

Description

The X7L series is an outdoor LED constant current driver with a very high power factor. This series is designed for low power street lights and tunnel lights. It supports 0-10V/PWM dimming and Dim-to-off. The high efficiency and simple metal housing design provides excellent heat dissipation, which effectively improves reliability and extends product life. To ensure trouble-free operation, the X7L series has lightning protection, output over voltage, short circuit to ensure low failure rate.



Product Features

- Universal input voltage: 90~305Vac;
- Isolate constant power design;
- Control solutions: 0~10Vdc / PWM;
- Potentiometer regulated current;
- Protections: SCP / OVP;
- surge protection: 4KV line-line, 6KV line-earth;
- IP67 design outdoor applications;
- Suitable for dry / damp / wet locations;
- 5 years warranty;

Application

Road and street lighting
 Industrial lighting

Models

| Model Number | Input Voltage Range (Vac) | Max Output Power (W) | Output Voltage Range (Vdc) | Full Power Output Current Range (A) | Default Current(A) | Eff. (Typ.) | PF(Typ.) | THD(Typ.) |
|--------------|---------------------------|----------------------|----------------------------|-------------------------------------|--------------------|-------------|----------|-----------|
| X7-022M050L | 100~240/277 | 22 | 28~50 | 0.45~0.70 | 0.70 | 87% | 0.97 | 10% |

Notes:

[1]. M means 0-10V/PWM dimming.

[2]. All specifications are measured at 25°C ambient temperature, input voltage 230Vac, and the typical value tested at full load, if no specific note.

Input Specifications

| Parameter | Min | Typ. | Max | Notes |
|---------------------------------|--------|------------|--------|---|
| Input Voltage Range | 90Vac | - | 305Vac | Low voltage 108Vac derating and ambient temperature reduction |
| Rated Input Voltage Range | 100Vac | 120/230Vac | 277Vac | Refer to Output Power vs. Input Voltage curve |
| Input Frequency AC | 47Hz | 50/60Hz | 63Hz | |
| Max Input Current | - | - | 0.5A | 90Vac & 100% load |
| Max Input Power | - | - | 30W | 90Vac & 100% load |
| Leakage Current | - | - | 0.70mA | IEC 60598-1; 240Vac/60Hz |
| Leakage Current | - | - | 0.75mA | UL 8750; 277Vac/60Hz |
| Inrush Current | - | - | 50A | 230Vac, 100% load |
| Power Factor (PF) | 0.94 | 0.97 | - | 100-240Vac, 50-60Hz, 75%-100% load |
| Power Factor (PF) | 0.90 | 0.92 | - | 277Vac, 50-60Hz, 75%-100% load |
| Total Harmonic Distortion (THD) | - | 10% | 15% | 100-240Vac, 50-60Hz, 70%-100% load |
| Total Harmonic Distortion (THD) | - | 15% | 20% | 277Vac, 50-60Hz, 70%-100% load |
| MCB(B16) | - | 10 | - | 277Vac; 100%load |
| MCB(B16) | - | 12 | - | 240Vac; 100%load |

Output Specifications

| Parameter | Min | Typ. | Max | Notes |
|-------------------------------------|---------------|------|---------------|--|
| Output Voltage Range | 28Vdc | - | 50Vdc | |
| Open Circuit Voltage | - | - | 60Vdc | |
| Full Power Current Range | 0.45A | - | 0.70A | Adjustable output current with potentiometer |
| Current Accuracy | -5% I_{set} | - | +5% I_{set} | 25°C±10°C Ambient temperature |
| Total Output Current Ripple (pk-pk) | - | 80% | 120% | 25°C±10°C Ambient temperature 20MHz BW full load & LED load the LED load ripple is slightly different for different leds |
| Startup Overshoot Current | - | - | 10% | 220-240Vac full load condition, LED load |
| Line Regulation | -3% | - | +3% | 25°C±10°C ambient temperature, input changes from 100Vac to 277Vac |
| Load Regulation | -5% | - | +5% | Load varies from 70% to 100% with 230Vac Input at 25°C±10°C ambient temperature |
| Turn-on Delay Time | - | - | 1.0s | 100-277Vac, 100% load |

