# YHM2711/3

## 500mA/750mA Linear Charger with Power Path Management

## Features

- 3.4V to 5.5V input range for Efficient Linear Charging
- Programmable Charging Current by external resistor:
  YHM2711: Max.500mA
  YHM2713: Max.750mA
- Preset Charging Voltage with ±0.5% Accuracy:
  YHM2711: 4.2V
  YHM2713: 4.35V
- Fully Integrated Power Path Switches and No External Blocking Diode Required
- Device Status Output from STACMD pin
- C/20 Charge Termination
- 2.8V Trickle Charge Threshold
- Built-In Robust Protection Including Input Current Limit, System Short-Circuit Protection, Discharge Current Limit, Battery OVP, Thermal Regulation
- Safety Related Certifications:
  IEC62368-1：2018 CB Certification
- Tiny 0.67mm x 1.02mm 6-pin WLP with 0.35mm pitch

## Applications

- Smart Watch/Band
- TWS Earbud
- Bluetooth Portable Device

## General Description

YHM2711 is a highly integrated, single-cell Li-ion battery charger with system power path management for space-limited portable applications. The full charger function features Trickle-charge, constant current fast charge and constant voltage regulation, charge termination, and auto recharge.

YHM2711 can deliver up to 500mA charging current, be programmed externally with a single resistor. The charge voltage is 4.2V. YHM2711 automatically terminates the charge cycle when the charge current drops to 1/20 of the programmed value after the final float voltage is reached. The device can report charging/discharging current for fuel gauging by current monitor output.

Fully Integrated Power Path Switches and no blocking diode is required due to the internal bi-direction MOSFET architecture. Thermal feedback regulates the charge current to limit the die temperature during high power operation or high ambient temperature.

The device status is indicated on STA pin output for charging, discharging and charge done.

YHM2711 comes in a 6-bump, 0.35mm pitch, 0.67mm x1.02mm wafer-level package (WLP).

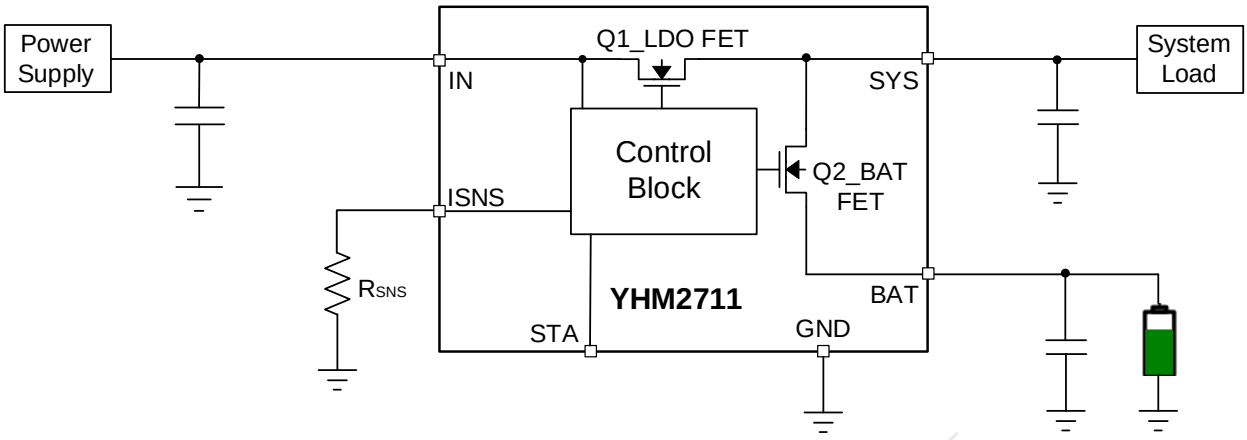



**Fig 1. YHM2711 Typical Application**

## YHM2711 Pin Configurations

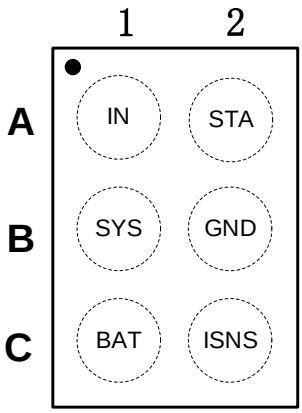



**Fig 2. YHM2711 WLP-6 Pin Assignment(Top Through View）**

## YHM2711 WLP Pin Descriptions

| WLP | Name | Description |
|---|---|---|
| A1 | IN | Input and Power Supply. Bypass this input with a ceramic capacitor to ground. |
| A2 | STA | Status Output. |
| B1 | SYS | System power supply. Connect to system load. Place at least 4.7μF ceramic capacitor from SYS to GND, and as close to the IC as possible. |
| B2 | GND | Ground. |
| C1 | BAT | Battery Pin. Place at least 2.2μF ceramic capacitor from BAT to GND, and as close to the IC as possible. |
| C2 | ISNS | Charge Current Program Pin. The charge current is programmed by connecting a 0.1% resistor to GND. |

## Function Table

| STACMD PIN | Status |
|---|---|
| Low | Charging |
| High | Other Status except Charging |

## 1 Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only.

Disclaimer: YHMICROS reserves the right to make any change in circuit design, specification or other related things if needed without notice at any time.

