



## 35W Multiple-Stage Constant Current Mode LED Driver **LCM-40UDA** series



### ■ Features

- Constant Current mode output with multiple levels selectable by dip switch
- Plastic housing with class II design
- Built-in active PFC function
- Functions: DALI interface(logarithm or linear dimming curve selectable), push dimming, synchronization up to 10units
- 3 years warranty

### ■ Applications

- LED indoor lighting
- LED office lighting
- LED architectural lighting
- LED panel lighting

### ■ Description

LCM-40UDA series is a 35W LED AC/DC constant current mode output LED driver featuring the multiple levels selectable by dip switch and the DALI interface with the compliance to IEC62386-207. LCM-40UDA operates from 90~132VAC and offers different current levels ranging between 350mA and 1050mA. Thanks to the efficiency up to 87.5%, with the fanless design, the entire series is able to operate for -30°C~+90°C case temperature under free air convection. In addition, LCM-40UDA is equipped with push dimming and synchronization so as to provide the optimal design flexibility for LED lighting system.

### ■ Model Encoding

LCM - 40UDA - ☐

Function mode option

Output wattage

Series name

| Type  | Function                                      | Note       |
|-------|-----------------------------------------------|------------|
| Blank | DALI and push dimming                         | In Stock   |
| AUX   | DALI and push dimming and Auxiliary DC output | By request |

