

Li-ion/polymer 2Cell protector IC with alarm function

The R5461K Series are high voltage CMOS-based protection ICs for over-charge/discharge of rechargeable two-cell Li-ion/Lithium polymer, further include an alarm function and a short protection for preventing large external short circuit current and the protection circuits against the excess discharge-current and excess charge current.

Each of these ICs is composed of detectors, a temperature detector, reference units, a delay circuit, a short circuit protector, an oscillator, a counter, and logic circuits. The signal is outputted before detecting over-charge due to having an alarm function.

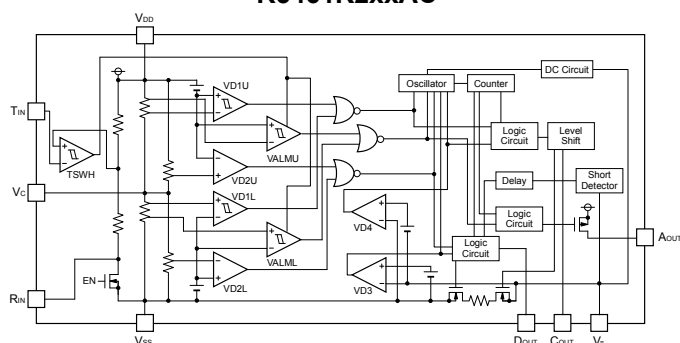
They are settable for normal, high and low temperature. So they can make it safer to charge a battery. The Over-charge detector threshold and the alarm detector threshold are high accuracy such as $\pm 10\text{mV}/\pm 15\text{mV}$. DFN(PLP)2527-10 package is available.

FEATURES

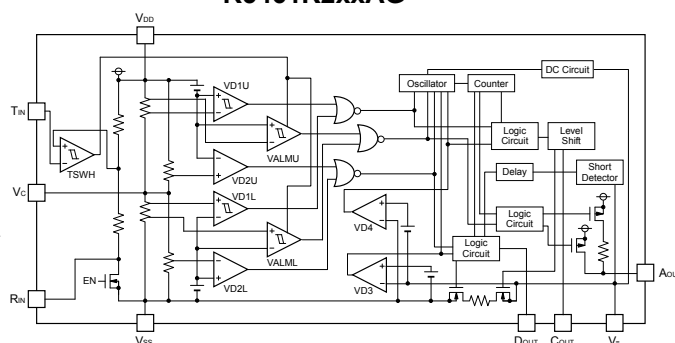
- Supply Voltage (V_{DD}) 12V (Absolute Maximum Rating)
- Charger Negative Input Voltage (V_-) -30V (Absolute Maximum Rating)
- Operating Input Voltage Range (V_{DD}) 1.5V to 10.0V
- Supply Current (I_{DD}) Typ. 4.0 μA (G version)
Typ. 5.0 μA (C version)
- Standby Current (I_s) Max. 0.1 μA
- Over-charge (V_{DET1}) Detector Threshold Range 3.6V to 4.35V (0.005V Steps)
Voltage Accuracy $\pm 10\text{mV}/\pm 15\text{mV}$ ($0^\circ\text{C}\sim 50^\circ\text{C}$)
Output Delay Time ($t_{V_{DET1}}$) Typ. 1.0s
- Alarm function Detector Threshold Range 3.2V to 4.5V ($0^\circ\text{C}\sim 45^\circ\text{C}$)
3.1V to 4.4V ($45^\circ\text{C}\sim 60^\circ\text{C}$)
Voltage Accuracy $\pm 10\text{mV}/\pm 15\text{mV}$
Output Delay Time 6ms
- Over-discharge (V_{DET2}) Detector Threshold Range 2.0 to 3.0V (0.1V Steps)
Voltage Accuracy $\pm 2.5\%$
Output Delay Time ($t_{V_{DET2}}$) Typ. 128ms
- Excess discharge-current (V_{DET3}) Detector Threshold Range 0.05V to 0.24V (0.005V steps)
Voltage Accuracy $\pm 15\text{mV}$
Output Delay Time ($t_{V_{DET3}}$) Typ. 12ms
- Excess charge-current (V_{DET4}) Detector Threshold -0.10V to -0.22V
Voltage Accuracy $\pm 30\text{mV}$
Output Delay Time ($t_{V_{DET4}}$) 8ms
- Short Protection Detector Threshold (V_{short}) Typ. 1.0V
Output Delay Time (t_{short}) Typ. 300 μs
- 0V-battery charge Selectable
- Packages DFN(PLP)2527-10