General Specifications

| Parameter | Min | Typ. | Max | Notes |
|---|---|------------|-------|---|
| Efficiency@230Vac Io=0.45A Io=0.70A | 85% 85% | 87% 87% | - | 100% load, 25°C ambient temperature |
| Mean Time Between Failure | - | 200Khours | - | 25°C±10°C ambient temperature, 230Vac, 80% load condition (MIL-HDBK-217/SR-332) |
| Lifetime | - | 50Khours | - | 230Vac & 100% load, Tc 75°C, refer to lifetime vs. case temperature curve |
| Operating Temperature Ta | -40°C | - | +55°C | Output Power vs. Ambient Temperature curve |
| Operating Tc for Safety Tc_s | -40°C | - | +90°C | |
| Operating Tc for Warranty Tc_w | -40°C | - | +75°C | 5-year warranty shell temperature, humidity: 10% to 95% RH |
| Storage Temperature Ta | -40°C | - | +85°C | Humidity: 5% to 100% RH |
| Altitude | -60m | - | 4000m | |
| Dimensions (L*W*H) | 124.2*55.4*33.5mm | | | |
| Net Weight | 410±50g/PCS | | | |
| Package (L*W*H) | 466*282*172mm; 16PCS/Ctn, Gross Weight: 9Kg | | | |

Dimming

| Parameter | Min | Typ. | Max | Notes |
|-------------------------------|----------------------|-------|-----------------------|---|
| Absolute Maximum Voltage | - | 10V | 15V | On the Vdim (+) Pin |
| Source Current on Vdim (+)Pin | - | 400uA | 650uA | |
| Dimming Range | 10% I _{set} | - | 100% I _{set} | I _{set} is set to the full power range |
| Suggest Dimming Input 0-10V | 0V | - | 10V | |
| Turn-on Voltage | 0.7V | - | 1.0V | |
| Turn-off Voltage | 0.4V | - | 0.8V | |
| PWM in High Level | 9.7V | - | 10.3V | |
| PWM in Low Level | 0V | - | 0.3V | |
| PWM in Frequency Range | 300Hz | - | 2KHz | |
| PWM in Duty Cycle | 1% | - | 99% | |
| Turn-on Duty Cycle | 7% | - | 10% | |
| Turn-Off Duty Cycle | 4% | - | 8% | |

Notes:

Dimming resolution 1%(PWM), 0.1V(0~10V) ,Recommended dimming range.

Safety Specification

| Parameter | Min | Typ. | Max | Notes |
|--------------------------------------|------|---------|------|---|
| Dielectric Strength (Input-Output) | - | 3750Vac | - | 60s, Current not exceeding 5mA |
| Dielectric Strength (Input-Ground) | - | 1875Vac | - | 60s, Current not exceeding 5mA |
| Dielectric Strength (Output-Ground) | - | 500Vac | - | 60s, Current not exceeding 5mA |
| Dielectric Strength (Input-Dimming) | - | 3750Vac | - | 60s, Current not exceeding 5mA |
| Dielectric Strength (Dimming-Ground) | - | 500Vac | - | 60s, Current not exceeding 5mA |
| Grounding Resistance | - | - | 0.1Ω | 25°C±10°C Ambient Temperature, pass 25A Current, 60s. |
| Insulation Resistance | 10MΩ | - | - | Input-Output, Input-PE, Output-PE, 500Vdc/60s/25°C |

