*Technical Datasheet*

# EDC F2 Series
# Preliminary

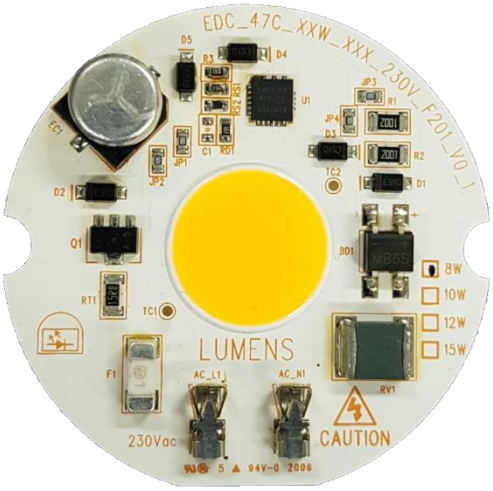
EDC/47C/10W/XXX/230V/F201

- Ver0.1 -

Flicker Free

Low SVM

## EDC/47C/10W/XXX/230V/F201




- Compatible with most TRIAC dimmers
- High Power Factor (>0.95)
- Low THD (<30%)
- Zhaga Standard Mounting Holes
- 50mA Inrush current
- No photo-biological hazard (RG1)
- Uniform Full Dimming
- Percent Flicker (<5%)
- SVM (<0.1)

EggDrop®

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# 1. Product Description

*** Description**

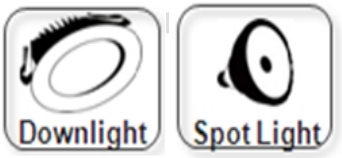
- The EDC(Egg Drop COB) series module is designed for the high power operation to get the high flux output applications.
- It incorporates the state of the art SMD LEDs with high reliability and semiconductor AC direct drive ICs.
- It is ideal for the indoor or down light applications.

*** Features**

- High performance, High brightness
- No emission of harmful short wavelength light(No UV radiation)
- High power conversion efficiency(>0.85)
- High power factor (>0.95)
- Low THD(≤ 30%)
- Low EMI
- RoHS compliant
- No photo-biological hazard –Group 1 (Low risk) (RG1)
- Starting current 44 [mA] @ 60ms
- Percent Flicker (<5%)
- SVM (<0.1)

*** Applications**

- Down Light (Indoor Lighting)
- Spot Light




# 2. Absolute Maximum Ratings

| Parameters | Symbol | Min Value | Max Value | Unit |
|---|---|---|---|---|
| Maximum power dissipation | Pd | - | 11.0 | W |
| Maximum operation voltage | Vop | - | 250 | V |
| Operation temperature | Top | -40 | +85 | ℃ |
| Storage temperature | Tst | -40 | +100 | ℃ |

➢ Operation temperature is not related to the lifetime.

# 3. Product Name Method

**(ex. Eggdrop)**

| Product Family | PCB Size/shape | | Power | CRI+CCT | | Input Voltage | Management Code | | | | Version |
|---|---|---|---|---|---|---|---|---|---|---|---|
| EDC | 57 | C | XXW | X | XX | XXXV | F | 2 | 0 | 1 | V0_1 |
| 'EDC'=EggDrop | Ø33 | 'C'=Circular | 10W | '7'=80↑ | '27'=2700K | '120V'=120Vac | | | | | |
| 'DLM'=DownLight | Ø38 | 'R'=Rectangular | 15W | '8'=80↑ | '30'=3000K | '220V'=220Vac | | | | | |
| | Ø47 | 'D'=Donut | ETC. | '9'=80↑ | '35'=3500K | '230V'=230Vac | | | | | |
| | Ø57 | ETC. | | | '40'=4000K | ETC. | | | | | |
| | Ø80 | | | | '50'=5000K | | | | | | |
| 'LNM'=Linear Bar | | 280X20 | | | '57'=5700K | | | | | | |
| | | 560X20 | | | | | | | | | |

### 1) Additional explanation

| Product Section | | Product Description<br>PCB Size>Shape>Watt>CRI+CCT>InputVoltage>Management Code |
|---|---|---|
| EggDrop | EDC | EDC_57C_XXW_XXX_XXXV_F201_V0_1 |
| DownLight | DLM | DLM_80D_XXW_XXX_XXXV_A101_V0_1 |
| Linear Bar | LNM | LNM_280X20_XXW_XXX_XXXV_C101_V0_1 |

