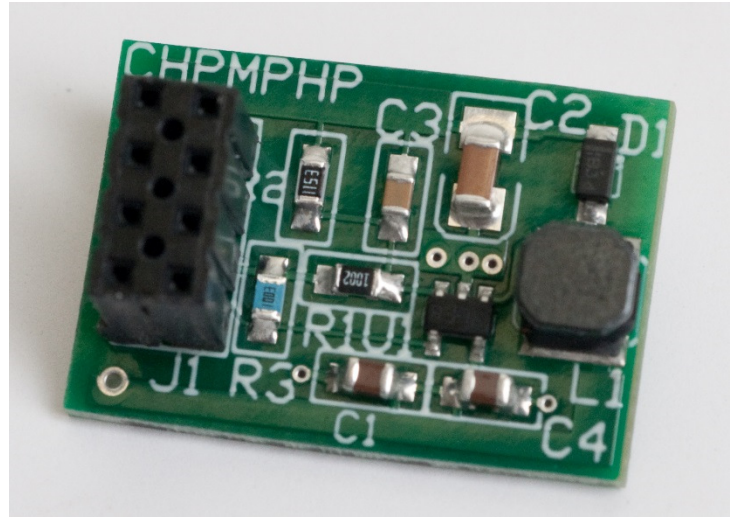
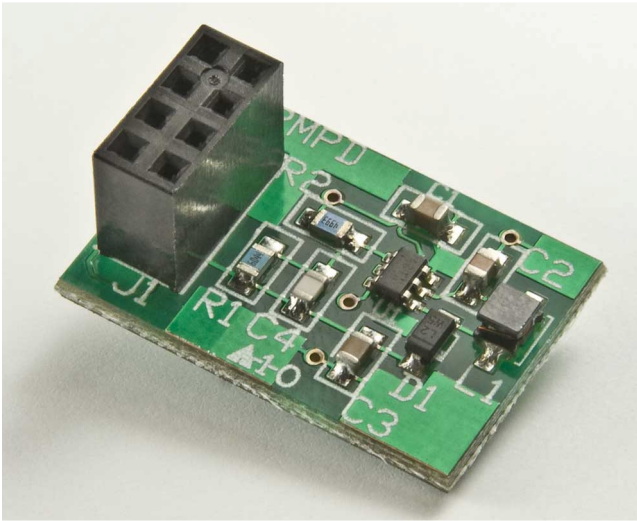


IS-CHPMP and IS-CHPMPHP Manual

Revision C

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1. General Description.

There are two different charge pumps; IS-CHPMP and IS-CHPMPHP. They are designed for different uses.

| OLED products supported by the charge pumps. | | |
|--|-----------|------------|
| | IS-CHPMP | IS-CHPMPHP |
| OLED Switch | ISC15ANP4 | ISC15ANP4 |
| OLED Display | ISC01P | ISC01P |
| OLED Rocker | IS18IA001 | IS18IA001 |
| Frameless OLED | - | ISF15ACP4 |

The IS-CHPMP is a DC/DC voltage step-up converter with an input of 2.7-5.5V and an output of **16V** for use in driving OLED displays. The IS-CHPMP utilizes Maxim’s MAX8574 step-up converter to take advantage of its floating output during shutdown mode. A 2x4 .100” header is required to interface with charge pump.

The IS-CHPMPHP is a DC/DC voltage step-up converter with an input of 2.7-5.5V and an output of **15V** for use in driving OLED displays. The IS-CHPMPHP utilizes LM2735YMF/NOPB step-up converter to take advantage of its floating output during shutdown mode. A 2x4 .100” header is required to interface with charge pump.

IS-CHPMP and IS-CHPMPHP are RoHS compliant.