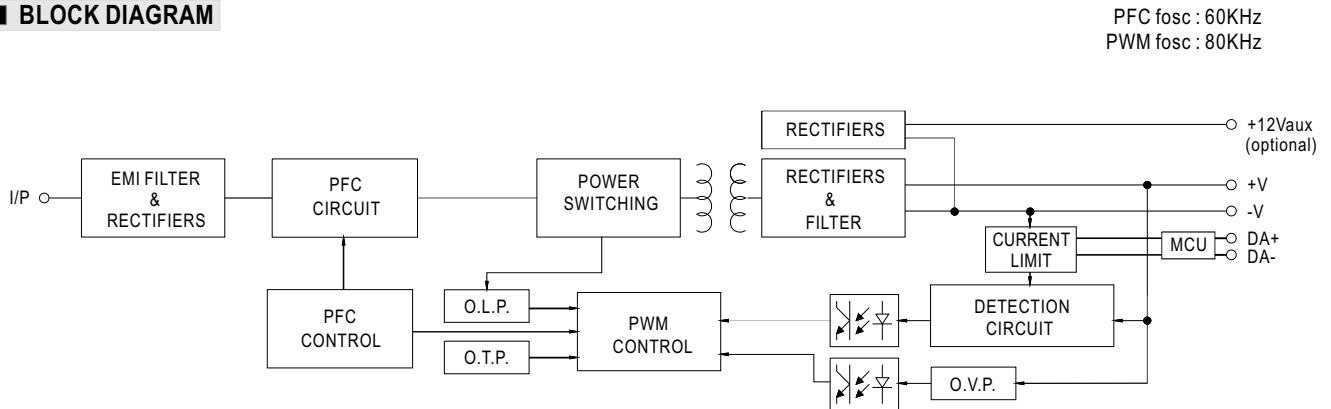


# 35W Multiple-Stage Constant Current Mode LED Driver **LCM-40UDA** series

## SPECIFICATION

| MODEL        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | LCM-40UDA- □                                                                                |         |         |                |         |         |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------|---------|----------------|---------|---------|
| OUTPUT       | CURRENT LEVEL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Current level selectable via DIP switch, please refer to "DIP SWITCH TABLE" section         |         |         |                |         |         |
|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 350mA                                                                                       | 500mA   | 600mA   | 700mA(default) | 900mA   | 1050mA  |
|              | RATED POWER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 35W                                                                                         |         |         |                |         |         |
|              | DC VOLTAGE RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 2 ~ 100V                                                                                    | 2 ~ 70V | 2 ~ 59V | 2 ~ 50V        | 2 ~ 39V | 2 ~ 34V |
|              | OPEN CIRCUIT VOLTAGE (max.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 110V                                                                                        |         |         | 65V            |         |         |
|              | CURRENT RIPPLE    Note.6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 5.0% max. @rated current                                                                    |         |         |                |         |         |
|              | CURRENT TOLERANCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ±5%                                                                                         |         |         |                |         |         |
|              | AUXILIARY DC OUTPUT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Nominal 12V(deviation 11.4~12.6V)@50mA for AUX-Type only                                    |         |         |                |         |         |
|              | SETUP TIME        Note.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1000ms / 115VAC                                                                             |         |         |                |         |         |
| INPUT        | VOLTAGE RANGE        Note.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 90 ~ 132VAC        127 ~ 186VDC<br>(Please refer to "STATIC CHARACTERISTIC" section)        |         |         |                |         |         |
|              | FREQUENCY RANGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 47 ~ 63Hz                                                                                   |         |         |                |         |         |
|              | POWER FACTOR (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | PF ≥ 0.98/115VAC @full load<br>(Please refer to "POWER FACTOR (PF) CHARACTERISTIC" section) |         |         |                |         |         |
|              | TOTAL HARMONIC DISTORTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | THD< 20%(@load≥75%)<br>(Please refer to "TOTAL HARMONIC DISTORTION(THD)" section)           |         |         |                |         |         |
|              | EFFICIENCY (Typ.)        Note.4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 87.5%                                                                                       |         |         |                |         |         |
|              | AC CURRENT (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 0.43A/115VAC                                                                                |         |         |                |         |         |
|              | INRUSH CURRENT (Typ.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | COLD START 15A(twidth=270μs measured at 50% Ipeak) at 115VAC; Per NEMA 410                  |         |         |                |         |         |
|              | MAX. No. of PSUs on 16A CIRCUIT BREAKER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 22 units (circuit breaker of type B) / 38 units (circuit breaker of type C) at 115VAC       |         |         |                |         |         |
|              | LEAKAGE CURRENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <0.5mA / 120VAC                                                                             |         |         |                |         |         |
| PROTECTION   | SHORT CIRCUIT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Constant current limiting, recovers automatically after fault condition is removed          |         |         |                |         |         |
|              | OVER VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 110 ~ 130V<br>Shutdown o/p voltage, re-power on to recover                                  |         |         |                |         |         |
|              | OVER TEMPERATURE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Shutdown o/p voltage, re-power on to recover                                                |         |         |                |         |         |
| FUNCTION     | DIMMING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Please refer to "DIMMING OPERATION" section                                                 |         |         |                |         |         |
|              | SYNCHRONIZATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Please refer to "SYNCHRONIZATION OPERATION" section                                         |         |         |                |         |         |
|              | TEMP. COMPENSATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | By external NTC, please refer to "TEMPERATURE COMPENSATION OPERATION" section               |         |         |                |         |         |
| ENVIRONMENT  | WORKING TEMP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Tcase=-30 ~ +90℃ (Please refer to " OUTPUT LOAD vs TEMPERATURE" section)                    |         |         |                |         |         |
|              | MAX. CASE TEMP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Tcase=+90℃                                                                                  |         |         |                |         |         |
|              | WORKING HUMIDITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 20 ~ 90% RH non-condensing                                                                  |         |         |                |         |         |
|              | STORAGE TEMP., HUMIDITY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | -40 ~ +80℃, 10 ~ 95% RH                                                                     |         |         |                |         |         |
|              | TEMP. COEFFICIENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ±0.03%/℃ (0 ~ 50℃)                                                                          |         |         |                |         |         |
|              | VIBRATION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes                     |         |         |                |         |         |
| SAFETY & EMC | SAFETY STANDARDS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | UL8750 approved                                                                             |         |         |                |         |         |
|              | DALI STANDARDS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Comply with IEC62386-101, 102, 207                                                          |         |         |                |         |         |
|              | WITHSTAND VOLTAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | I/P-O/P:3.75KVAC                                                                            |         |         |                |         |         |
|              | ISOLATION RESISTANCE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | I/P-O/P:>100M Ohms / 500VDC / 25℃ / 70% RH                                                  |         |         |                |         |         |
|              | EMC EMISSION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Compliance to FCC part 15 Subpart B                                                         |         |         |                |         |         |
| OTHERS       | MTBF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 193.6K hrs min.    MIL-HDBK-217F (25℃)                                                      |         |         |                |         |         |
|              | DIMENSION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 123.5*81.5*23mm (L*W*H)                                                                     |         |         |                |         |         |
|              | PACKING                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0.28Kg ; 54pcs/16Kg/1.12CUFT                                                                |         |         |                |         |         |
| NOTE         | 1. All parameters NOT specially mentioned are measured at 115VAC input, rated current and 25℃ of ambient temperature.<br>2. De-rating may be needed under low input voltages. Please refer to "STATIC CHARACTERISTIC" sections for details.<br>3. Length of set up time is measured at first cold start. Turning ON/OFF the driver may lead to increase of the set up time.<br>4. Efficiency is measured at 500mA/70V output set by DIP switch.<br>5. The driver is considered as a component that will be operated in combination with final equipment. Since EMC performance will be affected by the complete installation, the final equipment manufacturers must re-qualify EMC Directive on the complete installation again.<br>6. It is measured 50%~100% of maximum voltage under rated power delivery.<br>7. The ambient temperature derating of 3.5℃/1000m with fanless models and of 5℃/1000m with fan models for operating altitude higher than 2000m(6500ft). |                                                                                             |         |         |                |         |         |

