

1 to 4 cells lithium-ion/lithium-polymer battery Secondary protection IC

MM3284 Series

Outline

MM3284 series are secondary protection IC using high voltage CMOS process for overcharge protection of the rechargeable lithium-ion or lithium-polymer secondary battery. The high accuracy overcharge detection of each cell of the rechargeable 1 to 4 serial cells lithium-ion or lithium-polymer secondary battery is possible. With a timer circuit built-in, it is possible to set overcharge detection delay time.

Features

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

- Range and accuracy of overcharge detection/hysteresis voltage
 - Overcharge detection voltage 4.0V to 4.5V, 5mV step
 - Overcharge hysteresis voltage 50mV to 1000V, 50mV step
- Range of detection delay time
 - Overcharge detection delay time 1ms to $(1\text{ms} \times 2^{n1}) + (1\text{ms} \times 2^{n2})$
 *n1 and n2 can select two arbitrary integers between 0 to 13. (However n1≠n2)
- Low current consumption
 - Typ. 2.5μA, Max. 5.0μA (Vcell=3.5V)
 - Typ. 2.0μA, Max. 4.0μA (Vcell=2.3V)
- Absolute maximum ratings
 - VDD pin VSS-0.3 to VSS+28V
 - OV pin VSS-0.3V to VDD+0.3V
 - Storage temperature -55 to +125°C
 - Operation temperature -40 to +110°C

Pin Assignment

Top view SOT-26A	Pin No.	Function
	1	The input terminal of the positive voltage of V2 cell, and the negative voltage of V3 cell
	2	The input terminal of the positive voltage of V3 cell, and the negative voltage of V4 cell
	3	The input terminal of the power supply of IC and the positive voltage of V4 cell
	4	Output of over charge detection (Output type is CMOS)
	5	The input terminal of the ground of IC and the negative voltage of V1 cell
	6	The input terminal of the positive voltage of V1 cell, and the negative voltage of V2 cell

Top view SSON-6A	Pin No.	Function
	1	The input terminal of the power supply of IC and the positive voltage of V4 cell
	2	The input terminal of the positive voltage of V3 cell and the negative voltage of V4 cell
	3	The input terminal of the positive voltage of V2 cell and the negative voltage of V3 cell
	4	The input terminal of the positive voltage of V1 cell and the negative voltage of V2 cell
	5	The input terminal of the ground of IC and the negative voltage of V1 cell
	6	Output of over charge detection (Output type is CMOS)

*1 OV tarminal output Normal mode : "Low"
 Overcharge mode : "High"

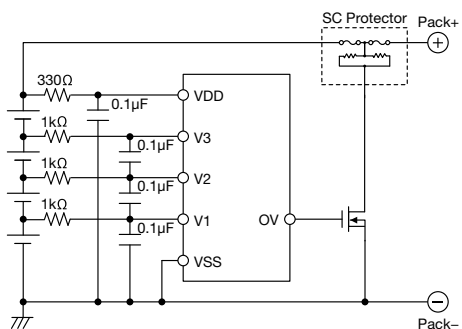
Selection Guide (3000pcs/Reel)

Product name	Package	Function	Overcharge detection voltage [V]	Overcharge hysteresis voltage[mV]	Overcharge detection dead time [s]	Output type
			V _{CELLU}	V _{HYS}	T _{OV}	
MM3284ANREH	SOT-26A	1 to 4 cells	4.350±0.030	200±60	1.2	CMOS Output Active High
MM3284CNREH	SOT-26A	1 to 4 cells	4.350±0.030	1000±200	10	
MM3284CRRE	SSON-6A	1 to 4 cells	4.350±0.030	1000±200	10	
MM3284ENREH	SOT-26A	1 to 4 cells	4.450±0.030	200±60	1.2	
MM3284FNREH	SOT-26A	1 to 4 cells	4.350±0.030	V4 : 680±100 V3 to V1 : 340±100	1.2	
MM3284GRRE	SSON-6A	1 to 4 cells	4.450±0.030	1000±200	10	
MM3284HNREH	SOT-26A	1 to 4 cells	4.350±0.030	1000±200	5.0	
MM3284INREH	SOT-26A	1 to 4 cells	4.450±0.030	1000±200	5.0	
MM3284JRRE	SSON-6A	1 to 4 cells	4.400±0.030	1000±200	10	
MM3284MRRE	SSON-6A	1 to 4 cells	4.280±0.030	1000±200	4.1	
MM3284NNREH	SOT-26A	1 to 4 cells	4.450±0.030	200±60	4.1	
MM3284PNREH	SOT-26A	1 to 4 cells	4.300±0.030	V4 : 620±100 V3 to V1 : 270±100	2.0	
MM3284RNREH	SOT-26A	1 to 4 cells	4.450±0.030	V4 : 750±100 V3 to V1 : 420±100	2.0	
MM3284TRRE	SSON-6A	1 to 4 cells	4.220±0.030	1000±200	10	
MM3284URRE	SSON-6A	1 to 4 cells	4.220±0.030	200±60	0.1	

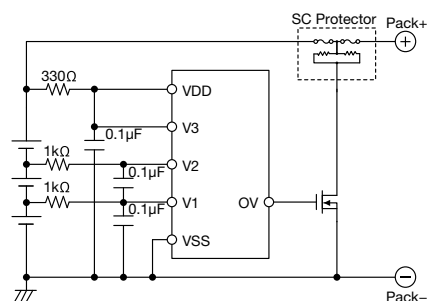
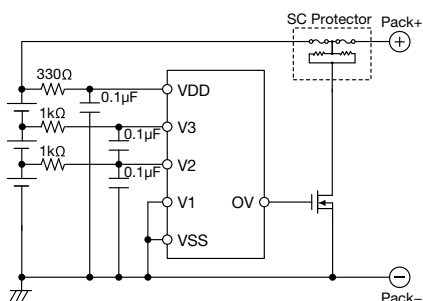
Please inquire to us, if you request a rank other than the above.

Application Circuit

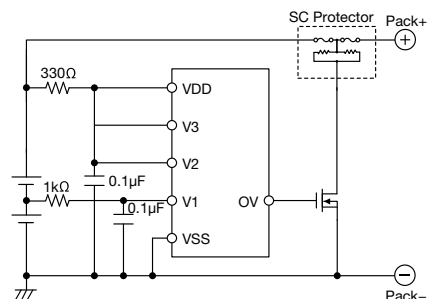
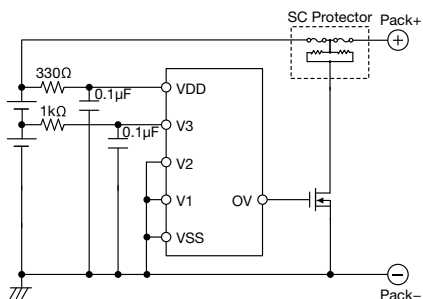
(1) When using it for 4 cells



(2) When using it for 3 cells



(3) When using it for 2 cells



(4) When using it for 1 cell

