1 to 3cell Li-ion/Li-polymer battery Secondary protection IC
MM3563B Series

Outline

MM3563B series are secondary protection IC using high voltage CMOS process for overcharge protection of the rechargeable Lithium-ion or Lithium-polymer battery. The high accuracy overcharge detection of each cell of the rechargeable 1~3-cell Lithium-ion or Lithium-polymer battery is possible. Each of these IC composed of four voltage detectors, reference voltage sources, oscillator, counter circuit and logical circuits.The ultra-small package SSON-6A is used to minimize footprints.

Features   (Unless otherwise specified, Topr=+25°C)

1. Range and accuracy of overcharge detection/hysteresis voltage
   - ●Overcharge detection voltage   4.0V to 4.5V, 5mV step   Accuracy±25mV (Topr=0 to +60°C)
   - ●Overcharge hysteresis voltage   –500mV to –50mV   Accuracy±50mV to 100mV

2. Range of detection delay time
   - ●Overcharge detection delay time   1ms to $(1ms \times 2^{n1}) + (1ms \times 2^{n2})$

   *n1 and n2 can select two arbitrary integers between 0 to 13. (However n1≠n2)
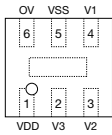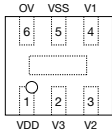
3. Low current consumption

   Typ. 1.5μA, Max. 3.0μA (Vcell=4.0V)

   Typ. 0.15μA, Max. 0.30μA (Vcell=2.3V)

4. Absolute maximum ratings
   - ●VDD pin   VSS–0.3 to VSS+18V
   - ●OV pin   VSS–0.3V to VDD+0.3V
   - ●Storage temperature   –55°C to +125°C
   - ●Operation temperature   –40°C to +110°C

Pin Assignment

Top view SSON-6A		Pin No.	Input / Output	Function
		1	INPUT	The input terminal of the power supply of IC
		2	INPUT	The input terminal of the positive voltage of V3 cell
		3	INPUT	The input terminal of the positive voltage of V2 cell, and the negative voltage of V3 cell
		4	INPUT	The input terminal of the positive voltage of V1 cell, and the negative voltage of V2 cell
		5	INPUT	The input terminal of the ground of IC, and the negative voltage of V1 cell
		6	OUTPUT	Output of over charge detection. Output type is CMOS. · Normal mode : "Low" · Overcharge mode : "High"

Top view SSON-6A		Pin No.	Input / Output	Function
		1	INPUT	The input terminal of the positive voltage of V2 cell, and the negative voltage of V3 cell
		2	INPUT	The input terminal of the positive voltage of V3 cell
		3	INPUT	The input terminal of the power supply of IC
		4	OUTPUT	Output of over charge detection. Output type is CMOS. · Normal mode : "Low" · Overcharge mode : "High"
		5	INPUT	The input terminal of the ground of IC, and the negative voltage of V1 cell
		6	INPUT	The input terminal of the positive voltage of V1 cell, and the negative voltage of V2 cell

Selection Guide (3000pcs/Reel)

Product name	Package	Overcharge detection voltage [V]	Overcharge hysteresis voltage[mV]	Overcharge detection dead time [s]	Stand by function	PTC function
		$V_{CELL}U$	V_{HYS}	T_{OV}		
MM3563B02NRH	SOT-26A	4.350±0.025	100±50	2.0±30	○	–
MM3563B02RRE	SSON-6A	4.350±0.025	100±50	2.0±30	○	–
MM3563B03NRH	SOT-26A	4.350±0.025	100±50	6.0±30	○	–
MM3563B03RRE	SSON-6A	4.350±0.025	100±50	6.0±30	○	–
MM3563B04NRH	SOT-26A	4.450±0.025	200±70	2.0±30	○	–
MM3563B04RRE	SSON-6A	4.450±0.025	200±70	2.0±30	○	–
MM3563B05RRE	SSON-6A	4.350±0.025	500±100	4.1±30	○	–
MM3563B06RRE	SSON-6A	4.450±0.025	500±100	4.1±30	○	–
MM3563B07RRE	SSON-6A	4.300±0.025	100±50	2.0±30	○	–
MM3563B08RRE	SSON-6A	4.400±0.025	200±70	2.0±30	○	–
MM3563B09RRE	SSON-6A	4.220±0.025	500±100	4.1±30	○	–
MM3563B11RRE	SSON-6A	4.350±0.025	300±80	6.0±30	○	–
MM3563B13RRE	SSON-6A	4.500±0.025	500±100	4.1±30	○	–
MM3563B15RRE	SSON-6A	4450±0.025	300±80	6.0±30	○	–

Please inquire to us, if you request a rank other than the above.

Application Circuit

(1) When using it for 3 cells

The voltage change becomes big according to an excessive current, and the current of the bias in IC is turned off temporarily. It is this influence, and there is a possibility that the output logic becomes unstable. In that case, please set the time constant of CR connected with the power supply terminal so that the variation in power source may become 1V/100μsec or more.

The constant of the mark is a standard.