



**THE DATASHEET OF
SI-EPF007040WW**



LED Driver

Indoor 75 W Dimmable SI-EPF007040WW



Constant Current LED Driver Wide Operating Range up to 2.1 A – Dimmable

Features & Benefits

- Output Current Range: 1.0 ~ 2.1 A (adjustable via Rset)
- Output Voltage Range: 22 ~ 52 Vdc
- Output Power Range: 22 ~ 75 W
- Dimming Control: 0-10 V
- Input Voltage: 120 ~ 277 Vac, 50/60 Hz
- Safety: UL / cUL (UL 60950 + UL 8750)
- EMI: FCC Part 15 Class B
- Protections: Short Circuit, Open Load Protection
- t_a Range: -20 ~ +50 °C
- Expected lifetime: 50,000 hours at $t_a = 50$ °C, $t_c = 90$ °C
- Environmental Compliance: RoHS
- Long lasting & high reliability
- Slim metal housing

Applications

- Ambient Lighting (Linear and Area) and other Indoor Lighting Applications
- Office – Industry – Shop



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1. Characteristics

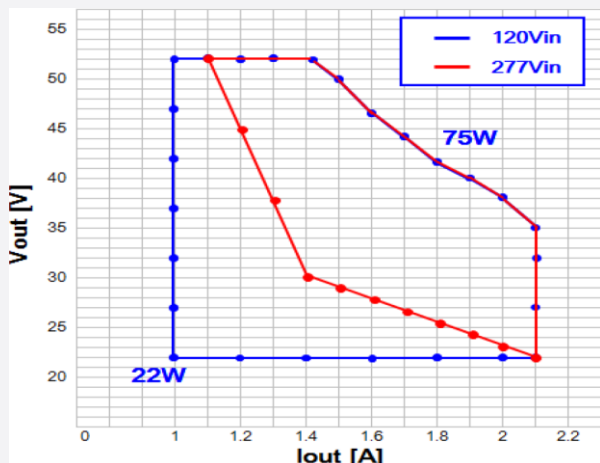
| Article | Symbol | Specification | | | Unit | Note |
|------------------------------|-----------------|-----------------|------|------|-----------------|--|
| | | Min. | Typ. | Max. | | |
| INPUT SPECIFICATIONS | | | | | | |
| Nominal Voltage | V _{in} | 120 ~ 277 | | | Vac | Full input range, no range switching |
| Voltage Range | | 108 | | 305 | Vac | |
| Nominal Frequency | f _{in} | 50 / 60 | | | Hz | |
| Frequency Range | | 47 | | 63 | Hz | |
| Input Current | At 120 Vac | l _{in} | | 0.88 | A | At full load |
| | At 277 Vac | l _{in} | | 0.44 | A | At full load |
| Total Harmonic Distortion | THD | | | 20 | % | At 120-277 Vac |
| Power Factor | PF | 0.9 | | | - | At 120-277 Vac |
| Efficiency | η | 83 | 88 | | % | At full load, 120 Vac, 60 Hz |
| Stand-by Power | | | | 1 | W | At <1 V dimming voltage, 120-277 Vac |
| Protection Class | | | 2 | | - | |
| In-rush Current | | | | 20 | A _{pk} | Cold or hot start (t _{width} = 300 μs measured at 50 % I _{pk}) at 277 Vac |
| OUTPUT SPECIFICATIONS | | | | | | |
| Nominal Voltage | V _o | 22 ~ 52 | | | Vdc | ±2 %; at I _o = 1.0-2.1 A |
| Max. Voltage | | | | 56 | Vdc | Open circuit, No-load protection |
| Nominal Current | I _o | 1.0 ~ 2.1 | | | A | ±5 % (2.1 A), ±10 % (1.0 A) |
| Nominal Power | P _o | 22 ~ 75 | | 75 | W | At I _o = 1.0-2.1 A, V _o = 22-52 V |
| Turn-on Delay Time | T _d | | | 1.5 | s | At full load, 120 Vac input |

- 1) The rated area shows the load condition to meet the PF, THD performance.
- 2) During the transient of AC input 120 ~ 277Vac, Driver can enter the latch mode.

