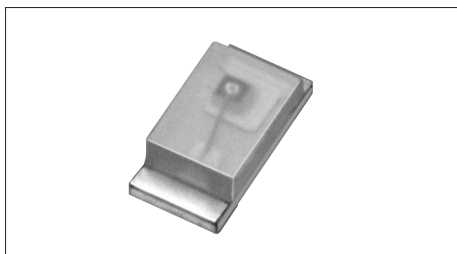
\*Per NIST standards

### 諸特性/Characteristics



# CL-193シリーズ

## CL-193 Series



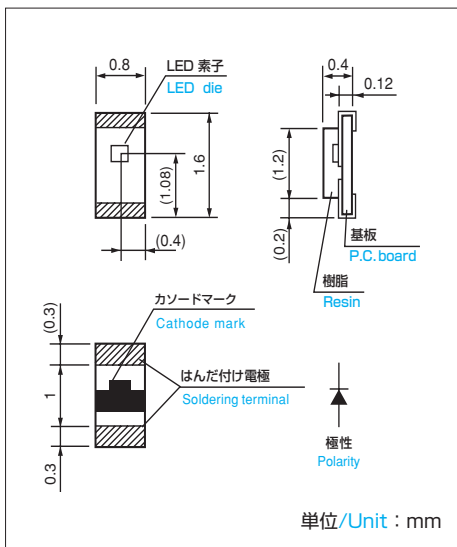
### ■特徴

1. 各々の構成部材を見直して極限まで厚さを抑えた1.6(L)×0.8(W)×0.4(H)mmの超薄形LEDです。
2. 薄形であっても光度等、CL-190と同等の特性を有しています。
3. 黄緑色(YG)のみの対応です。

### ■Features

1. Every component part and material has been reviewed to minimize thickness. The resulting LED (1.6(L)×0.8(W)×0.4(H)mm) is extraordinarily thin.
2. Despite its thinness, brightness and other properties are the same as the CL-190.
3. Only available in Yellow-green(YG).

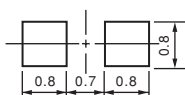
### ■外形寸法図/Outline drawing



推奨はんだ付けパターン

The following soldering patterns are recommended for reflow-soldering:

リフローはんだ用  
For reflow soldering



### ■絶対最大定格/Absolute Maximum Rating

(Ta 25°C)

| シリーズ<br>Series | Pd<br>(mW) | I <sub>F</sub><br>(mA) | I <sub>FP</sub><br>(mA) | V <sub>R</sub><br>(V) | Top<br>(°C) | Tst<br>(°C) |
|----------------|------------|------------------------|-------------------------|-----------------------|-------------|-------------|
| CL-193         | 50         | 20                     | 100*1                   | 5                     | -25~+80     | -30~+85     |

\*1 I<sub>FP</sub>の条件はduty 1/10、パルス巾0.1msecです。

\*1 Condition for I<sub>FP</sub> is pulse of 1/10 duty and 0.1msec width.

### ■電気的光学的特性/Electro-optical Characteristics

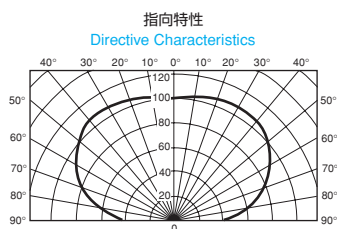
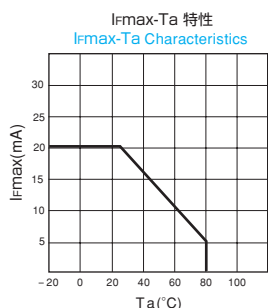
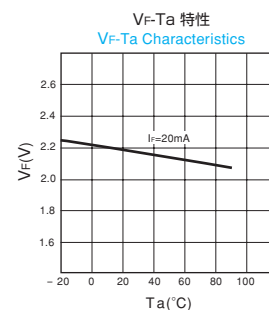
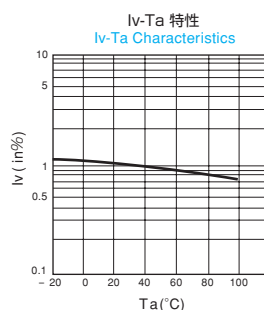
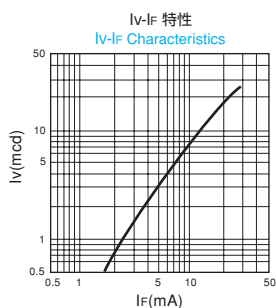
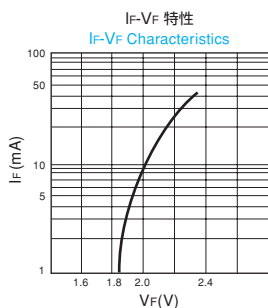
(Ta 25°C)

| 部品コード<br>Code for parts | 発光色<br>Lighting color | V <sub>F</sub>         |            |            | λ <sub>P</sub><br>typ<br>(nm) | Δλ<br>typ<br>(nm) | I <sub>V</sub> *<br>I <sub>F</sub> min typ (mcd) |              |              |
|-------------------------|-----------------------|------------------------|------------|------------|-------------------------------|-------------------|--|--------------|--------------|
|                         |                       | I <sub>F</sub><br>(mA) | typ<br>(V) | max<br>(V) |                               |                   | I <sub>F</sub><br>(mA)                           | min<br>(mcd) | typ<br>(mcd) |
| CL-193YG                | Yellow green          | 20                     | 2.2        | 2.6        | 570                           | 30                | 20   | 5            | 18           |

\*NIST規格に準拠

\*Per NIST standards

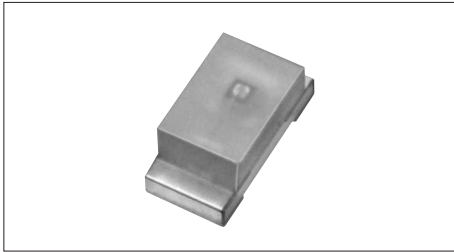
### ■諸特性/Characteristics



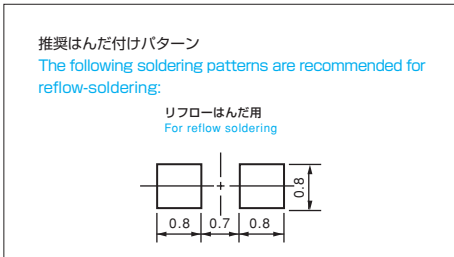
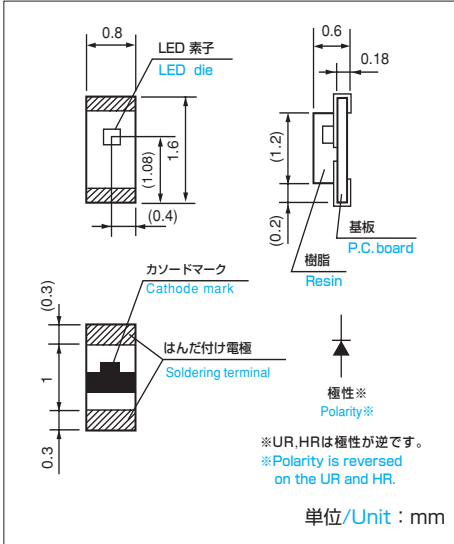


# CL-191シリーズ

## CL-191 Series



### ■外形寸法図/Outline drawing



### ■特徴

1. 超小型タイプLED CL-190の厚み(0.8 mm)を更に薄くした1.6(L)×0.8(W)×0.6(H)mmの超小型チップLEDです。
2. 単色発光タイプです。

### ■Features

1. Ultra-small-sized chip LED even thinner than CL-190 (0.8mm thick), dimensions: 1.6 (L)×0.8(W)×0.6(H)mm
2. Mono-color type

### ■絶対最大定格/Absolute Maximum Rating

(Ta 25°C)

| シリーズ<br>Series                        | Pd<br>(mW) | I <sub>F</sub><br>(mA) | I <sub>FP</sub><br>(mA) | V <sub>R</sub><br>(V) | Top<br>(°C) | Tst<br>(°C) |
|---------------------------------------|------------|------------------------|-------------------------|-----------------------|-------------|-------------|
| CL-191 (UR,HRを除く<br>Except UR and HR) | 50         | 20                     | 100*1                   | 5                     | -25~+80     | -30~+85     |
| CL-191UR/HR                           | 78         | 30                     |                         |                       |             |             |

\*1 I<sub>FP</sub>の条件はduty 1/10、パルス巾0.1msecです。

\*1 Condition for I<sub>FP</sub> is pulse of 1/10 duty and 0.1msec width.

### ■電気的光学的特性/Electro-optical Characteristics

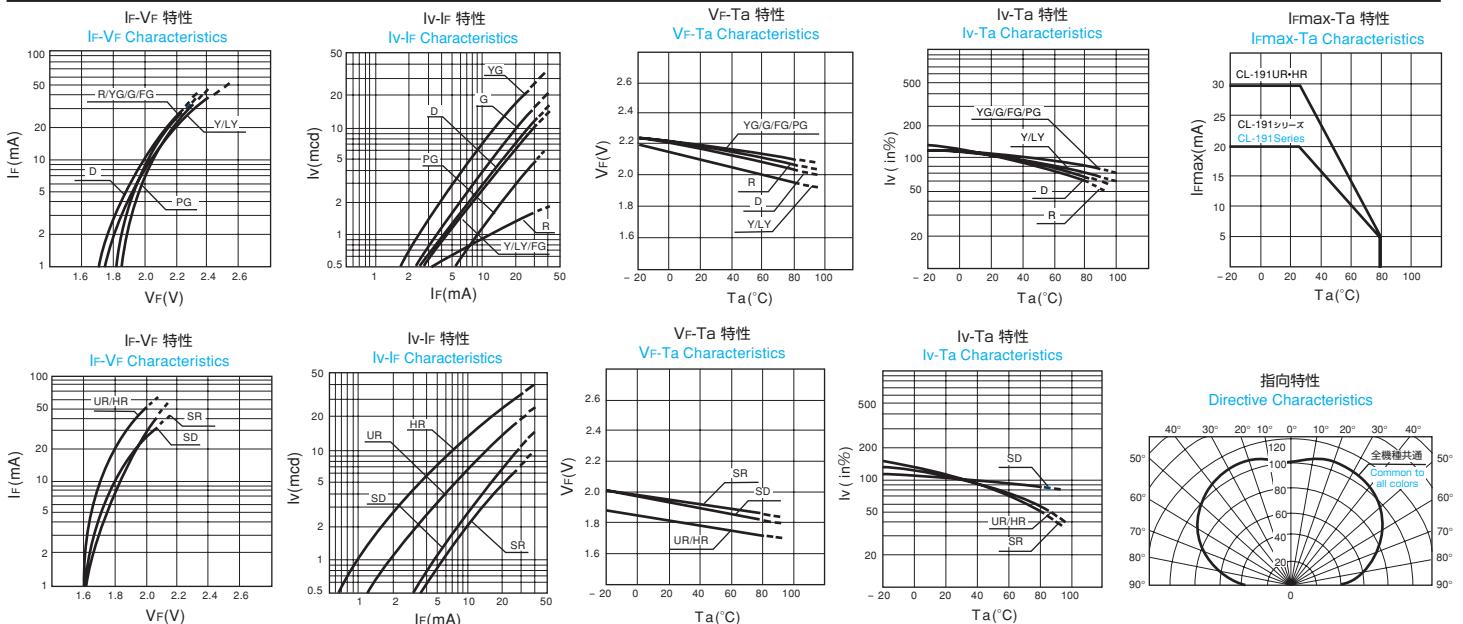
(Ta 25°C)

| 部品コード<br>Code for parts | 発光色<br>Lighting color   | V <sub>F</sub>         |         |         | λ <sub>P</sub><br>typ (nm) | Δλ<br>typ (nm) | I <sub>v</sub> *       |           |           |
|-------------------------|-------------------------|------------------------|---------|---------|----------------------------|----------------|------------------------|-----------|-----------|
|                         |                         | I <sub>F</sub><br>(mA) | typ (V) | max (V) |                            |                | I <sub>F</sub><br>(mA) | min (mcd) | typ (mcd) |
| CL-191R                 | Red                     | 20                     | 2.2     | 2.6     | 700                        | 100            | 20                     | 0.5       | 1.3       |
| CL-191D                 | Orange                  | 20                     | 2.2     | 2.6     | 605                        | 40             | 20                     | 2.4       | 7.1       |
| CL-191Y                 | Yellow                  | 20                     | 2.1     | 2.6     | 589                        | 40             | 20                     | 2.6       | 6.4       |
| CL-191LY                | Lemon yellow            | 20                     | 2.1     | 2.6     | 584                        | 40             | 20                     | 2.6       | 6.4       |
| CL-191YG                | Yellow green            | 20                     | 2.2     | 2.6     | 570                        | 30             | 20                     | 5         | 18        |
| CL-191G                 | Green                   | 20                     | 2.2     | 2.6     | 567                        | 26             | 20                     | 2.5       | 10        |
| CL-191FG                | Fresh green             | 20                     | 2.2     | 2.6     | 560                        | 26             | 20                     | 2.2       | 6.5       |
| CL-191PG                | Pure green              | 20                     | 2.2     | 2.6     | 557                        | 24             | 20                     | 1         | 3         |
| CL-191SR                | Super brightness red    | 20                     | 2       | 2.6     | 650                        | 40             | 20                     | 1.5       | 4.3       |
| CL-191SD                | Super brightness orange | 20                     | 2       | 2.6     | 630                        | 40             | 20                     | 2         | 6.2       |
| CL-191UR                | Ultra brightness red    | 20                     | 1.8     | 2.6     | 660                        | 20             | 20                     | 3.5       | 13        |
| CL-191HR                | High brightness red     | 20                     | 1.8     | 2.6     | 660                        | 20             | 20                     | 5         | 23        |

