MM3877 Series

2023/07/20

Outline

The MM3877 series are protection IC using high voltage CMOS process for overcharge, overdischarge, overcurrent, temperature protection, and cell balance control of the rechargeable Lithium-ion or Lithium-polymer battery.The overcharge, overdischarge, discharging overcurrent, charging overcurrent, and short of the rechargeable 4-7cells lithium-ion or lithium-polymer battery can detected. In addition, the temperature detection by external NTC thermistor and cell balance control are also possible. The internal circuit of IC is composed by the voltage detector, the reference voltage source, oscillator, counter circuit and the logical circuit, etc. A stacking configuration using multiple ICs is also possible, so a low-cost, space-saving protection circuit can be configured for applications with more than 7 cells.

Product Series

For 4 to 7cells

Features

(1) Range and accuracy of detection/release voltage/temperature
- Overcharge detection voltage 3.6V to 4.5V, 5mV step ±20mV
- Overcharge release voltage 3.4V to 4.5V, 50mV step ±30mV
- Overdischarge detection voltage 2.0V to 3.0V, 50mV step ±50mV
- Overdischarge release voltage 2.0V to 3.5V, 50mV step ±100mV
- Cell balance detection voltage 3.6V to 4.5V, 5mV step ±25mV
- Discharging overcurrent detection voltage1 30mV to 300mV, 5mV step ±10%
- Discharging overcurrent detection voltage2 60mV to 600mV, 6mV step ±15%
- Short detection voltage 200mV to 1.0V, 50mV step ±20%
- Charging overcurrent detection voltage -300mV to -20mV, 5mV step ±10%
- High/low temp protection detection temperature -40°C to 75°C , 5°C step ±5°C

(2) Range and accuracy of various delay time
- Overcharge detection delay time 100ms to 2.048s

MM3877 Series

2023/07/20

●Overdischarge detection delay time 100ms to 2.048s
●Cell balance detection delay time 100ms to 4.096s
●Discharging overcurrent detection delay time1 100ms to 2560ms, COC=0.01uF
●Discharging overcurrent detection delay time2 10ms to 640ms, COC=0.01uF
●Short detection delay time 200us to 500us, 50us step
●Discharging overcurrent release delay time 4ms to 2.048s
●Charging overcurrent detection delay time 4ms to 2.048s
●Charging overcurrent release delay time 4ms to 2.048s
●Temperature protection detection delay time 4ms to 2.048s
●Temperature protection release delay time 4ms to 2.048s

(3) SEL pin can be set from 4cell protection to 7 cell protection.

(4) Power save function

(5) Cascade connection

(6) 0V battery charge functionSelection from "Permission" or " Inhibition"

(7) Low current consumption
●Ave. current consumption (Normal mode) Typ. 20.0uA Max. 30.0uA (VCELL=3.5V)
●Current consumption (power save mode) Typ. 1.0uA Max. 1.5uA (VCELL=1.8V)

Specifications

Product name	Package	0V battery charge function	Overcharge detection voltage [V]	Overcharge release voltage [V]	Overdischarge detection voltage [V]	Overdischarge release voltage [V]
MM3877C05WBE	VSOP-20A	Prohibition	4.250	4.100	2.750	3.000
MM3877C06WBE	VSOP-20A	Prohibition	3.700	3.550	2.300	2.700

Product name	Discharging overcurrent detection voltage1 [V]	Discharging overcurrent detection voltage2 [V]	Charging overcurrent detection voltage [V]	Short detection voltage [V]	Cell balance detection voltage [V]	Overcharge detection delay time [s]	Overdischarge detection delay time [ms]

MM3877 Series

2023/07/20

	[V]	[V]	[V]		[V]		
MM3877C05WBE	0.1000	0.2000	-0.0300	0.350	4.200	1.020	1020.0
MM3877C06WBE	0.1000	0.2000	-0.0300	0.350	3.550	1.020	1020.0

Product name	Discharging overcurrent detection delay time 1 [ms]	Discharging overcurrent detection delay time 2 [ms]	Charging overcurrent detection delay time [ms]	Short detection delay time [ms]	Cell balance detection delay time [ms]	High temperature detection temperature 1 [deg.C]	High temperature release temperature 1 [deg.C]
MM3877C05WBE	100.0	10.0	1020.0	0.350	256.0	75	65
MM3877C06WBE	100.0	10.0	1020.0	0.350	256.0	75	65

Product name	High temperature detection temperature 2 [deg.C]	High temperature release temperature 2 [deg.C]	Low temperature detection temperature 1 [deg.C]	Low temperature release temperature 1 [deg.C]
MM3877C05WBE	50	40	0	10
MM3877C06WBE	50	40	0	10

Package

VSOP-24A