

AAT 3698 | Single Input, 1.6A Linear Charger with 28V Input Protection and 50mA LDO

The AAT3698-1/-2 BatteryManager™ is a single-cell Li-Ion/Li-Polymer battery charger IC designed to operate from a USB port or AC adapter with an input voltage of up to 7.0V. For increased safety, the AAT3698-1/-2 also includes over-voltage input protection (OVP) up to 28V.

The AAT3698-1/-2 precisely regulates battery voltage for 4.2V Li-Ion/Polymer battery cells through a low $R_{DS(ON)}$ switch. The charging current can be set by an external resistor up to 1.6A. If an over-voltage condition occurs from the input, the series switch quickly opens and a fault flag is activated, preventing damage to the battery and the charging circuitry. Other fault conditions are monitored in real time. In case of a battery over-voltage, or over-temperature failure, the device will automatically shut down, thus protecting the charging device and battery under charge. A status monitoring output pin (STAT) is provided to indicate charging activity. This open drain output pin can be used to drive an external LED as a charging indicator.

The AAT3698-1/-2 also includes a 5.0V LDO linear regulator with over-voltage protection that can supply loads of up to 50mA. The AAT3698-1/-2 is available in the Pb-free, thermally enhanced, space-saving 3x3mm TDFN33-14 package and is rated over the -40°C to +85°C temperature range.

# of Cells	Max Protected V_{IN} (V)	Max Charging V_{IN} (V)	Max Charge Current (mA)	Input Channels	Dynamic Power Management	Automatic Charge Reduction	Active Digital Thermal Loop Control	Charge Rate Control
1	28	7.0	1600	USB or AC Adaptor	No	No	Yes	External Resistor

Features

- 3.0V ~ 7.0V Input Voltage Range
- 14-pin 3x3mm TDFN Package
- High Level of Integration with Internal:
 - Power Device
 - Reverse Current Blocking
 - Current Sensing
 - 5V/50mA LDO Output
- Programmable Fast Charge Current from 50mA to 1.6A
- Programmable Charge Termination Current
- 0.5% final voltage accuracy
- Fast Over-Voltage Protection Turn Off
 - OVP Trip Threshold: 7.25V (typ)
- Digitally Controlled Thermal Loop Regulation
- Emergency Thermal Shutdown Protection
- Charge Status Indicator
- Power OK Indicator
- Battery Absence Detection Input Pin
- Automatic Termination and Recharge Sequencing (AAT3698-1 Only)
- Automatic Trickle Charge for Battery Pre-Conditioning
- Active Low Enable with Internal 200k Ω Pull-Down Resistor
- Output for Auto-Booting

Applications

- Bluetooth Headsets, Headphones, Accessories
- [Digital Cameras](#)
- [Media Players](#)
- Other Li-Ion Battery Powered Devices
- PDAs and Handheld Computers
- [Smart Phones](#)

Block Diagram

