SiliS Silicon Solutions

integrate our IMAGINATION into your DESIGN...

SS0808

UHF EPC Gen. 2 Chip with sensor and built-in data processing capability

KEY FEATURES

- **High precision temperature accuracy** (±0.2°C[1])
- Wide temperature span (-40÷85°C)
- Low supply voltage (down to 1.2V)
- Battery charge monitor
- RFID:
  - UHF EPC[2] Gen2 (ISO 18000-6/C)
  - 860-960MHz input frequency
  - High reading range (-20 dBm sensitivity)
  - User configurable RF sensitivity
- Selectable data-sampling period from 1 sec. to 18 hours
- **Large internal memory for data logging** (8 kB)
- External capacitive sensor (RH, gas, etc.)
- **High accuracy Internal timer** (±0.5%)
- Additional timer with external 32.768kHz X-tal.
- **Embedded 8051 µProc. for real-time data processing**.
- **Built-in firmware for shelf life prediction**.
- 8kB ROM for shelf life algorithms and firmware

DIE/PACKAGE OPTIONS

- 8' diced wafers (tested) for mounting on inlay
- Plastic package available on request

SHORT DESCRIPTION

SS0808 is a UHF EPC Gen2 RFID device featuring temperature-sensing functionality, data logging and real-time data processing. Thanks to the large supply voltage, the device can be powered with a single-cell paper battery, making SS0808 an ideal device for advanced battery-assisted labels.

The chip has an integrated temperature sensor and can be interfaced to an additional capacitive sensor (for measurement of RH, gas concentration, etc.).

SS0808 is suited for long-time monitoring thanks to the 8-kB internal memory. The embedded data-processing capability allows real-time calculation of parameters such as the remaining shelf-life of tagged item. The quality of the storage of the item in the supply chain must be readily and precisely assessed. The download of the complete data-log (up to 8kB) may thus be performed off-line when a fault in the supply chain (affecting the shelf-life of the item) is detected.