Safety Compliance

| Safety Category | Standards | Approved | Notes |
|-----------------|----------------------------------|----------|-------|
| CCC | GB19510.1,GB19510.14 | √ | |
| CE | EN61347-1, EN61347-2-13, EN62493 | √ | |
| ENEC | EN61347-1, EN61347-2-13, EN62384 | | |
| CB | IEC61347-1, IEC61347-2-13 | √ | |
| BIS | IS 15885(PART 2/SEC 13) | | |
| UL | UL 8750 | | |
| CUL | CSA C22.2 No.250.13 | | |
| KC | K61347-1, K61347-2-13 | | |
| PSE | J61347-1, J61347-2-13 | | |
| SAA | AS/NZS IEC 61347.2.13 | | |
| SAA | AS/NZS 61347.1 | | |

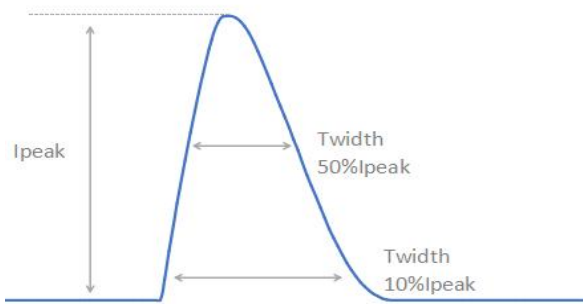
EMC Compliance

| EMC Category | Standards | Approved | Notes |
|----------------------|----------------------------|----------|-------|
| CCC | GB/T 17743, GB 17625.1 | √ | |
| CE | EN 55015 | √ | |
| CE | EN 61000-3-2, EN 61000-3-3 | √ | |
| CE | EN61000-4-2,3,4,5,6,11 | √ | |
| CE | EN 61547 | √ | |
| KC | K61547 | | |
| KC | K00015 | | |
| PSE | J55015 | | |
| FCC | FCC part 15 | | |
| Surge Shock Immunity | ANSI/C82.77-5-2017 | | |
| Ringing Wave | | | |

RoHS

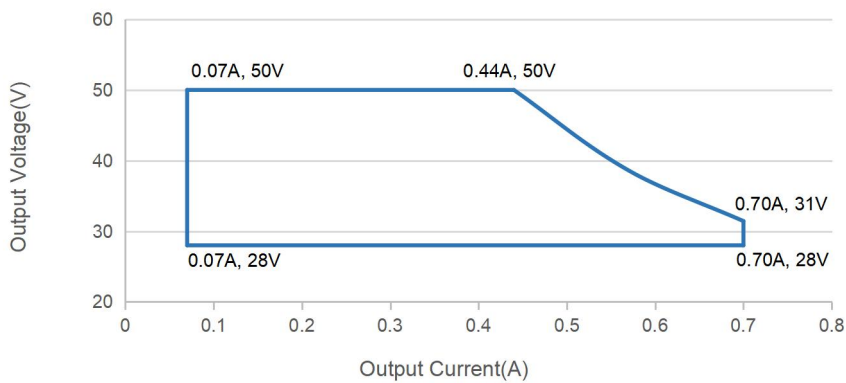
Our products comply with reference to RoHS Directive (EU) 2015/863 amending 2011/65/EU.

Inrush Current

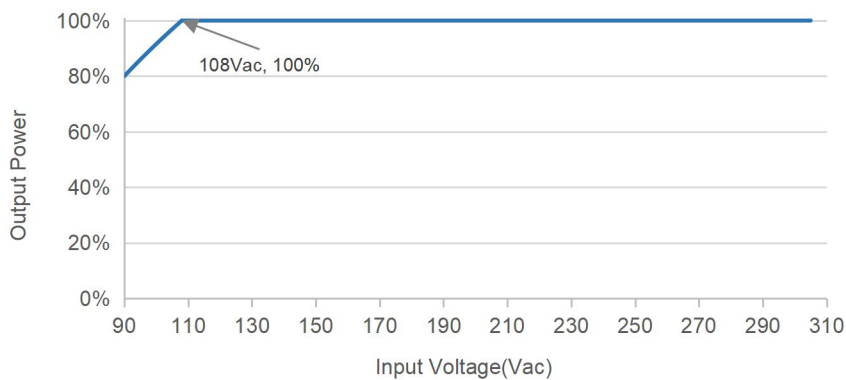


| V_{in} | I_{peak} | $T(@10\% \text{ of } I_{peak})$ | $T(@50\% \text{ of } I_{peak})$ |
|----------|------------|---------------------------------|---------------------------------|
| 230Vac | 50A | 300uS | 150uS |

