



# CN254 IR Contactless Thermometer

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# IR Contactless Thermometer

## ■ Overview

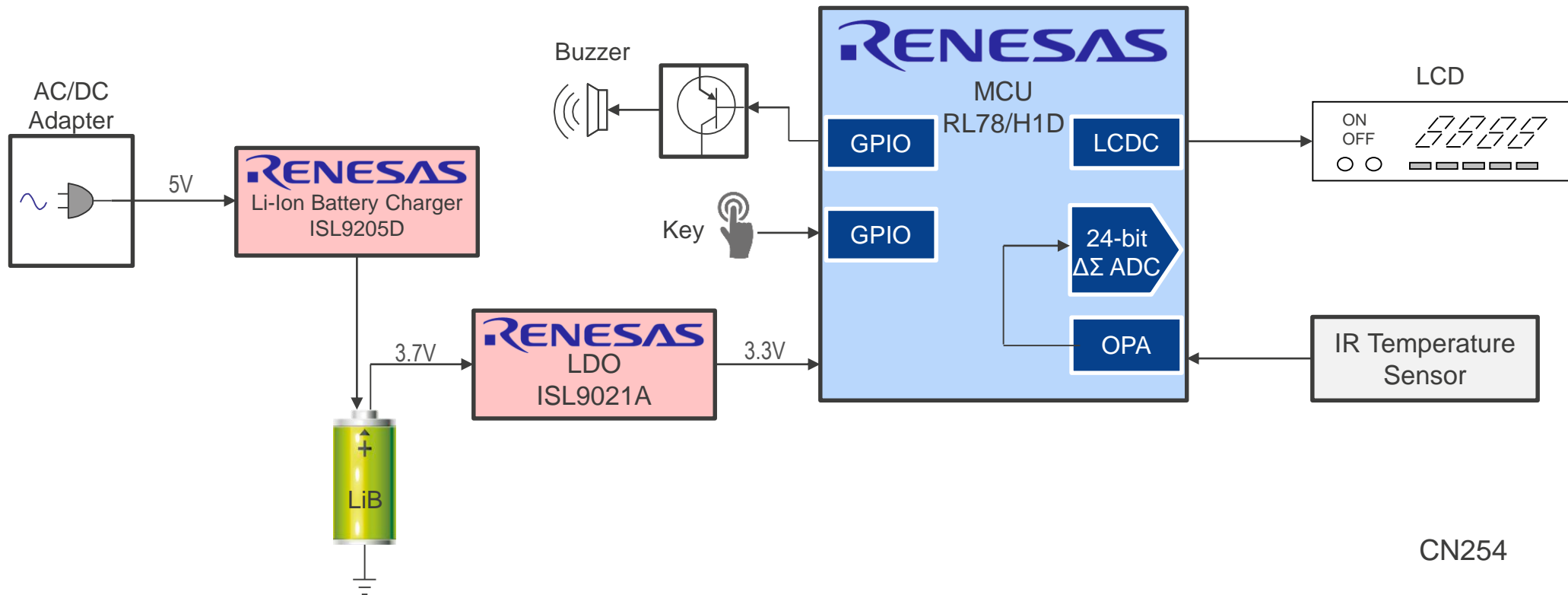
Infrared (IR) contactless thermometers are a safe approach to measuring temperature. This device does not make contact with the skin, and it can accurately and quickly display the temperature, as long as it is within range and close to the forehead. Because of the prevalence of new viruses, there is a huge demand for contactless thermometers. The RL78/H1D includes high precision analog functions, such as a Delta-Sigma ADC, SAR ADC, PGA, and OPA, which are necessary for accurate and fast measurements. It also has a built-in LCD controller/driver which makes the RL78/H1D well suited for IR contactless thermometer solutions. The ISL9205D is a cost-effective, fully integrated high input voltage single-cell Li-ion battery charger. This design also features a high performance LDO, which provides a reliable power system.