## ■ BLOCK DIAGRAM

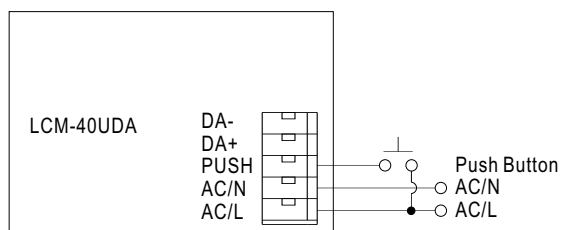


## ■ DIP SWITCH TABLE

LCM-40UDA is a multiple-stage constant current driver, selection of output current through DIP switch is exhibited below.

| Io \ DIP S.W.          | 1    | 2    | 3    | 4    | 5    | 6    |
|------------------------|------|------|------|------|------|------|
| 350mA                  | ---- | ---- | ---- | ---- | ---- | ---- |
| 500mA                  | ON   | ---- | ---- | ---- | ---- | ---- |
| 600mA                  | ON   | ON   | ---- | ---- | ---- | ---- |
| 700mA(factory default) | ON   | ON   | ON   | ---- | ---- | ON   |
| 900mA                  | ON   | ON   | ON   | ON   | ---- | ON   |
| 1050mA                 | ON   | ON   | ON   | ON   | ON   | ON   |

## ■ DIMMING OPERATION



### ※PUSH dimming(primary side)

| Action     | Action duration | Function                                                          |
|------------|-----------------|-------------------------------------------------------------------|
| Short push | 0.1~1 sec.      | Turn ON-OFF the driver                                            |
| Long push  | 1.5~10 sec.     | Every Long Push changes the dimming direction, dimming up or down |
| Reset      | >11 sec.        | Set up the dimming level to 100%                                  |

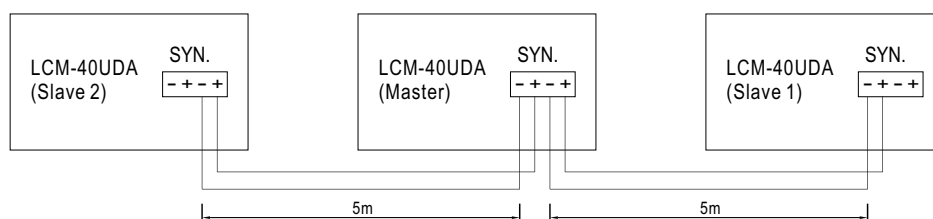
- The factory default dimming level is at 100%.
- If the push action lasts less than 0.05 sec., it will not lead to a change for the status of the driver.
- Up to 10 drivers can perform the PUSH dimming at the same time when utilizing one common push button.
- The maximum length of the cable from the push button to the last driver is 20 meters.
- The additive push button can be connected only between the PUSH terminal, as displayed in the diagram, and AC/L (in brown or black); it will lead to short circuit if it is connected to AC/N.

### ※DALI interface(primary side)

- Apply DALI signal between DA+ and DA-
- DALI protocol comprises 16 groups and 64 addresses.
- First step is fixed at 6% of output.