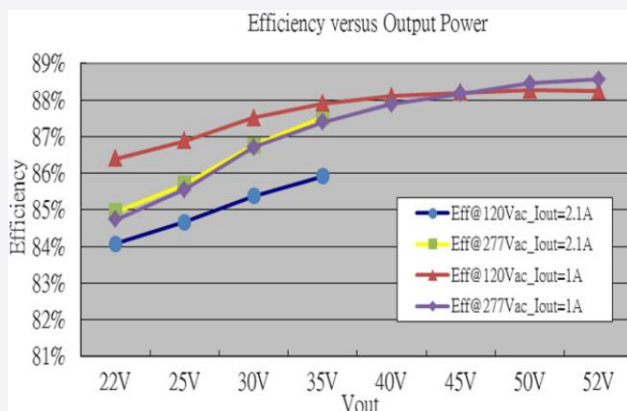
| Article | Symbol | Specification | | | Unit | Note |
|-------------------------------------|-----------|------------------|--------|------|------|--|
| | | Min. | Typ. | Max. | | |
| DIMMING SPECIFICATIONS | | | | | | |
| Dimming Control | | | 0-10 V | | | See Dimming Specification section |
| ENVIRONMENTAL SPECIFICATIONS | | | | | | |
| Ambient Temperature | t_a | -20 | | 50 | °C | |
| Case Temperature | t_c | | | 90 | °C | Tref max/ Measured Tref 90/85°C |
| Storage Temperature | t_s | -25 | | 80 | °C | Cool down before operating |
| Relative Humidity | | 20 | | 90 | % | Not condensing |
| Surge Transient Protection | L / N | | | ±1 | kV | According to IEC/EN 61547 |
| | LN / GND | | | ±2 | kV | |
| IP Rating | | | 20 | | - | Suitable for indoor environment |
| Expected Lifetime (e-cap) | | 50,000 | | | h | At $t_a = 50\text{ °C}$, $t_c = 90\text{ °C}$, full load, 120-277 Vac |
| MTBF | | 100,000 | | | h | At $t_a = 25\text{ °C}$, full load, 230 Vac |
| Dimensions | L x W x H | 14.1 x 1.2 x 1.0 | | | inch | |
| | | 359 x 30 x 26.5 | | | mm | |
| Net Weight | | | 395 | | g | ± 40 g |

