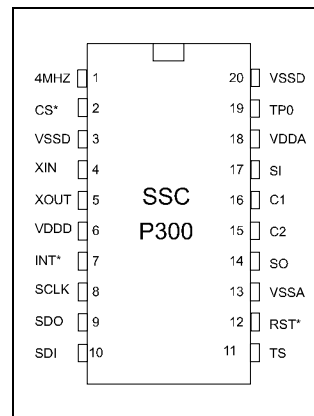


SSC P300

PL Network Interface Controller IC, CEBus Compliant

Features

- Enables low-cost CEBus[®] Standard compatible products
- EIA-600 (CEBus Standard) Data Link Layer services
- EIA-600 Physical Layer transceiver
- Spread Spectrum Carrier[™] power line technology
- SPI host processor interface
- Data Link, Controller, and Monitor Modes
- Single +5 Volt power supply requirement
- 20 pin SOIC package

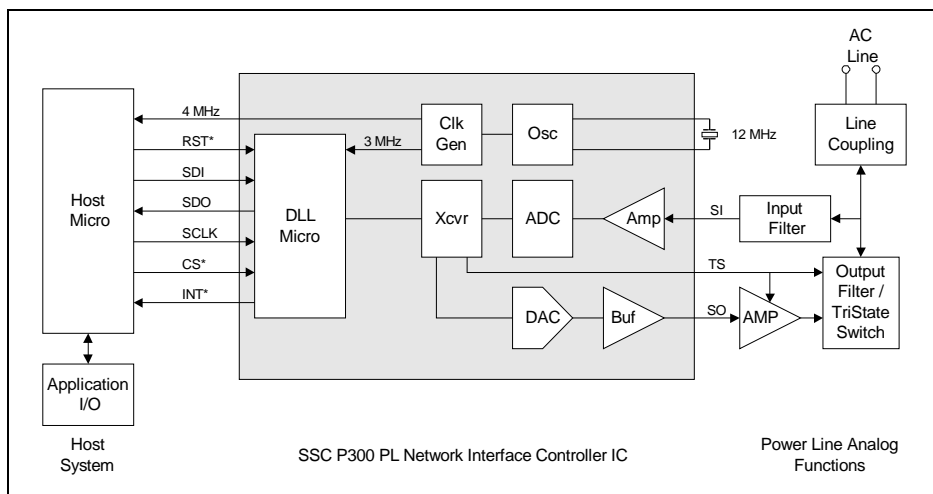


Introduction

The Intellon SSC P300 PL Network Interface Controller is a highly integrated power line transceiver and channel access interface for implementing CEBus Standard compatible products. The SSC P300 provides the Data Link Layer (DLL) control logic for EIA-600 channel access and communication services, a Spread Spectrum Carrier (SSC) power line transceiver, signal conditioning circuitry, and an SPI compatible host interface. A minimum of external circuitry is required to connect the SSC P300 to the power line. Superior performance is achieved using the SSC P300 in conjunction with the SSC P111 Media Interface IC. The SSC P300 is used with a host micro-controller to construct CEBus Standard compatible products and serves as the basic communications element in a variety of low-cost power line networking applications.

The inherent reliability of SSC signaling technology and incorporation of basic data link functionality combine to provide substantial improvement in network and communication performance over other power line communication methods. The SSC P300 also makes an excellent low cost network interface for twisted pair and DC power systems. A typical CEBus Standard power line node using the SSC P300 is illustrated below.

SSC P300 Node Block Diagram



SSC P300 Description

Resource intensive Data Link functions and Physical Layer services of the protocol are provided by the SSC P300. Specific DLL services include transmission and reception of packets, byte-to-symbol conversion for transmit packets, symbol-to-byte conversion for received packets, transmit channel access (based on packet priority and EIA-600 access rules) and CRC generation and checking. The Host Microcontroller interprets commands and data for the User Application and performs end to end protocol functions. Output signal amplification and filtering, input signal filtering, and node coupling to the power line is accomplished using external components.

SSC P300 interface to the Host system is supported through a Serial Peripheral Interface (SPI) using five I/O lines. A hardware, active-low, Reset (RST*) signal is also supplied by the Host system. A simple protocol is used to transfer commands and data between the host and SSC P300. These commands and data include packets to be transmitted, received packets, status and configuration information.

Analog data is transferred between the AC power line and the SSC P300 over the Signal In (SI) and Signal Out (SO) pins. In transmit mode, SSC "chirps" from the SSC P300 SO pin are routed to the Output Amplifier, which is enabled by the SSC P300 Tristate (TS) signal. Once amplified, the output signal passes through a low-pass Output Filter, which removes harmonic energy (distortion) from the transmit signal, and on to the Tristate Switch. This switch is also enabled by the SSC P300 TS signal and serves to isolate the amplifier and filter from the power line coupling circuit during receive operation. When the Tristate Switch is enabled, the power line communication signal is routed to the 60 Hz power line through the Power Line Coupling circuit.

Specifications

| Symbol | Parameter | Min | Typical | Max | Unit |
|------------------|-----------------------|-----|----------------|-----|------|
| V _{DD} | DC Supply Voltage | 4.5 | 5.0 | 5.5 | V |
| F _{OSC} | Oscillator Frequency | | 12 +/- 0.01% | | MHz |
| T _A | Operating Temperature | -40 | +25 | +85 | °C |
| | Humidity | | non-condensing | | |

Electrical Characteristics

Conditions: V_{DD} = 4.5 to 5.5 V T = -40 to +85°C

| Symbol | Parameter | Min | Typical | Max | Units |
|-----------------|--------------------------------------|-----|---------|-------|------------------|
| V _{OH} | Minimum High-level Output Voltage | 2.4 | | | V |
| V _{OL} | Maximum Low-level Output Voltage (1) | | | 0.4 | V |
| V _{IH} | Minimum High-level Input Voltage | 2.0 | | | V |
| V _{IL} | Maximum Low-level Input Voltage | | | 0.8 | V |
| Hys | Minimum Input Hysteresis | 350 | | | mV |
| I _{IL} | Maximum Input Leakage Current | | | +/-10 | μA |
| V _{SO} | SSC Signal Output Voltage (2) | | 4 | | V _{P-P} |
| I _{DD} | Total Power Supply Current | | 25 | | mA |
| | Latchup (3) | 150 | | | mA |

Notes: 1) I_{OL} = 2 mA 2) Z_L = 2K Ω || 10 pF 3) JEDEC JC -40.2

Ordering Information

| Part No. | Description | Tube Qty. | Package |
|----------|---|-----------|-------------|
| SSC P300 | PL Network Interface Controller IC, CEBus Compliant | 38 | 20 pin SOIC |