| Symbol | Parameters | | Min. | Max. | Unit |
|---|---|---|---|---|---|
| $V_{IN}$ | IN to GND | | -0.3 | 6 | V |
| $V_{SYS}$ | SYS to GND | | -0.3 | $V_{IN}$ + 0.3 | V |
| $V_{OTHER}$ | Other Pin to GND | | -0.3 | 6 | V |
| $I_{IN}$ | Input Current | | 0 | 1500 | mA |
| $T_{STG}$ | Storage Junction Temperature | | -65 | +150 | °C |
| $T_J$ | Operating Junction Temperature | | | +150 | °C |
| $T_L$ | Lead Temperature (Soldering, 10 Seconds) | | | +260 | °C |
| $\theta_{JA}$ | Thermal Resistance, Junction-to-Ambient ($100mm^2$ pad of 1 oz. copper) | | | TBD | °C/W |
| All Pins | Electrostatic Discharge Capability | Human Body Model, EIA/JESD22-A114 | 2 | | KV |
| | | Charged Device Model, JESD22-C101 | 1 | | |

Note 1. Refer to JEDEC JESD51-7, use a 4-layerboard

## 2 Recommended Operating Conditions

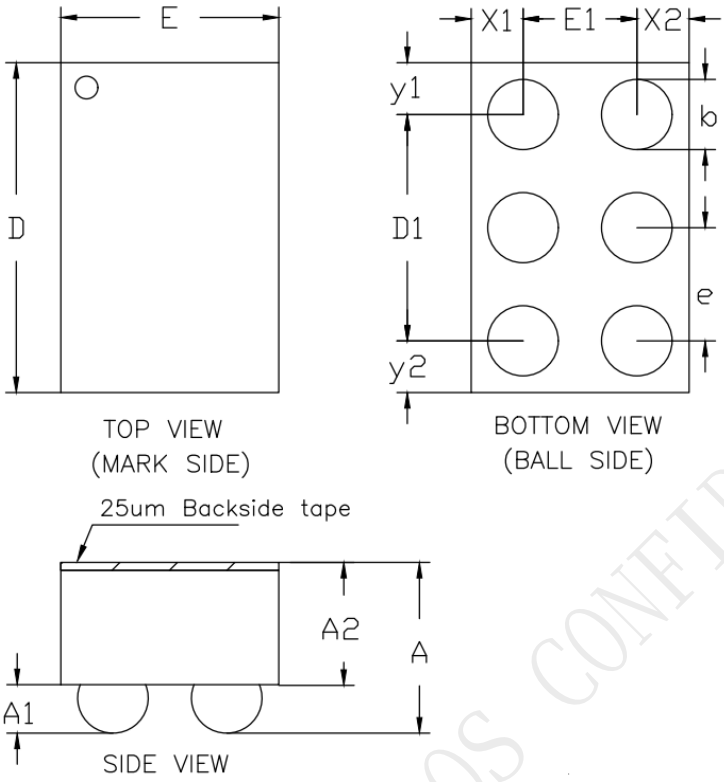
The Recommended Operating Conditions table defines the conditions for actual device operation. Recommended operating conditions are specified to ensure optimal performance.

| Parameters | Min. | Max. | Unit |
|---|---|---|---|
| $V_{IN}$ | 3.4 | 5.5 | V |
| $I_{IN}$ | 0 | 550(YHM2711)<br>800(YHM2713) | mA |
| $I_{DISCHG}$ | 0 | 1500* | mA |
| $I_{CHG}$ | 10 | 500(YHM2711)<br>750(YHM2713) | mA |
| $V_{OTHER}$ | 0 | 5.5 | V |
| $C_{IN}$ | 0.1 | | µF |
| $C_{SYS}$ (at least 3µF of ceramic capacitance with DC bias de-rating) | 4.7 | | µF |
| $C_{BAT}$ | 2.2 | | µF |
| Ambient Operating Temperature, $T_A$ | -40 | 85 | °C |
| Operating Junction Temperature, $T_J$ | -40 | 150 | °C |

*1.5A continuous discharge current in 85°C. Peak 2.5A 10ms.

## Package Dimensions

**WLCSP-6 0.67x1.02**




COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

| SYMBOL | MIN | NOM | MAX |
|---|---|---|---|
| A | 0.483 | 0.528 | 0.573 |
| A1 | 0.130 | 0.150 | 0.170 |
| A2 | 0.353 | 0.378 | 0.403 |
| D | 1.000 | 1.020 | 1.040 |
| D1 | | 0.700BSC | |
| E | 0.650 | 0.670 | 0.690 |
| E1 | | 0.350BSC | |
| b | 0.200 | 0.220 | 0.240 |
| e | | 0.350BSC | |
| x1 | | 0.160 REF | |
| x2 | | 0.160 REF | |
| y1 | | 0.160 REF | |
| y2 | | 0.160 REF | |

## Ordering Information

| Part Number | Temp Range | Pin Package | Top Mark | MOQ |
|---|---|---|---|---|
| YHM2711W6T | -40°C to 85°C | 6 WLCSP | YW<br>XX | 3000 |
| YHM2713W6T | -40°C to 85°C | 6 WLCSP | YW<br>XX | 3000 |

*T = Tape and reel.*
*YW: Date Code. Y = year, W = week.*
*L: The last number of LOTID.*
*XX: Internal tracking ID*

**YHMicros Website**: *WWW.YHMICROS.COM*