## ■ System Benefits

- Renesas' high precision analog MCU provides signal amplification, system control, and an LCD display in one chip
- High performance and high input voltage charger and LDO for an integrated solution

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Device Category	P/N	Key Features
MCU	RL78/H1D R5F11NLxAFP	Up to 128 KB ROM/8 KB SRAM, high precision analog functions such as Delta-Sigma A/D converter, SAR A/D converter, programmable gain amplifiers, operational amplifier, and 8-bit/12-bit D/A converter. It also has a built-in LCD controller/driver which makes the RL78/H1D well suited for healthcare devices.
Power	ISL9205D	High performance charger for single-cell Li-Ion/Polymer batteries
	ISL9021A	250mA single LDO low IQ, low noise and high PSRR LDO

# RL78/H1D – High Precision Analog MCU

## Well Suited for Healthcare Devices and Meters

### High Precision and Rich Analog Functions

- 24-bit Sigma Delta ADC, 10/8-bit SAR ADC
- 8/12-bit DAC
- PGA, op amp and analog SW for PGIA

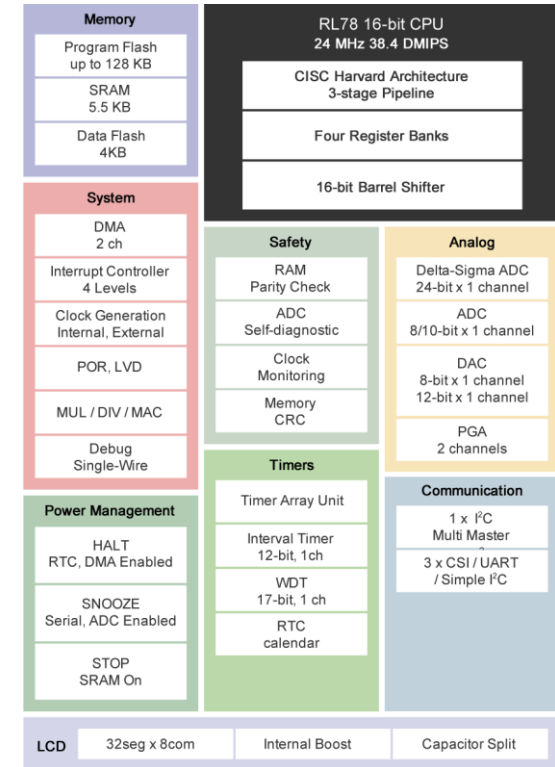
### High Performance and Integrated Capabilities

- 24MHz, up to 128KB Flash and 8KB RAM
- Rich timer functions include sampling output timer detector, high current output to sustain external sensor with CPU active
- Built-in DTC/ELC, LCD controller and rich serial interfaces
- Ultra-low power consumption technology with 3 kinds of low power modes

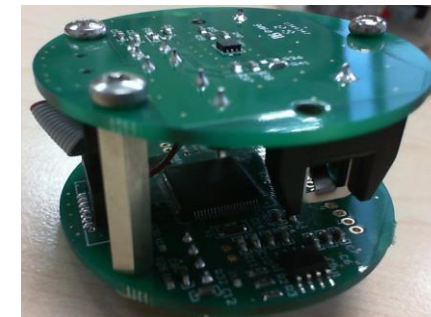
### Key Application

- Water/gas meter, healthcare devices, especially blood pressure monitors

Part #	ROM (Kbytes)	RAM (Kbytes)	LCD Controller Segment Signal	Package
<a href="#">R5F11NGx</a>	96/128	5.5	None	48-pin LQFP
R5F11PLx	96/128	5.5	None	64-pin TFBGA
R5F11NLx	96/128	5.5	27(23)	64-pin LQFP
R5F11NMx	64/96/128	5.5	36(32)	80-pin LQFP
R5F11RMG	128	8	36(32)	80-pin LQFP