## 4. Electro-optical Characteristics (Tc=25℃ & 55℃.)

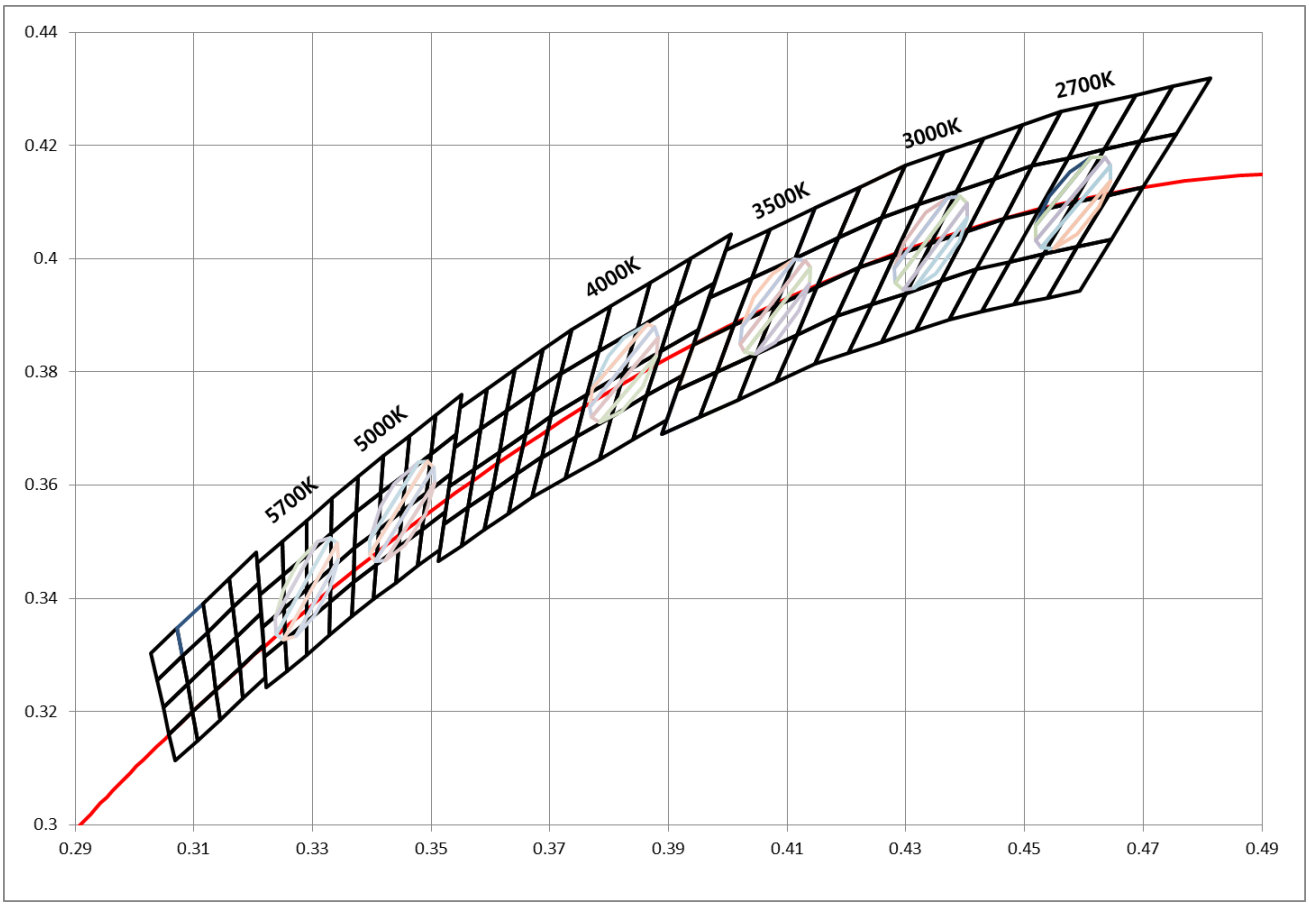
| Parameters | Symbol | Tc = 25℃ | | | Tc = 55℃ | | | Unit | Condition |
|---|---|---|---|---|---|---|---|---|---|
| | | Min. | Typ. | Max. | Min. | Typ. | Max. | | |
| Luminous Flux | Φv | 869 | 966 | - | 830 | 923 | - | lm | 2700K,CRI80 |
| | | 945 | 1050 | - | 902 | 1003 | - | | 3000K,CRI80 |
| | | 964 | 1071 | - | 921 | 1023 | - | | 3500K,CRI80 |
| | | 983 | 1092 | - | 939 | 1043 | - | | 4000K,CRI80 |
| | | 1006 | 1118 | - | 961 | 1068 | - | | 5000K,CRI80 |
| | | 1002 | 1113 | - | 957 | 1063 | - | | 5700K,CRI80 |
| | | 748 | 831 | - | 714 | 793 | - | | 2700K,CRI90 |
| | | 813 | 903 | - | 776 | 862 | - | | 3000K,CRI90 |
| | | 829 | 921 | - | 792 | 880 | - | | 3500K,CRI90 |
| | | 845 | 939 | - | 807 | 897 | - | | 4000K,CRI90 |
| | | 866 | 962 | - | 827 | 918 | - | | 5000K,CRI90 |
| | | 861 | 957 | - | 823 | 914 | - | | 5700K,CRI90 |
| Efficiency | lm/W | 87 | 97 | - | 83 | 92 | - | lm / W | 2700K,CRI80 |
| | | 95 | 105 | - | 90 | 100 | - | | 3000K,CRI80 |
| | | 96 | 107 | - | 92 | 102 | - | | 3500K,CRI80 |
| | | 98 | 109 | - | 94 | 104 | - | | 4000K,CRI80 |
| | | 101 | 112 | - | 96 | 107 | - | | 5000K,CRI80 |
| | | 100 | 111 | - | 96 | 106 | - | | 5700K,CRI80 |
| | | 75 | 83 | - | 71 | 79 | - | | 2700K,CRI90 |
| | | 81 | 90 | - | 78 | 86 | - | | 3000K,CRI90 |
| | | 83 | 92 | - | 79 | 88 | - | | 3500K,CRI90 |
| | | 85 | 94 | - | 81 | 90 | - | | 4000K,CRI90 |
| | | 87 | 96 | - | 83 | 92 | - | | 5000K,CRI90 |
| | | 86 | 96 | - | 82 | 91 | - | | 5700K,CRI90 |

