

1. General Description

ADD1010 is a Power Line Communications SOC which implements a full PLC node using FSK modulation.

It includes an enhanced 8051 microcontroller, a Medium Access Controller (MAC) and a Modem circuit for Power Line medium. A complete set of Peripherals has been developed achieving a high grade of versatility, providing a low cost and small size solution for AMR & AMM system using narrow band power line communications.



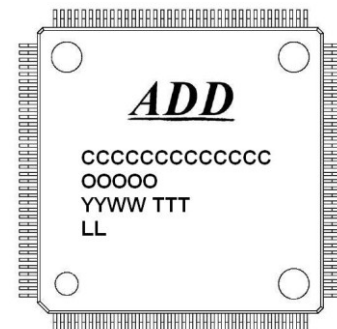
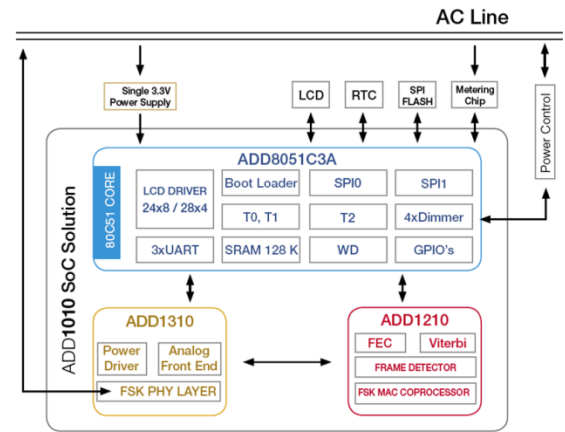
144-pin plastic LQFP
(16 x 16 mm)

Features:

- Power Line Carrier Modem for 50 and 60Hz mains
- 8 Programmable Carrier Frequencies from 60 to 132.5kHz
- Baudrate Selectable: 600 to 4800 bps
- Compliant to EHS and KONNEX
- Half Duplex
- Receiver Sensitivity: Up to 44dBμVrms
- Convolutional coding, Viterbi decoding
- CRC and FEC error correction
- Enhanced 8051 core, Average speedup of 5 times
- 128Kbytes internal SRAM
- 24x8/28x4 Segments LCD Driver
- Auto Boot-loading Program from Serial Flash
- In-circuit Serial Flash Programming
- Programmable Watchdog
- 3 x UART
- SPI to Serial Flash and external RTC
- Buffered SPI to external metering IC
- Quadruple Dimmer in/out
- Power Supply 3.3v
- Pb-Free and RoHS compliant
- Ambient Temperature Range: -40°C to +85°C

Typical Applications:

- Automated Meter Reading (AMR) & Advanced Meter Managing (AMM)
- Street lighting
- Home Automation



MARKING DIAGRAM

| | |
|---------------------|-----------------------|
| ADD | =Customer Logo |
| CCCCCCCCCCCC | =Customer Part number |
| OOOOO | =Country of Origin |
| YYWW | =Year/week code |
| TTT | =Control Code |
| LL | =Lead Free Code |

