

2016-4-12

General Description

The DW01A battery protection IC is designed to protect lithium-ion/polymer battery from damage or degrading the lifetime due to overcharge, overdischarge, and/or overcurrent for one-cell lithium-ion/polymer battery powered systems, such as cellular phones.

The ultra-small package and less required external components make it ideal to integrate the DW01A into the limited space of battery pack. The accurate ±50mV overcharging detection voltage ensures safe and full utilization charging. The very low standby current drains little current from the cell while in storage.

Ordering Information

DW01A

PACKAGE TYPE SOT-23-6

TEMPERATURE RANGE -40°C~+85°C

OVERCHARGE PROTECTION 4.3V± 50mV

Features

- Reduction in Board Size due to Miniature Package SOT-23-6.
- Ultra-Low Quiescent Current at 3 μ A (Vcc=3.6V).
- Overdischarge Current at 4 μA (Vcc=1.8V).
- Precision Overcharge Protection Voltage 4.3V ± 50mV
- Two Detection Levels for Overcurrent Protection.
- Delay times are generated by internal circuits.
 No external capacitors required.

Applications

 Protection IC for One-Cell Lithium-Ion / Lithium-Polymer Battery Pack

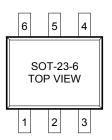


Product Name List

Product	Package	dotaction	Overcharge release voltage [VOCR] (V)	Overdischarge detection voltage [VODP] (V)	Overdischarge release voltage [VODR] (V)	Overcurrent detection voltage [VoI1] (mV)	battery charge	Stand by function release
DW01A	SOT-23-6	4.300±0.050	4.100±0.050	2.50±0.1	2.90±0.1	150±20	available	Auto Recovery

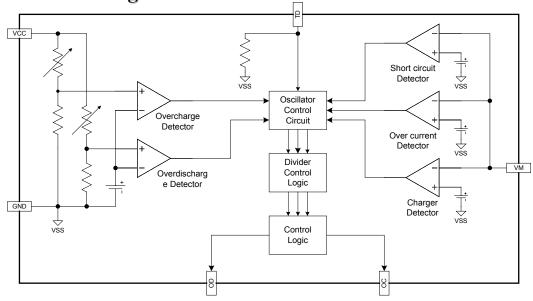
Pin Configuration

Pin No.	Symbol	Description		
1	OD	MOSFET gate connection pin for discharge control		
2	VM	Input pin for current sense, charger detect		
3	ОС	MOSFET gate connection pin for charge control		
4	TD	Test pin for reduce delay time		
5	VCC	Power supply, through a resistor (R1)		
6	GND	Ground pin		



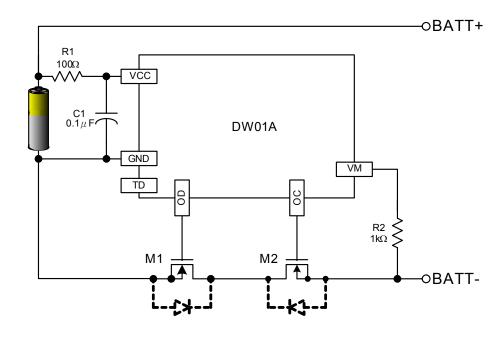


Functional Block Diagram





Typical Application Circuit



Absolute Maximum Ratings

(VSS=0V, Ta=25°C unless otherwise specified)

Item	Symbol	Rating	Unit
Input voltage between VDD and VSS		0.3 to 10	V
OC output pin voltage	Voc	VDD-24 to VDD+0.3	V
OD output pin voltage	Vod	VSS-0.3 to VDD+0.3	V
CS input pin voltage	Vcs	VDD-24 to VDD+0.3	V
Operating Temperature Range	Тор	-40 to +85	°C
Storage Temperature Range	Тѕт	-40 to +125	°C



Electrical Characteristics

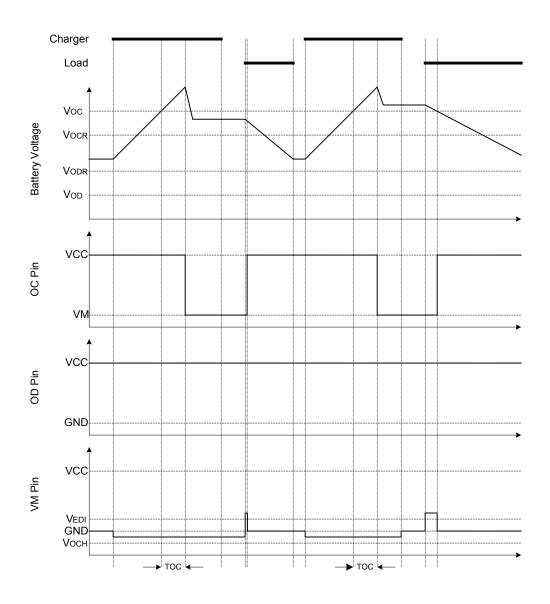
(Ta=25°C unless otherwise specified)

PARAMETER	TEST CONDITIONS	SYMBOL	Min	Тур	Max	UNIT
Supply Current	Vcc=3.6V	Icc		3.0	6.0	μ A
Power-Down Current	Vcc=1.8V	IPD			4	μΑ
0V Battery Charge Starting Charger Voltage		V ₀ CHA	1.2			V
Overcharge Protection Voltage		Voc	4.25	4.30	4.35	٧
Overcharge Release Voltage		Vocr	4.05	4.10	4.15	V
Overdischarge Protection Voltage		Vod	2.40	2.50	2.60	V
Overdischarge Release Voltage		Vodr	2.80	2.90	3.00	V
Overcurrent Protection Voltage		VEDI	130	150	170	mV
Short Current Protection Voltage		Vshort	0.82	1.36	1.75	V
Overcharge Delay Time		Toc		110	200	ms
Overdischarge Delay Time	Vcc=3.6V to 2.4V	Tod		55	200	ms
Overcurrent Delay Time (1)		TEDI		7	20	ms
Overcurrent Delay Time (2)		Tshort		400	600	μ S
OD Pin Output "H" Voltage	Vcc=3.9V Ico=10uA	DoutH	Vcc-0.4	Vcc-0.2		V
OD Pin Output "L" Voltage	Vcc=2V IDO=10uA	DoutL		0. 2	0.5	٧
OC Pin Output "H" Voltage	Vcc=3.9V Ico=10uA	CoutH	Vcc-0.1	Vcc-0 02		V

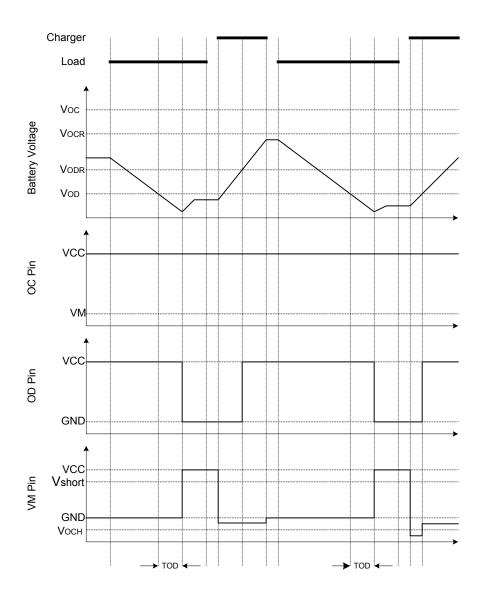


Timing Diagram

1. Overcharge Condition → Load Discharging → Normal Condition



2. Overdischarge Condition → Charging by a Charger →Normal Condition



3. Over Current Condition → Normal Condition