2. Typical Characteristics Graphs

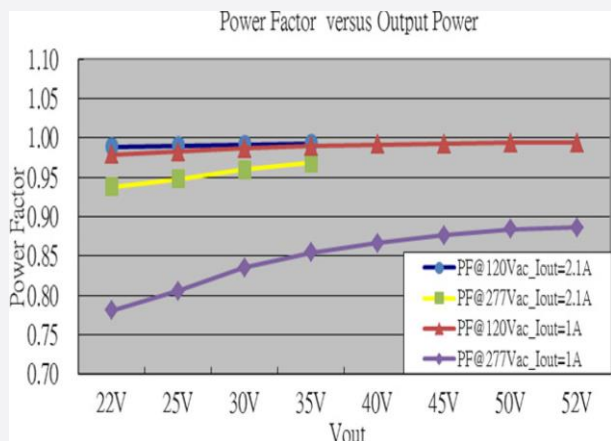
a) Operating Window



b) Efficiency vs. Load



c) PF Vs Output power



d) THD Vs Output power

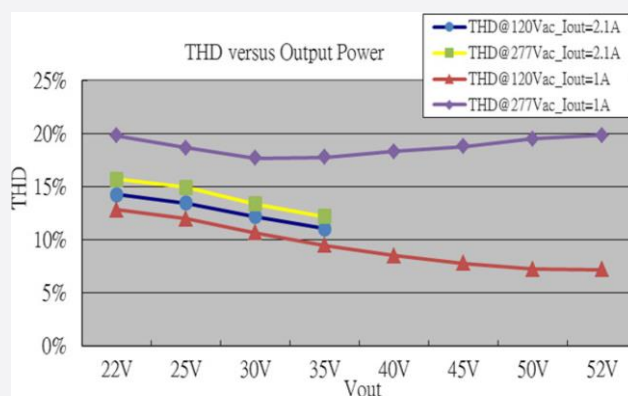
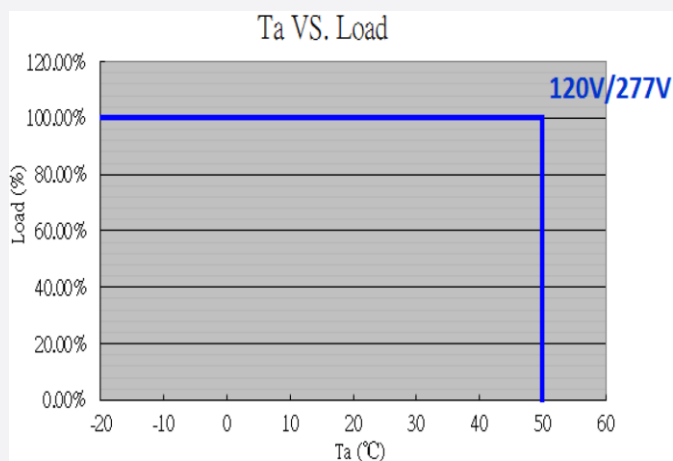
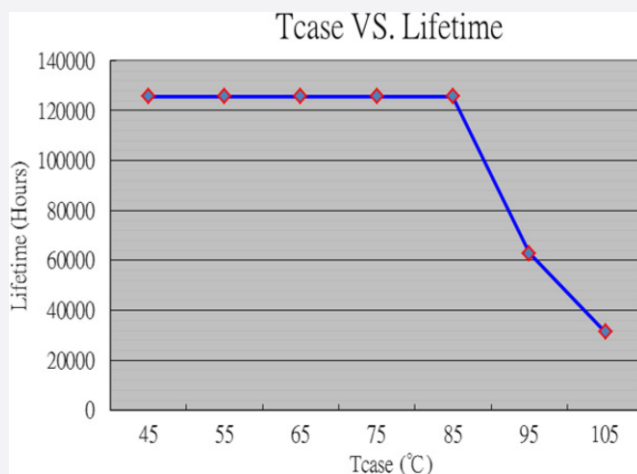