Photo 1, IS-CHPMP, Primary side

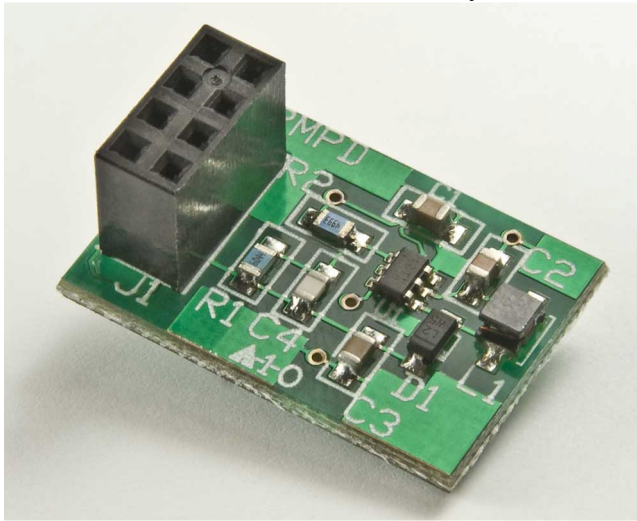


Photo 2, IS-CHPMP, Secondary side

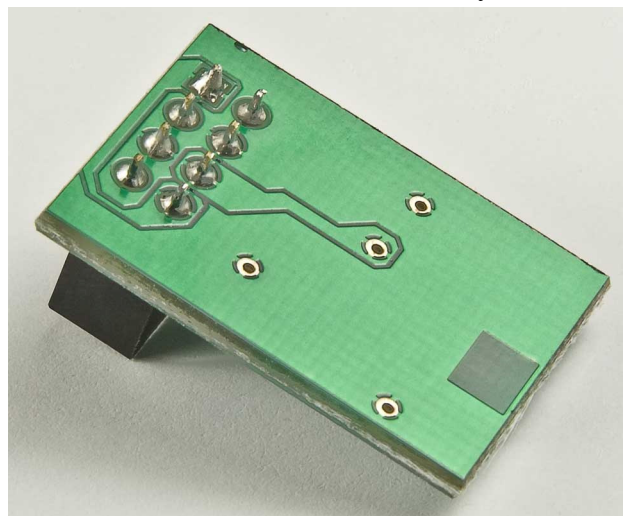


Photo 3, IS-CHPMPHP, Primary side

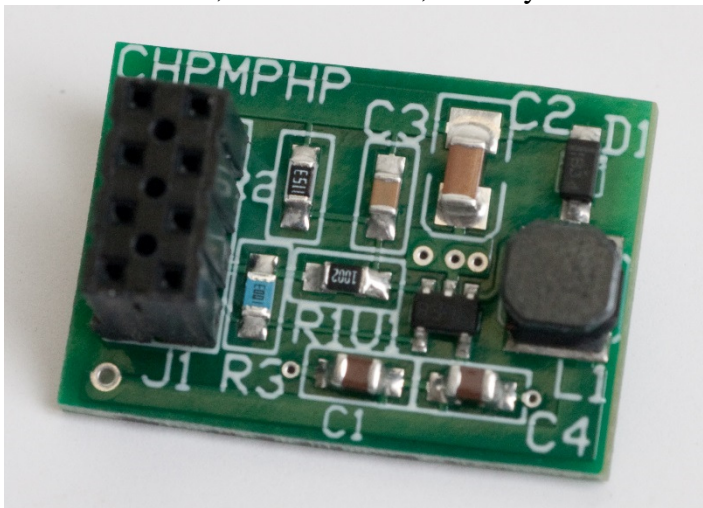


Photo 4, IS-CHPMPHP, Secondary side



2. Electrical Characteristics

| IS-CHPMP | IS-CHPMPHP |
|--|--|
| 2.7-5.5V Input Voltage. | 2.7-5.5V Input Voltage. |
| 16V Output Voltage. | 15V Output Voltage. |
| Floating output when in shutdown mode. | Floating output when in shutdown mode. |
| Current Capability: 20mA | Current Capability: 130mA |
| Does not have pulldown resistor for disable. | Has pulldown resistor for disable. |
| Current .05uA typical, 1uA maximum in shutdown mode. | Current .05uA typical, 1uA maximum in shutdown mode. |