(1) At 220~230Vac, $T_c$ = 25ºC & 55ºC
(2) $\Phi_V$ is the total luminous flux output measured with an integrated sphere.
- Measurement accuracy : **CRI(**±3), **Φv**(±3%), **Vf**(±3.0V)

| | | | | | | |
|---|---|---|---|---|---|---|
| Viewing Angle FWHM | 2θ1/2 | 110 | 120 | 130 | deg | Vop=220~230V |
| Operation Voltage | Vop | 220 ~ 230V | | | Vac | |
| Power Dissipation | Pd | 9.0 | 10.0 | 11.0 | W | Vop=220~230V |
| Rated Current | Ira | 43 | 46 | - | mA | Pd=10W |
| Operation Frequency | Fop | 50 / 60 | | | Hz | Vop=220~230V |
| Power Factor | PF | Over 0.95 | | | V | Vop=220~230V |
| Current THD | ATHD | Less than 30% | | | | Vop=220~230V |
| Percent Flicker | % | Less than 5% | | | | Vop=220~230V |
| SVM | | Less than 0.1 | | | | Vop=220~230V |

## 5. CIE Chromaticity Diagram

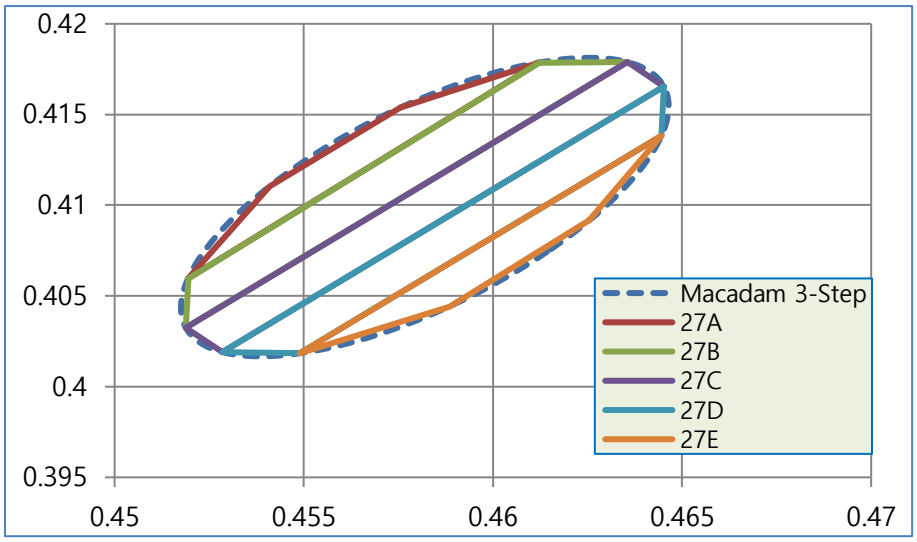
※ Correlated Color Temperature is derived from the CIE 1931 Chromaticity diagram.




(1) Chromaticity coordinate groups are measured with an accuracy of ±0.01

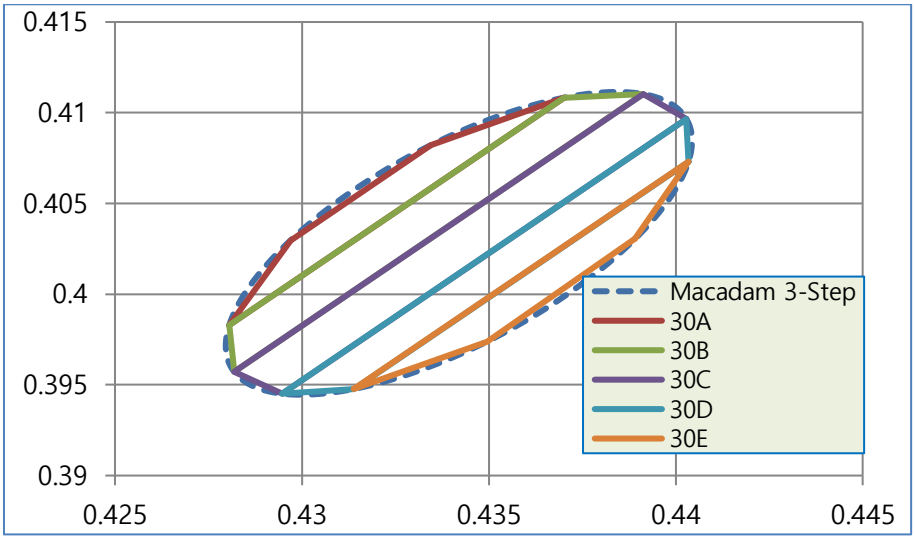
# 6. Chromaticity Coordinates

## 6-1. 2700K




| 27A | | 27B | | 27C | | 27D | | 27E | |
|---|---|---|---|---|---|---|---|---|---|
| X | Y | X | Y | X | Y | X | Y | X | Y |
| 0.4612 | 0.4179 | 0.4636 | 0.4179 | 0.4645 | 0.4165 | 0.4645 | 0.4138 | 0.4625 | 0.4092 |
| 0.4576 | 0.4154 | 0.4612 | 0.4179 | 0.4636 | 0.4179 | 0.4645 | 0.4165 | 0.4645 | 0.4138 |
| 0.4541 | 0.4110 | 0.4519 | 0.4060 | 0.4519 | 0.4033 | 0.4528 | 0.4019 | 0.4549 | 0.4018 |
| 0.4519 | 0.4060 | 0.4519 | 0.4033 | 0.4528 | 0.4019 | 0.4549 | 0.4018 | 0.4588 | 0.4044 |
| 0.4612 | 0.4179 | 0.4636 | 0.4179 | 0.4645 | 0.4165 | 0.4645 | 0.4138 | 0.4625 | 0.4092 |