RL78/H1D Block Diagram



RL78/H1D based Solution Board



RL78/H1D Blood Pressure Monitoring Kit

# ISL9205 – Li-Ion Battery Charger

## Complete Charger for Li-Ion/Polymer Batteries

### Single IC Solution for Charging

- Integrated pass element and current sensor
- Charge current from 50mA to 900mA

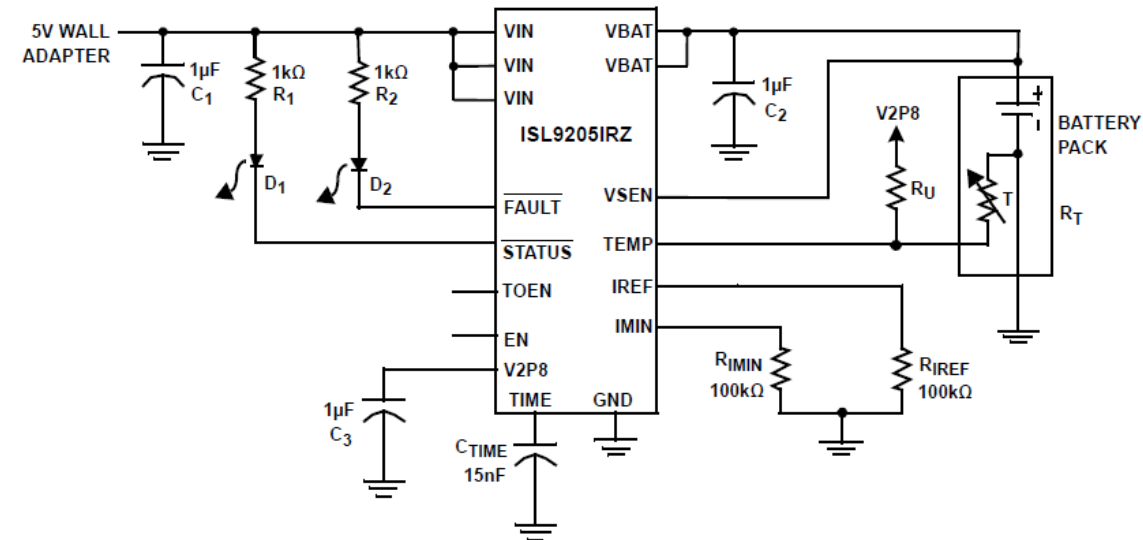
### Multiple Charge Modes

- Adjustable CC & End of Charge current via external resistors
- Ability to operate as pulse charger for current limited inputs
- Trickle charge for fully discharged batteries

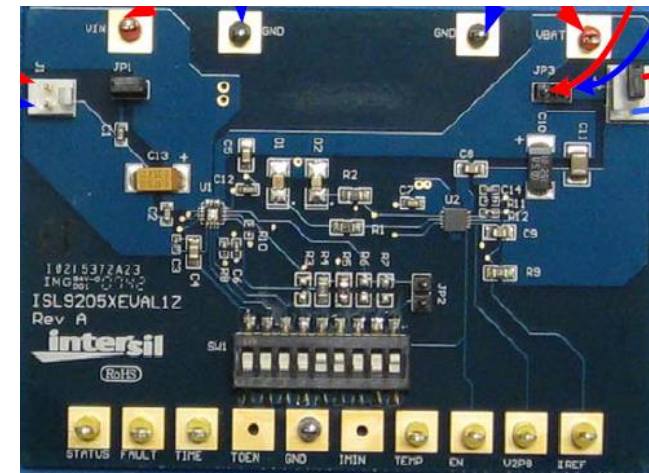
### Protection Features

- Incorporates Thermaguard to prevent over temperature
- Foldback of charge current during over temperature events
- Ability to monitor temperature of battery pack

Part #	V <sub>BAT</sub>	V <sub>sen</sub>	Temp	Timeout	Package
ISL9205IRZ-T	4.2	Yes	Yes	Yes	16L 3x3 TQFN
ISL9205AIRZ-T	4.2	Yes	No	No	10L 3x3 TQFN
ISL9205BIRZ-T	4.2	Yes	No	Yes	10L 3x3 TQFN
ISL9205CIRZ-T	4.256	Yes	No	Yes	10L 3x3 TQFN
<a href="#">ISL9205DIRZ-T</a>	4.2	No	Yes	Yes	10L 3x3 TQFN