3. Pin Configurations

| IS-CHPMP | | |
|----------|-------|---|
| Pin | Name | Function |
| 1 | V3.3 | Input voltage supply between 2.7-5V. |
| 2 | V16 | Output voltage preset to 16V. |
| 3 | SHTDN | Shutdown input. A logic high puts the MAX8574 into normal operation. A logic low at SHTDN places the MAX8574 into low-power shutdown mode. Does not have pulldown resistor for disable. |
| 4 | GND | Ground |
| 5 | GND | 5 connected to 4 |
| 6 | SHTDN | 6 connected to 3 |
| 7 | V16 | 7 connected to 2 |
| 8 | V3.3 | 8 connected to 1 |

| IS-CHPMPHP | | |
|------------|-------|---|
| Pin | Name | Function |
| 1 | V3.3 | Input voltage supply between 2.7-5V. |
| 2 | V16 | Output voltage preset to 15V. |
| 3 | SHTDN | Shutdown input. A logic high puts the LM2735Y into normal operation. A logic low at SHTDN places the LM2735Y into low-power shutdown mode. Has pulldown resistor for disable. |
| 4 | GND | Ground |
| 5 | GND | 5 connected to 4 |
| 6 | SHTDN | 6 connected to 3 |
| 7 | V16 | 7 connected to 2 |
| 8 | V3.3 | 8 connected to 1 |

Note: Incorrect installation of the connector could damage the charge pump and/or the motherboard.

Illustration 1, Pin Configuration in relation to board, IS-CHPMP

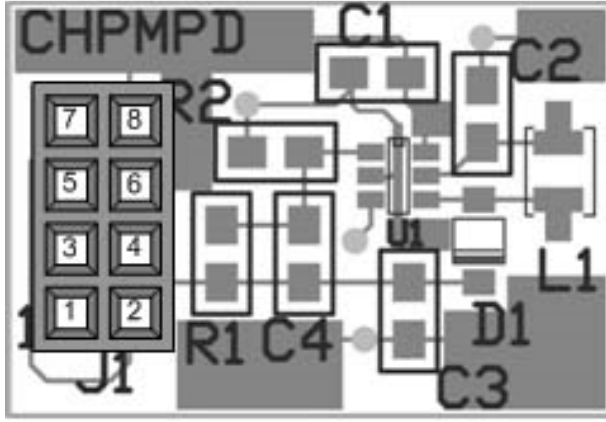
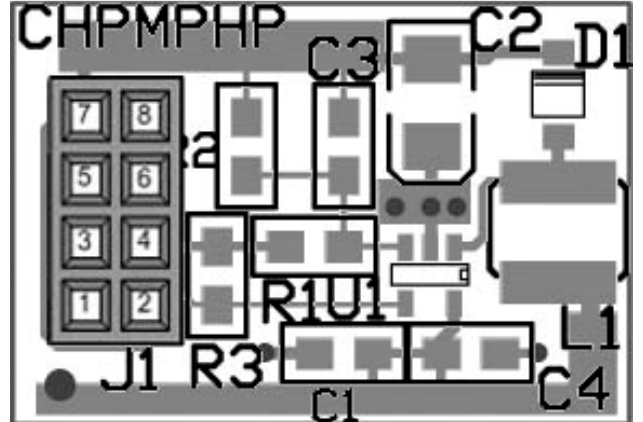