FIG. 2. THD VS. P_{out}

e) Ta Vs Load de-rating

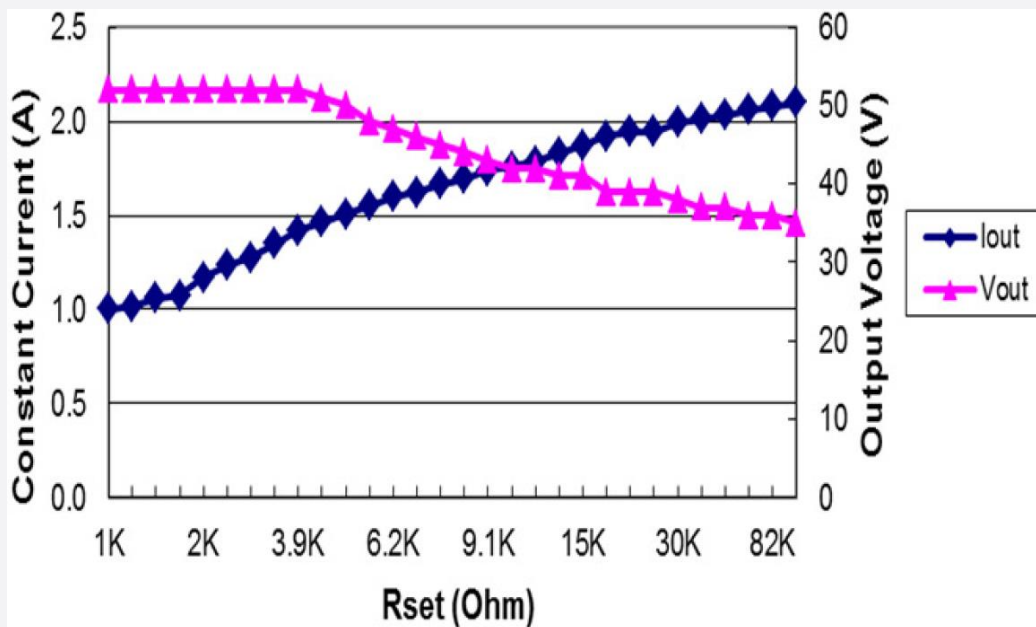


f) Tcase Vs Lifetime



The output current can be adjusted using Rset resistor:

- Disconnect Rset resistor to set full load at 2.1 A / 35 V condition
- Connect Rset resistor to set output current (see below table and curve); for Rset = 3.9 kOhm, the output is full load at 1.42 A / 52 V condition
- The unit has minimum output current at ... 1A when the Rset is less than 1kOhm
- The output voltage is limited by maximum output power (if the output current is set at 2.1 A, the maximum output voltage will be 35 V; if the output current is set at 1.42 A, the maximum output voltage will be 52 V)



| Rset (Ω) | Output Current (A) | Current Tolerance (%) | MAX Output Voltage (V) | Open Load Voltage (V) |
|----------------------|-----------------------|-----------------------------|------------------------------|-----------------------------|
| 1K | 1.0000 | ± 10 | 52 | 55 |
| 1.3K | 1.0146 | | 52 | 55 |
| 1.5K | 1.0575 | | 52 | 55 |
| 1.6K | 1.0746 | | 52 | 55 |
| 2K | 1.1722 | | 52 | 55 |
| 2.4K | 1.2336 | | 52 | 55 |
| 2.7K | 1.2763 | | 52 | 55 |
| 3.3K | 1.3475 | | 52 | 55 |
| 3.9K | 1.4188 | | 52 | 55 |
| 4.3K | 1.4633 | | 51 | 55 |
| 4.7K | 1.5080 | ± 7 | 50 | 54 |
| 5.6K | 1.5528 | | 48 | 53 |
| 6.2K | 1.5972 | | 47 | 51 |
| 6.8K | 1.6243 | | 46 | 50 |
| 7.5K | 1.6679 | | 45 | 49 |
| 8.2K | 1.6941 | | 44 | 48 |
| 9.1K | 1.7394 | | 43 | 47 |
| 10K | 1.7574 | | 42 | 46 |
| 11K | 1.7850 | | 42 | 45 |
| 13K | 1.8290 | | 41 | 44 |
| 15K | 1.8736 | ± 5 | 41 | 44 |
| 20K | 1.9199 | | 39 | 42 |
| 22K | 1.9455 | | 39 | 42 |
| 24K | 1.9470 | | 39 | 41 |
| 30K | 1.9913 | | 38 | 41 |
| 33K | 2.0144 | | 37 | 41 |
| 43K | 2.0337 | | 37 | 40 |
| 51K | 2.0618 | | 36 | 40 |
| 82K | 2.0780 | | 36 | 39 |
| 110K | 2.1000 | | 35 | 39 |