※NIST規格に準拠

※Per NIST standards

### ■諸特性/Characteristics

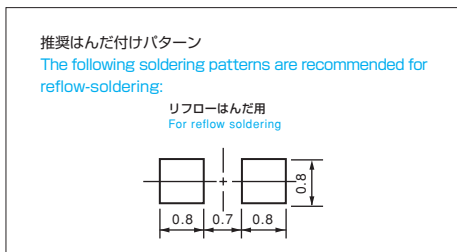
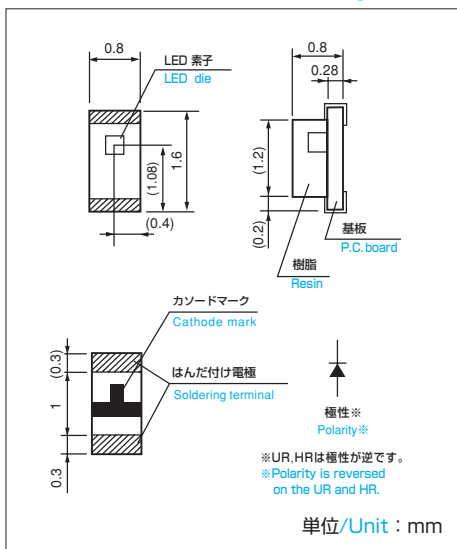


# CL-190シリーズ

## CL-190 Series



### ■外形寸法図/Outline drawing



### ■特徴

1. 単色発光タイプです。
2. 外形寸法は1.6(L)×0.8(W)×0.8(H) mmの超小型タイプです。

### ■Features

1. Mono-color type
2. Dimensions: 1.6(L)×0.8(W)×0.8(H) mm, being ultra-small size

### ■絶対最大定格/Absolute Maximum Rating

(Ta 25°C)

| シリーズ<br>Series                                   | Pd<br>(mW) | I <sub>F</sub><br>(mA) | I <sub>FP</sub><br>(mA) | V <sub>R</sub><br>(V) | Top<br>(°C) | Tst<br>(°C) |
|--|------------|------------------------|-------------------------|-----------------------|-------------|-------------|
| CL-190 <sup>UR,HRを除く</sup><br>(Except UR and HR) | 50         | 20                     | 100 *1                  | 5                     | -25~+80     | -30~+85     |
| CL-190UR/HR                                      | 78         | 30                     |                         |                       |             |             |

\*1 I<sub>FP</sub>の条件はduty 1/10、パルス巾0.1msecです。

\*1 Condition for I<sub>FP</sub> is pulse of 1/10 duty and 0.1msec width.

### ■電気的光学的特性/Electro-optical Characteristics

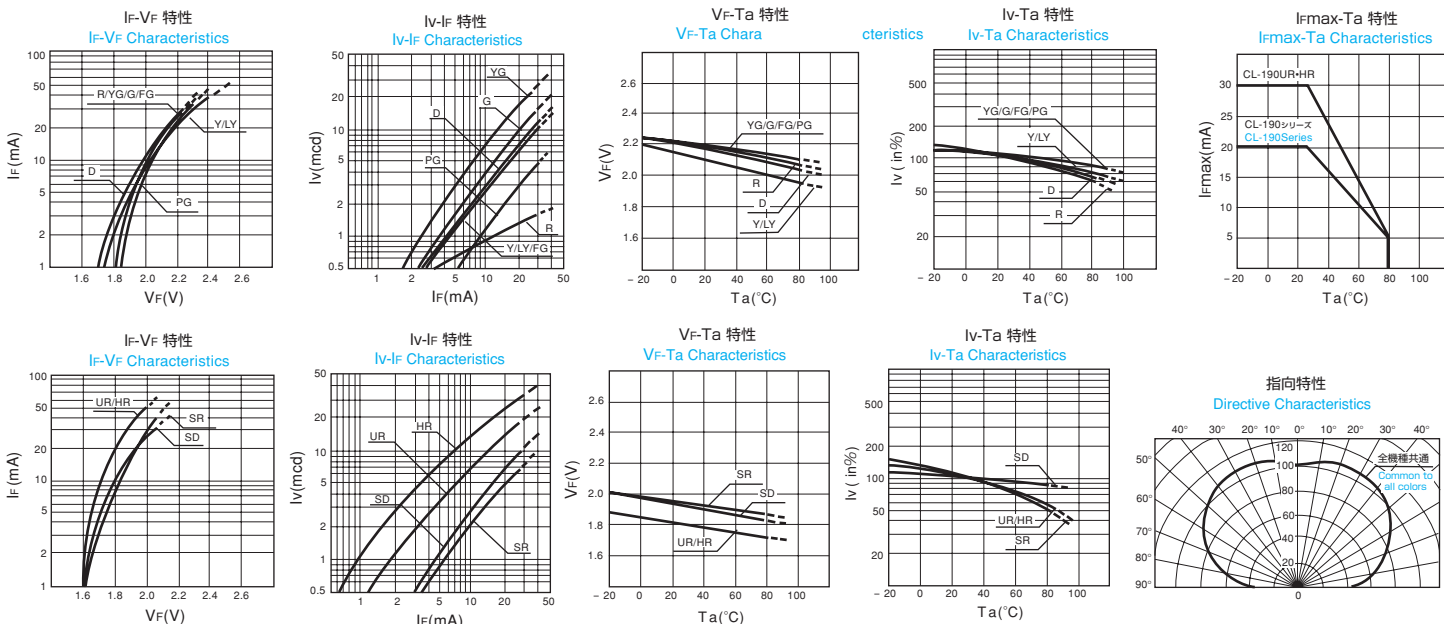
(Ta 25°C)

| 部品コード<br>Code for parts | 発光色<br>Lighting color   | V <sub>F</sub>         |            |            | λ <sub>P</sub><br>typ<br>(nm) | Δλ<br>typ<br>(nm) | I <sub>V</sub> *<br>I <sub>F</sub> min typ |       |              |
|-------------------------|-------------------------|------------------------|------------|------------|-------------------------------|-------------------|--|-------|--------------|
|                         |                         | I <sub>F</sub><br>(mA) | typ<br>(V) | max<br>(V) |                               |                   | (mA)                                       | (mcd) | typ<br>(mcd) |
| CL-190R                 | Red                     | 20                     | 2.2        | 2.6        | 700                           | 100               | 20   | 0.5   | 1.3          |
| CL-190D                 | Orange                  | 20                     | 2.2        | 2.6        | 605                           | 40                | 20   | 2.4   | 7.1          |
| CL-190Y                 | Yellow                  | 20                     | 2.1        | 2.6        | 589                           | 40                | 20   | 2.6   | 6.4          |
| CL-190LY                | Lemon yellow            | 20                     | 2.1        | 2.6        | 584                           | 40                | 20   | 2.6   | 6.4          |
| CL-190YG                | Yellow green            | 20                     | 2.2        | 2.6        | 570                           | 30                | 20   | 5     | 18           |
| CL-190G                 | Green                   | 20                     | 2.2        | 2.6        | 567                           | 26                | 20   | 2.5   | 10           |
| CL-190FG                | Fresh green             | 20                     | 2.2        | 2.6        | 560                           | 26                | 20   | 2.2   | 6.5          |
| CL-190PG                | Pure green              | 20                     | 2.2        | 2.6        | 557                           | 24                | 20   | 1     | 3            |
| CL-190SR                | Super brightness red    | 20                     | 2          | 2.6        | 650                           | 40                | 20   | 1.5   | 4.3          |
| CL-190SD                | Super brightness orange | 20                     | 2          | 2.6        | 630                           | 40                | 20   | 2     | 6.2          |
| CL-190UR                | Ultra brightness red    | 20                     | 1.8        | 2.6        | 660                           | 20                | 20   | 3.5   | 13           |
| CL-190HR                | High brightness red     | 20                     | 1.8        | 2.6        | 660                           | 20                | 20   | 5     | 23           |

\*NIST規格に準拠

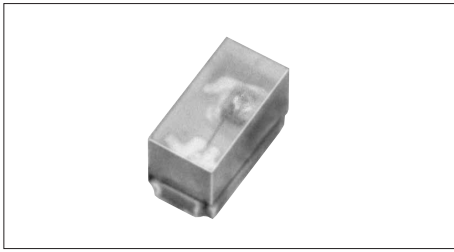
\*Per NIST standards

### ■諸特性/Characteristics

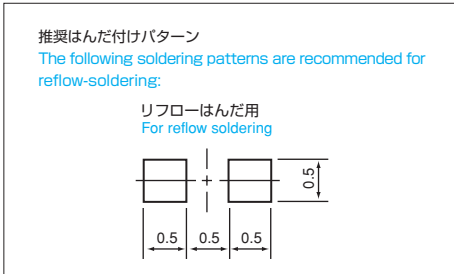
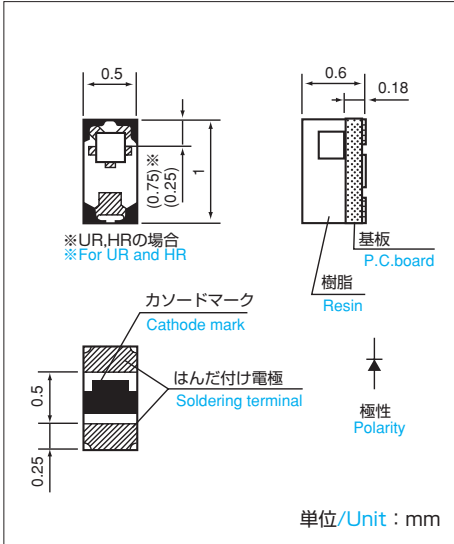


# CL-280シリーズ

## CL-280 Series



### ■外形寸法図/Outline drawing



### ■特徴

1. 1.0(L)×0.5(W)×0.6(H)mmの超小型・超薄型LEDです。
2. 光度等は弊社小型サイズ品と同等の特性を有しています。

### ■Features

1. This LED is extremely thin and compact 1.0(L)×0.5(W)×0.6(H)mm.
2. Brightness and other properties are the same as those of our other compact products.