## ■ SYNCHRONIZATION OPERATION

- Synchronization up to 10 drivers (1 master + 9 slaves)
- Dimming operating range : 10%~100%
- Sync cable length : < 5m
- Sync cable type : Flat cable
- Sync cable cross section area : 22 – 24 AWG (0.2~0.3mm<sup>2</sup>)

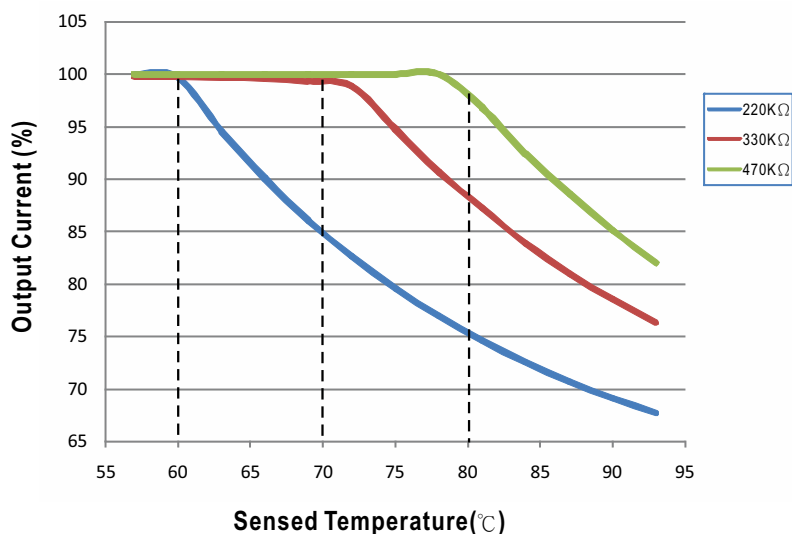


NOTE : 1. Please make sure all units are set to 100% dimming setting (factory default) before synchronizing.  
2. Min. Dimming operating range depends on dimmer setting.

## ■ TEMPERATURE COMPENSATION OPERATION

LCM-40UDA have the built-in temperature compensation function ; by connecting a temperature sensor (NTC resistor) between the +NTC / -NTC terminal of LCM-40UDA and the detecting point on the lighting system or the surrounding environment, output current of LCM-40UDA could be correspondingly changed, based on the sensed temperature, to ensure the long life of LED.

**NTC derating curve**



◎ LCM-40UDA can still be operated normally when the NTC resistor is not connected and the value of output current will be the current level selected through the DIP switch.

◎ NTC reference:

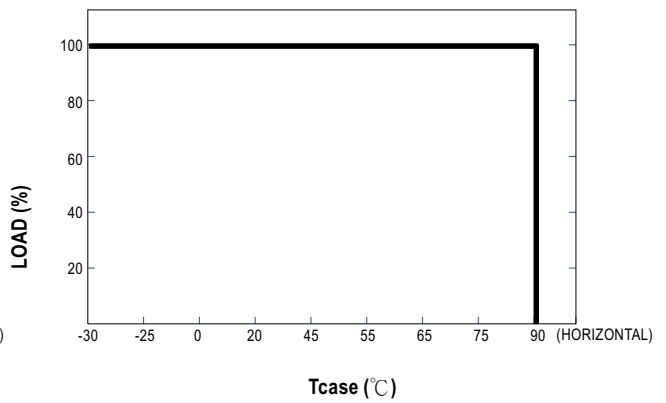
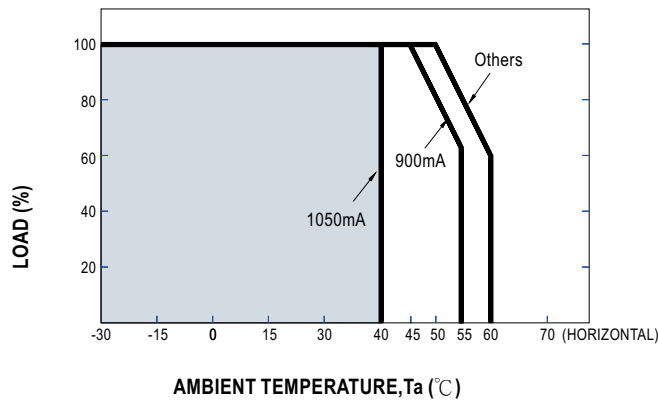
| NTC resistance | Output Current                                                                                                                                                  |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 220K           | < 60°C, 100% of the rated current (corresponds to the setting current level)<br>> 60°C, output current begins to reduce, please refer to the curve for details. |
| 330K           | < 70°C, 100% of the rated current (corresponds to the setting current level)<br>> 70°C, output current begins to reduce, please refer to the curve for details. |
| 470K           | < 80°C, 100% of the rated current (corresponds to the setting current level)<br>> 80°C, output current begins to reduce, please refer to the curve for details. |