3. Protection

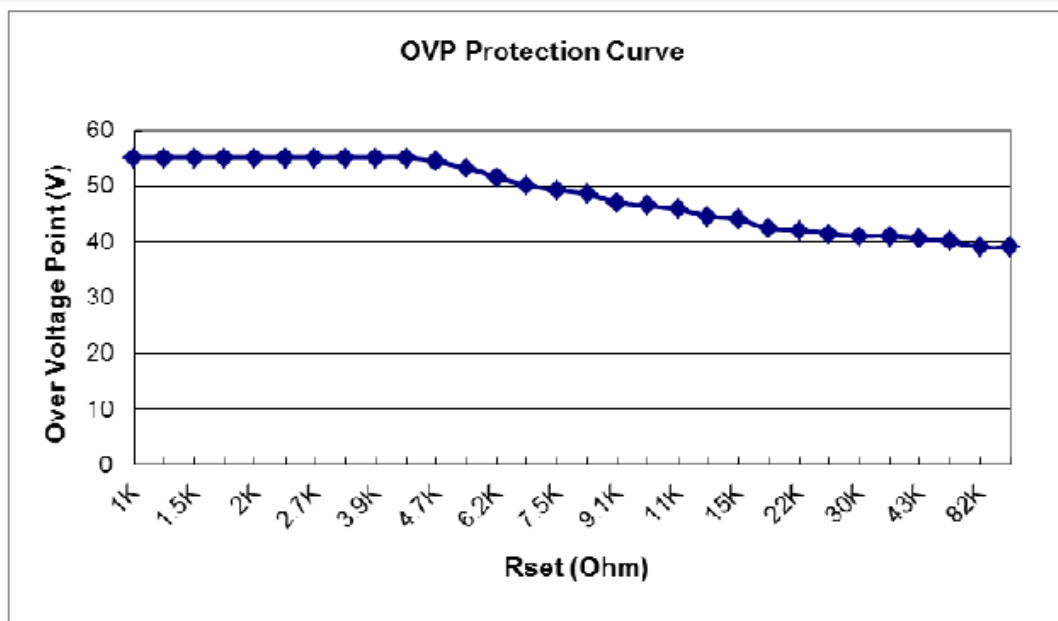
a) Output Short Circuit Protection

The PSU should be protected when the output short and do not result in a fire hazard, shock hazard, or damage to the PSU.

The protection is latch mode. The test procedure is setup at LED mode and short V+ to GND, after the fault condition removed, it needs to repower on to recover the PSU.

b) Output Over Voltage Protection

When output open occurs before AC turn on, the PSU should clamp Open Load Voltage, and it will work normally when output reload. But when AC power on then output open, **it will trigger the latch protection** and not to damage the PSU, and it needs to repower on to recover the PSU. The Open Load Voltage can adjust by Rset resistor which is referring from following curve.