### ■絶対最大定格/Absolute Maximum Rating

(Ta 25°C)

| シリーズ<br>Series                        | Pd<br>(mW) | I <sub>F</sub><br>(mA) | I <sub>FP</sub><br>(mA) | V <sub>R</sub><br>(V) | Top<br>(°C) | Tst<br>(°C) |
|---------------------------------------|------------|------------------------|-------------------------|-----------------------|-------------|-------------|
| CL-280 (UR,HRを除く<br>Except UR and HR) | 50         | 20                     | 100*1                   | 5                     | -25~+80     | -30~+85     |
| CL-280UR/HR                           | 78         | 30                     |                         |                       |             |             |

\*1 I<sub>FP</sub>の条件はduty 1/10、パルス巾0.1msecです。

\*1 Condition for I<sub>FP</sub> is pulse of 1/10 duty and 0.1msec width.

### ■電気的光学的特性/Electro-optical Characteristics

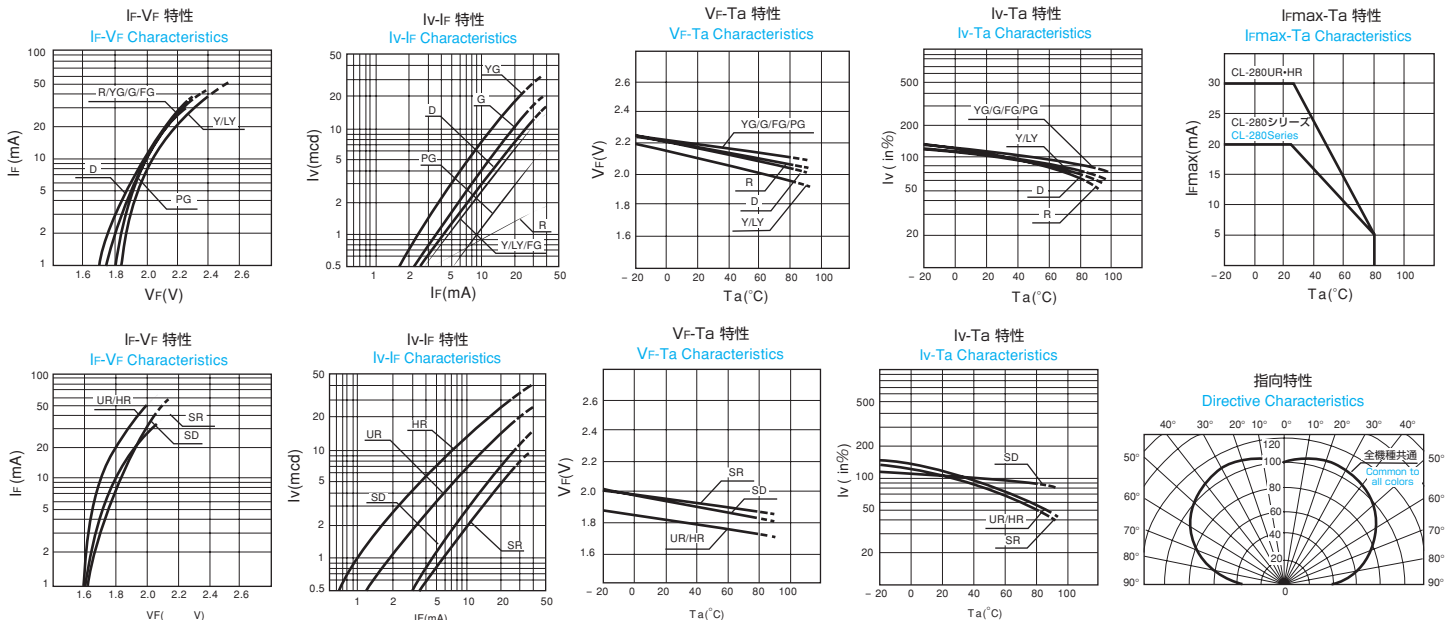
(Ta 25°C)

| 部品コード<br>Code for parts | 発光色<br>Lighting color   | V <sub>F</sub>         |         |         | λ <sub>P</sub><br>typ (nm) | Δλ<br>typ (nm) | I <sub>v</sub> * (mcd) |           |           |
|-------------------------|-------------------------|------------------------|---------|---------|----------------------------|----------------|------------------------|-----------|-----------|
|                         |                         | I <sub>F</sub><br>(mA) | typ (V) | max (V) |                            |                | I <sub>F</sub><br>(mA) | min (mcd) | typ (mcd) |
| CL-280R                 | Red                     | 20                     | 2.2     | 2.6     | 700                        | 100            | 20                     | 0.5       | 1.3       |
| CL-280D                 | Orange                  | 20                     | 2.2     | 2.6     | 605                        | 40             | 20                     | 2.4       | 7.1       |
| CL-280Y                 | Yellow                  | 20                     | 2.1     | 2.6     | 589                        | 40             | 20                     | 2.6       | 6.4       |
| CL-280LY                | Lemon yellow            | 20                     | 2.1     | 2.6     | 584                        | 40             | 20                     | 2.6       | 6.4       |
| CL-280YG                | Yellow green            | 20                     | 2.2     | 2.6     | 570                        | 30             | 20                     | 5         | 18        |
| CL-280G                 | Green                   | 20                     | 2.2     | 2.6     | 567                        | 26             | 20                     | 2.5       | 10        |
| CL-280FG                | Fresh green             | 20                     | 2.2     | 2.6     | 560                        | 26             | 20                     | 2.2       | 6.5       |
| CL-280PG                | Pure green              | 20                     | 2.2     | 2.6     | 557                        | 24             | 20                     | 1         | 3         |
| CL-280SR                | Super brightness red    | 20                     | 2       | 2.6     | 650                        | 40             | 20                     | 1.5       | 4.3       |
| CL-280SD                | Super brightness orange | 20                     | 2       | 2.6     | 630                        | 40             | 20                     | 2         | 6.2       |
| CL-280UR                | Ultra brightness red    | 20                     | 1.8     | 2.6     | 660                        | 20             | 20                     | 3.5       | 13        |
| CL-280HR                | High brightness red     | 20                     | 1.8     | 2.6     | 660                        | 20             | 20                     | 5         | 23        |

※NIST規格に準拠

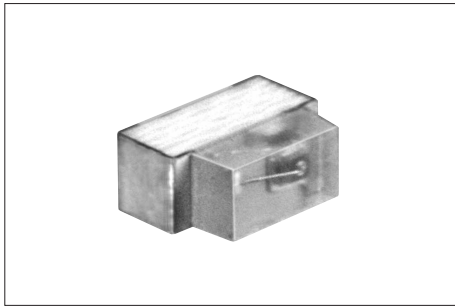
※Per NIST standards

### ■諸特性/Characteristics



# CL-270シリーズ

## CL-270 Series



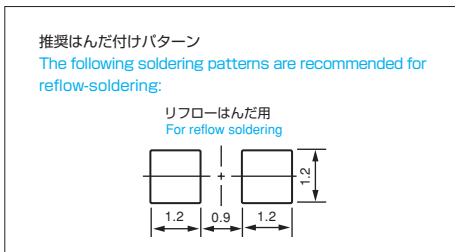
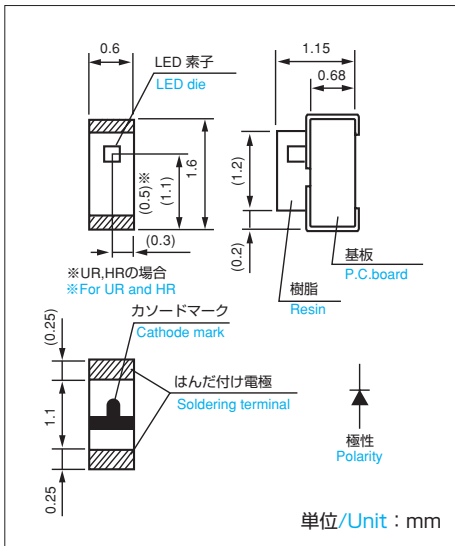
### ■特徴

1. 側面発光として実装可能な極小型チップLEDです。
2. 単色発光タイプです。
3. 1.6(L)×1.15(W)×0.6(H)mmの極小型薄型サイズです。

### ■Features

1. Very-small-sized chip LED which makes right-angle mounting available
2. Mono-color type
3. Dimensions : 1.6(L)×1.15(W)×0.6(H) mm, being extremely small

### ■外形寸法図/Outline drawing



### ■絶対最大定格/Absolute Maximum Rating

(Ta 25°C)

| シリーズ<br>Series                        | Pd<br>(mW) | I <sub>F</sub><br>(mA) | I <sub>FP</sub><br>(mA) | V <sub>R</sub><br>(V) | Top<br>(°C) | Tst<br>(°C) |
|---------------------------------------|------------|------------------------|-------------------------|-----------------------|-------------|-------------|
| CL-270 (UR,HRを除く<br>Except UR and HR) | 50         | 20                     | 100*1                   | 5                     | -25~+80     | -30~+85     |
| CL-270UR/HR                           | 78         | 30                     |                         |                       |             |             |

\*1 I<sub>FP</sub>の条件はduty 1/10、パルス巾0.1msecです。

\*1 Condition for I<sub>FP</sub> is pulse of 1/10 duty and 0.1msec width.

### ■電気的光学的特性/Electro-optical Characteristics

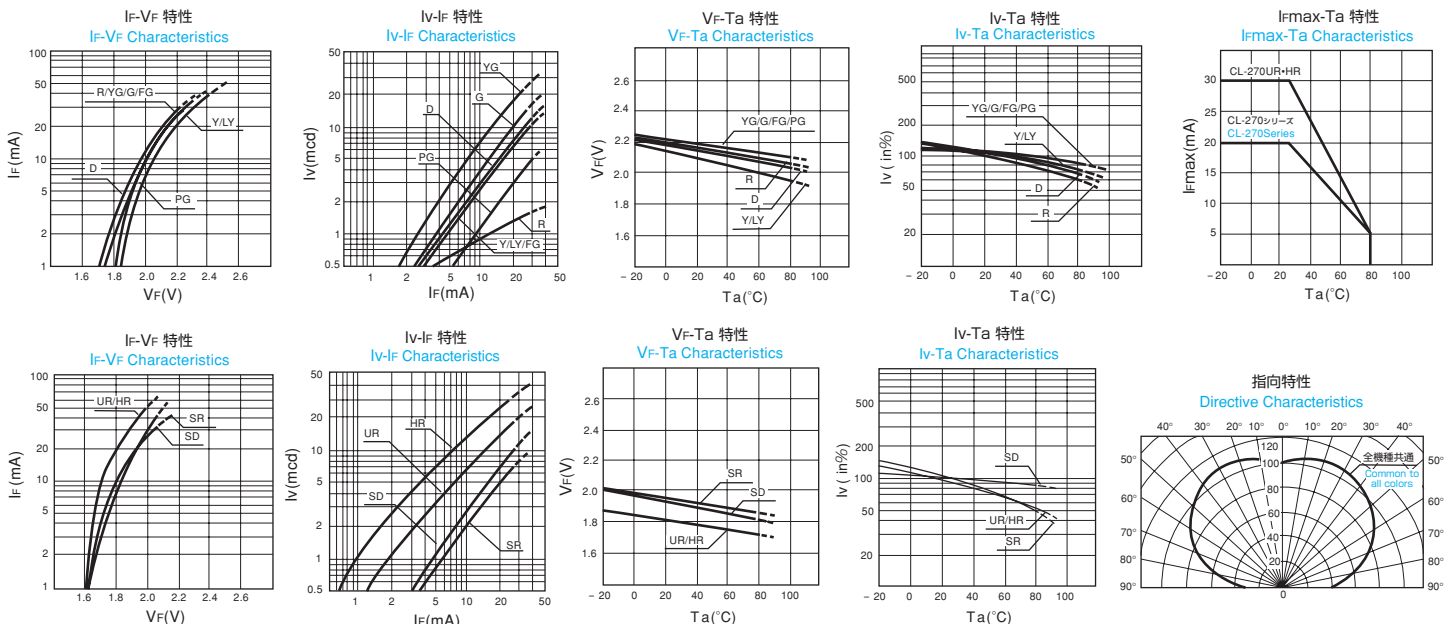
(Ta 25°C)