Illustration 2, Pin Configuration in relation to board IS-CHPMPHP



4. Multi-Switch Operation

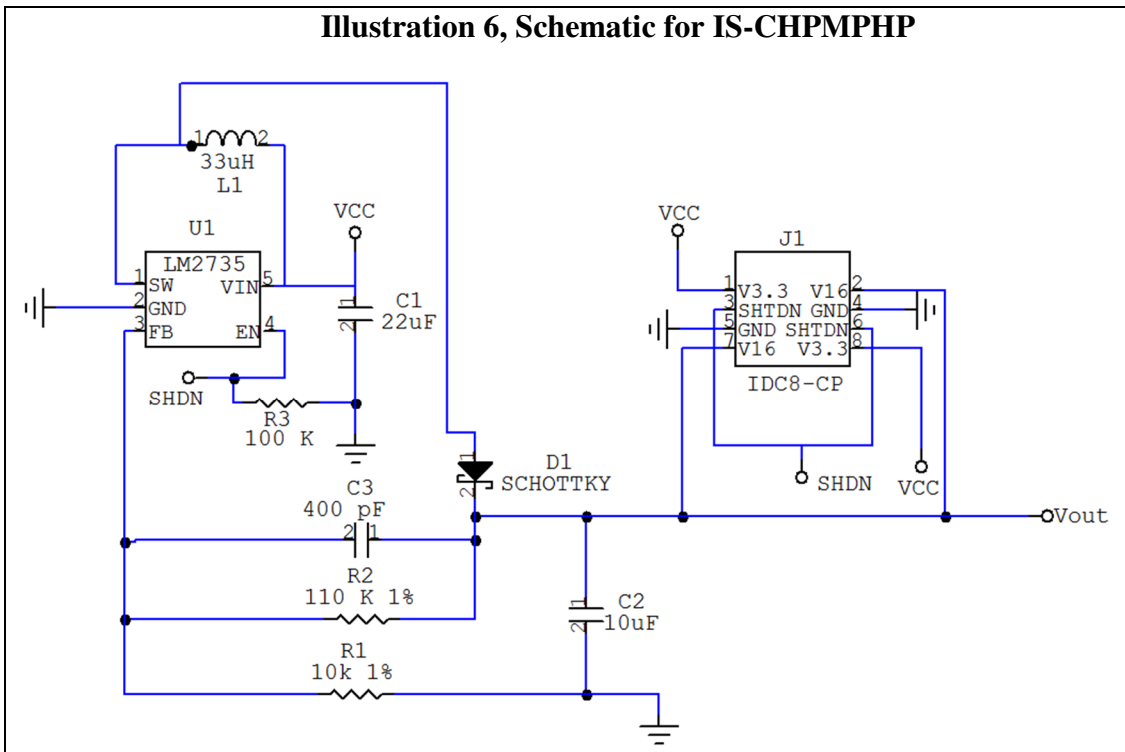
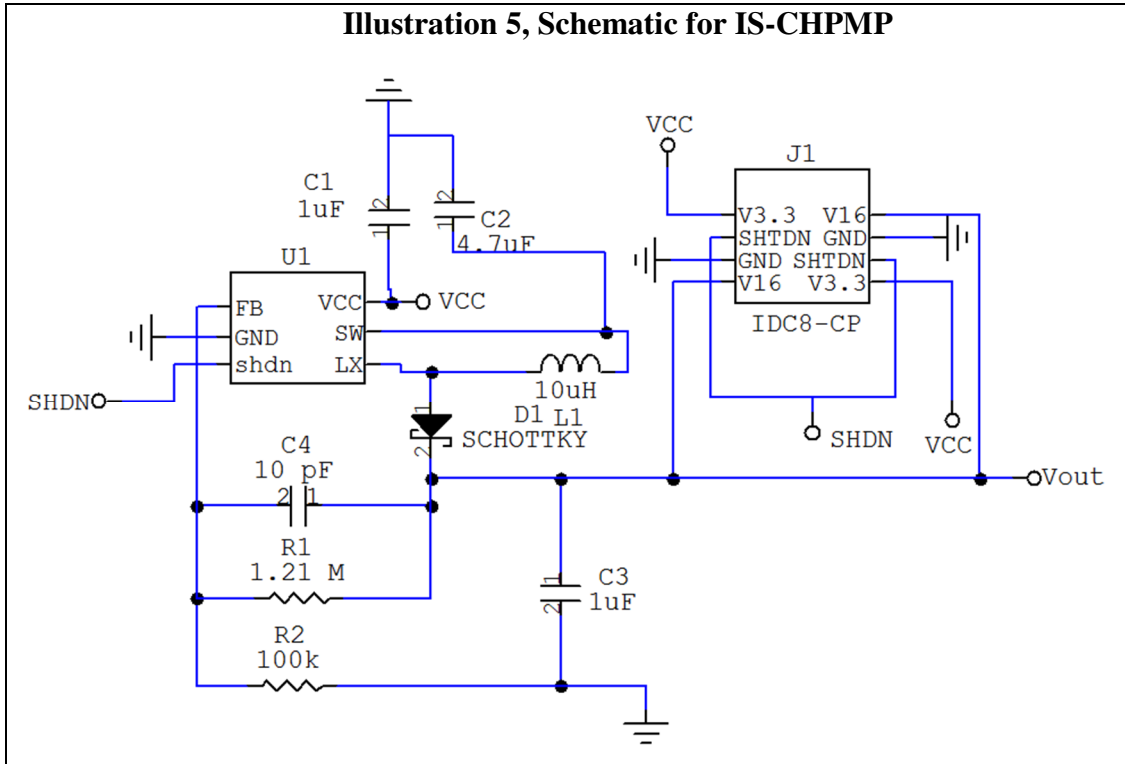
OLED power consumption is based on the number of pixels on. The safe way to calculate the number of OLED products that can be powered by one charge pump is as stated below:

$$\text{Number of OLED products} = \frac{\text{Charge Pump Current Capability}}{\text{AllPixelsOn Mode Max Current}}$$

It is possible to have more OLED products powered by one charge pump since under normal operation not all the pixels are on at the same time.