## 6-2. 3000K




| 30A | | 30B | | 30C | | 30D | | 30E | |
|---|---|---|---|---|---|---|---|---|---|
| X | Y | X | Y | X | Y | X | Y | X | Y |
| 0.4370 | 0.4108 | 0.4391 | 0.4110 | 0.4403 | 0.4097 | 0.4403 | 0.4073 | 0.4389 | 0.4031 |
| 0.4334 | 0.4082 | 0.4370 | 0.4108 | 0.4391 | 0.4110 | 0.4403 | 0.4097 | 0.4403 | 0.4073 |
| 0.4297 | 0.4030 | 0.4281 | 0.3983 | 0.4282 | 0.3957 | 0.4295 | 0.3945 | 0.4314 | 0.3948 |
| 0.4281 | 0.3983 | 0.4282 | 0.3957 | 0.4295 | 0.3945 | 0.4314 | 0.3948 | 0.4350 | 0.3974 |
| 0.4370 | 0.4108 | 0.4391 | 0.4110 | 0.4403 | 0.4097 | 0.4403 | 0.4073 | 0.4389 | 0.4031 |

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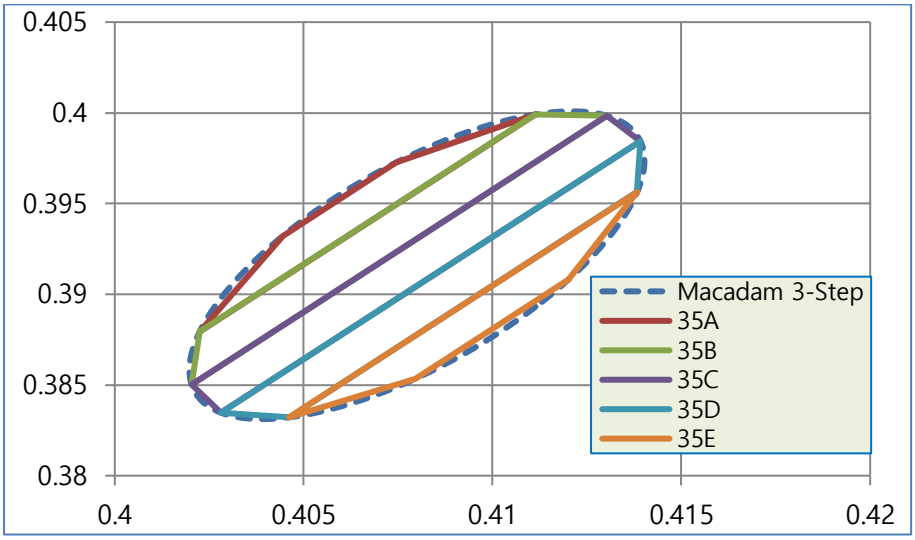
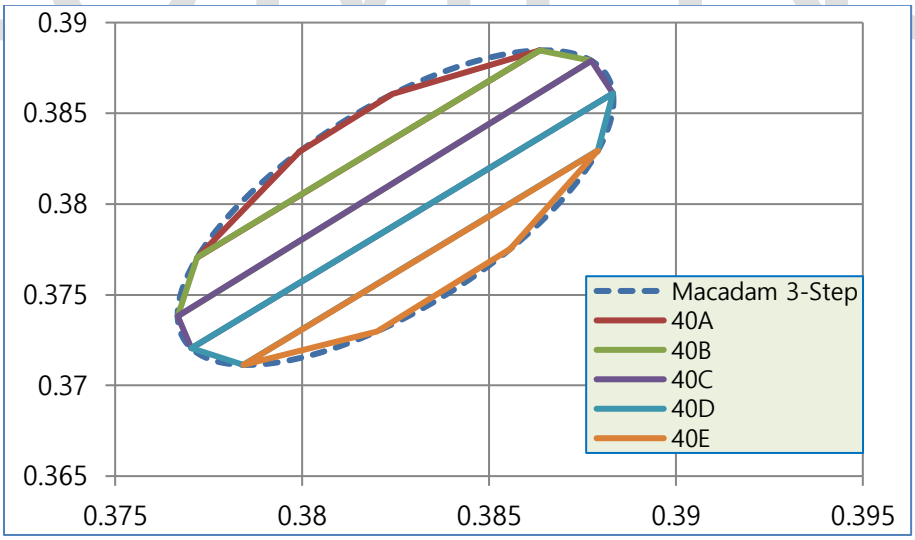
### 6-3. 3500K