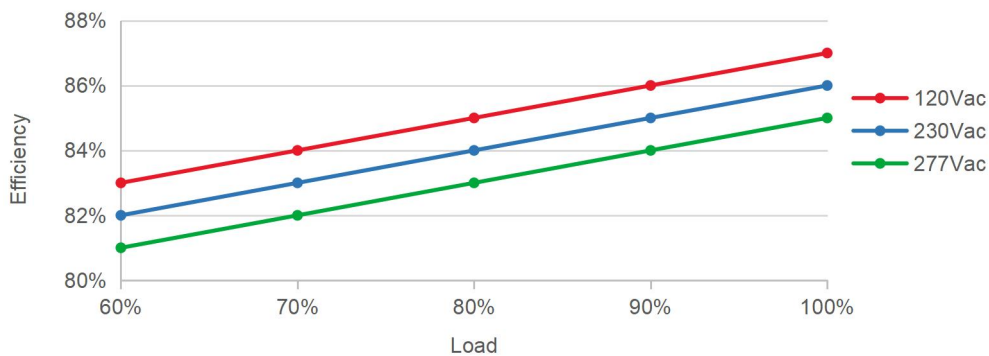
Output Voltage vs. Output Current



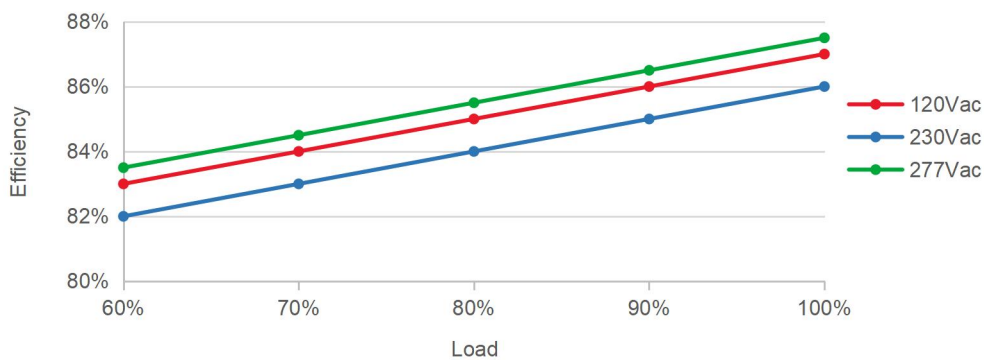
Output Power vs. Input Voltage



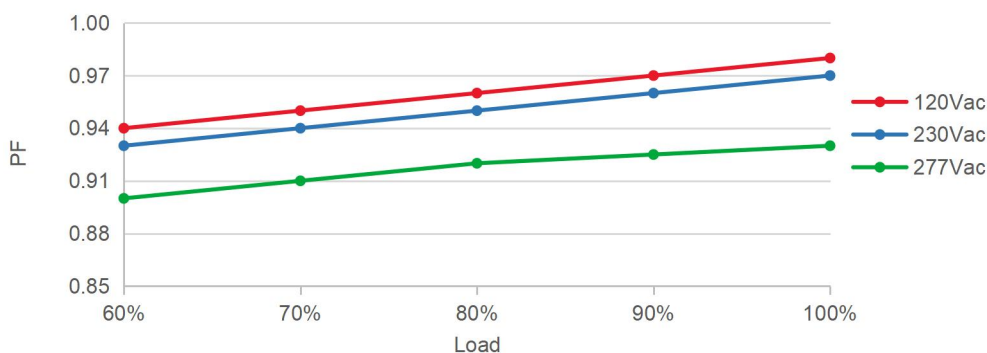
Efficiency vs. Load ($I_o=0.45A$)