Ordering Code : **ADD1010AQF144 Pb-Free**

1.1 Block Diagram

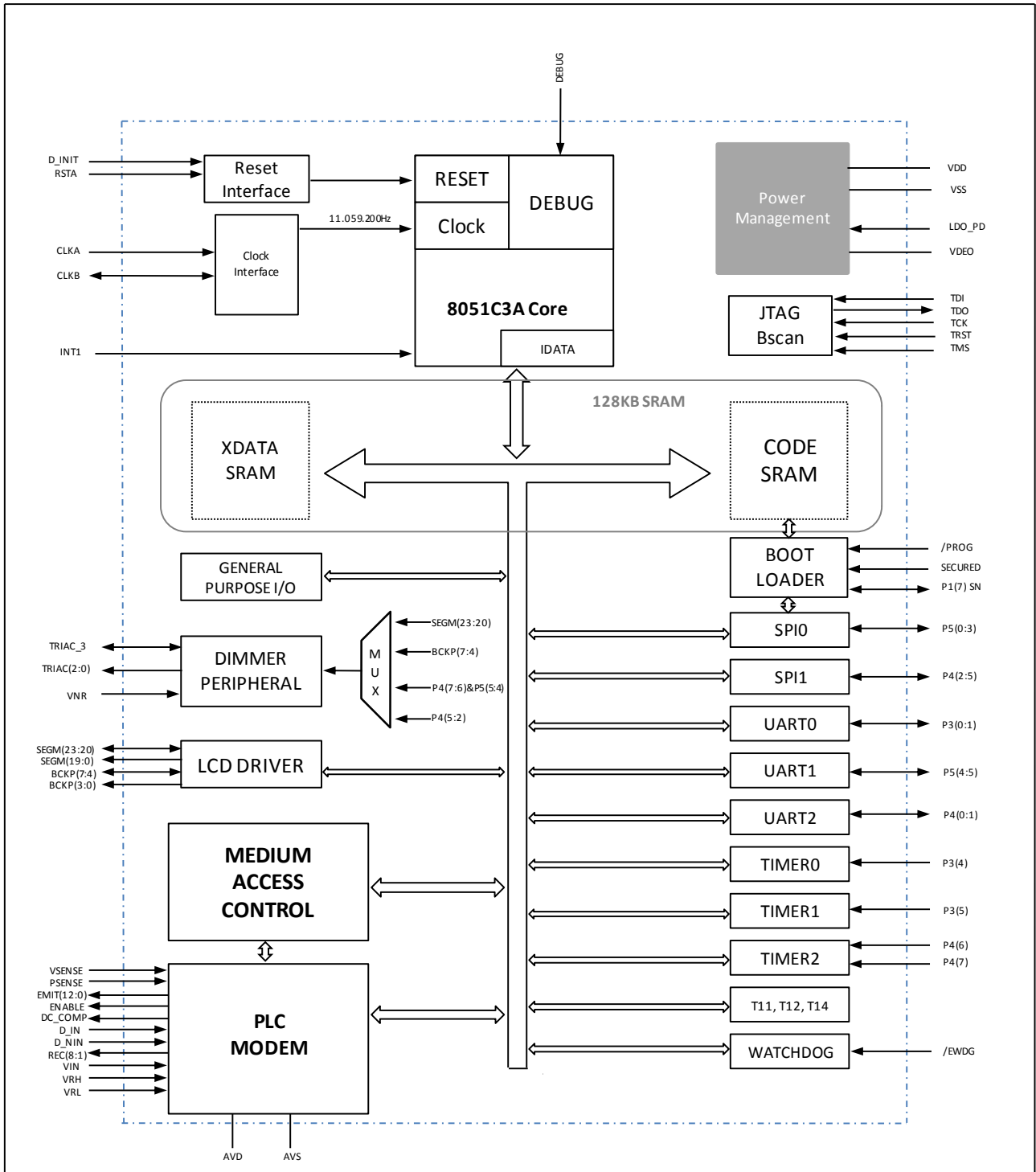


Figure 1. ADD1010 Block Diagram

1.2 Pin Assignment

The following figure illustrates the pinout of the ADD1010 LQFP144 package:

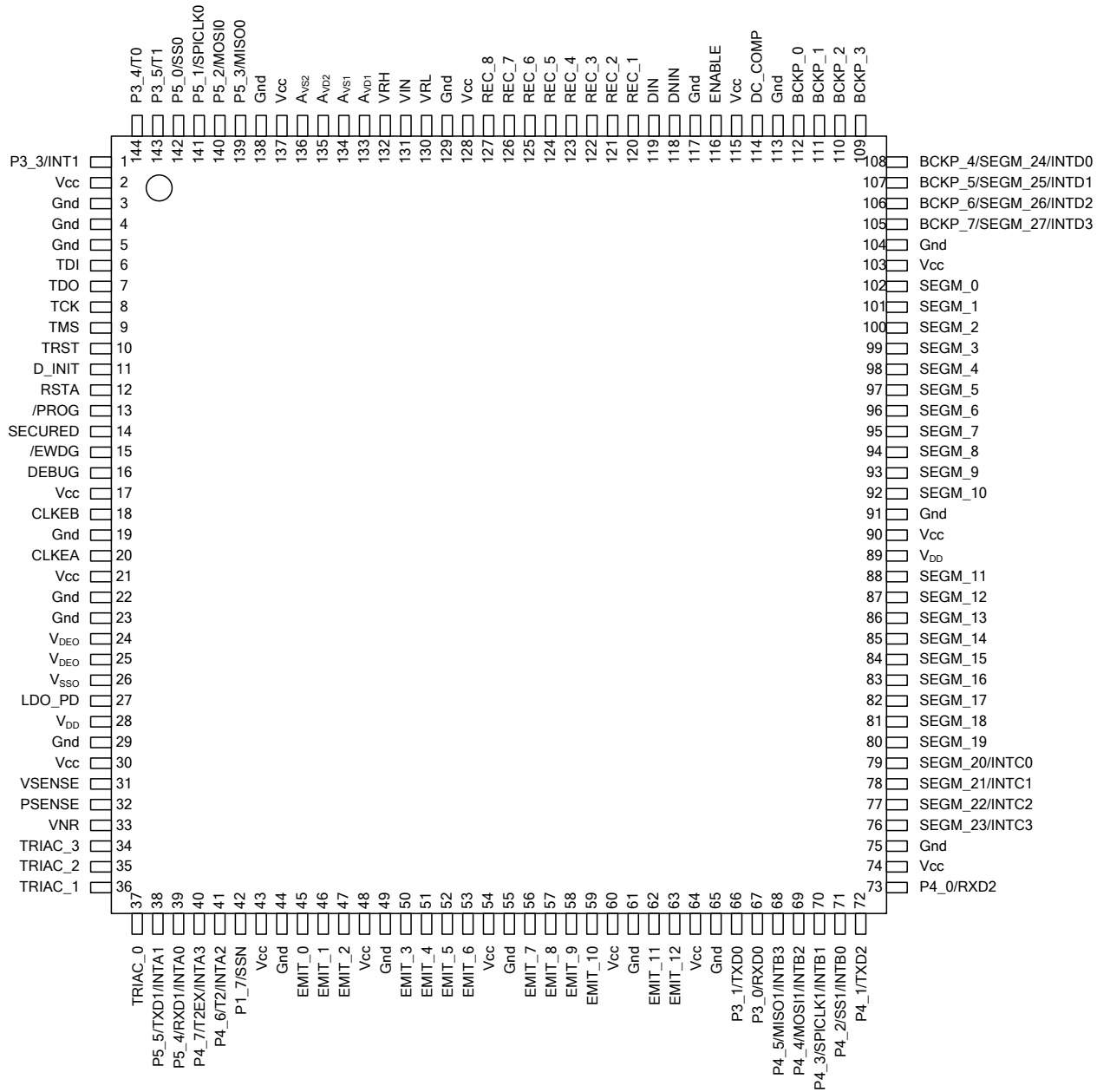


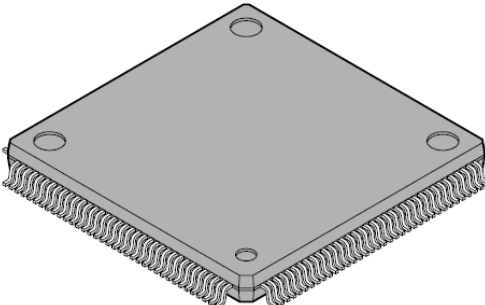
Figure 2. LQFP pin assignment

2. Mechanical data

144-pin plastic LQFP (16x16mm) Pb-free, RoHS compliant.