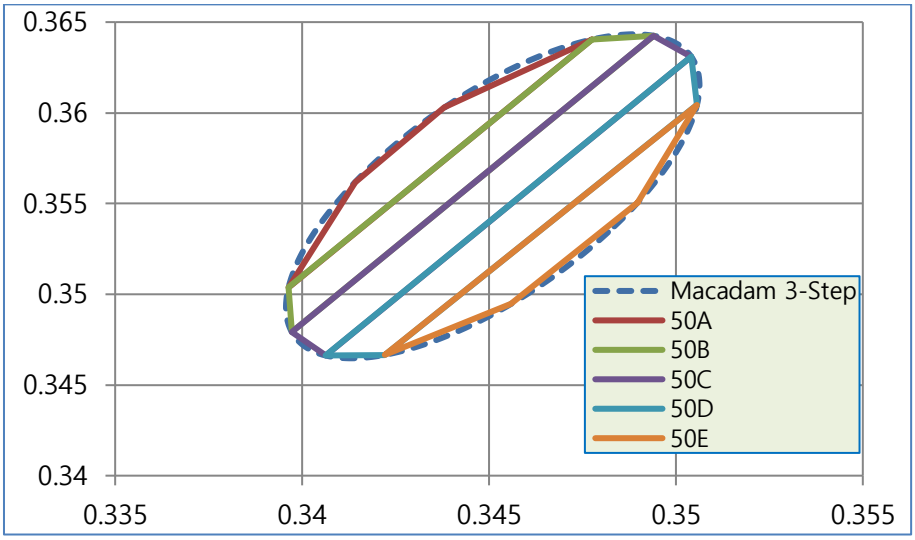

| 35A | | 35B | | 35C | | 35D | | 35E | |
|---|---|---|---|---|---|---|---|---|---|
| X | Y | X | Y | X | Y | X | Y | X | Y |
| 0.4111 | 0.3999 | 0.4130 | 0.3998 | 0.4139 | 0.3984 | 0.4138 | 0.3956 | 0.4120 | 0.3908 |
| 0.4075 | 0.3973 | 0.4111 | 0.3999 | 0.4130 | 0.3998 | 0.4139 | 0.3984 | 0.4138 | 0.3956 |
| 0.4044 | 0.3932 | 0.4023 | 0.3879 | 0.4020 | 0.3850 | 0.4028 | 0.3835 | 0.4046 | 0.3832 |
| 0.4023 | 0.3879 | 0.4020 | 0.3850 | 0.4028 | 0.3835 | 0.4046 | 0.3832 | 0.4080 | 0.3853 |
| 0.4111 | 0.3999 | 0.4130 | 0.3998 | 0.4139 | 0.3984 | 0.4138 | 0.3956 | 0.4120 | 0.3908 |

### 6-4. 4000K



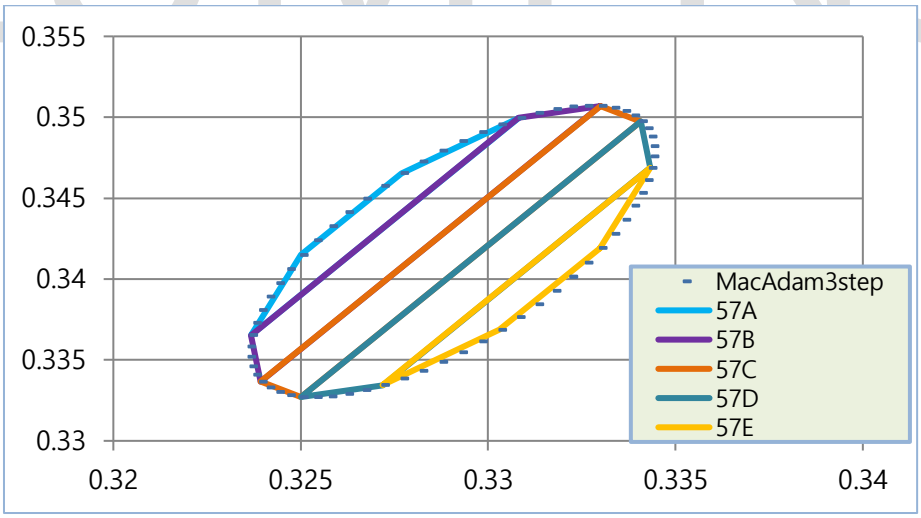

| 40A | | 40B | | 40C | | 40D | | 40E | |
|---|---|---|---|---|---|---|---|---|---|
| X | Y | X | Y | X | Y | X | Y | X | Y |
| 0.3864 | 0.3885 | 0.3877 | 0.3879 | 0.3883 | 0.3861 | 0.3879 | 0.3829 | 0.3856 | 0.3775 |
| 0.3824 | 0.3861 | 0.3864 | 0.3885 | 0.3877 | 0.3879 | 0.3883 | 0.3861 | 0.3879 | 0.3829 |
| 0.3799 | 0.3829 | 0.3772 | 0.3771 | 0.3767 | 0.3738 | 0.3770 | 0.3720 | 0.3784 | 0.3711 |
| 0.3772 | 0.3771 | 0.3767 | 0.3738 | 0.3770 | 0.3720 | 0.3784 | 0.3711 | 0.3820 | 0.3730 |
| 0.3864 | 0.3885 | 0.3877 | 0.3879 | 0.3883 | 0.3861 | 0.3879 | 0.3829 | 0.3856 | 0.3775 |

### 6-5. 5000K




| 50A | | 50B | | 50C | | 50D | | 50E | |
|---|---|---|---|---|---|---|---|---|---|
| X | Y | X | Y | X | Y | X | Y | X | Y |
| 0.3478 | 0.3640 | 0.3494 | 0.3642 | 0.3504 | 0.3631 | 0.3506 | 0.3604 | 0.3490 | 0.3550 |
| 0.3438 | 0.3603 | 0.3478 | 0.3640 | 0.3494 | 0.3642 | 0.3504 | 0.3631 | 0.3506 | 0.3604 |
| 0.3414 | 0.3562 | 0.3396 | 0.3504 | 0.3397 | 0.3479 | 0.3406 | 0.3466 | 0.3422 | 0.3467 |
| 0.3396 | 0.3504 | 0.3397 | 0.3479 | 0.3406 | 0.3466 | 0.3422 | 0.3467 | 0.3456 | 0.3495 |
| 0.3478 | 0.3640 | 0.3494 | 0.3642 | 0.3504 | 0.3631 | 0.3506 | 0.3604 | 0.3490 | 0.3550 |