If more OLED product need to be powered, then multiple charge pumps can be placed in parallel.

5. Schematic



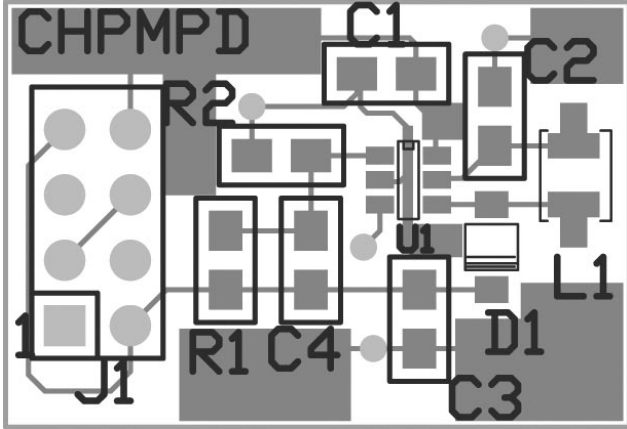
6. Build of Material

| BOM for IS-CHPMP | | | | | | |
|------------------|-------|-------------|--------------------|--|-------|----------|
| Item | Count | Designation | Part Number | Description | Value | Package |
| 1 | 1 | - | P-CHPMPD | PCB/OLED CHARGE PUMP/REV D | - | - |
| 2 | 1 | C1 | MA0805XR105K160R | CAPACITOR, 1uF, SM0805, 16V, X7R | 1UF | SM0805 |
| 3 | 1 | C2 | C2012X5R0J475K | CAPACITOR, 4.7uF, SM0805, 6.3V, X5R | 4.7UF | SM0805 |
| 4 | 1 | C3 | GRM219R71E105KA88D | CAPACITOR, 1uF, SM0805, 25V, X7R | 1UF | SM0805 |
| 5 | 1 | C4 | GRM2165C1H4R7CD01D | CAPACITOR, 4.7pF, SM0805, 50V, COG | 4.7PF | SM0805 |
| 6 | 1 | D1 | BAT42W-V-GS08 | DIODE, SCHOTTKY, SOD-123, 0.200A, 30V | | SOD-123 |
| 7 | 1 | J1 | PPPC042LFBN-RC | HEADER, 2x4, RECEPT, FEMALE, .100", THU, STRAIGHT, GOLD | 2x4 | THR HOLE |
| 8 | 1 | L1 | LQH32CN100K33L | INDUCTOR, 10uH, 450MA, 0.300 OHM, SMD | 10UH | SMD |
| 9 | 1 | R1 | RK73H2ATTD6044F | RESISTOR, 6.04M, SM0805, 1/8W, 1% | 6.04M | SM0805 |
| 10 | 1 | R2 | RK73H2ATTD4993F | RESISTOR, 499K, SM0805, 1/8W, 1% | 499K | SM0805 |
| 11 | 1 | U1 | MAX8574EUT+T | IC, SOT-23-6, LCD STEP-UP DC-DC CONVERTER, 500mA, 2.7V TO 5.5V | | SOT-23-6 |