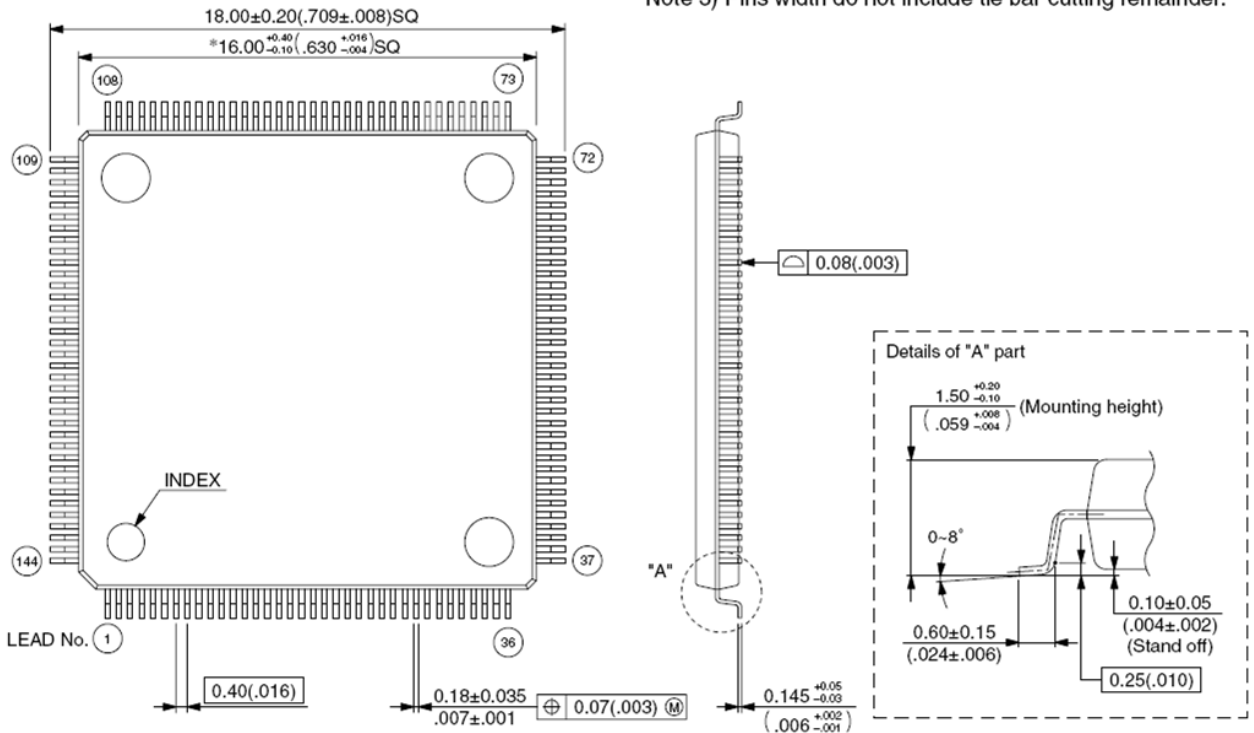
Ambient Temperature Range: -40°C to +85°C.

Ordering Code: **ADD1010AQF144**

| | | |
|---|--------------------------------|-----------------------|
|  <p>144-pin plastic LQFP</p> | Lead pitch | 0.40 mm |
| | Package width × package length | 16.0 × 16.0 mm |
| | Lead shape | Gullwing |
| | Sealing method | Plastic mold |
| | Mounting height | 1.70 mm MAX |
| | Weight | 0.88 g |
| | Code (Reference) | P-LFQFP144-16×16-0.40 |

Dimensions in mm (inches).
 Note: The values in parentheses are reference values.

Note 1) * : These dimensions include resin protrusion.
 Resin protrusion is +0.25(.010)Max(each side).
 Note 2) Pins width and pins thickness include plating thickness.
 Note 3) Pins width do not include tie bar cutting remainder.

