

ISL9519

Narrow VDC Regulator/Charger with SMBus Interface



DATASHEET

Request Full Datasheet

OVERVIEW

PARAMETRICS

DOCUMENTS

PACKAGING &
ENVIRONMENTAL

RESOURCES

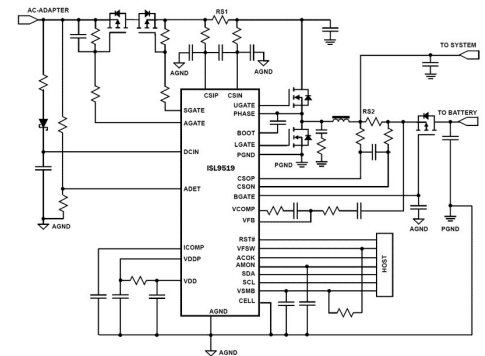
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Key Features

- ±0.5% System Voltage Accuracy (-10°C to +100°C)
- ±3% Accurate Input Current Limit (-10°C to +100°C)
- ±3% Accurate Battery Charge Current Limit
- Variable Switching Frequency at Light Load Conditions for Higher Efficiency
- Fixed Frequency Operation at Higher Loads
 - Fixed Frequency Mode can be Forced by an External Pin
- Trickle Charge System for Deeply Discharged Batteries
 - Automatic Trickle Charge Current (256mA)
 - Holds Minimum Voltage to System
- SMBus 2-Wire Serial Interface
- Default System Voltage Values for 1-Cell, 2-Cell or 3-Cell Operation Selected by an External Pin
- Adapter In-rush FET Control
- Adapter Isolation FET Control
- Battery Short Circuit Protection
- Fast System-Load Transient Response
- Monitor Outputs
 - Adapter Current (2.5% Accuracy)
 - AC-adapter Present Indicator
- 11-Bit Max System Voltage Setting
- 7-Bit Min System Voltage Setting
- 6-Bit Charge Current Setting
 - Over 8A Battery Charger Current
- 6-Bit Adapter Current Setting
 - Over 8A Adapter Current
- +4.5V to +22V Adapter Voltage Range
- Pb-Free (RoHS Compliant)

TYPICAL DIAGRAM

ENLARGE



Sample

Simulate

Purchase

Description

The ISL9519 is a highly integrated narrow VDC system voltage regulator and battery charger controller. Operating parameters are programmable over the System Management Bus (SMBus). The ISL9519 is designed for applications where the system power source is either the battery pack or the output of the regulator/charger. This makes the max voltage to the system equal to the max battery voltage instead of the max adapter voltage. The ISL9519 also includes a patented system to control trickle charging deeply discharged batteries while maintaining system voltage at a user defined minimum. High efficiency is achieved with a DC/DC synchronous-rectifier buck converter, equipped with diode emulation and variable switching frequency for enhanced light load efficiency and AC-adapter boosting prevention. The ISL9519 can charge one, two or three series connected Lithium-ion cells, at up to 8A charge current. Default settings for 1-, 2- or 3-cell operation at power-up are selected by an external pin. Integrated MOSFET drivers and bootstrap diode result in fewer components and smaller implementation area. Low offset current-sense amplifiers provide high accuracy.

The ISL9519 provides an open drain digital output that indicates the presence of the AC-adapter. The ISL9519 also provides an analog output that indicates the adapter current.

Applications

- Notebook Computers




- Tablet PCs

- Portable Equipment with Rechargeable Batteries



Parameters	ISL9519	Alternatives		
		ISL9237	ISL9520	ISL9238
V _{IN} (min) (V)	4.5	3.2	9	3.2
V _{IN} (max) (V)	22	23.4	22	23.4
Input Current Limit Accuracy (%)	±3		±3	
Battery Charge Voltage (V)	2V to 16.3V in 16mV Steps	2.4 to 13.824	2.5V to 19V in 16mV Steps	2.4 to 18.304
Charging Voltage Accuracy Max (%)	±0.5	±0.5	±0.5	±0.5
Battery Charge Voltage Adjust (%)	16mV steps	8mV steps	16mV steps	8mV steps
Charge Current Limit Accuracy (%)	±3	±3	±3	±3
Trickle Charge Current Limit Accuracy (%)	166A to 346mA	64mA, 128mA, 256mA, or 512mA	256mA	64mA, 128mA, 256mA, or 512mA
Automatic Trickle Charge Typ (V)	4.7		4.7	
Battery Leakage Current Max (µA)	25 (DCIN=0V, No System Load)		25 (DCIN=0V, No System Load)	
Automatic Power Source Selection	Yes	Yes	No	Yes
DC Adapter Detection	Yes	Yes	Yes	Yes
Topology	Variable Frequency Synchronous Buck	R3 modulator	Variable Frequency Synchronous Buck	R3 modulator
Switching Frequency (typ) (kHz)	400	733 or 1000	400	733 or 1000
Max Duty Cycle (%)	99	100		100
Audible Noise	No	No	No	No
Thermal Shutdown (°C)	150 °C	150 °C	150 °C	150 °C
Battery Chemistry	Multi-Cell Li+/Polymer	Multi-Cell Li+/Polymer	Multi-Cell Li+/Polymer	Multi-Cell Li+/Polymer

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Devices

Part Number	Package Type	Weight(g)	Pins	MSL Rating	Peak Temp (°C)	RoHS Status
ISL9519HRTZ	 28 Ld TQFN	0.037	28	3	260	 Details
ISL9519HRTZ-T	 28 Ld TQFN T+R	0.037	28	3	260	 Details
ISL9519IRTZ	 28 Ld TQFN	0.037	28	3	260	 Details
ISL9519IRTZ-T	 28 Ld TQFN T+R	0.037	28	3	260	 Details

Hardware

Part Number	Package Type	Weight(g)	Pins	MSL Rating	Peak Temp (°C)	RoHS Status
ISL9519EVAL1Z				N/A		 Details
ISL9519TQFNEVAL2Z				N/A		 Details