



## EVAL6924D

### EVAL6924D Battery charger system with integrated Power Switch for Li-ION/Li-POLYMER

Data Brief

#### General description

The L6924D is a fully monolithic battery charger dedicated to single-cell Li-Ion/Polymer battery packs. It is the ideal solution for space-limited applications, like PDAs, handheld equipment, cellular phones, and digital cameras. It is designed with BCD6 technology and integrates all of the power elements (the Power MOSFET, reverse blocking diode and the sense resistor) in a small VFQFPN16 3mm x 3mm package.

When an external voltage regulated wall adapter is used, the L6924D works in Linear Mode, and charges the battery in a Constant Current/Constant Voltage (CC/CV) profile.

Moreover, when a current-limited adapter is used, the device can operate in Quasi-Pulse Mode, dramatically reducing the power dissipation. Regardless of the charging approach, a closed loop thermal control avoids device overheating.

The device has an operating input voltage ranging from 2.5V to 12V and it allows the user to program

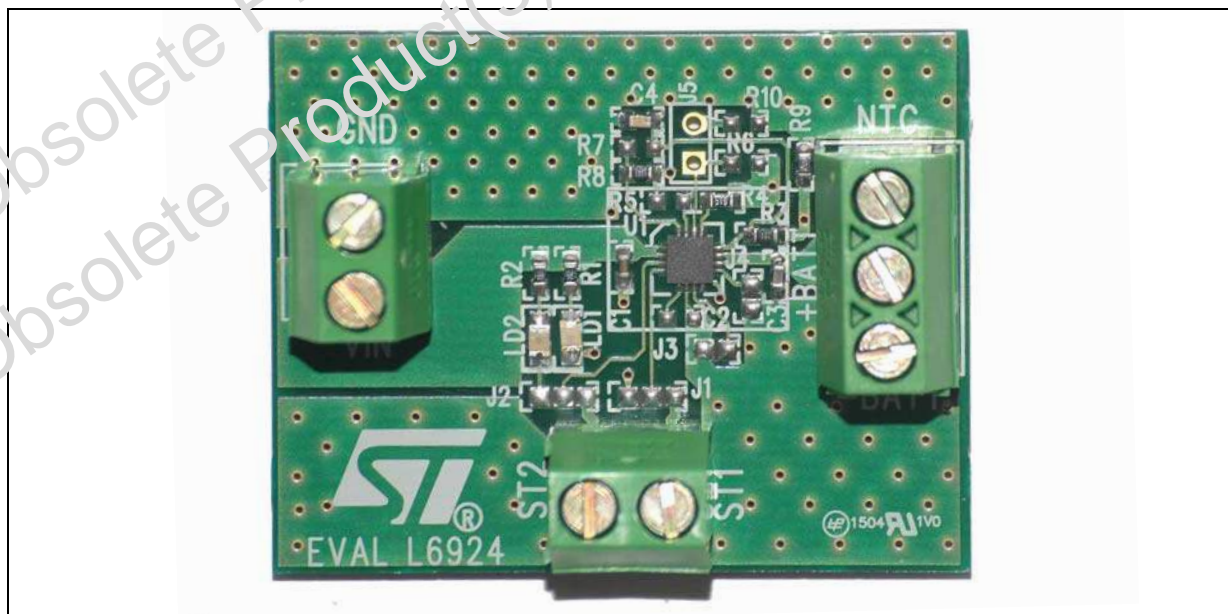
many parameters, such as pre-charge current, fast-charge current, pre-charge voltage threshold, end-of-charge current threshold, and charge timer.

The L6924D offers two open collector outputs for diagnostic purposes, which can be used to either drive two external LEDs or communicate with a host microcontroller. Finally, the L6924D also provides very flexible control of the charge process termination and Gas Gauge capability, as well as other functions, such as checking for battery presence, and monitoring and protecting the battery from unsafe thermal conditions.

The EVAL6924D Evaluation Board integrates the linear battery charger as well as the external components required for a typical application.

The input voltage range can be adjusted between 2.5V and 12V, while the output voltage is selected by  $\mu$  between 4.1V and 4.2V, depending on the battery type. The fast charge current is set to 500 mA through the 24K R5 resistor.

