RICOH

R5460x Series

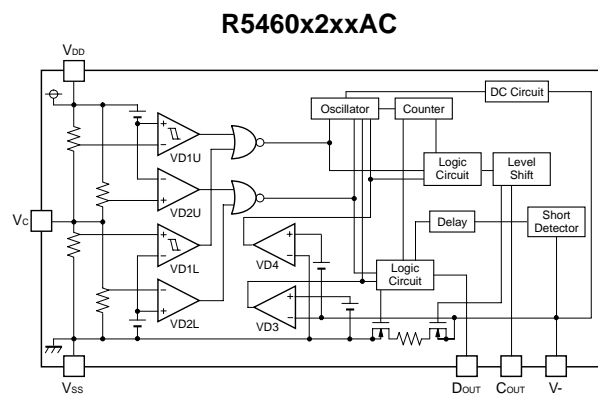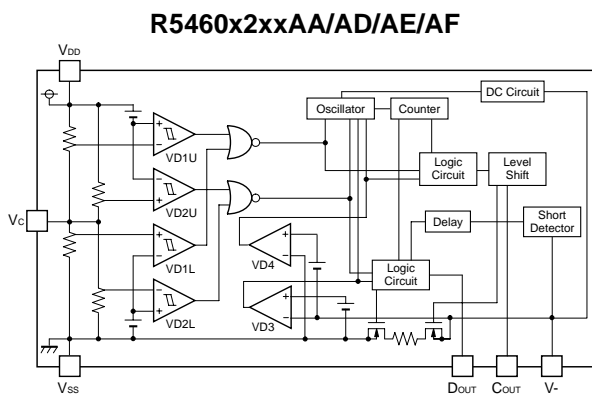## Li-ion/polymer 2Cell protector

The R5460x Series are high voltage CMOS-based protection ICs for over-charge/discharge of rechargeable two-cell Li-ion/Lithium polymer, further include a short circuit protection circuit 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 six voltage detectors, reference units, a delay circuit, a short circuit protector, an oscillator, a counter, and a logic circuit. In addition to SOT-23-6 package, DFN(PLP)1820-6 is also 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.4.0μA
- Standby Current (I_s) ································· Max.0.1μA (C, F Version)
  Max.2.0μA (A, D, E Version)
- Over-charge (V_{DET1}) Detector Threshold Range ····· 4.1V to 4.5V (0.005V Steps) (A,C,E,F Version)
  3.5V to 4.0V (0.005V Steps) (D Version)
  Voltage Accuracy ··············· ±25mV (25°C)
  ±30mV (-5 to 55°C)
  Output Delay Time (tV_{DET1}) ····· 1.0s
- Over-discharge (V_{DET2}) Detector Threshold Range ····· 2.0 to 3.0V (0.1V Steps)
  Voltage Accuracy ···················· ±2.5%
  Output Delay Time (tV_{DET2}) ····· 128ms

- Excess discharge-current (V_{DET3}) Detector Threshold Range ···· 0.05V to 0.20V (0.005V steps)
  Voltage Accuracy ··················· ±15mV
  Output Delay Time (tV_{DET3}) ···· 12ms
- Excess charge-current (V_{DET4}) Detector Threshold ·············· -0.10V to -0.40V
  Voltage Accuracy ··················· ±30mV or ±40mV
  Output Delay Time (tV_{DET4}) ··· 8ms
- Short Protection Detector Threshold (V_{short}) ···· Typ.1.0V
  Output Delay Time (t_{short}) ······ Typ.300μs
- 0V-battery charge ·· Available
- Packages ·· DFN(PLP)1820-6, SOT-23-6

BLOCK DIAGRAMS

R5460x2xxAA/AD/AE/AF

R5460x2xxAC

SELECTION GUIDES

Package	Quantity per Reel	Part No.
DFN(PLP)1820-6	5,000 pcs	R5460K2xx$∗-TR
SOT-23-6	3,000 pcs	R5460N2xx$∗-TR-FE

xx: Serial Number for the R5460x Series designing input four threshold for over-charge, over-discharge, excess discharge-current and excess charge-current detectors.

$: Designation of Output delay option of excess charge-current, excess discharge-current and short circuit.

∗: Designation of protection type.
  (A) Auto Release after Over-charge and Over-discharge.
  (C) Auto Release after Over-charge and with latch function after Over-discharge.
  (D) Auto Release after Over-charge and Over-discharge. Over-charge Detector Threshold Range is from 3.5V to 4.0V.
  (E) Auto Release after Over-charge and Over-discharge without Hysteresis Cancellation.
  (F) Auto Release after Over-charge and Over-discharge with Hysteresis.

PACKAGES

DFN(PLP)1820-6		SOT-23-6	

DFN(PLP)1820-6

1	C_{OUT}
2	V-
3	D_{OUT}
4	V_{SS}
5	V_{DD}
6	V_C

SOT-23-6

1	D_{OUT}
2	C_{OUT}
3	V-
4	V_C
5	V_{DD}
6	V_{SS}

∗) 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 cell-phones and any other gadgets using on board Li-ion/Li polymer battery