

Features

- 29V Maximum Voltage Rating with OVP and OCP
- Over voltage protection: Default 6V
- Programmable Input Over Current Protection
- Programmable Charging Current from 10mA to 500mA by 0.1% external resistor
- Low Dropout Fast Charge, up to 1.5A
- Configurable 4V - 4.525V charging voltage. Preset 4.2V with $\pm 0.5\%$ Accuracy
- Fully Integrated Power Path Switches and No External Blocking Diode Required
- Charging/Discharging Current Monitor Output for Fuel Gauging
- Device Status Output and Access Command Input from STACMD pin
- C/20 Charge Termination
- 2.8V Trickle Charge Threshold
- Built-In Battery Disconnection Function for Shipping Mode with 150nA current consumption
- Built-In Robust Protection Including System Short-Circuit Protection, Discharge Current Limit, Battery OVP, Thermal Regulation
- Safety Related Certifications:
IEC62368-1 :2018 CB Certification
- 2mm x 2mm 8-pin DFN

Applications

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

General Description

YHM2810 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.

YHM2810 can deliver up to 500mA charging current, be programmed externally with a single resistor. The charge voltage is default 4.2V and adjustable by Access command. YHM2810 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.

YHM2810 can enter shipping mode by Access command and exit it after input power is present. In shipping mode, battery FET is open and the device only consume 150nA current.

The device status is indicated on STACMD pin output for charging, discharging and charge done. This pin also supports Access command to adjust charging current and charging voltage or enter different mode.

YHM2810 comes in a 2mm x 2mm 8-pin DFN with 0.5 pitch and operates over an ambient temperature range of -40°C to $+85^{\circ}\text{C}$.