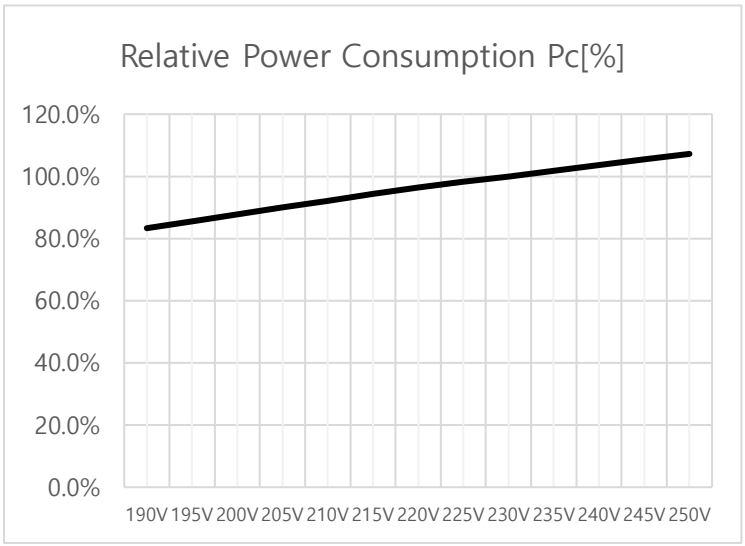
### 6-6. 5700K

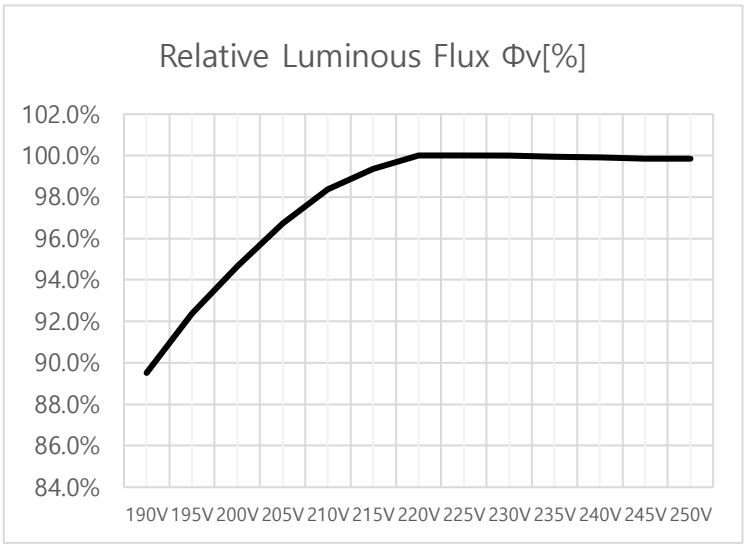


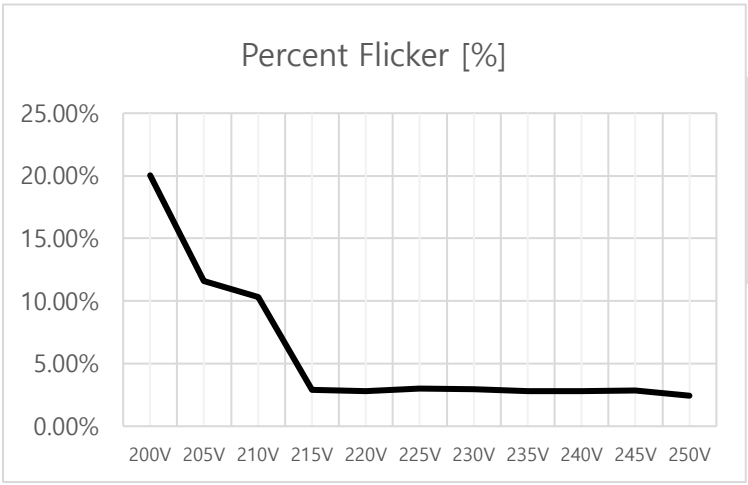

| 57A | | 57B | | 57C | | 57D | | 57E | |
|---|---|---|---|---|---|---|---|---|---|
| X | Y | X | Y | X | Y | X | Y | X | Y |
| 0.3308 | 0.3500 | 0.3330 | 0.3507 | 0.3341 | 0.3497 | 0.3343 | 0.3469 | 0.3330 | 0.3419 |
| 0.3277 | 0.3465 | 0.3308 | 0.3500 | 0.3330 | 0.3507 | 0.3341 | 0.3497 | 0.3343 | 0.3469 |
| 0.3250 | 0.3415 | 0.3237 | 0.3365 | 0.3239 | 0.3337 | 0.3250 | 0.3327 | 0.3272 | 0.3334 |
| 0.3237 | 0.3365 | 0.3239 | 0.3337 | 0.3250 | 0.3327 | 0.3272 | 0.3334 | 0.3303 | 0.3369 |
| 0.3308 | 0.3500 | 0.3330 | 0.3507 | 0.3341 | 0.3497 | 0.3343 | 0.3469 | 0.3330 | 0.3419 |