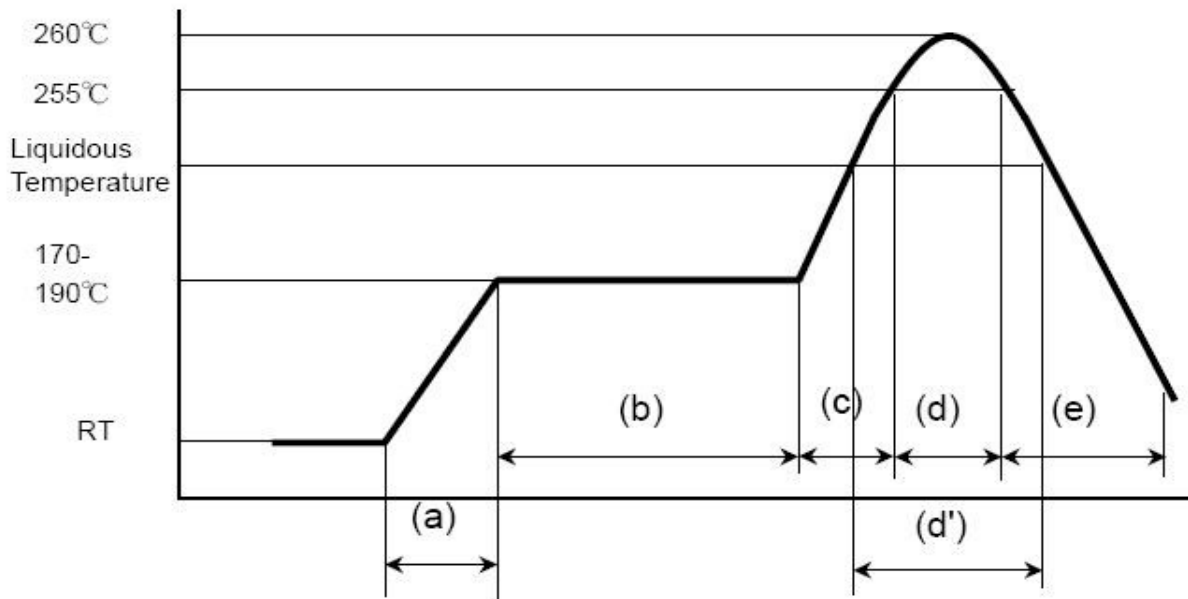


2.1 Recommended mounting conditions

2.1.1 Conditions of Standard Reflow

| Items | Contents | |
|----------------------|--|---|
| Method | IR(Infrared Reflow) / Convection | |
| Times | 2 | |
| Floor life | Before unpacking | Please use within 2 years after production |
| | From unpacking to second reflow | Within 8 days |
| | In case over period of floor life | Baking with 125°C +/- 3°C for 24hrs +2hrs/-0hrs is required. Then please use within 8 days. (please remember baking is up to 2 times) |
| Floor life condition | Between 5°C and 30°C and also below 70%RH required. (It is preferred lower humidity in the required temp range.) | |

Temperature Profile



H rank: 260°C Max

(a) Average ramp-up rate: 1°C/s to 4°C/s

(b) Preheat & Soak: 170°C to 190°C, 60s to 180s

(c) Average ramp-un rate: 1°C/s to 4°C/s

(d) Peak temperature: 260°C Max, Up to 255°C within 10s

(d') Liquidous temperature: Up to 230°C within 40s or
 Up to 225°C within 60s or
 Up to 220°C within 80s

(e) Cooling: Natural cooling or forced cooling

****Temperature on the top of the package is measured***

2.1.2 Manual Soldering

| Items | Contents | |
|----------------------|---|---|
| Floor life | Before unpacking | Please use within 2 years after production |
| | From unpacking to Manual Soldering | Within 2 years after production (No control required for moisture adsorption because it is partial heating) |
| Floor life condition | Between 5°C and 30°C and also below 70%RH required. (It is preferred lower humidity in the required temp range.) | |
| Solder Condition | Temperature of soldering iron: Max 400°C, Time: Within 5 seconds/pin *Be careful for touching package body with iron | |