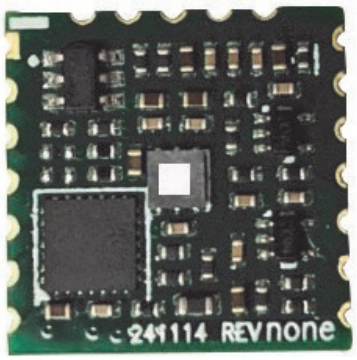
LI-ION TAMER - OEM BOARD

LITHIUM ION BATTERY MONITORING SYSTEM

LI-ION TAMER®

xtralis

Product Description



The Li-ion Tamer Fault Detector is a low-power device that monitors lithium-ion batteries for increased safety. The monitor's sensing ability and embedded algorithms enable the detection of the initial venting of electrolyte solvent vapours (known as the off-gas phase) of a failing battery without calibration.

The monitor can be directly integrated onto a Battery Management System (BMS) and will indicate whether or not a single cell within a battery module has experienced an off- gassing event.

The Fault Detector provides an entirely redundant perspective on the batteries without electrical or mechanical interrogation. Experiments have indicated the Fault Detector can indicate some failures significantly ahead of traditional monitoring techniques such as temperature, voltage, and current monitoring.

Features

- Compatible with all lithium-ion battery form factors and chemistries
- Calibration-free product
- Provides early warning of lithium-ion battery failures
- Long product lifetime
- Fast response time to off-gassing events
- Highly reliable output signal
- Low power consumption
- Direct BMS integration

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TECHNICAL SPECIFICATIONS

Specifications

Package	15 x 15 x 2.6 mm
Interface	Analog voltage
Supply voltage	3.3 – 16 VDC
Power consumption	260 mW (@5VDC, 25°C)
Target gases	Li-ion off-gas compounds
Detection threshold	< 1 ppm/sec
Response time	5 seconds
Fault detection	Single cell failure

Environmental Description

The Fault Detector product is intended to be integrated into spaces with lithium-ion batteries and, therefore, has very similar specifications to that of a standard lithium-ion battery system.

Condition	Specification
Temperature	-10 to +55°C
Humidity	10 to 90% RH (non-condensing)
Maximum temperature change	8.6°C/min (15.5°F/min)

Power and Output Signal Description

The Fault Detector product provides signals specific to the battery module where it is installed. With this localized signal, you will be able to know not only when your battery module is experiencing a problem, but also you will have early warning of a fully developed lithium-ion battery failure. Signal outputs from the Fault Detector can be tied into a BMS.

Detail	Specification
Power input	3.3 - 16 VDC
Power consumption	260 mW (@ 5VDC, 25°C)
Output signal (error state)	0.10 VDC
Output signal (warm up)	0.25 VDC
Output signal (OK)	0.50 VDC
Output signal (alarm)	3.0 VDC

Gas Detection Description

The Fault Detector is equipped with a sensing element that is acutely sensitive to lithium-ion battery electrolyte solvent vapours. This acute sensitivity is how this product is able to provide indication of a single cell battery failure without electrical or mechanical contact of battery cells.

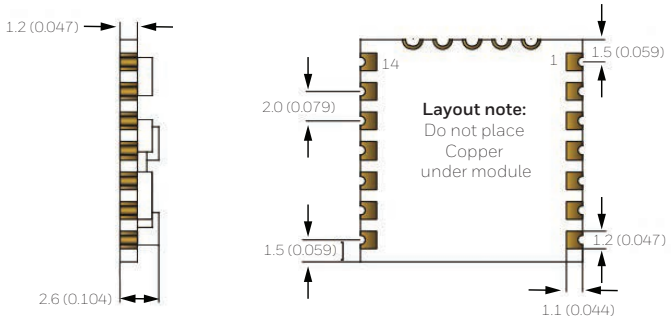
Detail	Specification
Target gases	• Battery electrolyte solvent vapours (e.g. DEC, DMC, EMC, EC, etc) • Volatile organic compounds • Carbon monoxide (CO) • Hydrogen (H_2)
Min. detection threshold	<1 ppm/sec
Response time	5 seconds
Fault detection	Single cell failure

Product Life Description

The associated algorithms provided an extended lifetime product that does not require calibration. The product is intended to have comparable lifetime to lithium-ion battery systems.

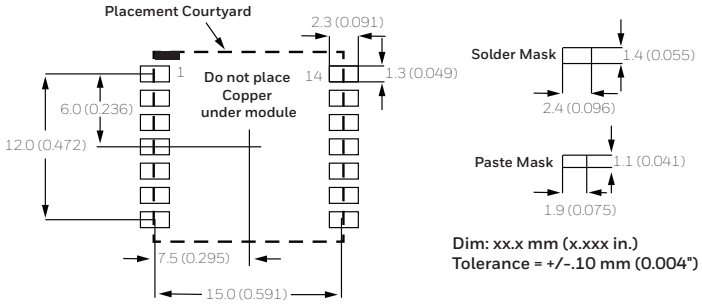
Detail	Specification
Target lifetime	15+ years
Warranty	1 year

Chip Dimensions and Pad Spacing



Dim: xx.x mm (x.xxx in.)
Tolerance = +/-.10 mm (0.004")

Recommended Layout



Dim: xx.x mm (x.xxx in.)
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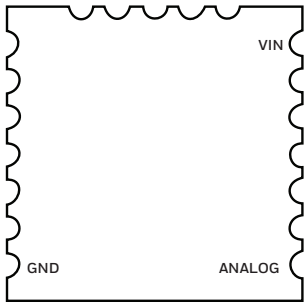
Pad Identification



Ordering Information

Ordering Information	Description
LT-ACC-OEM	Li-ion Tamer - OEM Board

Note: This device detects off-gas from lithium-ion batteries. It does not prevent fires or thermal runaway. This device is not a stand alone safety device and should be incorporated into a proper safety system. If device responds, there is a risk of battery fault which could lead to thermal runaway. To avoid injury, leave area immediately.