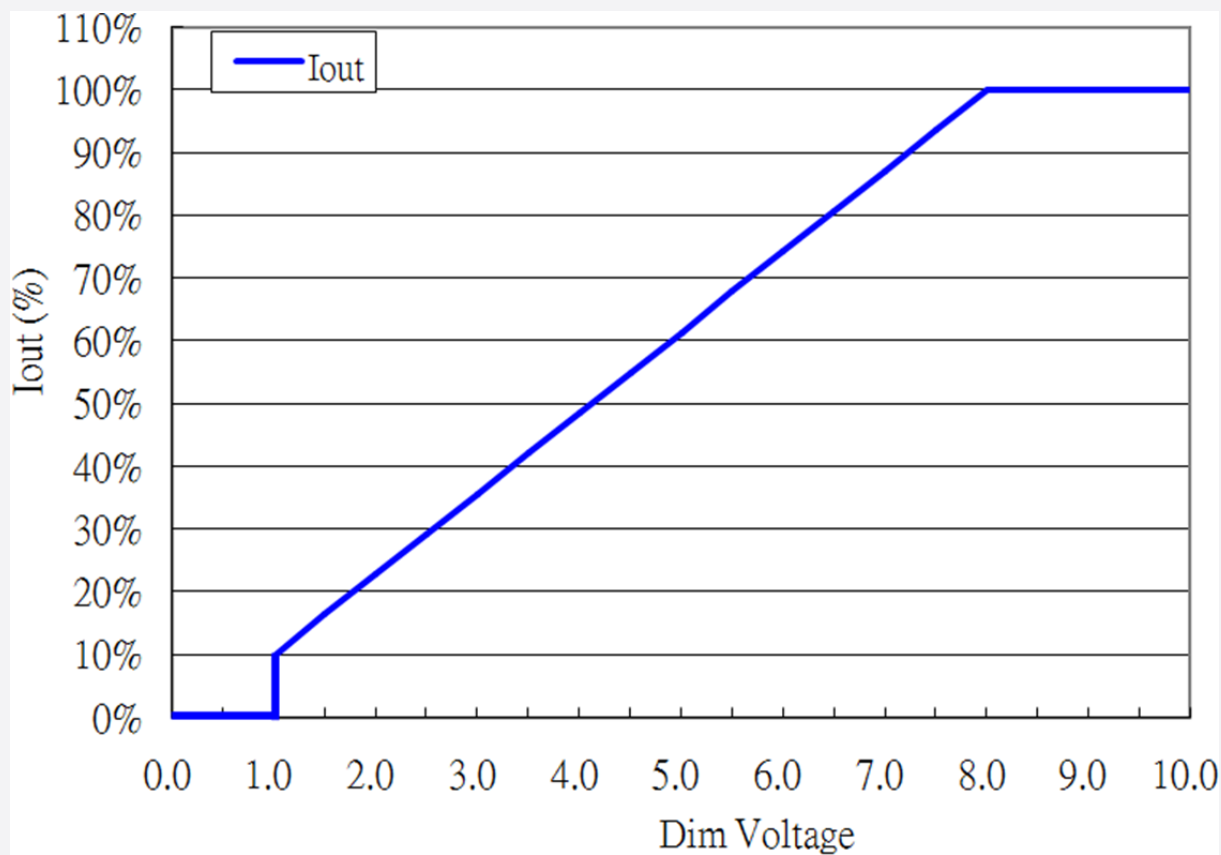


c) Protection tables

| Protection Specification | Protection Mode | Condition |
|--------------------------|---|--|
| Output Short Protection | Auto-recovery | (1)AC turn on then output short (2)Output short then AC turn on |
| Output Open Protection | Clamp Open Load Voltage (refer to the OLP curve) | (1)AC turn on then output open (2)Output open then AC turn on |
| AC Transient Protection | Auto-recovery | 120 ~ 277Vac range switching |

4. Dimming Specification

The unit has Analog Dimming (AD) function, using 0-10 Vdc. The typical dimming curve is shown below:
(the current of LED module is 2.1 A at full load condition)



| | Symbol | Unit | Min | Typ | Max | Remark |
|---------|---------------------|------|-----|-----|-----|--------|
| Dimming | Range | V | 0 | | 10 | |
| | Dim off | V | 0 | | 1 | |
| | Dim. Min. | V | 1 | | | |
| | Dim Max. | V | 8 | | 10 | |
| | I _{SOURCE} | mA | | | | 0.6 |

※ Compatible Dimmer : IP710-DL, NTSTV-DV, DVSTV

5. Reliability

Test Items and Conditions

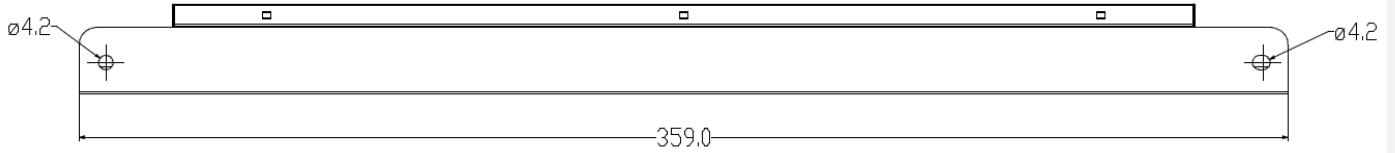
| Test Item | Specification | Condition | |
|-----------------------|----------------|--|---------------------------------|
| Leakage Current | < 0.7 mA | According to IEC/EN 60950 | |
| Earth Continuity | < 0.5 Ω | According to IEC/EN 61347 100 % tested in production line | |
| Hi-Pot | Input – Output | 3000 Vac, 60 s, cut-off current 10 mA | 100 % tested in production line |
| | Input – Case | 1500 Vac, 60 s, cut-off current 10 mA | 100 % tested in production line |
| Insulation Resistance | Input – Output | 500 Vdc, 60 s, insulation resistance 4 MΩ | 100 % tested in production line |
| | Input – Case | 500 Vdc, 60 s, insulation resistance 2 MΩ | 100 % tested in production line |
| Surge | L / N | ±1 kV | According to IEC/EN 61547 |
| | LN / GND | ±2 kV | |
| ESD | Contact | ±4 kV | According to IEC 61000-4-2 |
| | Air | ±8 kV | |