| 部品コード<br>Code for parts | 発光色<br>Lighting color   | V <sub>F</sub>         |            |            | λ <sub>P</sub><br>typ<br>(nm) | Δλ<br>typ<br>(nm) | I <sub>v</sub> *<br>I <sub>F</sub> min typ |              |              |
|-------------------------|-------------------------|------------------------|------------|------------|-------------------------------|-------------------|--|--------------|--------------|
|                         |                         | I <sub>F</sub><br>(mA) | typ<br>(V) | max<br>(V) |                               |                   | I <sub>F</sub><br>(mA)                     | min<br>(mcd) | typ<br>(mcd) |
| CL-270R                 | Red                     | 20                     | 2.2        | 2.6        | 700                           | 100               | 20   | 0.5          | 1.3          |
| CL-270D                 | Orange                  | 20                     | 2.2        | 2.6        | 605                           | 40                | 20   | 2.4          | 7.1          |
| CL-270Y                 | Yellow                  | 20                     | 2.1        | 2.6        | 589                           | 40                | 20   | 2.6          | 6.4          |
| CL-270LY                | Lemon yellow            | 20                     | 2.1        | 2.6        | 584                           | 40                | 20   | 2.6          | 6.4          |
| CL-270YG                | Yellow green            | 20                     | 2.2        | 2.6        | 570                           | 30                | 20   | 5            | 18           |
| CL-270G                 | Green                   | 20                     | 2.2        | 2.6        | 567                           | 26                | 20   | 2.5          | 10           |
| CL-270FG                | Fresh green             | 20                     | 2.2        | 2.6        | 560                           | 26                | 20   | 2.2          | 6.5          |
| CL-270PG                | Pure green              | 20                     | 2.2        | 2.6        | 557                           | 24                | 20   | 1            | 3            |
| CL-270SR                | Super brightness red    | 20                     | 2          | 2.6        | 650                           | 40                | 20   | 1.5          | 4.3          |
| CL-270SD                | Super brightness orange | 20                     | 2          | 2.6        | 630                           | 40                | 20   | 2            | 6.2          |
| CL-270UR                | Ultra brightness red    | 20                     | 1.8        | 2.6        | 660                           | 20                | 20   | 3.5          | 13           |
| CL-270HR                | High brightness red     | 20                     | 1.8        | 2.6        | 660                           | 20                | 20   | 5            | 23           |

\*NIST規格に準拠

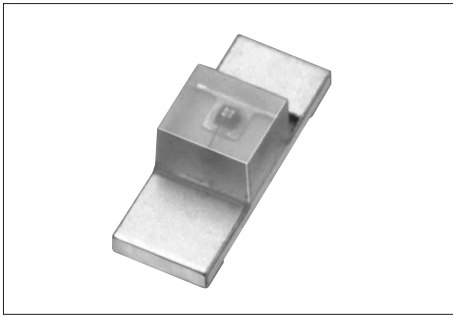
\*Per NIST standards

### ■諸特性/Characteristics

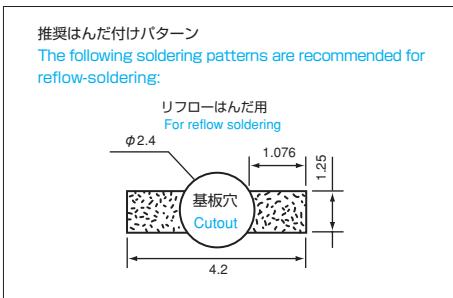
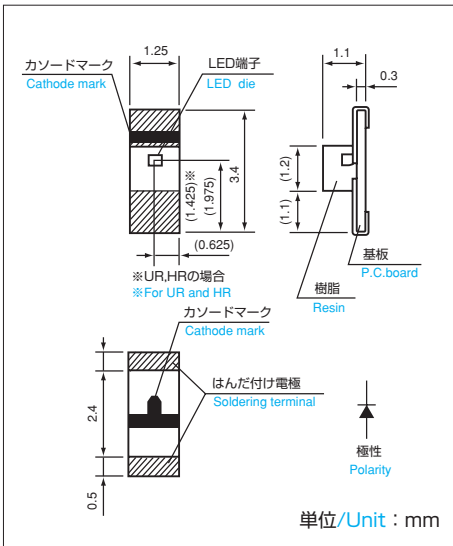


# CL-260シリーズ

## CL-260 Series



### ■外形寸法図/Outline drawing



### ■特徴

1. チップマウンターによるプリント基板背面からの自動実装が可能です。
2. プリント基板穴に発光面を挿入する事により、トータルの薄型化が実現できます。
3. プリント基板穴は、丸穴に対応しています。
4. 単色発光タイプです。
5. 外形寸法は3.4(L)×1.25(W)×1.1(H)mmの小型サイズです。

### ■Features

1. Mountable from bottom surface of P.C. board by chip mounter
2. Thinner total height can be obtained by means of fitting lens portion into the cut-out provided on the P.C.board.
3. Designed for circular cutout on P.C. board
4. Mono-color type
5. Small and square size, dimensions : 3.4(L) × 1.25(W) × 1.1(H)mm

### ■絶対最大定格/Absolute Maximum Rating

(Ta 25°C)

| シリーズ<br>Series                        | Pd<br>(mW) | I <sub>F</sub><br>(mA) | I <sub>FP</sub><br>(mA) | V <sub>R</sub><br>(V) | Top<br>(°C) | Tst<br>(°C) |
|---------------------------------------|------------|------------------------|-------------------------|-----------------------|-------------|-------------|
| CL-260 (UR,HRを除く<br>Except UR and HR) | 65         | 25                     | 100*1                   | 5                     | -25~+80     | -30~+85     |
| CL-260UR/HR                           | 78         | 30                     |                         |                       |             |             |

\*1 I<sub>FP</sub>の条件はduty 1/10、パルス巾0.1msecです。

\*1 Condition for I<sub>FP</sub> is pulse of 1/10 duty and 0.1msec width.

### ■電気的光学的特性/Electro-optical Characteristics

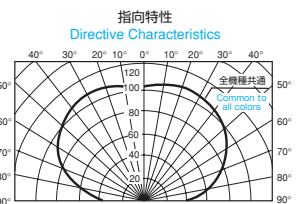
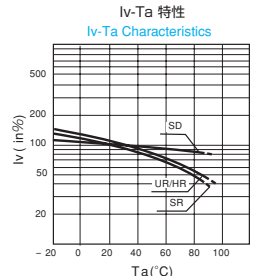
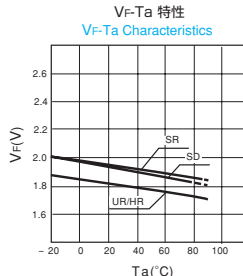
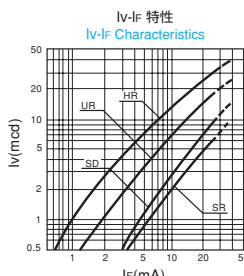
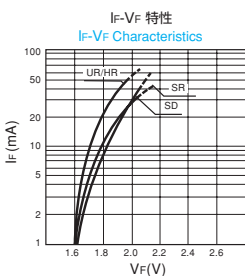
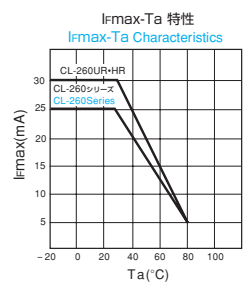
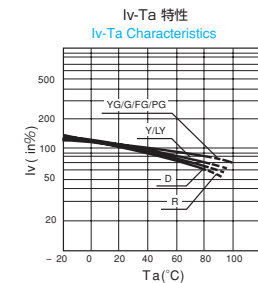
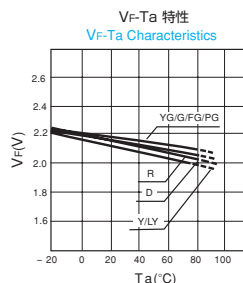
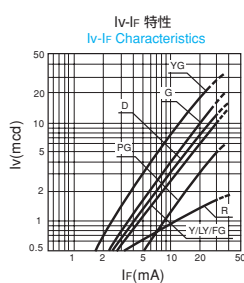
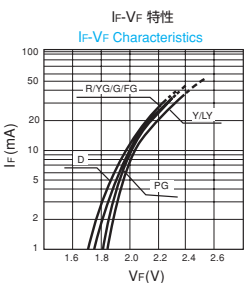
(Ta 25°C)

| 部品コード<br>Code for parts | 発光色<br>Lighting color   | V <sub>F</sub>         |            |            | λ <sub>P</sub><br>typ (nm) | Δλ<br>typ (nm) | I <sub>V</sub> *<br>I <sub>F</sub> (mA) |              |     |
|-------------------------|-------------------------|------------------------|------------|------------|----------------------------|----------------|---|--------------|-----|
|                         |                         | I <sub>F</sub><br>(mA) | typ<br>(V) | max<br>(V) |                            |                | min<br>(mcd)                            | typ<br>(mcd) |     |
| CL-260R                 | Red                     | 20                     | 2.2        | 2.6        | 700                        | 100            | 20                                      | 0.5          | 1.3 |
| CL-260D                 | Orange                  | 20                     | 2.2        | 2.6        | 605                        | 40             | 20                                      | 2.4          | 7.1 |
| CL-260Y                 | Yellow                  | 20                     | 2.1        | 2.6        | 589                        | 40             | 20                                      | 2.6          | 6.4 |
| CL-260LY                | Lemon yellow            | 20                     | 2.1        | 2.6        | 584                        | 40             | 20                                      | 2.6          | 6.4 |
| CL-260YG                | Yellow green            | 20                     | 2.2        | 2.6        | 570                        | 30             | 20                                      | 5            | 18  |
| CL-260G                 | Green                   | 20                     | 2.2        | 2.6        | 567                        | 26             | 20                                      | 2.5          | 10  |
| CL-260FG                | Fresh green             | 20                     | 2.2        | 2.6        | 560                        | 26             | 20                                      | 2.2          | 6.5 |
| CL-260PG                | Pure green              | 20                     | 2.2        | 2.6        | 557                        | 24             | 20                                      | 1            | 3   |
| CL-260SR                | Super brightness red    | 20                     | 2          | 2.6        | 650                        | 40             | 20                                      | 1.5          | 4.3 |
| CL-260SD                | Super brightness orange | 20                     | 2          | 2.6        | 630                        | 40             | 20                                      | 2            | 6.2 |
| CL-260UR                | Ultra brightness red    | 20                     | 1.8        | 2.6        | 660                        | 20             | 20                                      | 3.5          | 13  |
| CL-260HR                | High brightness red     | 20                     | 1.8        | 2.6        | 660                        | 20             | 20                                      | 5            | 23  |

\*NIST規格に準拠

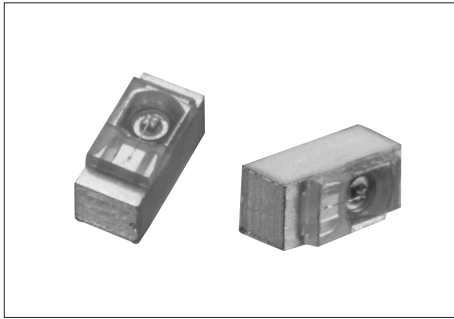
\*Per NIST standards

### ■諸特性/Characteristics

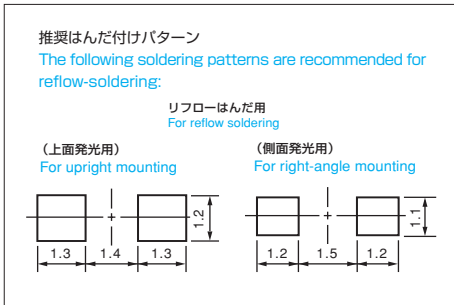
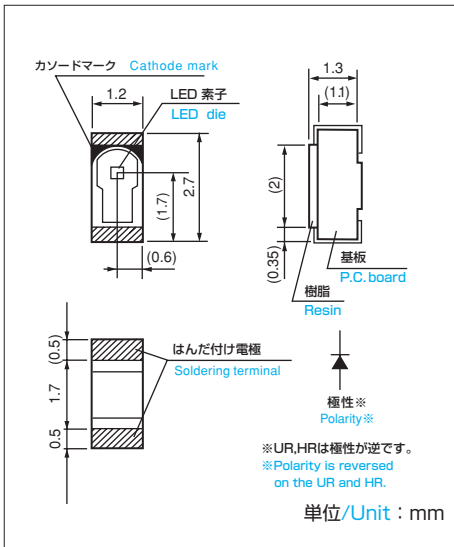


# CL-220シリーズ

## CL-220 Series



### ■外形寸法図/Outline drawing



### ■特徴

1. 上面発光及び側面発光のいずれにも実装可能です。
2. 単色発光タイプです。
3. 外形寸法は2.7(L)×1.2(W)×1.3(H) mmの小型サイズです。
4. 発光部周辺にリフレクタを配した高輝度タイプです。
5. CL-220には上向き(上面)と横向き(側面)のテーピング仕様がありますので、ご注文時にはご指定ください。

### ■Features

1. Both mounting available: namely, upright and right-angle mounting
2. Mono-color type
3. Ultra small square size, dimensions : 2.7 (L)×1.2(W)×1.3(H)mm
4. The package provides a reflector area around the LED die and it enhances higher brightness.
5. For CL-220 there are two ways of taping, namely, taping upward and taping sideways. Please specify when ordering.

