

TMS320F28PLC83 Power Line Communication (PLC) Microcontroller Technical Brief

1 Introduction

This technical brief introduces the features of the TMS320F28PLC83 power line communication microcontroller unit (MCU).

1.1 Features

- Dedicated for Power Line Communications
 - Supports Popular PLC Standards Such as PRIME, G3-PLC, IEEE-1901.2, ITU G.9903, and ITU G.9904
 - Supports CENELEC A (35.9 kHz–90.6 kHz) and CENELEC B (98.4 kHz–121.8 kHz) Frequency Bands
 - Supports TI-Proprietary PLC Lite Standard
 - Developed Together With the AFE031 Analog Front End for PLC
- Supported by Texas Instruments plcSUITE Software
 - Complete Software Stack for all Supported PLC Standards
 - PHY, MAC, Networking, and Transport Layers
- Serial Interface to Host MCU
 - Complete Set of APIs to Control Modem
 - Object Code License Included With TMS320F28PLC83 MCU
- Memory
 - 256KB of On-Chip Flash
 - 100KB of RAM
- Host Communications Interfaces
 - Serial Communications Interface (SCI)
 - Serial Peripheral Interface (SPI)
- Security
 - Code Security Module with 128-Bit Password
 - Blocks JTAG Access When Enabled
- 80-Pin PN Low-Profile Quad Flatpack (LQFP)
- Industrial Temperature Range: –40°C to 105°C

1.2 Applications

- Electric Meters
- Power Line Communications Data Concentrators
- Solar Inverters

1.3 Description

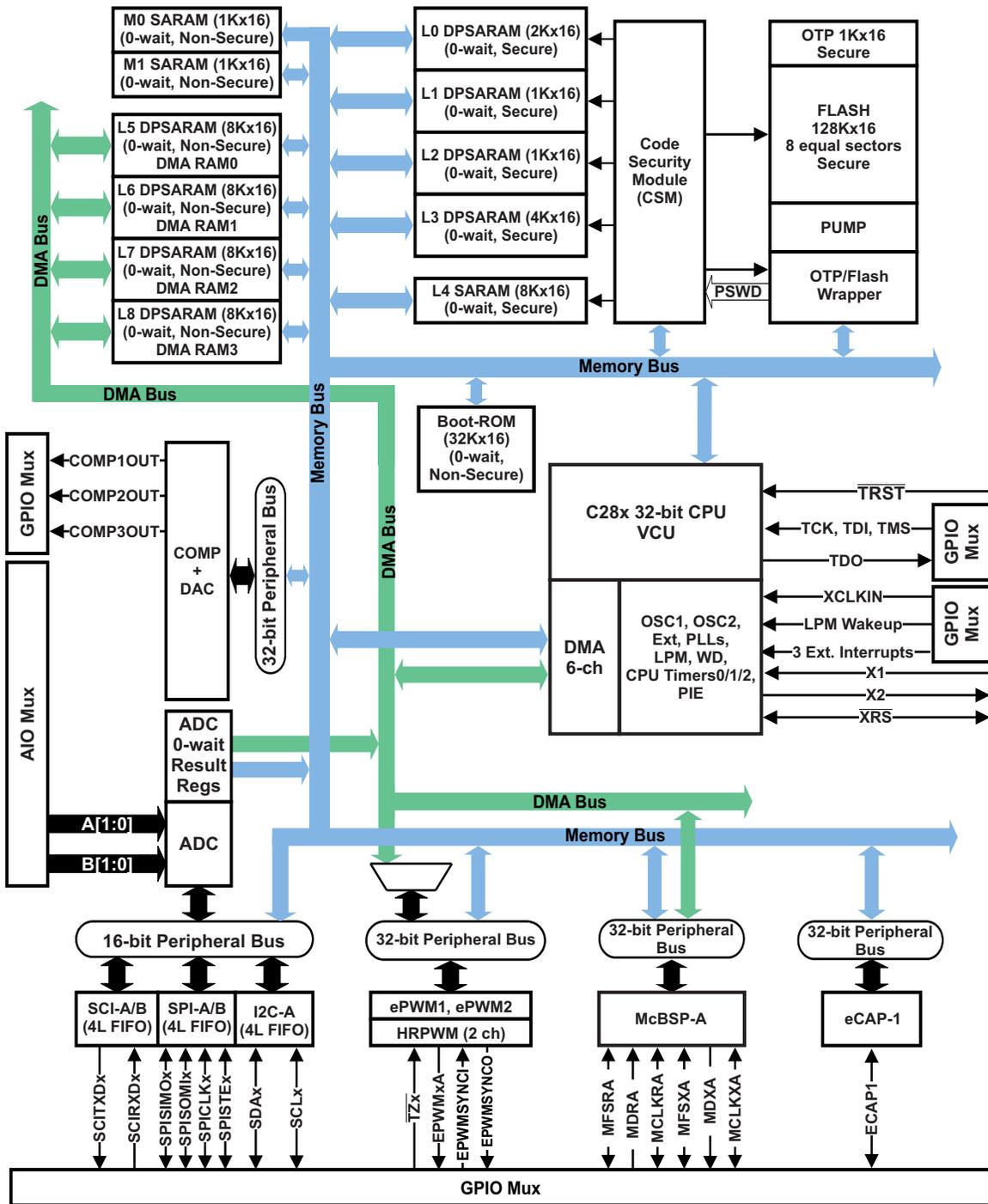
The Texas Instruments TMS320F28PLC83 PLC MCU is optimized to meet the requirements for PLC communications networks in Smart Grid deployments around the world.

The F28PLC83 MCU features the C28x 32-bit CPU that is capable of executing the narrowband OFDM PLC modem standards, which adhere to key international and industry standards such as PRIME, G3-PLC, IEEE-1901.2, and ITU G.9903/9904 in the CENELEC frequency bands.

The F28PLC83 MCU is optimized to work with the AFE031 PLC analog front end. The AFE031 is an integrated PLC AFE that is capable of a transformer coupled connected to the AC mains power line. It is ideal for driving high-current, low-impedance lines driving up to 1.9 A into reactive loads. The AFE031 is compliant to CENELEC A, B, C, and D (EN50065-1, -2, -3, -7).



1.4 Functional Block Diagram



A. Not all peripheral pins are available at the same time due to multiplexing.

Figure 1-1. Functional Block Diagram

1.5 Trademarks

All trademarks are the property of their respective owners.

PRODUCT PREVIEW

PACKAGING INFORMATION

Orderable Device	Status (1)	Package Type	Package Drawing	Pins	Package Qty	Eco Plan (2)	Lead/Ball Finish (6)	MSL Peak Temp (3)	Op Temp (°C)	Device Marking (4/5)	Samples
TMS320F28PLC83PNT	ACTIVE	LQFP	PN	80	119	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-3-260C-168 HR	-40 to 105	F28PLC83PNT TMS320	Samples
TMS320F28PLC83PNTR	ACTIVE	LQFP	PN	80	1000	Green (RoHS & no Sb/Br)	CU NIPDAU	Level-3-260C-168 HR	-40 to 105	F28PLC83PNT TMS320	Samples

(1) The marketing status values are defined as follows:

ACTIVE: Product device recommended for new designs.

LIFEBUY: TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

NRND: Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

PREVIEW: Device has been announced but is not in production. Samples may or may not be available.

OBsolete: TI has discontinued the production of the device.

(2) Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

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(3) MSL, Peak Temp. - The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

(6) Lead/Ball Finish - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead/Ball Finish values may wrap to two lines if the finish value exceeds the maximum column width.

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