Notes: 1. MEAN WELL does not offer the NTC resistor and all the data above are measured by using THINKING TTC03 series.

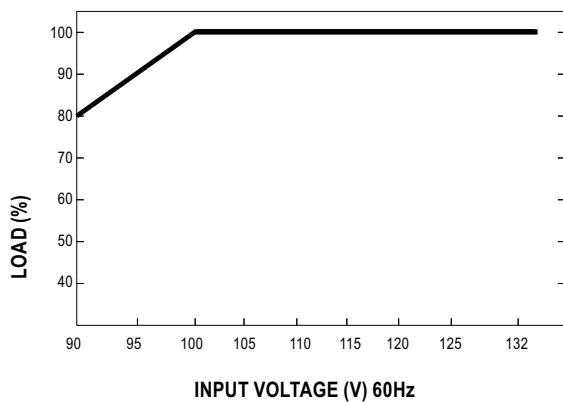
2. If other brands of NTC resistor is applied, please check the temperature curve first.

◎ Dimming and synchronization function of the driver will be invalid when the "temperature compensation" function is in use.

## ■ OUTPUT LOAD vs TEMPERATURE



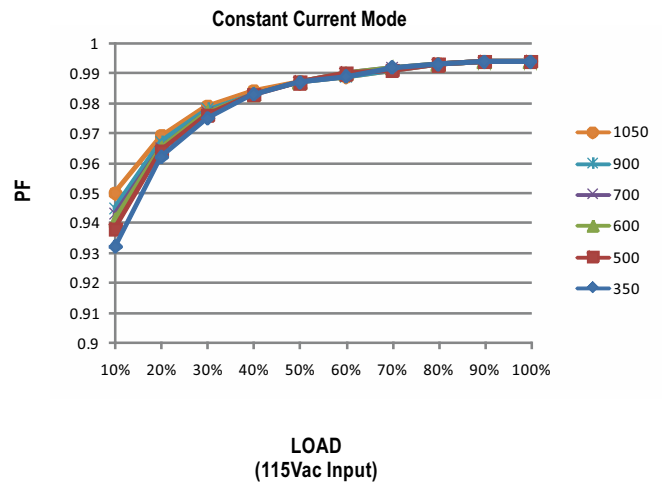
## ■ STATIC CHARACTERISTIC



※ De-rating is needed under low input voltage.

