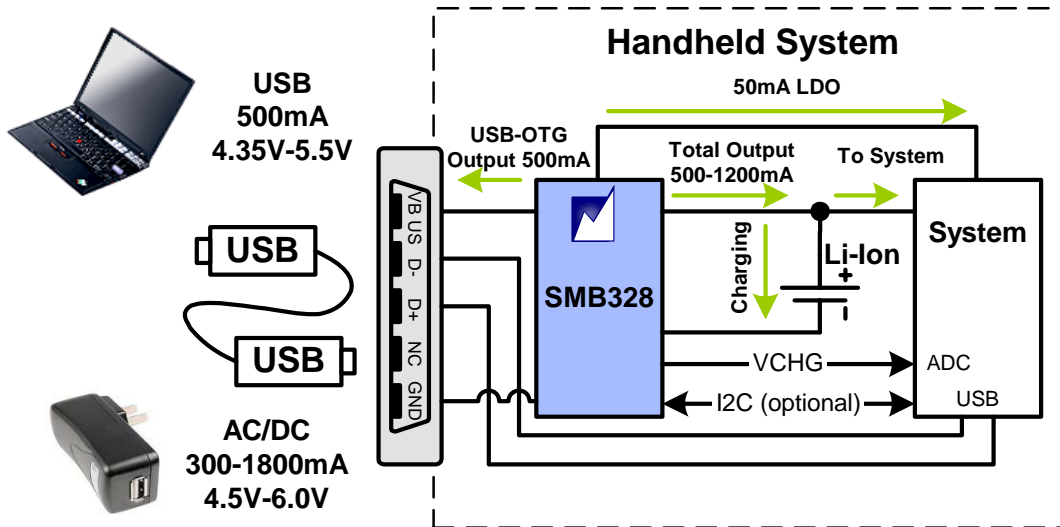
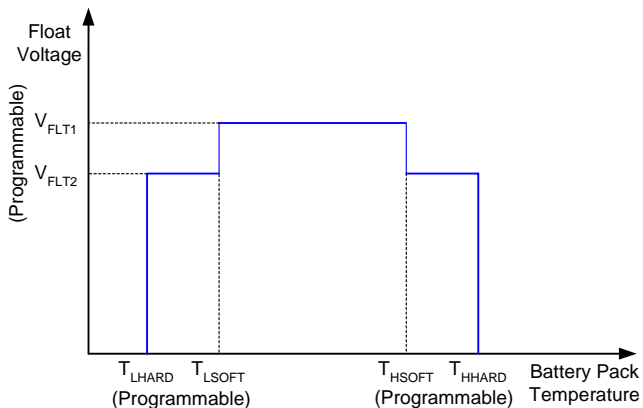


# Tiny Li+ Charger IC Enables Fastest Charging Time and Supports JEITA/JISC/IEEE1725 Safety Standards

*High-Efficiency Operation Minimizes Power Dissipation and Charging Time  
Industry's Widest Set of Features and Highest Level of Parametric/Functional Flexibility*



**Configurable JEITA Algorithm Optimizes Profile for Each Battery and Maximizes System Safety and Reliability**



## SMB328 Applications

- Mobile & Smart Phones
- Digital Cameras & Camcorders
- Portable Media Players & Games
- Smart Books & Mobile Internet Devices
- Handheld GPS Terminals

## SMB328 Features

- TurboCharge™\* for 50% Current Gain from Current-limited Power Sources
- Automatic Charger Input Current Adjustment based on Wall Adapter Current Limit \*
  - As low as 275mA for China Chargers
  - Dynamic Monitoring, Control and Reporting
- Pre-bias Mode for Unregulated Wall Adapters
- Integrated USB On-the-Go Power Support (+5V @ 500mA)
- +3.5V to +6.2V Operating Input (+20V Protection)
- 3MHz Switch-Mode Operation (Chip Inductors)
- I<sup>2</sup>C Programmable (Volatile and Non-volatile)
  - Fast/Pre-Charge/Termination Current
  - Float (Regulation) Voltage
  - Pre-Charge/Dead-battery Thresholds
  - Battery Pack Temperature Operation
- Built-in Safety – supports IEEE1725, JEITA/JISC standards
  - Input OV Protection to +20V
  - Battery OV/OC Protection
  - Trickle Charge for Deeply-Discharged Cells
  - Watchdog and Safety Timers
  - Digital Fault Monitors
  - Adaptive Battery Temperature Monitor
  - Missing Battery Monitor
  - Charge/Fault Indicator Output
  - Valid Input Power Presence Output
- 2.2mm x 2.0mm CSP Packaging