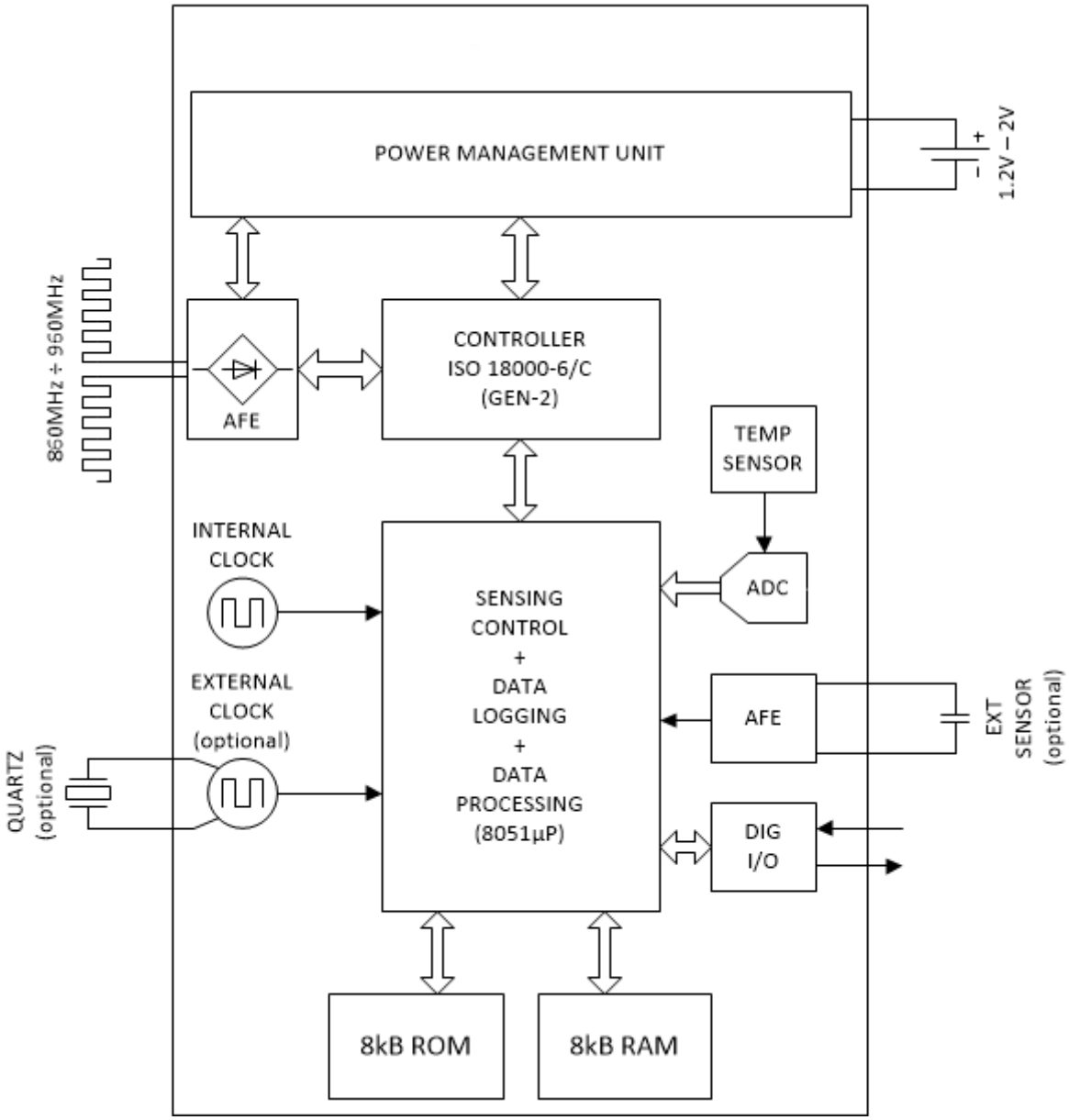
MAINSTREAM APPLICATIONS

- **Monitory and inventory of items sensitive to temperature or other environmental param.s**
- Food and Pharmaceutical supply chains
- Monitoring of medical and chemical products
- Long-range shipment monitoring logging
- Checking of temperature and other critical parameters (RH, gas, etc.) in supply chain

1 In -10°C to +10°C temperature range, high accuracy option, suited for perishable food chain monitoring. Other temp. range available under request.