6. Outline Drawing & Dimension

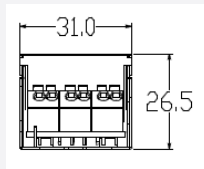
a) Dimension (mm)



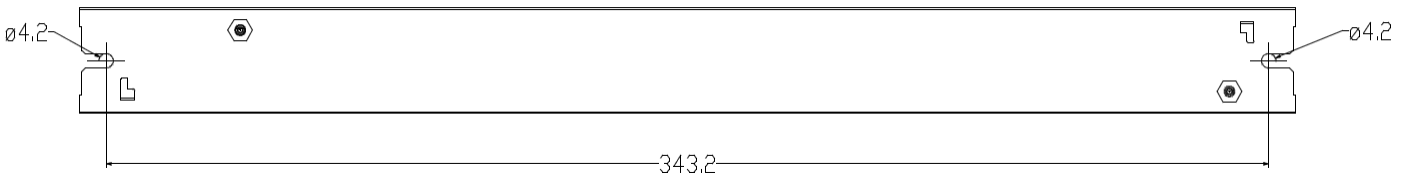
Top



Sides



Bottom



Housing material: SGCC

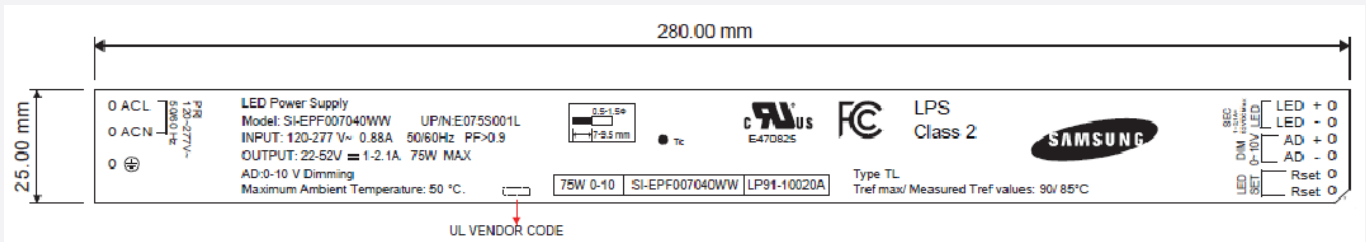
b) Wiring

Connectors type (input and output): DN250A or compatible

Wire cross-section: 0.5 - 1.5 mm²

Wire peeling length: 7 - 9.5 mm

7. Label Structure



8. Packing Structure

| Packing material | Max. quantity (pcs) | Dimension (mm) | | |
|------------------|-----------------------|----------------|-------|--------|
| | | Length | Width | Height |
| Outer Box | 32 | 483 | 385 | 148 |
| Pallet | 1152 (36 outer boxes) | 1220 | 1020 | 120 |

9. Precautions in Handling & Use

- To prevent the LED Driver from any defect, please handle and store it with care
 - Do not drop or give shock
 - Do not store in very humid location or at extreme temperature
 - Do not open or disassemble the product
- Static electricity or surge voltage may damage the components inside LED Driver, as such please observe proper anti-electrostatic working process
 - People handling the Driver should be well grounded (e.g. using ESD wrist band) and wear anti-static working clothes and gloves
 - All related devices and instruments in the production line should be well grounded (e.g. working table, measuring equipment, assembly jigs)
- Observe the correct polarity of output terminal
- Avoid input voltage exceeds the maximum rating, which will cause damage to the circuit and result in malfunction

Legal and additional information.

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