\* Patent pending

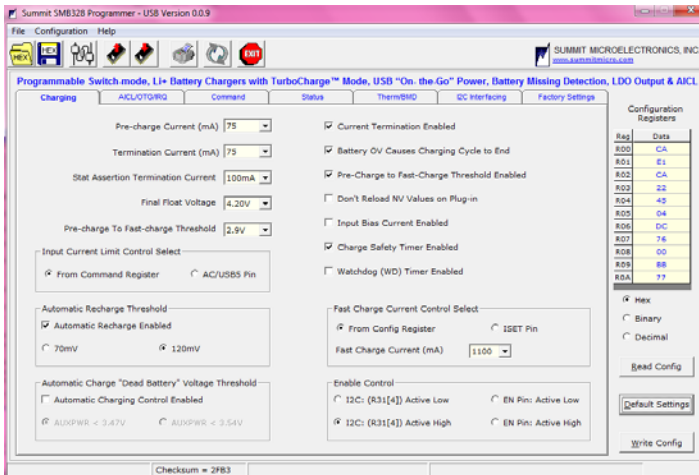
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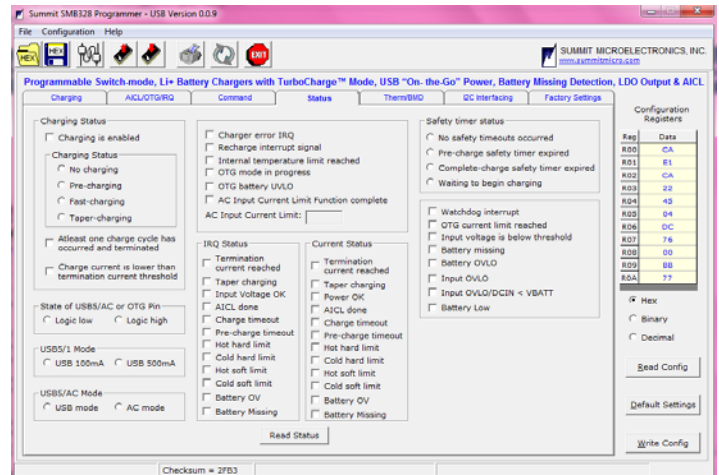
# Tiny Li+ Charger IC Enables Fastest Charging Time and Supports JEITA/JISC/IEEE1725 Safety Standards

*GUI allows easy programming of all functions and parameters in a real-time environment*

## Battery Charging Configuration



## Real-time Status/Fault Control



## Battery Charging Product Portfolio

|   | SMB137B          | SMB136           | SMB328           | SMB329B                      | SMB338           | SMB135/235                   | SMB139/239                      |
|---|------------------|------------------|------------------|------------------------------|------------------|------------------------------|---------------------------------|
| Topology  | Switch-mode      | Switch-mode      | Switch-mode      | Switch-mode                  | Switch-mode      | Switch-mode                  | Linear-mode                     |
| Input Voltage Range (V)*                          | 4.35 to 6.2 (18) | 4.35 to 6.2 (18) | 4.35 to 6.2 (20) | 4.35 to 6.2 (20)             | 4.35 to 6.2 (18) | 4.35 to 6.5 (10)             | 4.35 to 6.5 (10)                |
| # of Inputs/Outputs                               | 2/2              | 1/2              | 1/1              | 1/1                          | 1/1              | 1/1                          | 1/1                             |
| Maximum Charge Current (mA)                       | 1500             | 1500             | 1200             | 1150                         | 1250             | 900                          | 210/500                         |
| Maximum Input Current (mA)                        | 1400             | 1400             | 1200             | 1150                         | 1250             | NA                           | N/A                             |
| TurboCharge™ Output                               | Automatic        | Automatic        | Automatic        | Automatic                    | Automatic        | Software/uC                  |                                 |
| CurrentPath™ Control                              | √                | √                |                  |                              |                  |                              |                                 |
| USB On-The-Go Power                               | √                | √                | √                | √                            | √                |                              |                                 |
| Instant-On System Boot                            | √                | √                | √                | √                            | √                |                              |                                 |
| Charge Current Voltage Output                     |                  |                  | √                | √                            | √                |                              |                                 |
| Low-Battery Recovery Mode                         | √                | √                |                  |                              |                  |                              |                                 |
| I2C Interface                                     | √                | √                | √                | √                            | √                | √                            | √                               |
| Programmable Float Voltage                        | √                | √                | √                | √                            | √                | √                            | √                               |
| Programmable Charge/Term. Current                 | √                | √                | √                | √                            | √                | √                            | √                               |
| Programmable Input Current Limit                  | √                | √                | √                | √                            | √                | √                            | √                               |
| Input/Battery OV/UV                               | √                | √                | √                | √                            | √                | √                            | √                               |
| Hardware Safety Timer                             | √                | √                | √                | √                            | √                | √                            | √                               |
| Software Watchdog Timer                           | √                | √                | √                | √                            | √                |                              |                                 |
| Battery Thermal Protection                        | √                | √                | √                | √                            | √                | √                            | √                               |
| Automatic Input Current Limit                     | √                | √                | √                | √                            | √                |                              |                                 |
| Automatic Power Source Detection **               | rev 1.0          | rev 1.0          |                  | rev 1.0                      |                  |                              |                                 |
| IC Thermal Protection                             | √                | √                | √                | √                            | √                | √                            | √                               |
| Charge Current/Float Voltage Compensation (JEITA) | SW               | SW               | HW               | SW                           |                  | SW                           | SW                              |
| Package   | 3.0x2.5 CSP-30   | 3.0x2.5 CSP-30   | 2.2x2.0 CSP-20   | 2.2x1.9 CSP-20<br>4x4 QFN-24 | 2.2x1.9 CSP-20   | 2.1x1.3 CSP-15<br>5x5 QFN-32 | 2.1x1.3 CSP-15<br>2.1x1.3 CSP-8 |



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