### ■絶対最大定格/Absolute Maximum Rating

(Ta 25°C)

| シリーズ<br>Series                        | Pd<br>(mW) | I <sub>F</sub><br>(mA) | I <sub>FP</sub><br>(mA) | V <sub>R</sub><br>(V) | Top<br>(°C) | Tst<br>(°C) |
|---------------------------------------|------------|------------------------|-------------------------|-----------------------|-------------|-------------|
| CL-220 (UR,HRを除く<br>Except UR and HR) | 65         | 25                     | 100 *1                  | 5                     | -25~+80     | -30~+85     |
| CL-220UR/HR                           | 78         | 30                     |                         |                       |             |             |

\*1 I<sub>FP</sub>の条件はduty 1/10、パルス巾0.1msecです。

\*1 Condition for I<sub>FP</sub> is pulse of 1/10 duty and 0.1msec width.

### ■電気的光学的特性/Electro-optical Characteristics

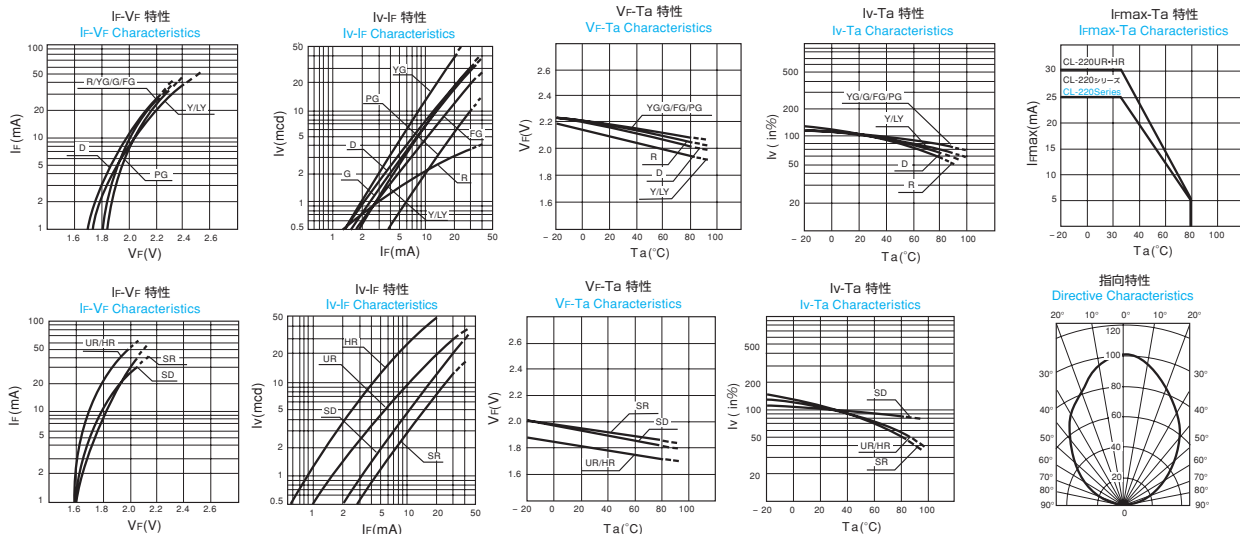
(Ta 25°C)

| 部品コード<br>Code for parts | 発光色<br>Lighting color   | V <sub>F</sub>         |         |         | λ <sub>P</sub><br>typ (nm) | Δλ<br>typ (nm) | I <sub>v</sub> *<br>(mcd) |           |           |
|-------------------------|-------------------------|------------------------|---------|---------|----------------------------|----------------|---------------------------|-----------|-----------|
|                         |                         | I <sub>F</sub><br>(mA) | typ (V) | max (V) |                            |                | I <sub>F</sub><br>(mA)    | min (mcd) | typ (mcd) |
| CL-220R                 | Red                     | 20                     | 2.2     | 2.6     | 700                        | 100            | 20                        | 1.5       | 3         |
| CL-220D                 | Orange                  | 20                     | 2.2     | 2.6     | 605                        | 40             | 20                        | 5         | 15        |
| CL-220Y                 | Yellow                  | 20                     | 2.1     | 2.6     | 589                        | 40             | 20                        | 6.1       | 15        |
| CL-220LY                | Lemon yellow            | 20                     | 2.1     | 2.6     | 584                        | 40             | 20                        | 6.1       | 15        |
| CL-220YG                | Yellow green            | 20                     | 2.2     | 2.6     | 570                        | 30             | 20                        | 10        | 35        |
| CL-220G                 | Green                   | 20                     | 2.2     | 2.6     | 567                        | 26             | 20                        | 5.8       | 17        |
| CL-220FG                | Fresh green             | 20                     | 2.2     | 2.6     | 560                        | 26             | 20                        | 5.8       | 11        |
| CL-220PG                | Pure green              | 20                     | 2.2     | 2.6     | 557                        | 24             | 20                        | 2.4       | 5.3       |
| CL-220SR                | Super brightness red    | 20                     | 2       | 2.6     | 650                        | 40             | 20                        | 3.8       | 7.2       |
| CL-220SD                | Super brightness orange | 20                     | 2       | 2.6     | 630                        | 40             | 20                        | 4.4       | 13        |
| CL-220UR                | Ultra brightness red    | 20                     | 1.8     | 2.6     | 660                        | 20             | 20                        | 5.6       | 20        |
| CL-220HR                | High brightness red     | 20                     | 1.8     | 2.6     | 660                        | 20             | 20                        | 9         | 50        |

※NIST規格に準拠

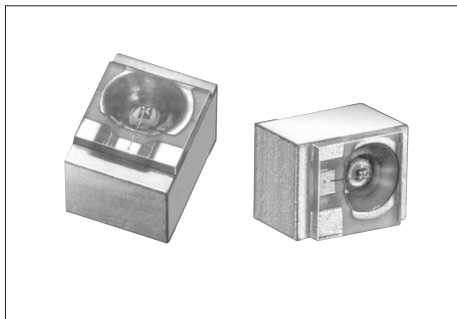
※Per NIST standards

### ■諸特性/Characteristics

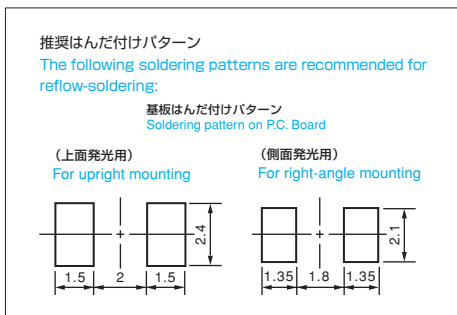
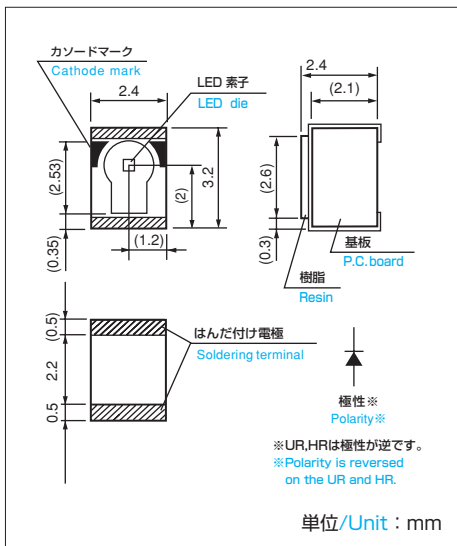


# CL-200シリーズ

## CL-200 Series



### ■外形寸法図/Outline drawing



### ■特徴

1. 上面発光及び側面発光のいずれにも実装可能です。
2. 単色発光タイプです。
3. 外形寸法は3.2(L)×2.4(W)×2.4(H)mmの標準型です。
4. 発光部周辺にリフレクタを配した超高輝度タイプです。
5. CL-200には、上向き(上面)と横向き(側面)のテーピング仕様がありますので、ご発注時にはご指定ください。

### ■Features

1. Both mounting available; namely, upright and right-angle mounting
2. Mono-color type
3. Dimensions:3.2(L)×2.4(W)×2.4(H)mm, being a standard size
4. The package provides a reflector area around the LED die and it enhances higher brightness.
5. For CL-200 there are two ways of taping; namely, taping upward and taping sideways. Please specify when ordering.

### ■絶対最大定格/Absolute Maximum Rating

(Ta 25°C)

| シリーズ<br>Series                        | Pd<br>(mW) | I <sub>F</sub><br>(mA) | I <sub>FP</sub><br>(mA) | V <sub>R</sub><br>(V) | Top<br>(°C) | Tst<br>(°C) |
|---------------------------------------|------------|------------------------|-------------------------|-----------------------|-------------|-------------|
| CL-200 (UR,HRを除く<br>Except UR and HR) | 65         | 25                     | 100*1                   | 5                     | -25~+80     | -30~+85     |
| CL-200UR/HR                           | 78         | 30                     |                         |                       |             |             |

\*1 I<sub>FP</sub>の条件はduty 1/10、パルス巾0.1msecです。

\*1 Condition for I<sub>FP</sub> is pulse of 1/10 duty and 0.1msec width.

### ■電気的光学的特性/Electro-optical Characteristics

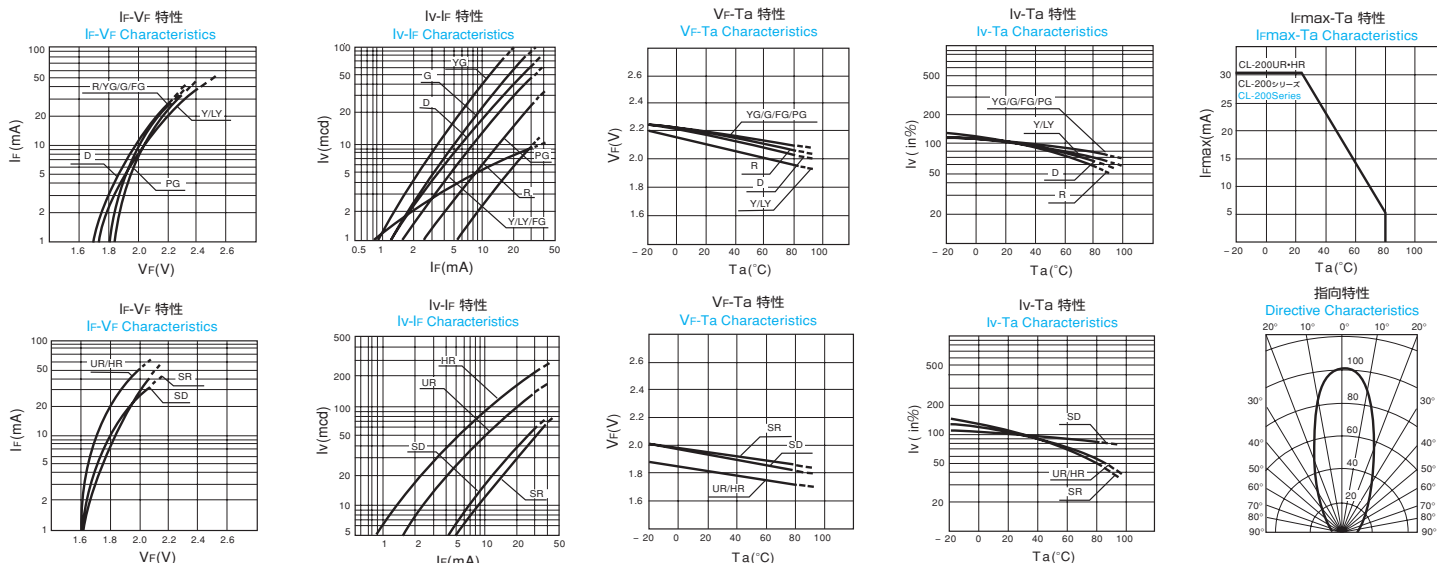
(Ta 25°C)