Typical Application Circuit



Evaluation Board

# ISL9021/9021A – 250mA Single LDO

## Low IQ, Low Noise and High PSRR LDO

### Stable Output Voltage

- 250mA guaranteed continuous output current
- $\pm 1.8\%$  output accuracy over-temperature/load/line

### High Efficiency

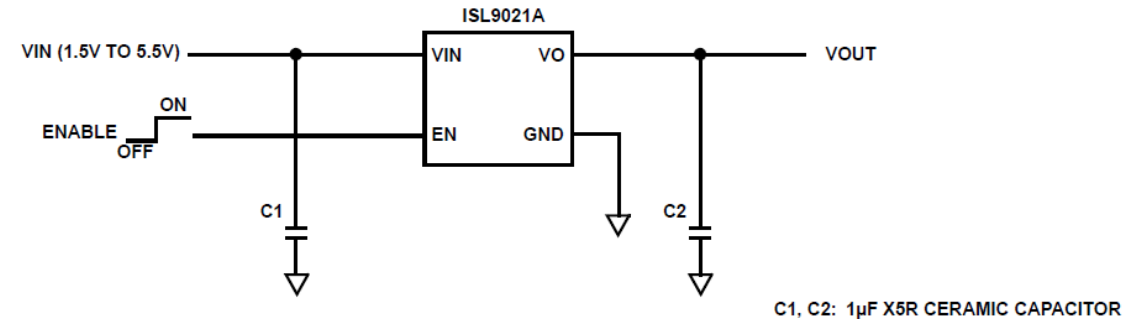
- Dropout voltage:  $< 150\text{mV}$  at 250mA
- Enable Control: typically  $< 0.1\mu\text{A}$ (typ) when disabled

### High Performance

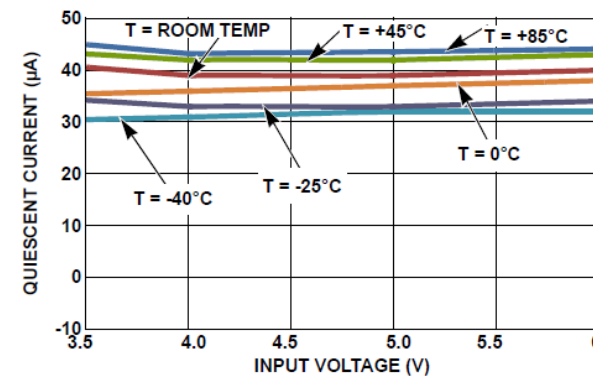
- High PSRR: 75dB at 10kHz, 50dB at 1MHz
- Low quiescent current:  $35\mu\text{A}$

### Excellent Safety

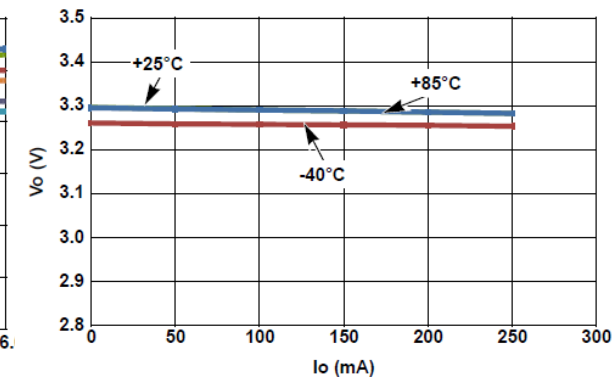
- Soft-start limits input current surge during enable
- Current limit and overheat protection



Typical Application Circuit



Quiescent Current vs Input Voltage



Load regulation vs Temperature

Part #	Vin (V)	Vout (V)	Iout (A)	Package
ISL9021	1.5V to 5.5V	1.2V to 3.3V	0.25	6 Ld $\mu\text{TDFN}$
<a href="#">ISL9021A</a>	1.5V to 5.5V	1.2V to 3.3V	0.25	6 Ld $\mu\text{TDFN}$

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[Renesas.com](https://www.renesas.com)