BLOCK DIAGRAMS

R5461K2xxAC



R5461K2xxAG



SELECTION GUIDE

Halogen Free	Package	Quantity per Reel	Part No.
H/F	DFN(PLP)2527-10	5,000 pcs	R5461K2xx\$* -TR

xx: Serial Number for the R5461K Series designing input thresholds for over-charge, over-discharge, excess discharge-current and excess charge-current detectors.

\$: Designation of Output delay option of over-charge, alarm function, over-discharge, excess charge-current, alarm function, and excess discharge-current.

(A) $t_{V_{DET1}}=1\text{s}$, $t_{V_{ALM}}=6\text{ms}$, $t_{V_{DET2}}=128\text{ms}$, $t_{V_{DET3}}=12\text{ms}$, $t_{V_{DET4}}=8\text{ms}$

*: Designation of release after detecting, 0V-charge, Alarm function.

(C) They are released in Auto Release after Over-charge and Latch function after Over-discharge. 0V-charge is unavailable.

There are two types alarm functions such as normal temperature and high temperature. The output of signal turns to high impedance from "H" after detecting over-charge.

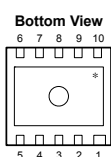
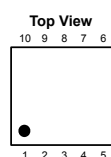
(G) They are released in Auto Release after Over-charge and Latch function after Over-discharge. 0V-charge is available.

There are two types alarm functions such as normal temperature and high temperature.

The output of signal turns to high impedance (Normal temperature) or middle level (High temperature) from "H" after detecting over-charge.

PACKAGE

DFN(PLP)2527-10



1	V_{DD}	6	C_{OUT}
2	V_{SS}	7	V_-
3	R_{IN}	8	NC
4	T_{IN}	9	A_{OUT}
5	V_C	10	D_{OUT}

*) The tab is substrate level (V_{DD})

APPLICATIONS

- Li-ion/Li polymer protector of over-charge, over-discharge, excess discharge-current, excess charge-current for battery pack
- High precision protectors for DSLR, portable DVD player and any other gadgets using on board Li-ion/Li polymer battery



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Ricoh continually strives to promote customer satisfaction, and shares the achievements of its management quality improvement program with people and society.



■ Ricoh awarded ISO 14001 certification.

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RICOH COMPANY, LTD. Electronic Devices Company

● **Shin-Yokohama office (International Sales)**
3-2-3, Shin-Yokohama, Kohoku-ku, Yokohama City, Kanagawa 222-8530, Japan
Phone: +81-45-477-1697 Fax: +81-45-477-1698

RICOH EUROPE (NETHERLANDS) B.V.

● **Semiconductor Support Centre**
Prof. W.H.Keesomlaan 1, 1183 DL Amstelveen, The Netherlands
P.O.Box 114, 1180 AC Amstelveen
Phone: +31-20-5474-309 Fax: +31-20-5474-791

RICOH ELECTRONIC DEVICES KOREA Co., Ltd.

11 floor, Haesung 1 building, 942, Daechidong, Gangnamgu, Seoul, Korea
Phone: +82-2-2135-5700 Fax: +82-2-2135-5705

RICOH ELECTRONIC DEVICES SHANGHAI Co., Ltd.

Room403, No.2 Building, 690#Bi Bo Road, Pu Dong New district, Shanghai 201203,
People's Republic of China
Phone: +86-21-5027-3200 Fax: +86-21-5027-3299

RICOH COMPANY, LTD. Electronic Devices Company

● **Taipei office**
Room109, 10F-1, No.51, Hengyang Rd., Taipei City, Taiwan (R.O.C.)
Phone: +886-2-2313-1621/1622 Fax: +886-2-2313-1623



Ricoh completed the organization of the Lead-free production for all of our products. After Apr. 1, 2006, we will ship out the lead free products only. Thus, all products that will be shipped from now on comply with RoHS Directive.