

### Brief Description

The ZSPM4551 is a DC/DC synchronous switching lithium-ion (Li-Ion) battery charger with fully integrated power switches, internal compensation, and full fault protection.

Its switching frequency of 1MHz enables the use of small filter components, resulting in smaller board space and reduced BOM costs.

In Full-Charge Constant-Current Mode, the regulation is for constant current (CC). Once termination voltage is reached, the regulator operates in voltage mode. When the regulator is disabled (the EN pin is low), the device draws 10 $\mu$ A (typical) quiescent current.

The ZSPM4551 includes supervisory reporting through the NFLT (inverted fault) open-drain output to interface other components in the system. Device programming is achieved by an I<sup>2</sup>C™\* interface through the SCL and SDA pins.

### Benefits

- Up to 1.5A of continuous output current in Full-Charge Constant-Current (CC) Mode
- High efficiency – up to 92% with typical loads

### Available Support

- Evaluation Kit
- Support Documentation

### Features

- VBAT reverse-current blocking
- Programmable temperature-compensated termination voltage: 3.94V to 4.18V  $\pm$  1%
- User programmable maximum charge current: 50mA to 1500mA
- Current mode PWM control in constant voltage
- Supervisor for VBAT reported at the NFLT pin
- Input supply under-voltage lockout
- Full protection for over-current, over-temperature, VBAT over-voltage, and charging timeout
- Charge status indication
- I<sup>2</sup>C™ program interface with EEPROM registers

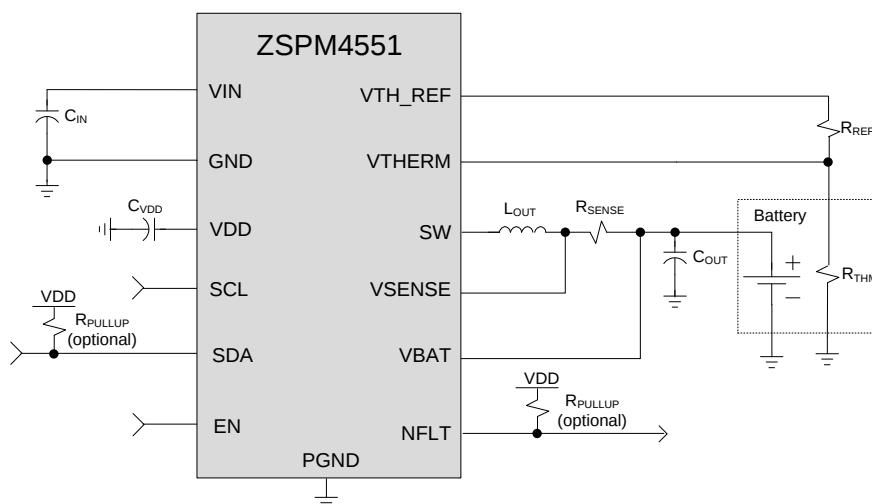
### Related IDT Smart Power Products

- ZSPM4121 Ultra-low Power Under-Voltage Switch
- ZSPM4141 Ultra-Low-Power Linear Regulator

### Physical Characteristics

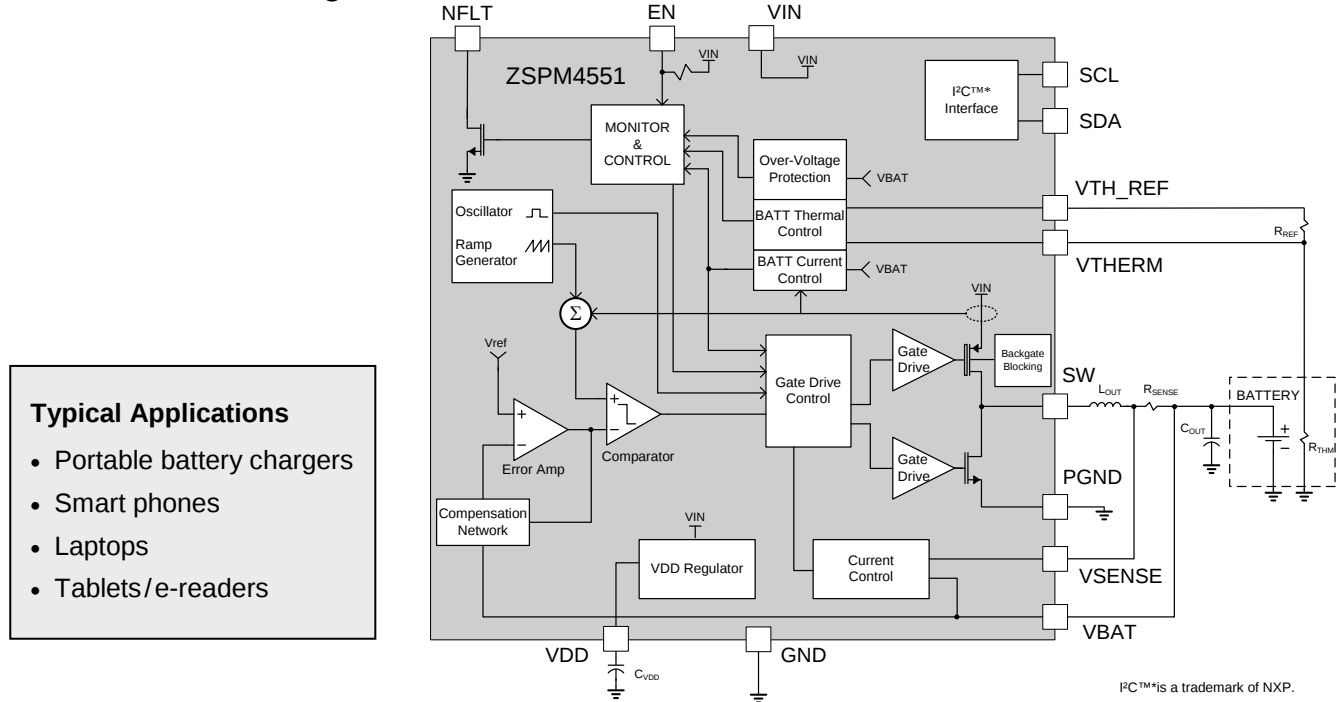
- Wide input voltage range: V<sub>BAT</sub> + 0.3V (3.5V min.) to 7.2V
- Junction operating temperature: -40°C to 125°C
- Package: 16-pin PQFN (4mm x 4mm)

### ZSPM4551 Application Circuit



\* I<sup>2</sup>C™ is a trademark of NXP.

### ZSPM4551 Block Diagram



### Ordering Information

| Ordering Code | Description                                     | Package                             |
|---------------|-------------------------------------------------|-------------------------------------|
| ZSPM4551AA1W  | ZSPM4551 High-Efficiency Li-Ion Battery Charger | 16-pin PQFN / 7" Reel (1000 parts)  |
| ZSPM4551AA1R  | ZSPM4551 High-Efficiency Li-Ion Battery Charger | 16-pin PQFN / 13" Reel (3300 parts) |
| ZSPM4551KIT   | ZSPM4551 Evaluation Kit                         |                                     |