| 部品コード<br>Code for parts | 発光色<br>Lighting color   | V <sub>F</sub>         |            |            | λ <sub>P</sub><br>typ (nm) | Δλ<br>typ (nm) | I <sub>v</sub> *<br>I <sub>F</sub> min typ (mcd) |              |              |
|-------------------------|-------------------------|------------------------|------------|------------|----------------------------|----------------|--|--------------|--------------|
|                         |                         | I <sub>F</sub><br>(mA) | typ<br>(V) | max<br>(V) |                            |                | I <sub>F</sub><br>(mA)                           | min<br>(mcd) | typ<br>(mcd) |
| CL-200R                 | Red                     | 20                     | 2.2        | 2.6        | 700                        | 100            | 20   | 2.5          | 7.8          |
| CL-200D                 | Orange                  | 20                     | 2.2        | 2.6        | 605                        | 40             | 20   | 9.8          | 39           |
| CL-200Y                 | Yellow                  | 20                     | 2.1        | 2.6        | 589                        | 40             | 20   | 9.4          | 31           |
| CL-200LY                | Lemon yellow            | 20                     | 2.1        | 2.6        | 584                        | 40             | 20   | 9.4          | 31           |
| CL-200YG                | Yellow green            | 20                     | 2.2        | 2.6        | 570                        | 30             | 20   | 23           | 95           |
| CL-200G                 | Green                   | 20                     | 2.2        | 2.6        | 567                        | 26             | 20   | 11           | 53           |
| CL-200FG                | Fresh green             | 20                     | 2.2        | 2.6        | 560                        | 26             | 20   | 8.8          | 30           |
| CL-200PG                | Pure green              | 20                     | 2.2        | 2.6        | 557                        | 24             | 20   | 2.9          | 15           |
| CL-200SR                | Super brightness red    | 20                     | 2          | 2.6        | 650                        | 40             | 20   | 5.7          | 29           |
| CL-200SD                | Super brightness orange | 20                     | 2          | 2.6        | 630                        | 40             | 20   | 8.6          | 35           |
| CL-200UR                | Ultra brightness red    | 20                     | 1.8        | 2.6        | 660                        | 20             | 20   | 17           | 94           |
| CL-200HR                | High brightness red     | 20                     | 1.8        | 2.6        | 660                        | 20             | 20   | 37           | 147          |

\*NIST規格に準拠

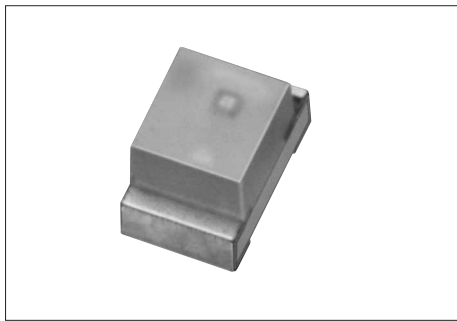
\*Per NIST standards

### ■諸特性/Characteristics

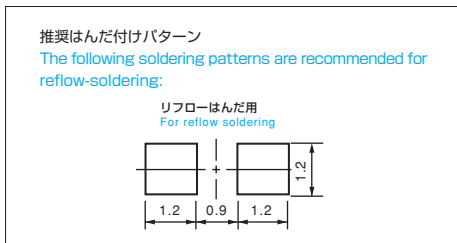
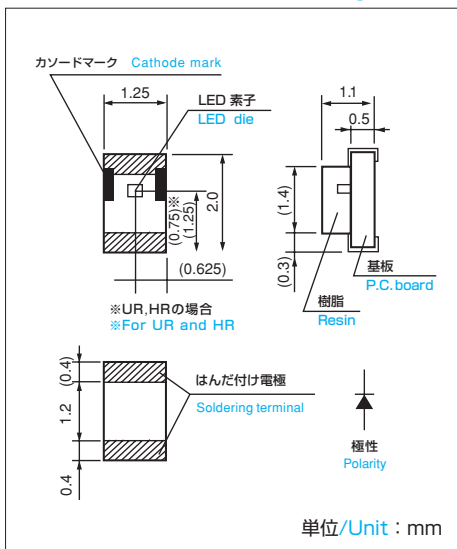


# CL-170シリーズ

## CL-170 Series



### ■外形寸法図/Outline drawing



### ■特徴

1. 単色発光タイプです。
2. 外形寸法は2.0(L)×1.25(W)×1.1(H)mmの小型タイプです。

### ■Features

1. Mono-color type
2. Dimensions:2.0(L)×1.25(W)×1.1(H)mm, being small size

### ■絶対最大定格/Absolute Maximum Rating

(Ta 25°C)

| シリーズ<br>Series                        | Pd<br>(mW) | I <sub>F</sub><br>(mA) | I <sub>FP</sub><br>(mA) | V <sub>R</sub><br>(V) | Top<br>(°C) | Tst<br>(°C) |
|---------------------------------------|------------|------------------------|-------------------------|-----------------------|-------------|-------------|
| CL-170 (UR,HRを除く)<br>Except UR and HR | 65         | 25                     | 100*1                   | 5                     | -25~+80     | -30~+85     |
| CL-170UR/HR                           | 78         | 30                     |                         |                       |             |             |

\*1 I<sub>FP</sub>の条件はduty 1/10、パルス巾0.1msecです。

\*1 Condition for I<sub>FP</sub> is pulse of 1/10 duty and 0.1msec width.

### ■電気的光学的特性/Electro-optical Characteristics

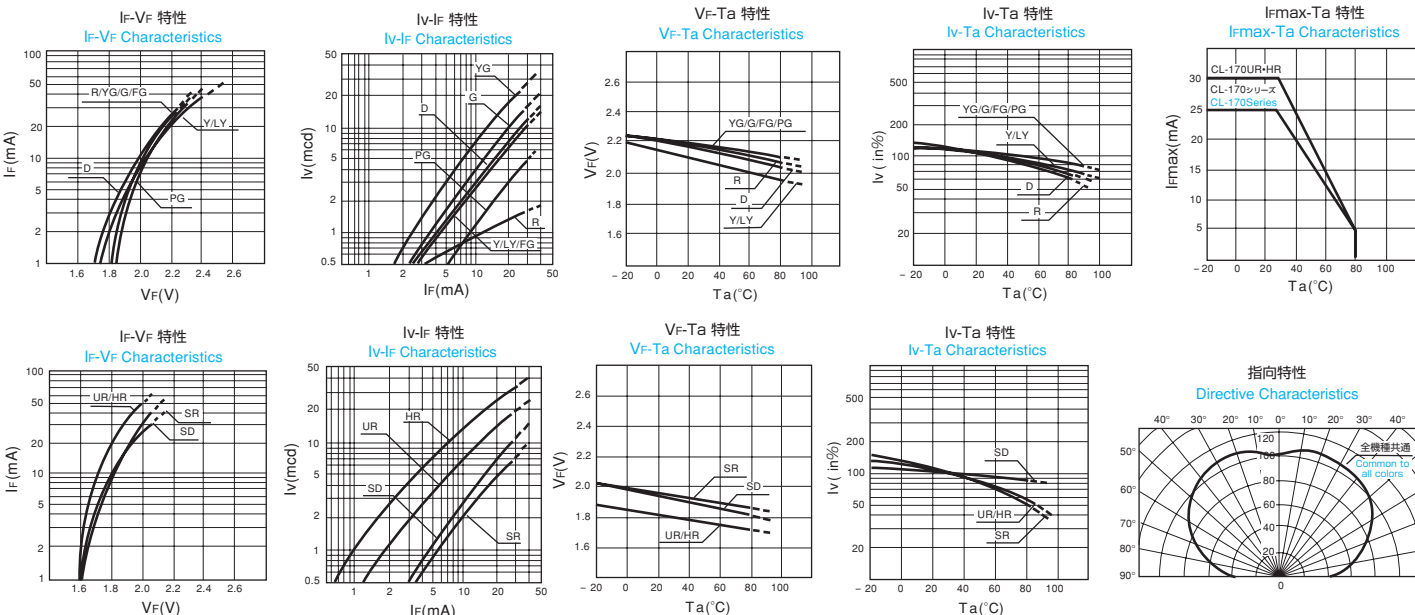
(Ta 25°C)

| 部品コード<br>Code for parts | 発光色<br>Lighting color   | V <sub>F</sub>         |            |            | λ <sub>P</sub><br>typ (nm) | Δλ<br>typ (nm) | I <sub>v</sub> *       |              |              |
|-------------------------|-------------------------|------------------------|------------|------------|----------------------------|----------------|------------------------|--------------|--------------|
|                         |                         | I <sub>F</sub><br>(mA) | typ<br>(V) | max<br>(V) |                            |                | I <sub>F</sub><br>(mA) | min<br>(mcd) | typ<br>(mcd) |
| CL-170R                 | Red                     | 20                     | 2.2        | 2.6        | 700                        | 100            | 20                     | 0.5          | 1.3          |
| CL-170D                 | Orange                  | 20                     | 2.2        | 2.6        | 605                        | 40             | 20                     | 2.4          | 7.1          |
| CL-170Y                 | Yellow                  | 20                     | 2.1        | 2.6        | 589                        | 40             | 20                     | 2.6          | 6.4          |
| CL-170LY                | Lemon yellow            | 20                     | 2.1        | 2.6        | 584                        | 40             | 20                     | 2.6          | 6.4          |
| CL-170YG                | Yellow green            | 20                     | 2.2        | 2.6        | 570                        | 30             | 20                     | 5            | 18           |
| CL-170G                 | Green                   | 20                     | 2.2        | 2.6        | 567                        | 26             | 20                     | 2.5          | 10           |
| CL-170FG                | Fresh green             | 20                     | 2.2        | 2.6        | 560                        | 26             | 20                     | 2.2          | 6.5          |
| CL-170PG                | Pure green              | 20                     | 2.2        | 2.6        | 557                        | 24             | 20                     | 1            | 3            |
| CL-170SR                | Super brightness red    | 20                     | 2          | 2.6        | 650                        | 40             | 20                     | 1.5          | 4.3          |
| CL-170SD                | Super brightness orange | 20                     | 2          | 2.6        | 630                        | 40             | 20                     | 2            | 6.2          |
| CL-170UR                | Ultra brightness red    | 20                     | 1.8        | 2.6        | 660                        | 20             | 20                     | 3.5          | 13           |
| CL-170HR                | High brightness red     | 20                     | 1.8        | 2.6        | 660                        | 20             | 20                     | 5            | 23           |

※NIST規格に準拠

※Per NIST standards

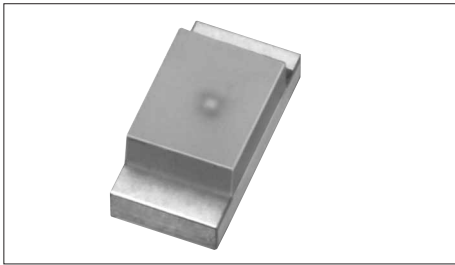
### ■諸特性/Characteristics



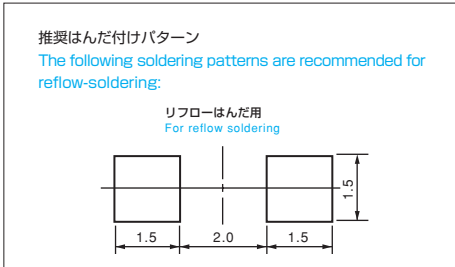
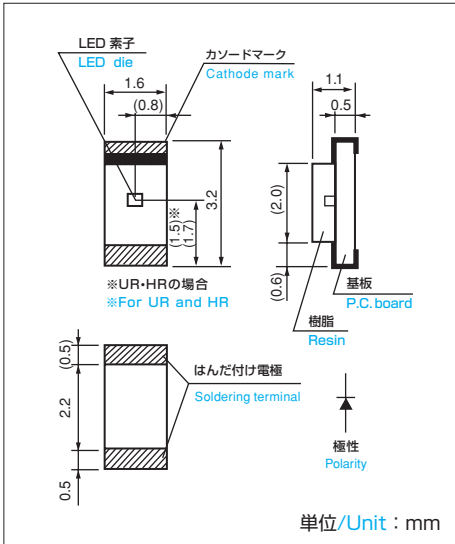


