

Voltage Monitor IC for Li-ion Cell Balance

MM3513 Series

Outline

The MM3513 series are voltage monitor ICs for rechargeable Lithium-ion or Lithium-polymer batteries, using a high voltage CMOS process. Each Lithium-ion or Lithium-polymer battery can be balanced. Each of these ICs is composed of voltage detectors, reference voltage sources, an oscillator, a counter circuit and logical circuits.

Features

(Unless otherwise specified, $T_{opr}=+25^{\circ}C$)

(1) High-accuracy detection voltage

- Detection voltage 3.5V to 4.5V, 5mV steps Accuracy±20mV
Accuracy±25mV ($T_{opr}=-5$ to $+60^{\circ}C$)
- Hysteresis voltage 0V to 0.4V, 50mV steps
However, "Detection voltage-Hysteresis voltage<3.5V" is disabled.

(2) Range of Detection delay time

- Detection delay time Selectable from 0.25s, 1.0s, 1.2s, 3.0s, 4.5s

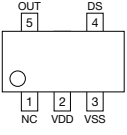
(3) Low current consumption

- Normal mode Typ. 1.5µA, Max. 3.0µA
- Stand-by mode Max. 0.5µA

(4) Absolute maximum ratings

- VDD pin VSS-0.3V to +12V
- OUT pin VDD-0.3V to VDD+0.3V
- DS pin VSS-0.3V to VDD+0.3V
- Storage temperature -55°C to +125°C
- Operation temperature -40°C to +85°C

Pin Assignment

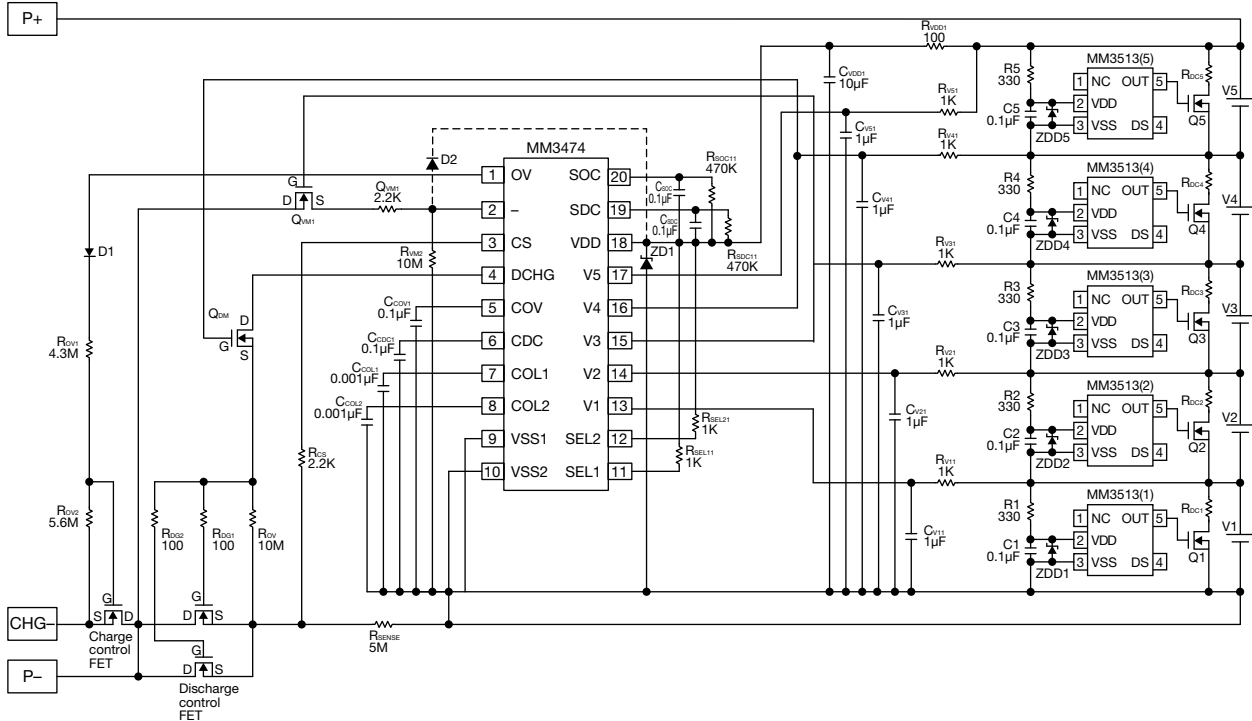
Top view SOT-25A	Pin No.	Function
	1	No connection.
	2	VDD terminal. Connected to IC substrait.
	3	VSS terminal. Connected to ground.
	4	Delay shorten terminal.
	5	Output of detecting voltage. Output type is CMOS.

Selection Guide (3,000pcs/Reel)

Product name	Package	Detection voltage [V]	Hysteresis voltage [V]	Detection delay time [sec]	Release delay time [sec]
		Vdet	Vhys	tVdet	tVrel
MM3513A01NRH	SOT-25A	4.150	0.010	0.25	8.0m
MM3513B01NRH	SOT-25A	3.750	0.010	0.25	8.0m
MM3513C01NRH	SOT-25A	4.200	0.010	0.25	8.0m
MM3513D01NRH	SOT-25A	3.600	0.010	0.25	8.0m
MM3513D02NRH	SOT-25A	3.600	0.100	0.25	8.0m
MM3513E03NRH	SOT-25A	4.350	0.380	3.0	8.0m
MM3513F01NRH	SOT-25A	3.650	0.010	0.25	8.0m
MM3513H01NRH	SOT-25A	4.175	0.010	0.25	8.0m
MM3513J01NRH	SOT-25A	3.475	0.010	0.25	8.0m
MM3513K01NRH	SOT-25A	4.180	0.010	0.25	4.0
MM3513L01NRH	SOT-25A	4.175	0.000	0.25	4.0
MM3513R01NRH	SOT-25A	4.210	0.010	0.25	8.0m

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

Application Circuit



- Resistors R1 to R5 and capacitors C1 to C5 stabilize a supply voltage ripple. However, if the resistors R1 to R5 are increased, the detection voltage raises due to through-current in the IC. Therefore, adjust the value to 1kΩ or less. Moreover, the capacitors C1 to C5 should be 0.01µF or more to ensure stable operation.
- For resistors RDC1 to RDC5, the value of bypass current is determined.

• Any products mentioned in this catalog are subject to any modification in their appearance and others for improvements without prior notification.
 • The details listed here are not a guarantee of the individual products at the time of ordering. When using the products, you will be asked to check their specifications.