#### Evaluation board



# 1 Features

Figure 1. Evaluation board schematic

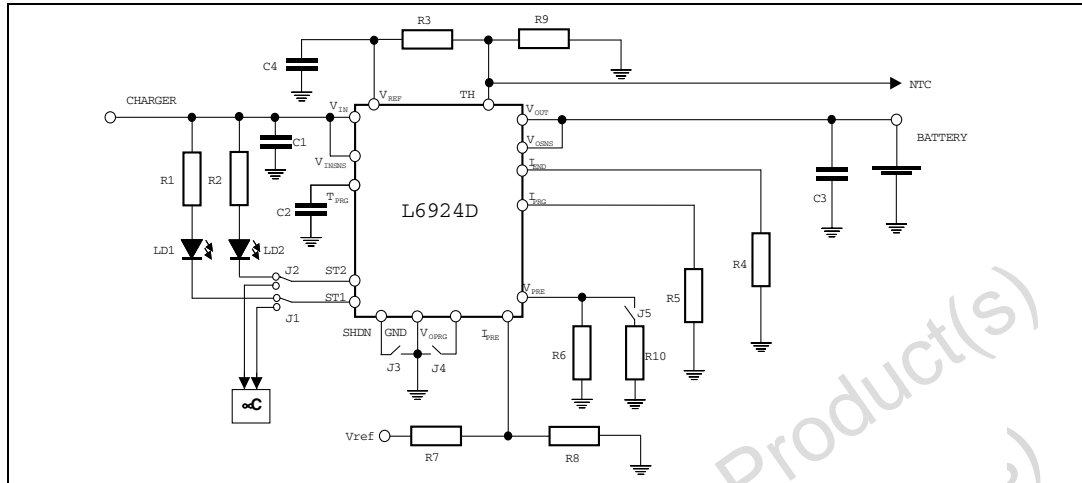
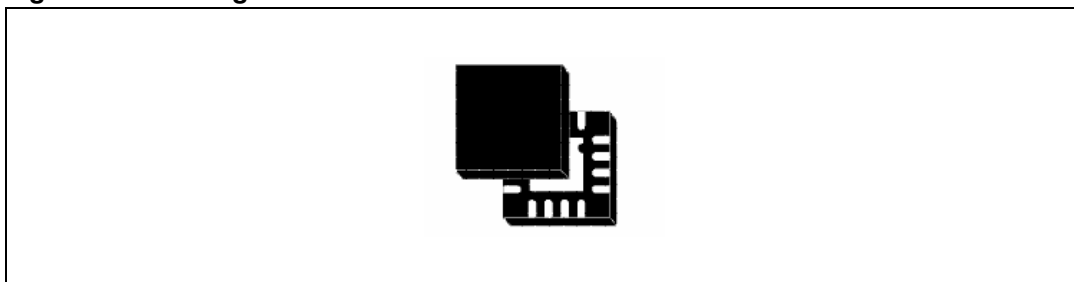


Table 1. Evaluation board part list

Name	Value	Description
R1	1K	Pull up resistor. To be used when the ST1s connected with a LED
R2	1K	Pull up resistor. To be used when the ST1s connected with a LED
R3	1K	Pull up resistor. Connected between V <sub>REF</sub> and TH pin
R4	3K3	End of charge current resistor. Used to set the termination current and, as a "Gas Gauge" when measuring the voltage across on it.
R5	24K	Fast-charge current resistor. Used to set the charging current
R6	N.M	V <sub>PRETH</sub> resistor. Used to set programmable pre-charge voltage threshold. If not mounted, the V <sub>PRETHDefault</sub> equal to 2.8V, is set
R7	N.M	I <sub>PRETH</sub> resistor. Used to set programmable pre-charge voltage threshold below the default one. If not mounted, the I <sub>PRETHDefault</sub> is set
R8	68K	I <sub>PRETH</sub> resistor. Used to set programmable pre-charge current threshold above the default one. If not mounted, the I <sub>PRETHDefault</sub> is set
R9	470R	If a NTC is not used, a half value of R3 must be mounted to keep the TH voltage in the correct window
R10	N.M	It has the same function of R6. Moreover, if it is replaced with a short-circuit, when J5 is closed, the timer is reset (falling edge)
C1	1μF	Input capacitor
C2	10nF	T <sub>MAX</sub> capacitor. Used to set the maximum charging time
C3	1μF	Output capacitor
C4	1μF	V <sub>REF</sub> filter capacitor. Not mounted
LD1	GREEN	ST1 LED

**Figure 2. Package - VFQFPN16**

## 2 Revision history

**Table 2. Revision history**

Date	Revision	Change
21-Nov-2006	1	First issue

**Please Read Carefully:**

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST's terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

**UNLESS OTHERWISE SET FORTH IN ST'S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.**

**UNLESS EXPRESSLY APPROVED IN WRITING BY AN AUTHORIZED ST REPRESENTATIVE, ST PRODUCTS ARE NOT RECOMMENDED, AUTHORIZED OR WARRANTED FOR USE IN MILITARY, AIR CRAFT, SPACE, LIFE SAVING, OR LIFE SUSTAINING APPLICATIONS, NOR IN PRODUCTS OR SYSTEMS WHERE FAILURE OR MALFUNCTION MAY RESULT IN PERSONAL INJURY, DEATH, OR SEVERE PROPERTY OR ENVIRONMENTAL DAMAGE. ST PRODUCTS WHICH ARE NOT SPECIFIED AS "AUTOMOTIVE GRADE" MAY ONLY BE USED IN AUTOMOTIVE APPLICATIONS AT USER'S OWN RISK.**

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.

Information in this document supersedes and replaces all information previously supplied.

The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

© 2006 STMicroelectronics - All rights reserved

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

[www.st.com](http://www.st.com)