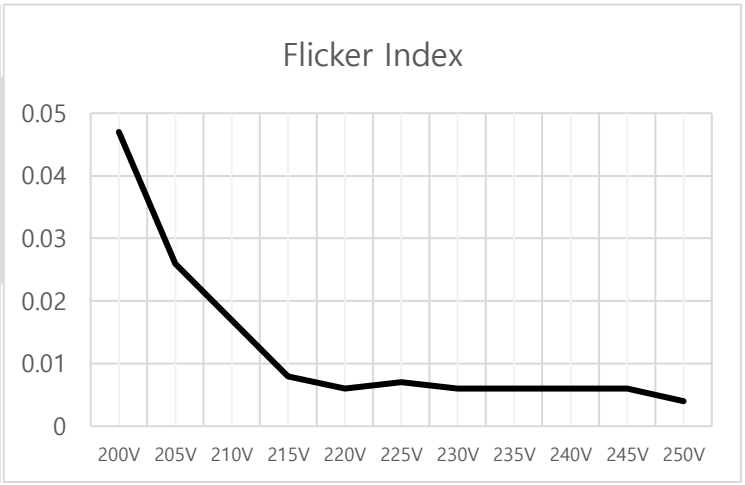
# 7. Characteristic Graphs

## 7-1 Voltage Characteristics(Ta=25℃)

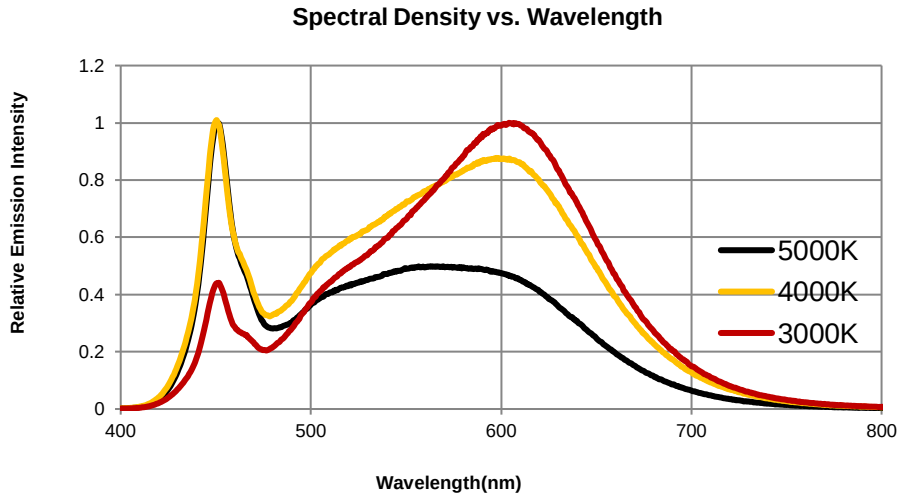


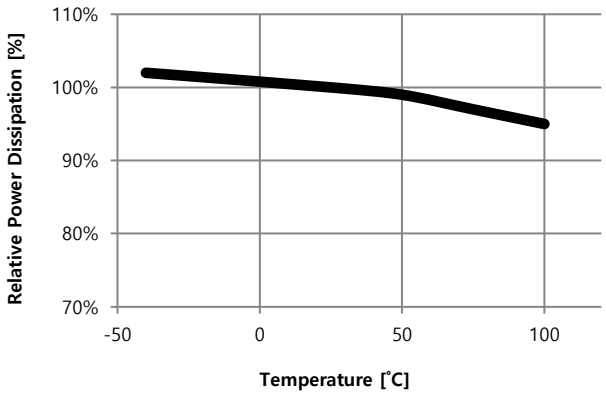



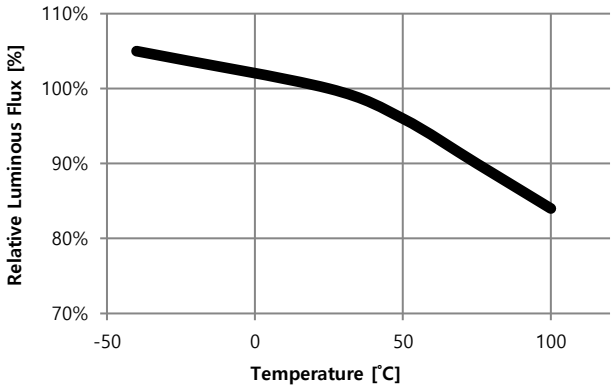




## 7-2 Spectrum Characteristics(Ta=25℃)



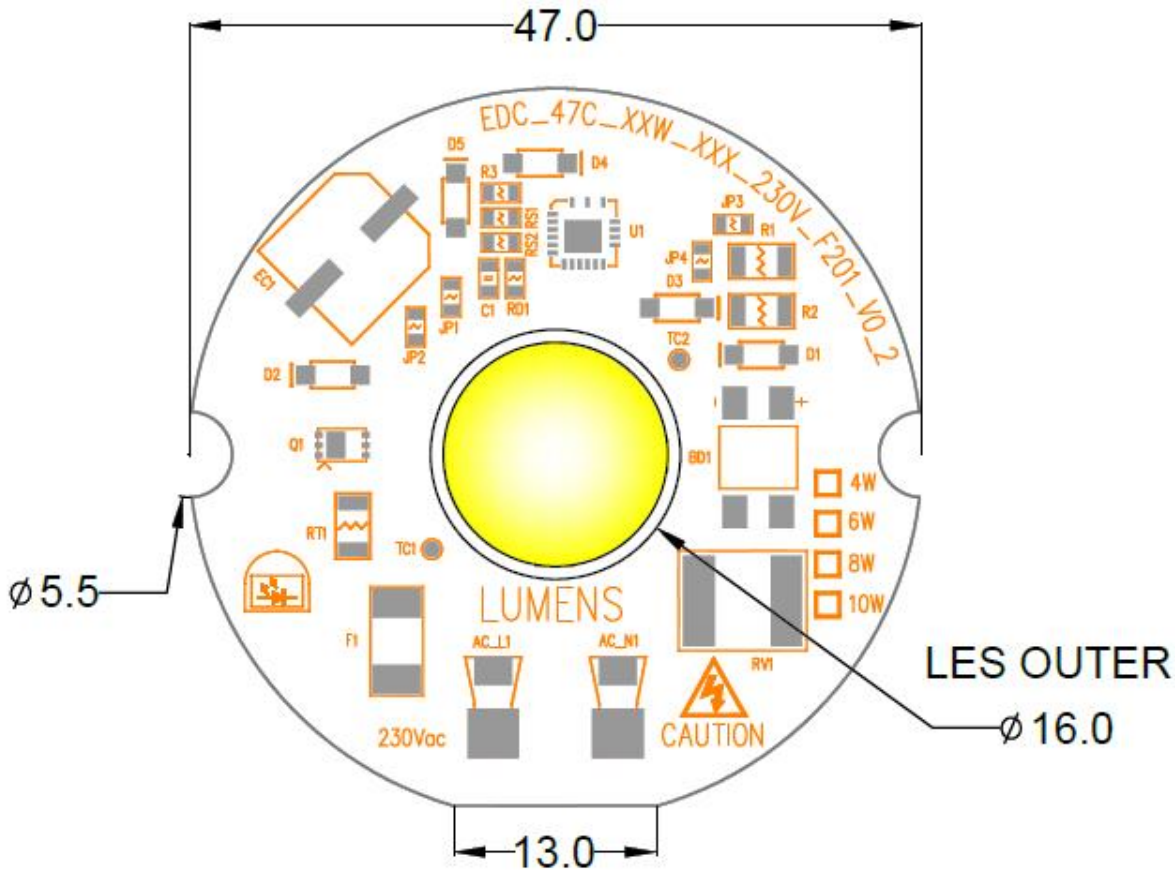
### 7-3 Temperature Characteristics




## 8. Outline Dimensions

### 8-1 PCB Dimensions




Unit : mm

1) Outline Diameter : 47Φ , Height : 7.6mm (Include PCB)
2) Tolerance - All measurements are ± 0.2 mm unless otherwise indicated.

## 9. Cautions

- The LED Module itself and all its components may not be mechanically stressed.
- Make sure proper discharge prior to starting work.
- DO NOT touch any of the circuit board, components or terminals with body or metal while circuit is active.
- Installation of LED Module needs to be made with regard to all applicable electrical and safety standards. Only qualified personnel should be allowed to perform installation.
- DO NOT add or change wires while circuit is active.
- DO NOT make any modification on module.
- DO NOT use adhesives to attach the LED that outgas organic vapor.
- DO NOT use together with the materials containing Sulfur.
- The LED Module needs to be mounted on a heat sink providing adequate thermal dissipation.
- DO NOT exceed the values given in this specification
- Be cautious when soldering to board so as not to create a short between different trace patterns.
- Keep cautions not to apply higher voltage above the maximum rating. Otherwise damage may occur.
- Pay attention not to exceed the maximum operation temperature of 85℃ at the Tc1 Point when the modules are used in an enclosed environment.

  ( Tc1 Temperature Condition ≤ 85℃ )

  ( Tc1 + 30℃ ≒ Maximum LES temperature($T_j$) ) : Depends on specification of heat sink
- DO NOT assemble in conditions of high moisture and/or oxidizing gas such as CI, H2S, NH3, SO2, NOx, etc.
