

Dear customer

LAPIS Semiconductor Co., Ltd. ("LAPIS Semiconductor"), on the 1st day of October, 2020, implemented the incorporation-type company split (shinsetsu-bunkatsu) in which LAPIS established a new company, LAPIS Technology Co., Ltd. ("LAPIS Technology") and LAPIS Technology succeeded LAPIS Semiconductor's LSI business.

Therefore, all references to "LAPIS Semiconductor Co., Ltd.", "LAPIS Semiconductor" and/or "LAPIS" in this document shall be replaced with "LAPIS Technology Co., Ltd."

Furthermore, there are no changes to the documents relating to our products other than the company name, the company trademark, logo, etc.

Thank you for your understanding.

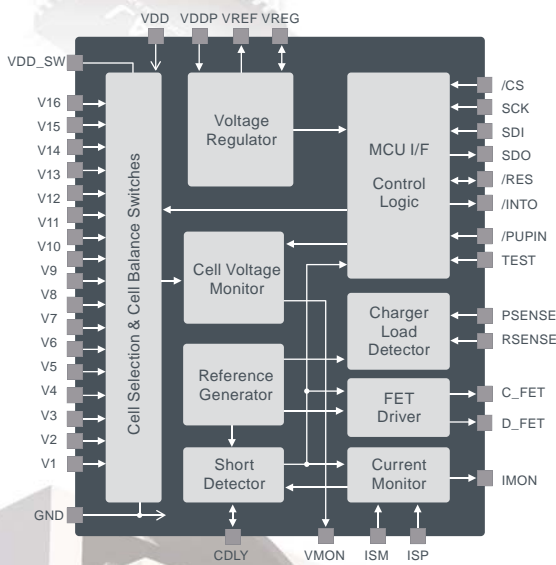
LAPIS Technology Co., Ltd.
October 1, 2020

Lithium-ion battery monitoring LSI

Analog Front End type **ML5238**



The ML5238 is an analog front-end IC intended for 16-cell lithium-ion secondary battery pack protection systems. With the cell-by-cell voltage monitoring function, and the charge/discharge current monitoring function, it can protect each cell against over-charge, over-discharge and over-current, using the external microcontroller. In addition, it is equipped with the short current detection function to automatically protect battery packs without control from the external microcontroller.



- Supply voltage : +7V to +80V
- Operating temperature : -40°C to +85°C
- Package : QFP44

Application



E-assist bicycle Electric bicycle



Power tool



UPS
uninterruptible power supply

16-cell support

Charge/discharge NMOS-FET is connected high-side

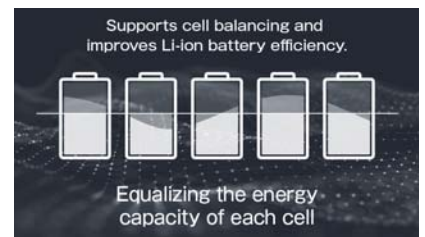
No required additional external driver IC by directly driving the gate terminal for charge/discharge control.

High accuracy voltage / current measurement

Battery voltage and current is measured with high accuracy. Voltage measurement accuracy is so high as $\pm 20\text{mV}$ (Typ.)

Equipped with Cell balancing function

Cell-Balancing switch for each cell is equipped and its balancing switch ON-resistance is 6Ω .



Low Current consumption

Current consumption in the power-down mode is minimized to around zero to reduce especially the load on the battery during long-term storage.

- At normal Mode : $50\mu\text{A}$ (typ.)
- At power-save Mode : $25\mu\text{A}$ (typ.)
- At power-down Mode : $0.1\mu\text{A}$ (typ.)



Short-current detection and protection function

Built-in short-circuit detection and protection function. If short-circuit is detected, ML5238 automatically cut-off charge/discharge FET for system safety.