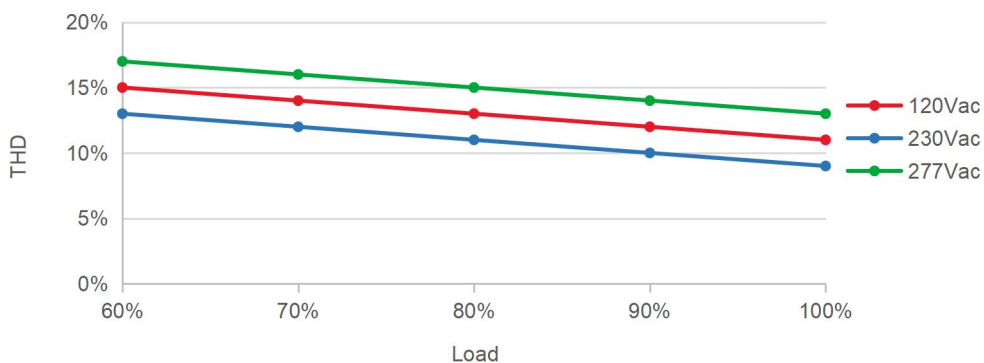
Efficiency vs. Load (I_o=0.70A)



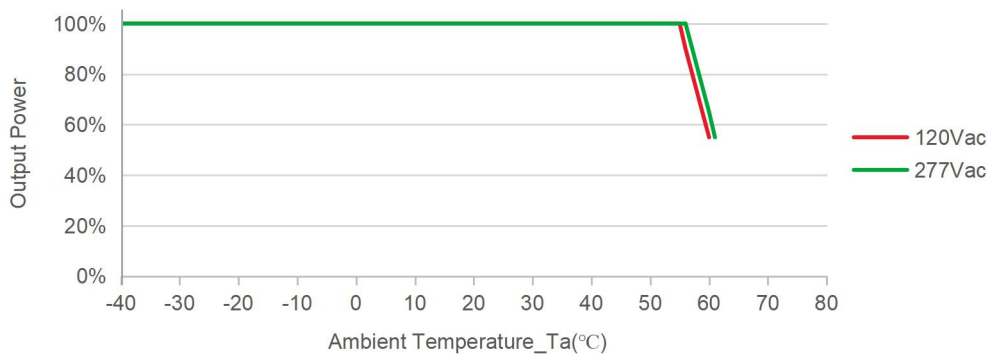
PF vs. Load



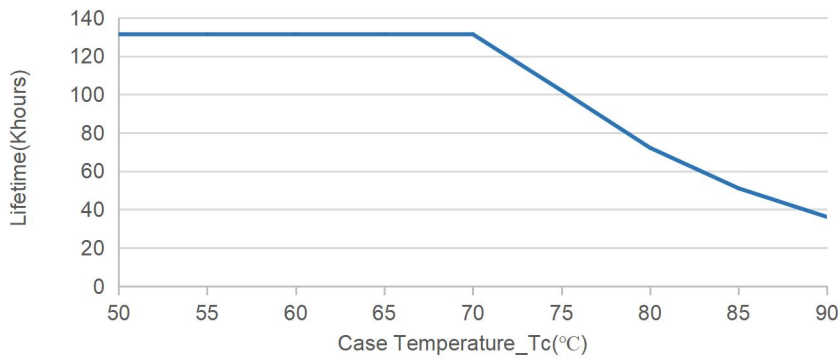
THD vs. Load



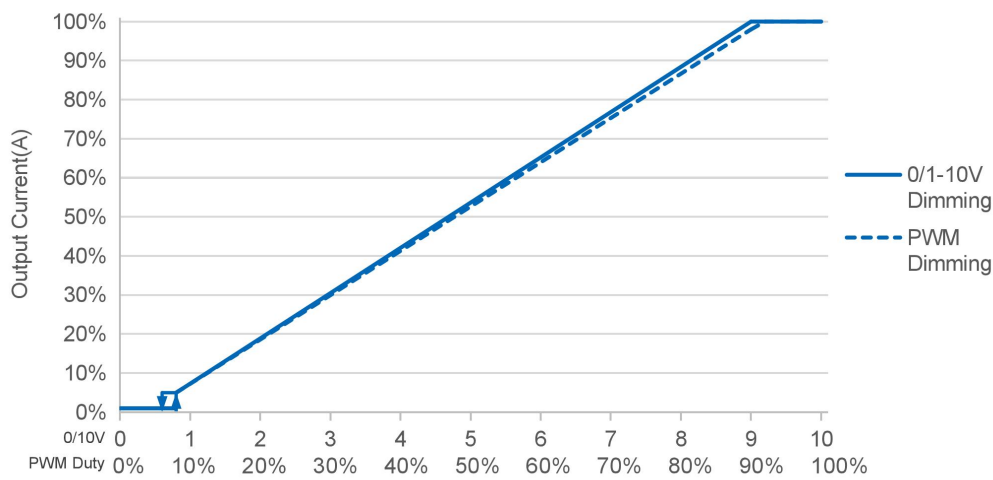
Output Power vs. Ambient Temperature