- The module should also not be installed in end equipment without ESD (Electrical Static Discharge) protection.
- Damage by corrosion will not be allowed as defect claim. Lumens LED Module is recommended for Indoor use only.
- Great care should be taken not to see directly the operated lighting LED. If not the intense light should cause the damage to eye. Use proper goggles to protect your eyes during operation.
- Long time exposure to sunlight or UV can cause the lens to discolor.
- Moisture-Proof package
  1. When moisture is absorbed into the LED light engine it may vaporize and expand products during manufacturing. There is a possibility that this may cause exfoliation of the contacts and damage to the optical characteristics of the LEDs. For this reason, the moisture-proof pack is used to keep moisture to a minimum in the package.
  2. A pack of a moisture-absorbent material (silica gel) is inserted into the shielding bag. The silica gel changes its color from blue to pink as it absorbs moisture.
- Storage Conditions
  1. Before opening the package: The LED light engines should be kept at 30℃ or less and 90% RH or less. The LED light engines should be used within a year. When storing the LED light engines, moisture-proof packaging with moisture-absorbent material (silica gel) is recommended.
  2. After opening the package: The LED light engines should be kept at 30℃ or less and 70% RH or less. The LEDs should be soldered within 168 hours (7 days) after opening the package. If unused LED light engines remain, they should be stored in moisture-proof packages, such as sealed containers with packages of moisture -absorbent material (silica gel). It is also recommended to return the LED light engines to the original moisture-proof bag and to reseal the moisture-proof bag again.
  3. Please avoid rapid transitions in ambient temperature, especially in high humidity environments where condens ation can occur.
- Basic insulation is based on 240Vac.

**NOTE :**

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