2 EPC Global certification pending

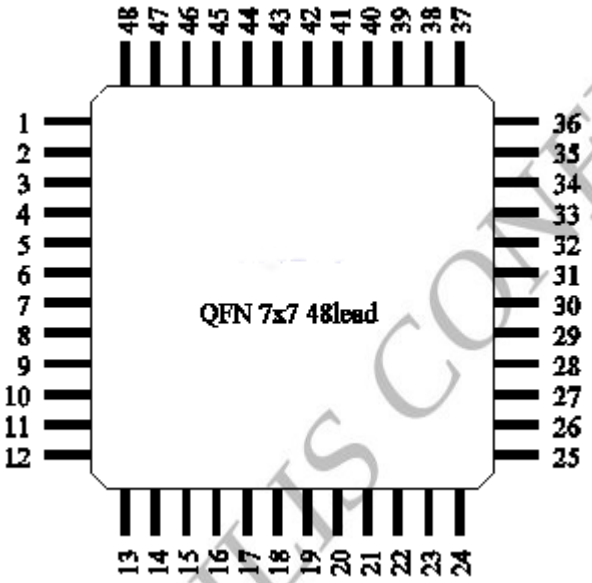
BLOCK DIAGRAM



PACKAGED VERSION

N.	Name	Description	Mandatory/ Optional
1	BATTERY	Positive supply	Mandatory
2	NC		
3	EXT CAP SENSOR POS.	Positive pin for external capacitive sensor	Optional
4	EXT CAP SENSOR NEG.	Negative pin for external capacitive sensor	Optional
5	XTAL POS.	Positive pin for external 32.768kHz crystal (optional for ppm time accuracy)	Optional
6	XTAL NEG.	Negative pin for external 32.768kHz crystal	Optional
7	NC		
8	NC		
9	NC		
10	NC		
11	NC		
12	NC		
13	GND	Negative supply (ground)	Mandatory
14	NC		
15	NC		
16	NC		
17	NC		
18	NC		
19	NC		
20	NC		
21	NC		
22	NC		
23	NC		
24	NC		
25	BATTERY	Positive supply	Mandatory
26	NC		
27	NC		
28	NC		
29	NC		
30	NC		
31	RED LED	Red Led for Manual Interface	Optional
32	GREEN LED	Green Led for Manual Interface	Optional
33	NC		
34	NC		
35	NC		
36	GND	Negative supply (ground)	Mandatory
37	NC		
38	NC		

39	NC		
40	GND	Negative supply (ground)	Mandatory
41	PUSH BUTTON	Pushbutton for Manual Interface	Optional
42	NC		
43	NC		
44	BATTERY	Positive supply	Mandatory
45	NC		
46	NC		
47	RF ANTENNA INP	RF antenna front-end	Mandatory
48	RF ANTENNA INN	RF antenna front-end	

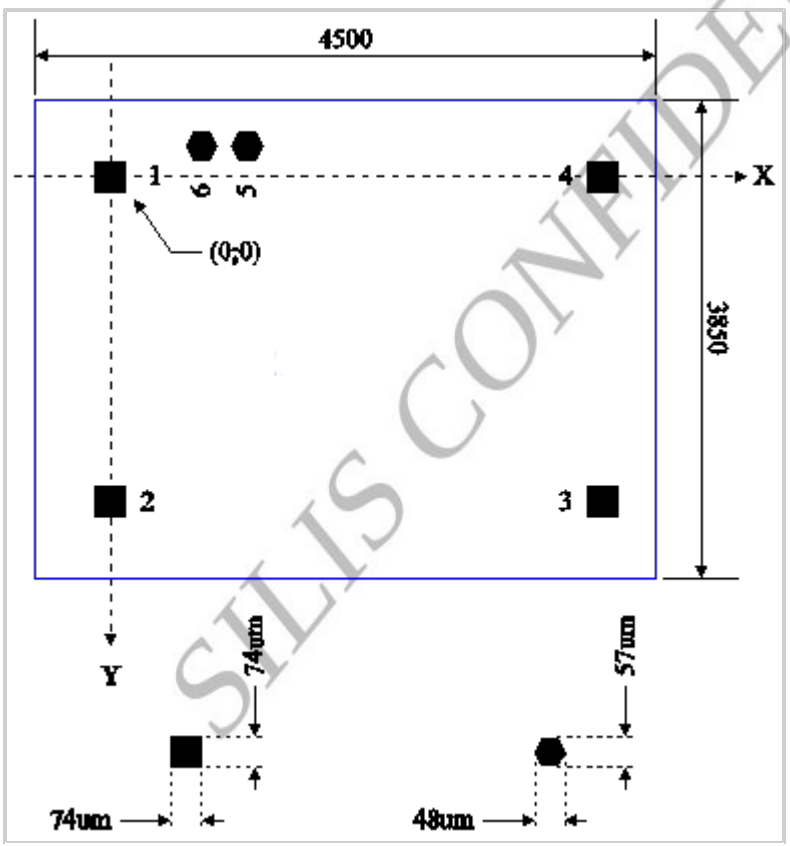


NOTE:

Only indicated pins must be connected. All other pins must be left floating

NAKED DIE VERSION

N.	Name	Description	Mandatory/ Optional
1	BATTERY	Positive supply	Mandatory
2	GND	Negative supply (ground)	Mandatory
3	BATTERY	Positive supply	Mandatory
4	GND	Negative supply (ground)	Mandatory
5	RF ANTENNA INP	RF antenna front-end	Mandatory for RF front-end.
6	RF ANTENNA INN	RF antenna front-end	



N.	X [µm]	Y [µm]
1	0	0
2	0.675	3367.585
3	3955.585	3367.585
4	3956.260	0
5	490.630	-104.875
6	178.630	-104.875

NOTE:

All coordinates are expressed in µm considering the center of the pad

Figure is not scaled and represents an approximate distribution

