Thermal protection and control terminal for charge and discharge off mode protection IC

Outline

MM3855 series are protection ICs with thermal protection and control teminal for charge and discharge off mode for Lithium-ion and Lithium-polymer rechargeable battery.
By using external thermistor, this protects the battery pack and system over temperature. In addition, it reduces the current consumption of system by using charge and dischrge off mode , when the system is shutdown.

Features   (Unless otherwise specified, Ta=25°C)

(1) Range and accuracy of detection/release voltage
- Overcharge detection voltage............................Vdet1 ....4.1V to 5.0V .... ±20mV
  5mVstep   ±20mV(Ta=-20 to +60°C)
- Overdischarge detection voltage ....Vdet2 ....2.1V to 3.0V .... ±35m
  50mV step   ±40mV(Ta=-20 to +60°C)
- Discharging overcurrent detection voltage1 ......Vdet3-1...........6mV to 100mV........... ±2.5mV
  1mV step   ±3.0mV (Ta=-20 to +60°C)*1
- Discharging overcurrent detection voltage2 ......Vdet3-2...........15mV to 100mV......... ±3.5mV
  1mV step   ±4.0mV (Ta=-20 to +60°C)*1
- Charging overcurrent detection voltage.............Vdet4 ....-6mV to -100mV .... ±2.5mV
  1mV step   ±3.0mV(Ta=-20 to +60°C)*1
- Short detection voltage....................................tShort..............30mV to 200mV......... ±5.0mV
  10mV step   ±5.5mV (Ta=-20 to +60°C)*1
- 0V battery charge inhibition battery voltage ......Vst ....0.9V .... ±0.3V

*1 Accuracy of overcurrent detection voltage (Ta=25 °C)
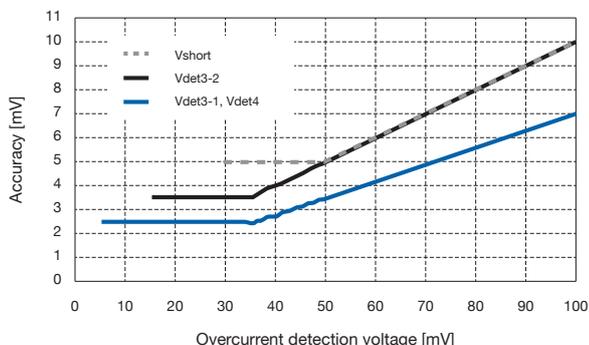
(2) Temperature detection function.............................Selectable "Enable" or "Disable"

(3) 0V battery charge function ....Selectable "Permission" or "Inhibition"

4) Control terminal for charge and discharge off mode

5) Current consumption... (Not include NTC bias current)
- Normal mode ....Temperature detection function "Enable"   3.0µA typ.
  5.0µA max.   (Ta=-20 to +85°C)
  Temperature detection function "Disable" 2.5µA typ.
  4.5µA max.   (Ta=-20 to +85°C)

- Standby mode ....Overdischarge latch function "Enable" ... 0.1µA max. (Ta=-20 to +60°C)
  Overdischarge latch function "Disable"... 0.8µA max. (Ta=-20 to +85°C)

Pin assignment

■ SSON-8F ■ SSON-8G

(Top view)

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CNT  1        8  TH
VM   2        7  CS
COUT 3        6  VSS
DOUT 4        5  VDD
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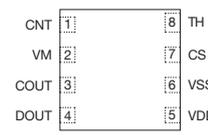
Pin no.	Symbol	Function
1	CNT	Control terminal for charge and discharge FET
2	VM	Input terminal for charger negative voltage
3	COUT	Control terminal for charge FET
4	DOUT	Control terminal for discharge FET
5	VDD	Input terminal for negative power supply voltage
6	VSS	Input terminal for positive power supply voltage
7	CS	Input terminal for overcurrent detection
8	TH	Input terminal for temperature detection

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Model	Overcharge detection	Overdischarge detection	Discharging overcurrent detection 1	Discharging overcurrent detection 2	Charging overcurrent detection	Short detection1	Temperature detection resistance	Overcharge detection latch function	Overdischarge detection latch function	Discharging overcurrent latch functio	Charging overcurrent latch function	0V battery charge function	Temperature detection function	Delay time *1
	Vdet1	Vdet2	Vdet3-1	Vdet3-2	Vdet4	Vshort1	RdetTH							
	V	V	mV	mV	mV	V	---							
MM3855AJ1	4.475	2.400	35.0	50.000	-35.0	100.0	90kΩ	Disable	Disable	Disable	Enable	Permission	Enable	(A)
MM3855AL1	4.475	2.500	20.5	29.500	-26.5	70.0	No function	Disable	Disable	Disable	Enable	Permission	Disable	(B)
MM3855AL2	4.475	2.500	22.5	No function	-21.0	100.0	No function	Disable	Disable	Disable	Enable	Permission	Disable	(C)
MM3855EN5	4.470	2.465	13.0	No function	-15.0	50.0	90kΩ	Enable	Enable	Disable	Enable	Permission	Enable	(D)
MM3855EN7	4.450	2.600	36.0	No function	-21.0	90.0	48kΩ	Enable	Enable	Disable	Enable	Permission	Enable	(E)

Delay time *1

	tVdet1	tVdet2	tVdet3-1	tVdet3-2	tVdet4	tShort1	tCDGdet	tRdetTH
	sec	msec	msec	msec	msec	μsec	msec	msec
A	1.024	64	4096	16	16	280	48	512
B	1.024	64	4096	16	16	280	48	No function
C	1.024	20	16	No function	16	300	48	No function
D	1.024	128	8	No function	8	250	48	512
E	1.024	2048	2048	No function	8	280	48	64

*Please inquire to us, if you need another spec.

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