# CL-150シリーズ

## CL-150 Series



### ■外形寸法図/Outline drawing



### ■特徴

1. 単色発光タイプです。
2. 外形寸法は3.2(L)×1.6(W)×1.1(H)mmの標準型です。

### ■Features

1. Mono-color type
2. Dimensions:3.2(L)×1.6(W)×1.1(H) mm,being a standard size

### ■絶対最大定格/Absolute Maximum Rating

(Ta 25°C)

| シリーズ<br>Series                        | Pd<br>(mW) | IF<br>(mA) | IFP<br>(mA) | VR<br>(V) | Top<br>(°C) | Tst<br>(°C) |
|---------------------------------------|------------|------------|-------------|-----------|-------------|-------------|
| CL-150 (UR,HRを除く<br>Except UR and HR) | 65         | 25         | 100*1       | 5         | -25~+80     | -30~+85     |
| CL-150UR/HR                           | 78         | 30         |             |           |             |             |

\*1 IFPの条件はduty 1/10、パルス中0.1msecです。

\*1 Condition for IFP is pulse of 1/10 duty and 0.1msec width.

### ■電気的光学的特性/Electro-optical Characteristics

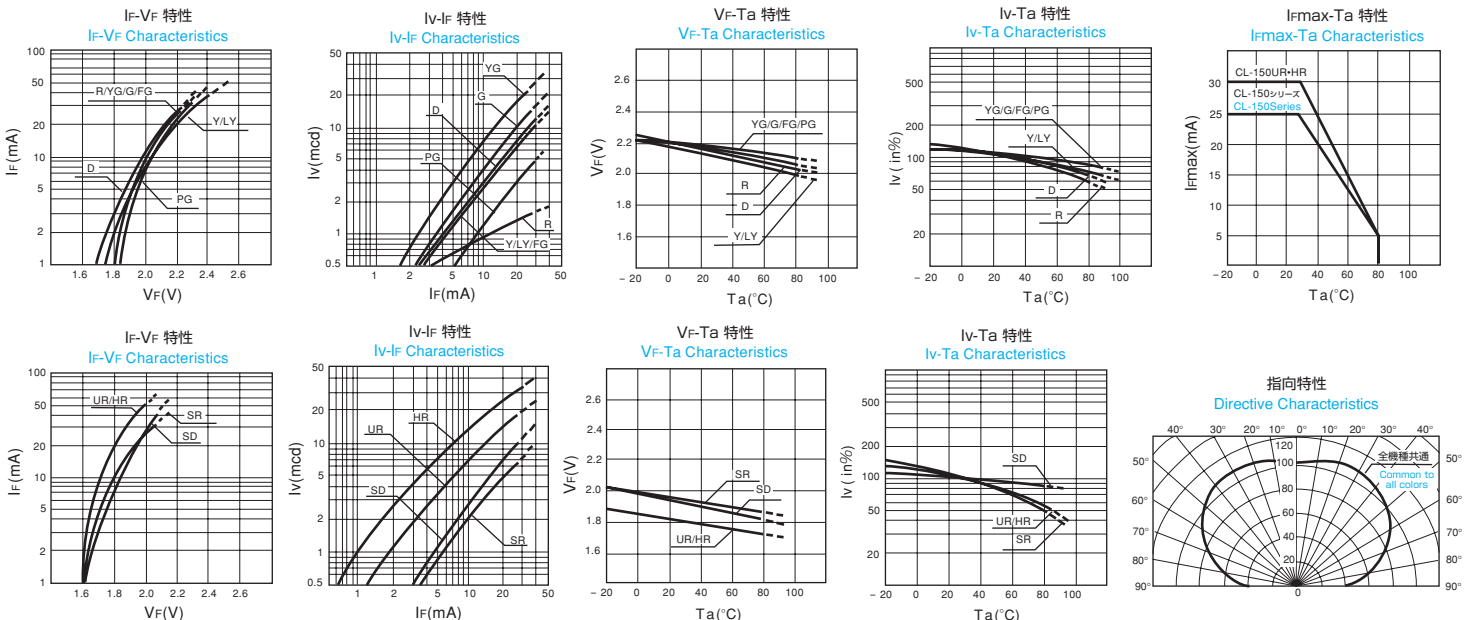
(Ta 25°C)

| 部品コード<br>Code for parts | 発光色<br>Lighting color   | VF         |         |         | λP<br>typ (nm) | Δλ<br>typ (nm) | IV*        |           |           |
|-------------------------|-------------------------|------------|---------|---------|----------------|----------------|------------|-----------|-----------|
|                         |                         | IF<br>(mA) | typ (V) | max (V) |                |                | IF<br>(mA) | min (mcd) | typ (mcd) |
| CL-150R                 | Red                     | 20         | 2.2     | 2.6     | 700            | 100            | 20         | 0.5       | 1.3       |
| CL-150D                 | Orange                  | 20         | 2.2     | 2.6     | 605            | 40             | 20         | 2.4       | 7.1       |
| CL-150Y                 | Yellow                  | 20         | 2.1     | 2.6     | 589            | 40             | 20         | 2.6       | 6.4       |
| CL-150LY                | Lemon yellow            | 20         | 2.1     | 2.6     | 584            | 40             | 20         | 2.6       | 6.4       |
| CL-150YG                | Yellow green            | 20         | 2.2     | 2.6     | 570            | 30             | 20         | 5         | 18        |
| CL-150G                 | Green                   | 20         | 2.2     | 2.6     | 567            | 26             | 20         | 2.5       | 10        |
| CL-150FG                | Fresh green             | 20         | 2.2     | 2.6     | 560            | 26             | 20         | 2.2       | 6.5       |
| CL-150PG                | Pure green              | 20         | 2.2     | 2.6     | 557            | 24             | 20         | 1         | 3         |
| CL-150SR                | Super brightness red    | 20         | 2       | 2.6     | 650            | 40             | 20         | 1.5       | 4.3       |
| CL-150SD                | Super brightness orange | 20         | 2       | 2.6     | 630            | 40             | 20         | 2         | 6.2       |
| CL-150UR                | Ultra brightness red    | 20         | 1.8     | 2.6     | 660            | 20             | 20         | 3.5       | 13        |
| CL-150HR                | High brightness red     | 20         | 1.8     | 2.6     | 660            | 20             | 20         | 5         | 23        |

※NIST規格に準拠

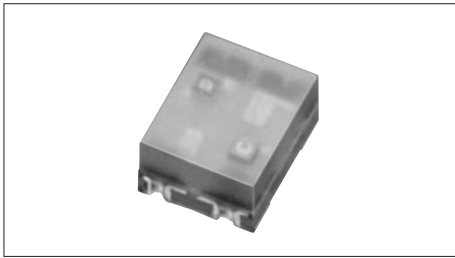
※Per NIST standards

### ■諸特性/Characteristics

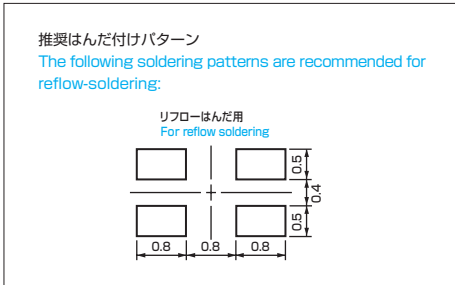
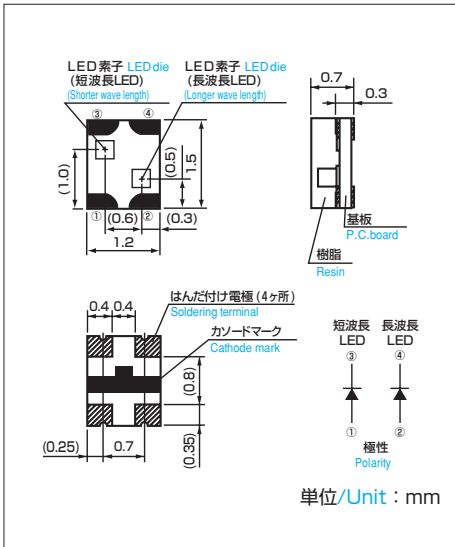


# CL-165シリーズ

## CL-165 Series



### 外形寸法図/Outline drawing



### 特徴

- 2色発光タイプです。
- 外形寸法は1.5(L)×1.2(W)×0.7(H) mmの超小型サイズです。

### Features

- Two-color lighting
- Dimensions : 1.5(L) X 1.2(W) X 0.7(H)mm, being ultra-small size

### 絶対最大定格/Absolute Maximum Rating

(Ta 25°C)

| シリーズ<br>Series | 発光色<br>Lighting color | P*1<br>(mW) | Pd<br>(mW) | IF<br>(mA) | IFP<br>(mA) | VR<br>(V) | Top<br>(°C) | TSt<br>(°C) |
|----------------|-----------------------|-------------|------------|------------|-------------|-----------|-------------|-------------|
| CL-165         | YG                    | 90          | 65         | 25         | 100※2       | 5         | -25~+80     | -30~+85     |
|                | HR                    |             | 78         | 30         |             |           |             |             |

※1 Pは同時点灯時の全許容損失を示します。

※1 P means total value of power dissipation when both colors are on.

※2 IFPの条件はduty 1/10、パルス巾0.1msecです。

※2 Condition for IFP is pulse of 1/10 duty and 0.1msec width.

### 電気的光学的特性/Electro-optical Characteristics

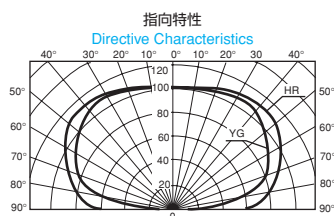
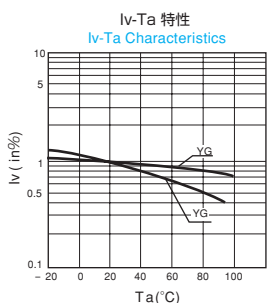
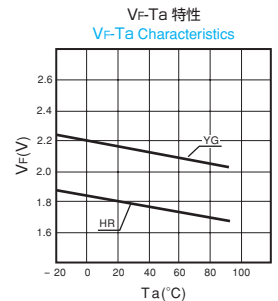
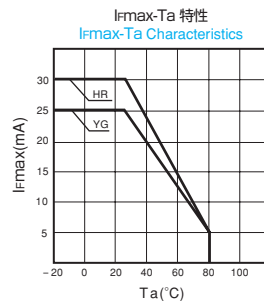
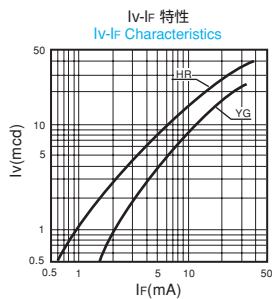
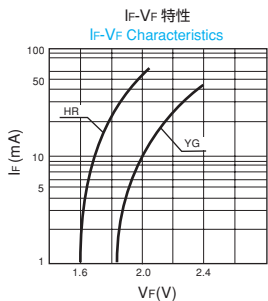
(Ta 25°C)

| 部品コード<br>Code for parts | 発光色<br>Lighting color | VF         |            |            | λP<br>typ<br>(nm) | Δλ<br>typ<br>(nm) | IV*        |              |              |
|-------------------------|-----------------------|------------|------------|------------|-------------------|-------------------|------------|--------------|--------------|
|                         |                       | IF<br>(mA) | typ<br>(V) | max<br>(V) |                   |                   | IF<br>(mA) | min<br>(mcd) | typ<br>(mcd) |
| CL-165HR/YG             | Yellow green          | 20         | 2.2        | 2.6        | 570               | 30                | 20         | 5.0          | 18           |
|                         | High brightness red   | 20         | 1.8        | 2.6        | 660               | 20                | 20         | 5.0          | 23           |