Lifetime vs. Case Temperature

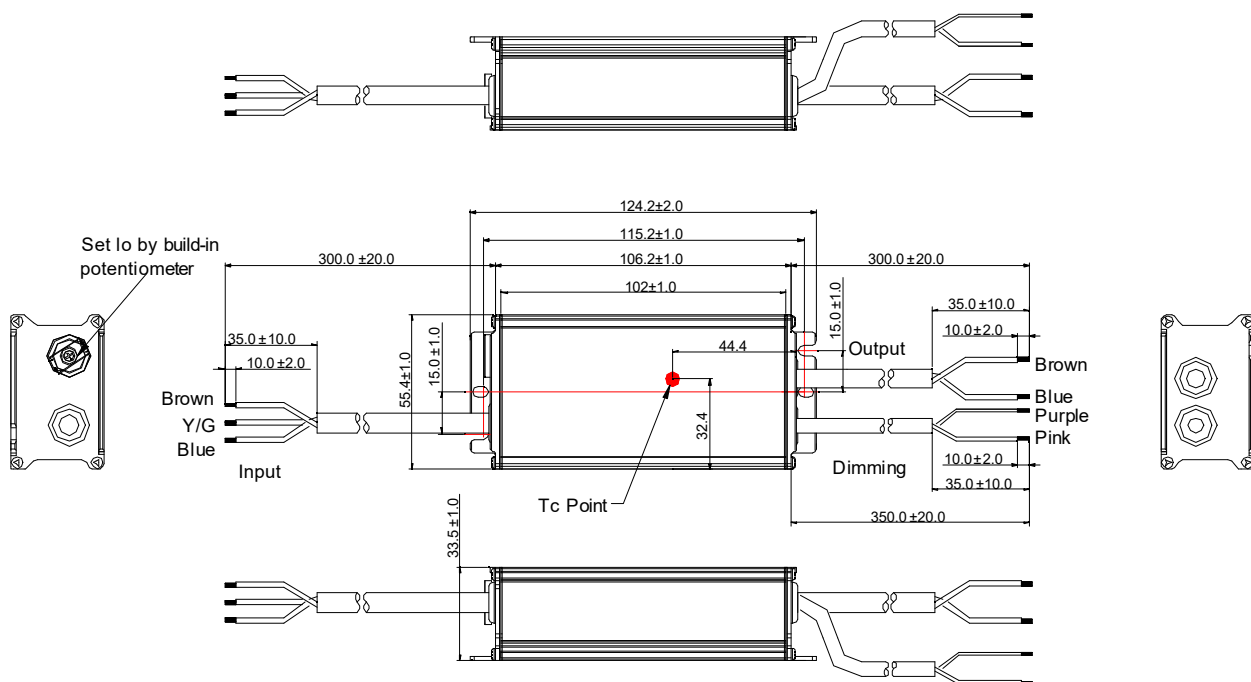


0-10V/PWM Dimming



Notes: Afterglow may appear after switching off dimming due to the difference of lamp panel. Thus, lighting fixture grounding test is suggested.