| BOM for IS-CHPMPHP | | | | | | |
|--------------------|-------|-------------|---------------------|---|------------|----------|
| Item | Count | Designation | Part Number | Description | Value | Package |
| 1 | 1 | - | P-CHPMPHP | PCB, CHARGE PUMP HIGH POWER, Rev C | - | - |
| 2 | 1 | C1 | C2012X5R0J226M/1.25 | CAPACITOR, 22uF, SM0805, 6.3V, X5R | 22uF | SM0805 |
| 3 | 1 | C2 | C3216X5R1E106M | CAPACITOR, 10uF, SM1206, 25V, X5R | 10uF | SM1206 |
| 4 | 1 | C3 | CC0805KRX7R9BB471 | CAPACITOR, 470pF, SM0805, 50V, X7R | 470pF | SM0805 |
| 5 | - | C4 | - | - | - | - |
| 6 | 1 | D1 | MBR0530 | DIODE, SCHOTTKY, SOD-123, 0.5A, 30V | | SOD-123 |
| 7 | 1 | J1 | 929975-01-36 | HEADER, 2x36, .100", THU, FEMALE, STRAIGHT | Cut 2x4 | THR HOLE |
| 8 | 1 | L1 | 74404054330 | INDUCTOR, 33uH, 1.2A, 189 mOHM, SMD | 33UH | SMD |
| 9 | 1 | R1 | RMCF0805FT10K0 | RESISTOR, 10K, SM0805, 1/8W, 1% | 10K | SM0805 |
| 10 | 1 | R2 | RC0805FR-07110KL | RESISTOR, 110K, SM0805, 1/8W, 1% | 110K | SM0805 |
| 11 | 1 | U1 | LM2735YMF/NOPB | VOLTAGE REGULATOR, SOT23-5, STEP-UP, 520kHz, ADJ O.P. 3-24V, 2.1A | | SOT23-5 |

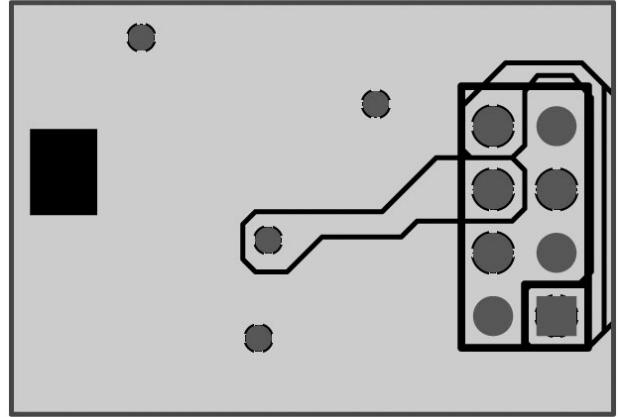
7. Board Layout

Illustration 7, Primary side



8. Board Layout for IS-CHPMP

Illustration 8, Secondary side



Note: No traces or ground plane shall be present under the inductor.

Board Layout for IS-CHPMPHP

Illustration 9, Primary side

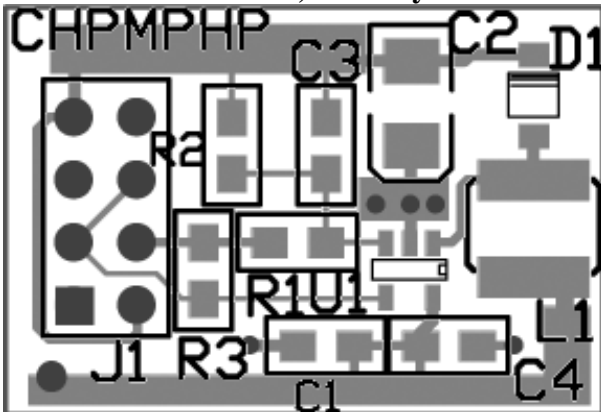
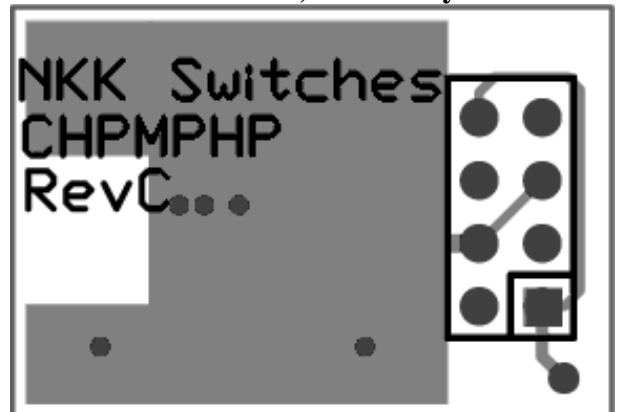


Illustration 10, Secondary side



Note: No traces or ground plane shall be present under the inductor.

9. Dimensions