※NIST規格に準拠

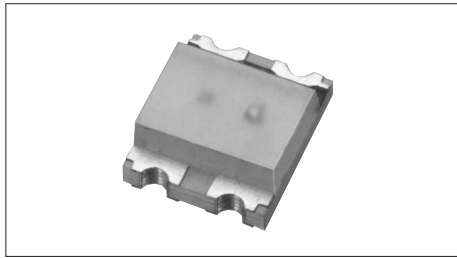
※Per NIST standards

### 諸特性/Characteristics



# CL-155シリーズ

## CL-155 Series



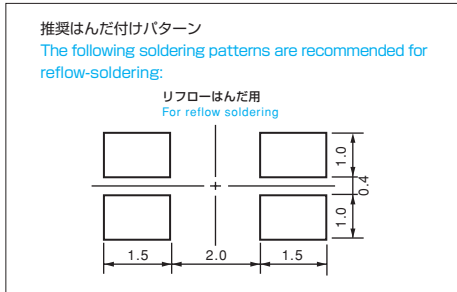
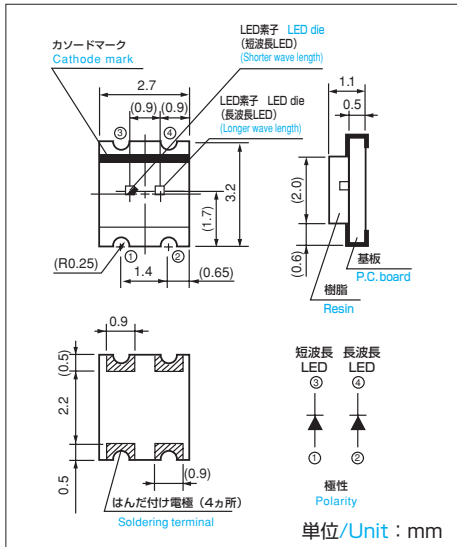
### ■特徴

1. 2色発光タイプです。
2. 外形寸法は3.2(L)×2.7(W)×1.1(H) mmの標準型です。

### ■Features

1. Two-color lighting
2. Dimensions: 3.2(L)×2.7(W)×1.1(H) mm, being a standard size

### ■外形寸法図/Outline drawing



### ■絶対最大定格/Absolute Maximum Rating

(Ta 25°C)

| シリーズ<br>Series | P*1<br>(mW) | Pd<br>(mW) | IF<br>(mA) | IFP<br>(mA) | VR<br>(V) | Top<br>(°C) | Tst<br>(°C) |
|----------------|-------------|------------|------------|-------------|-----------|-------------|-------------|
| CL-155         | 90          | 65         | 25         | 100**2      | 5         | -25~+80     | -30~+85     |

\*1 Pは同時点灯時の全許容損失を示します。

\*1 P means total value of power dissipation when both colors are on.

\*2 IFPの条件はduty 1/10、パルス巾0.1msecです。

\*2 Condition for IFP is pulse of 1/10 duty and 0.1msec width.

### ■電氣的・光学的特性/Electro-optical Characteristics

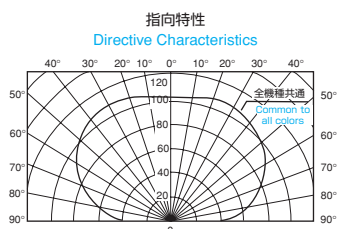
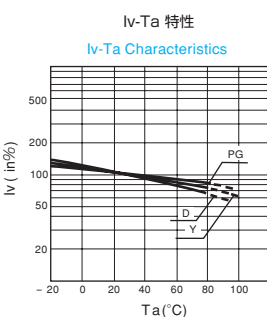
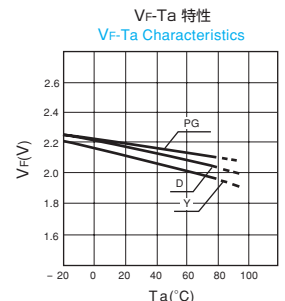
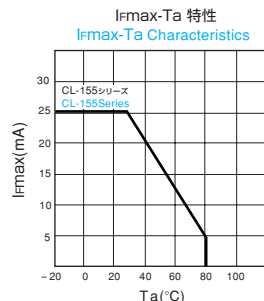
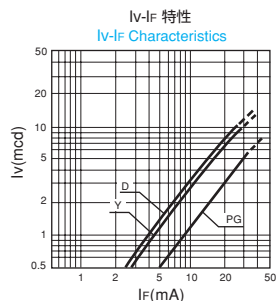
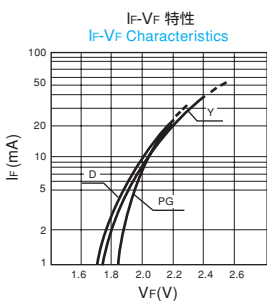
(Ta 25°C)

| 部品コード<br>Code for parts | 発光色<br>Lighting color | VF         |            |            | λP<br>typ (nm) | Δλ<br>typ (nm) | IV**       |              |              |
|-------------------------|-----------------------|------------|------------|------------|----------------|----------------|------------|--------------|--------------|
|                         |                       | IF<br>(mA) | typ<br>(V) | max<br>(V) |                |                | IF<br>(mA) | min<br>(mcd) | typ<br>(mcd) |
| CL-155Y/PG              | Yellow                | 20         | 2.1        | 2.6        | 589            | 40             | 20         | 2.6          | 6.4          |
|                         | Pure green            | 20         | 2.2        | 2.6        | 557            | 24             | 20         | 1            | 3            |
| CL-155D/PG              | Orange                | 20         | 2.2        | 2.6        | 605            | 40             | 20         | 2.4          | 7.1          |
|                         | Pure green            | 20         | 2.2        | 2.6        | 557            | 24             | 20         | 1            | 3            |

\*NIST規格に準拠

\*Per NIST standards

### ■諸特性/Characteristics



## 納入形態

## ■ 単品テーピング

CITILED単品をテーピングして納入いたします。尚、テーピング仕様はCITILEDの機種により異なりますが、本カタログのテーピング仕様頁に、機種別詳細を掲載してありますのでご参照下さい。

## はんだ作業上の注意

(ご使用の際には事前打ち合わせをお奨めいたします。)

## ■ 手はんだ

コテ先温度は300°C以下に抑えて、各ランド3秒以内でおこなってください。

## ■ リフローはんだ

リフローはんだ推奨条件下図をご参照下さい。

## 取扱について

- 1) 樹脂部に高温の状態で応力のかかるようなことは避けてください。
- 2) 樹脂部は鋭い金属爪、あるいはサンドブラストなどでの摩擦は避けてください。

## 設計上の注意

- 1) 回路内には必ず電流制限抵抗を接続し、定格内で駆動するよう設計してください。
- 2) パルス駆動にて使用される場合は、平均電流値が定格内になるよう設計してください。また、LED消灯時に逆電圧がかからないよう設計してください。

## Shipping Modes

## ■ Taped

Single CITILEDs are packed on a tape. The taping specifications depend on the CITILED type. For details on each type, please refer to the taping specifications page in this catalog.

## ■ Soldering

(Consultation with us prior to soldering recommended)

## ■ Manual soldering

The temperature of the iron tip should be no higher than 300°C (572°F) and soldering within 3 seconds per solder-land is to be observed.

## ■ Reflow soldering

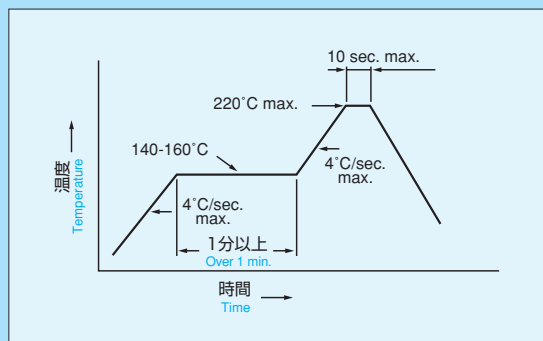
For recommendable conditions for reflow soldering, see figure below.

## Handling

- 1) Care must be taken not to cause stress to the epoxy resin portion of CITILEDs while it is exposed to high temperature.
- 2) Care must be taken not to rub the epoxy resin portion of CITILEDs with hard or sharp article such as the sand blast and the metal hook.

## Notes for designing

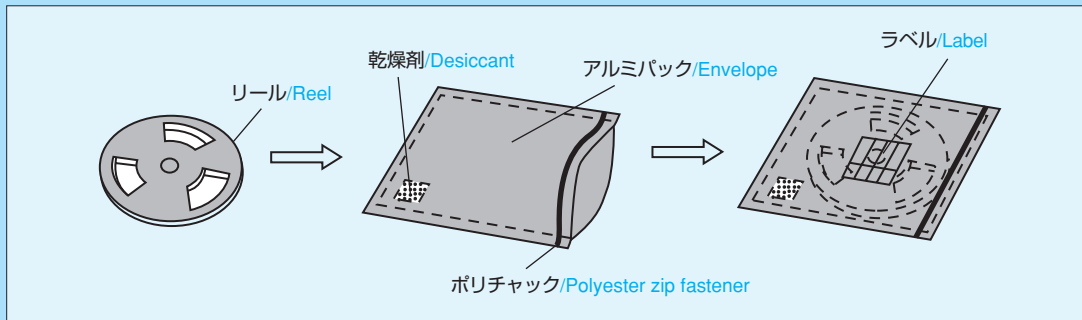
- 1) Care must be taken to provide the current limiting resistor in the circuit so as to drive the CITILEDs within the rated figures. Also, caution should be taken not to overload CITILEDs with instantaneous voltage at the turning ON and OFF of the circuit.
- 2) When using the pulse drive, care must be taken to keep the average current within the rated figures. Also, the circuit should be designed so as not to be subjected to reverse voltage when turning off the CITILEDs.



## 梱包仕様

### ■ 防湿梱包

製品の輸送中及び保管中の吸湿を避けるため、アルミパックによる防湿包装を行っています。この包装袋内にはインジケーター入りの乾燥剤（シリカゲル）が入っており、吸湿が進むとブルーからピンクに変色します。



### ■ 保管

樹脂部の吸湿を避けるため、保管環境としてはドライボックス保管が最も望ましいですが、ドライボックス保管が出来ない場合は以下の条件を推奨します。

温度：5～30℃  
湿度：60%RH以下

防湿包装されておりますので、開封後は速やかに実装されることが望まれますが、開封後保管される場合はドライボックス保管、またはポリチャックによる再シールをお願いします。

### ■ ベーキング

防湿梱包開封後から一定時間以上経過した製品は吸湿が進みますので、ご使用前にベーキングを行って下さい。（詳細は個別仕様書を御請求ください。）

## 注意事項

使用上の注意については、個別仕様書及びアプリケーションマニュアルを御参考願います。

## Packing specifications

### ■ Moisture-proof packing :

In order to avoid the absorption of moisture during transportation and storage, CITILEDs are packed in the aluminum envelope. A desiccant with a humidity indicator is included in the aluminum envelope and indicator changes its color from blue to pink as it absorbs moisture.

### ■ Storage :

In order to avoid the absorption of moisture, it is recommended to store CITILEDs (in bulk or taped) in the dry box (or the desiccator) with a desiccant. Otherwise, to store them in the following environment is recommended.

Temperature : 5℃～30℃(41°F～86°F)  
Humidity : 60%RH max.

It is recommended to solder CITILEDs as soon as possible after unpacking the aluminum envelope, but in case that CITILEDs have to be left unused after unpacking, to store them in the dry box or to seal the aluminum envelope again is requested.

### ■ Baking :

The packing is moisture-proof, but products unpacked for more than a certain time before use should be baked first.  
(For details apply for individual specification sheets.)

### ■ Precautions :

Please see the individual specifications manual and applications manual for precautions.