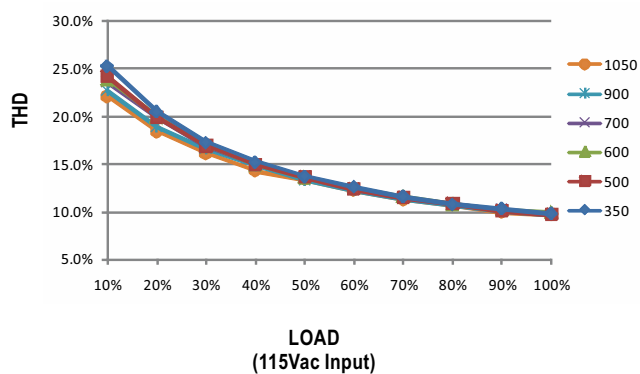
## ■ POWER FACTOR (PF) CHARACTERISTIC

※  $T_{case}$  at 80°C



## ■ TOTAL HARMONIC DISTORTION (THD)

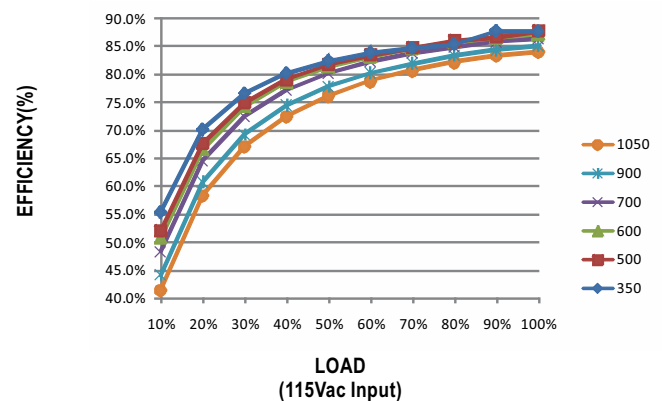
※  $T_{case}$  at 80°C



## ■ EFFICIENCY vs LOAD

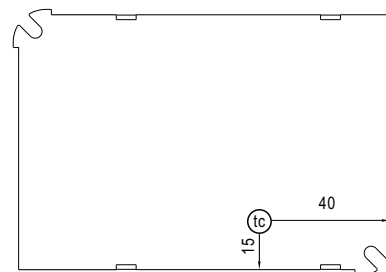
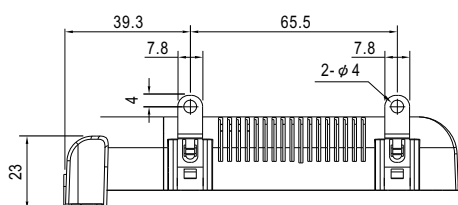
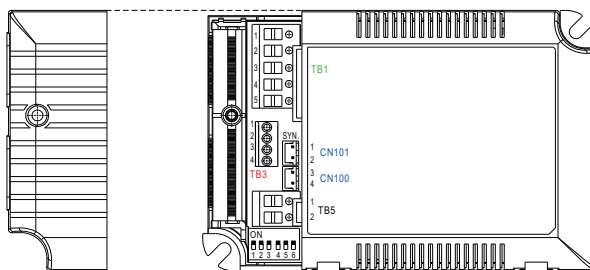
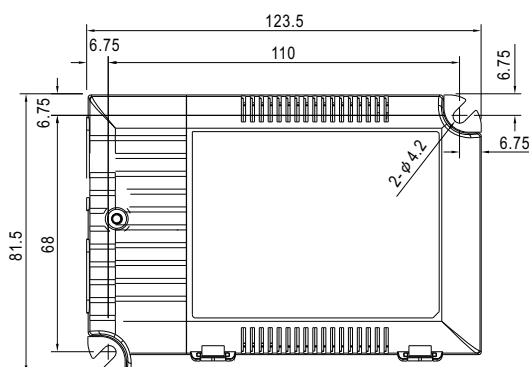
LCM-40UDA series possess superior working efficiency that up to 87.5% can be reached in field applications.

※  $T_{case}$  at 80°C



## MECHANICAL SPECIFICATION

Case No.LCM-60A Unit:mm



Bottom View

• (tc) : Max. Case Temperature

### ※ Terminal Pin No. Assignment(TB1)

| Pin No. | Assignment | Pin No. | Assignment |
|---------|------------|---------|------------|
| 1       | AC/L       | 4       | DA+        |
| 2       | AC/N       | 5       | DA-        |
| 3       | PUSH       |         |            |

### ※ Terminal Pin No. Assignment(TB3)

| Pin No. | Assignment     | Pin No. | Assignment |
|---------|----------------|---------|------------|
| 1       | +FAN(optional) | 3       | +NTC       |
| 2       | -FAN(optional) | 4       | -NTC       |

◎ Pin1(+FAN) / Pin2(-FAN) is the Auxiliary DC output for the optional model LCM-40UDA-AUX; it can be used to drive fan.

### ※ Terminal Pin No. Assignment(TB5)

| Pin No. | Assignment |
|---------|------------|
| 1       | +V         |
| 2       | -V         |

### ※ SYN. Connector(CN101/CN100):JST B2B-XH or equivalent

| Pin No. | Assignment | Mating Housing           | Terminal                           |
|---------|------------|--------------------------|------------------------------------|
| 1,3     | +          | JST XHP<br>or equivalent | JST SXH-001T-P0.6<br>or equivalent |
| 2,4     | -          |                          |                                    |

## Данный компонент на территории Российской Федерации

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<http://moschip.ru/get-element>

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Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

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