YHM2810

500mA High Voltage Linear Charger with OVP/OCP

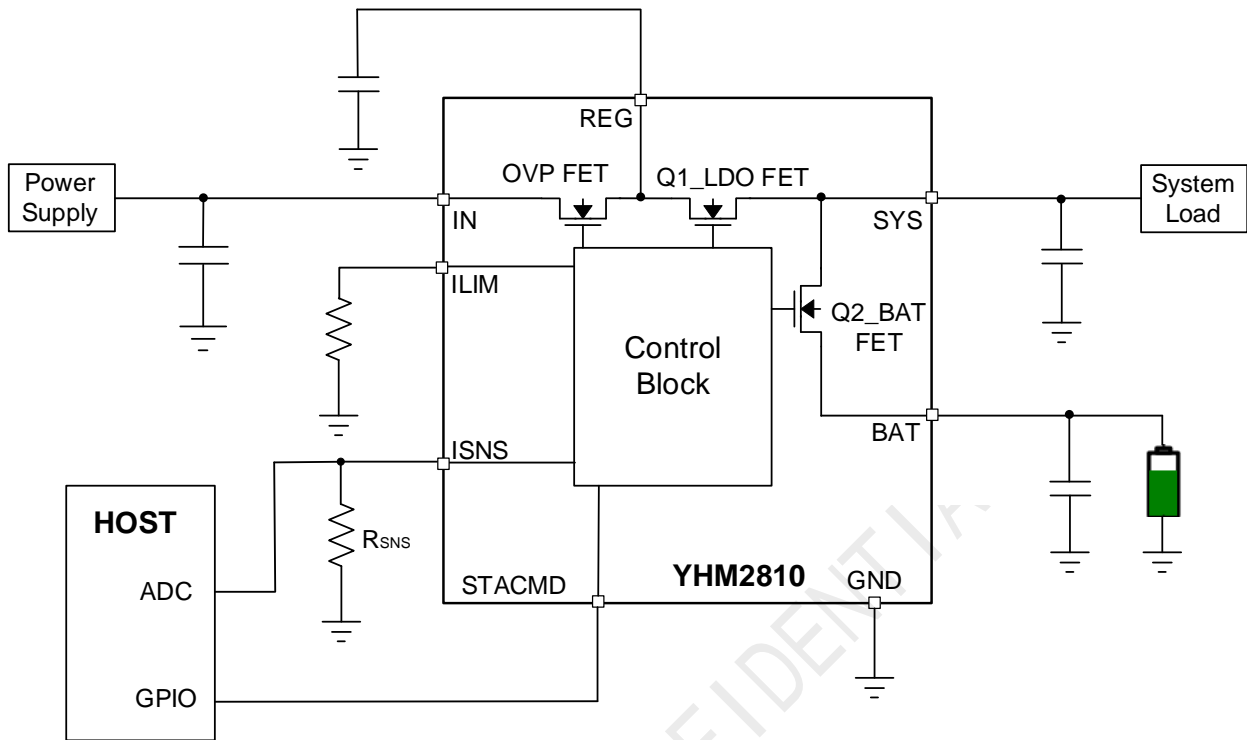


Fig 1. YHM2810 Typical Application

YHM2810

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YHM2810 Pin Configurations

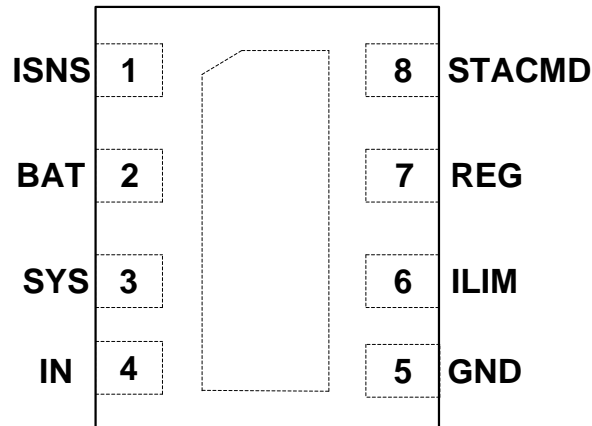


Fig 2. YHM2810 DFN-8 Pin Assignment(Top Through View)

YHM2810 DFN Pin Descriptions

Bump	Name	Description
1	ISNS	Charge Current Program & Monitor Pin. The charge current is programmed by connecting a 0.1% resistor to GND. The voltage on this pin can be used to measure the current between BAT and SYS. This pin can be used for Q2 fully turn on control when tied to ground.
2	BAT	Battery Pin. Place at least 2.2 μ F ceramic capacitor from BAT to GND, and as close to the IC as possible.
3	SYS	System power supply. Connect to system load. Place at least 4.7 μ F ceramic capacitor from SYS to GND, and as close to the IC as possible.
4	IN	Input and Power Supply. Bypass this input with a ceramic capacitor to ground.
5	GND	Ground.
6	ILIM	Resistor connected to program input over current threshold.
7	REG	Connect 0.1 μ F ceramic capacitor from REG to ground.
8	STACMD	Status Output and Access Command Input. This pin can also be used as push button for hardware reset or exit ship mode, connect push button by 50kohm resistor.

Function Table

STACMD PIN	Status
Low	Charging
High	Other Status except Charging

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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	29	V
V_{OTHER}	Other Pin to GND		-0.3	6	V
I_{IN}	Input Current		0	1500	mA
t_{PD}	Total Power Dissipation at $T_A=25^{\circ}C$				mW
T_{STG}	Storage Junction Temperature		-65	+150	$^{\circ}C$
T_J	Operating Junction Temperature			+150	$^{\circ}C$
T_L	Lead Temperature (Soldering, 10 Seconds)			+260	$^{\circ}C$
θ_{JA}	Thermal Resistance, Junction-to-Ambient (100mm ² pad of 1 oz. copper)				$^{\circ}C/W$
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	1500	mA
I_{DISCHG}	0	1500*	mA
I_{CHG}	10	500	mA
V_{OTHER}	0	5.5	V
C_{IN}	0.1		μF
C_{SYS} (at least 3 μF of ceramic capacitance with DC bias de-rating)	4.7		μF
C_{BAT}	2.2		μF
Ambient Operating Temperature, T_A	-40	85	$^{\circ}C$
Operating Junction Temperature, T_J	-40	150	$^{\circ}C$

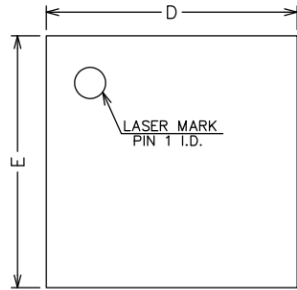
*1.5A continuous discharge current in 85 $^{\circ}C$. Peak 2.5A 10ms.

YHM2810

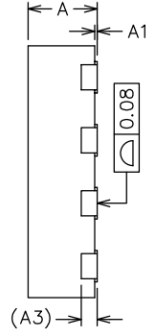
500mA High Voltage Linear Charger with OVP/OCP

Package Dimensions

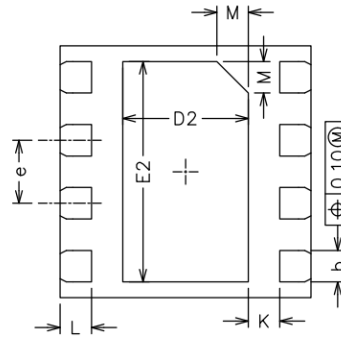
DFN-8 2x2x0.55



TOP VIEW



SIDE VIEW



BOTTOM VIEW

COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	0.50	0.55	0.60
A1	0.00	0.02	0.05
A3	0.127REF		
b	0.15	0.25	0.35
D	1.90	2.00	2.10
E	1.90	2.00	2.10
D2	0.90	1.00	1.10
E2	1.65	1.75	1.85
e	0.40	0.50	0.60
K	0.25REF		
L	0.15	0.25	0.35
M	0.25REF		



SIDE VIEW

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YHM2810

500mA High Voltage Linear Charger with OVP/OCP



Ordering Information

Part Number	Temp Range	Pin Package	Top Mark	MOQ
YHM2810W6T	-40°C to 85°C	8 DFN	Y2810 YYWW	3000

T = Tape and reel.

Y2810: YHM2810

YYWW: Date Code. YY = year, WW = week.

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