Mechanical Outline



Specification

| | | |
|---------|--|--------|
| Input | CCC+VDE H05RN-F 3*1.0 mm ² L=300±20mm | CCC/CE |
| Output | CCC+VDE H05RN-F 2*1.0 mm ² L=300±20mm | CCC/CE |
| Dimming | UL 2733 2*22AWG L=350±20mm | UL |

Label

| | | | | | | | | | |
|--|--|---|---|-------------|---|-----------------------|-----------------------|--|--|
| <p>MOSO[®] X7-022M050L Constant current type LED DRIVER LED 恒流控制装置</p> | | | <p>OUTPUT</p> <p>(BROWN 棕) Vo +</p> <p>(BLUE 蓝) Vo -</p> <p>(PURPLE 紫) DIM"+"</p> <p>(PINK 粉) DIM"-"</p> | | | | | | |
| <p>INPUT</p> <p>⊕ Io ADJ</p> <p>L (BROWN 棕)</p> <p>G (Y/G 黄/绿)</p> <p>⊥</p> <p>N (BLUE 蓝)</p> | <table border="1"> <tr> <td>INPUT (输入)</td> <td>100-240V~ 50/60Hz, 0.5A Max. PF: 0.95, 30W</td> </tr> <tr> <td>OUTPUT (输出)</td> <td>28-50V= 0.07-0.70A Uout Max.(最大电压): 60V= Max.Power(最大功率): 22W</td> </tr> <tr> <td>t_c: 90°C</td> <td>t_a: 55°C</td> </tr> </table> | INPUT (输入) | 100-240V~ 50/60Hz, 0.5A Max. PF: 0.95, 30W | OUTPUT (输出) | 28-50V= 0.07-0.70A Uout Max.(最大电压): 60V= Max.Power(最大功率): 22W | t _c : 90°C | t _a : 55°C | | |
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| t _c : 90°C | t _a : 55°C | | | | | | | | |
| <p>MADE IN CHINA For LED module only</p> | | <p>SHENZHEN MOSO ELECTRONICS TECHNOLOGY CO., LTD No. 1061, Songbai Road, Xili Town, Nanshan District, Shenzhen, CHINA</p> | | | | | | | |

Note:

Nameplate is laser engraved.

Version

| | | |
|-----|---------------|------------|
| A.1 | First release | 2023-08-23 |
| | | |
| | | |
| | | |
| | | |
| | | |

Specification for Approval

Product Name: 22W LED Driver

Product Model: X7-022M050L

Rev: A.1

Address: XiLiSongbai Road 1061, Nanshan District, Shenzhen City, Guangdong, China

Tel: 0755-27657000

FAX: 755-27657908

E-mail: info@mosopower.com

Web Site: <http://www.mosopower.com>

| Prepared By | Checked By | Approved By |
|-------------|------------|-------------|
| | | |

Specification for Approval

Product Name: 22W LED Driver

Product Model: X7-022M050L

Rev: A.1

| CUSTOMER AUTHORIZED SIGNATURE | | |
|---|------------|-------------|
| Tested By | Checked By | Approved By |
| | | |
| (Company seal)Return one copy to MOSO with approved signature and company seal. | | |

Address:XiLiSongbai Road 1061, Nanshan District, Shenzhen City, Guangdong, China

Tel: 0755-27657000

FAX: 755-27657908

E-mail:info@mosopower.com

Web Site:http://www.mosopower.com

| Prepared By | Checked By | Approved By |
|-------------|------------|-------------|
| | | |