Actel POWER MATTERS

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CoreFROM

DirectCore

Product Summary

Intended Use

- Intended for Use in a Processor-Based Subsystem to Access On-Chip FROM in the Memory Map

Key Features

- Supplied in SysBASIC Core Bundle
- Tiny Area
- Access FROM Memory from Software

Benefits

- Allows FROM to Appear in Your Memory Map (read only)
- Auto Stitch CoreFROM in CoreConsole for Rapid Development
- Compatible with AMBA, CoreMP7, and Cortex™-M1

Supported Device Families

- Fusion
- IGLOO®
- IGLOOe
- ProASIC®3L
- ProASIC3
- ProASIC3E

Synthesis and Simulation Support

- Supported in the Actel Libero® Integrated Design Environment (IDE)

Verification and Compliance

- Compliant with AMBA

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General Description

CoreFROM is an APB slave that provides a means to access the 128-byte FROM available in Fusion, IGLOO, ProASIC, and ProASIC3E devices.

If you want to access the on-chip FROM, add CoreFROM to your design and connect it to the APB Bus. Aside from the connections to the APB Bus, there are two other ports on the component. These are named FROMAddr (7-bit FROM address bus) and FROMData (8-bit FROM data bus) and should be routed to the top-level of your subsystem design in CoreConsole for subsequent connection to an FROM instance.

Use the SmartGen core generator, available in Libero IDE, to generate an FROM instance and to set the values to be programmed into the FROM.

More information on using the FROM on Actel devices can be found in the "FlashROM in Actel's Low Power Flash Devices" chapter of any FPGA fabric user's guide, such as the *IGLOO FPGA Fabric User's Guide*.

Connecting CoreFROM in CoreConsole

Table 1 lists the ports present on the CoreFROM and describes how to connect these in CoreConsole.

Table 1 • **FROM Access Connections**

Connection	CoreConsole Label	Description
Required Connections		
APB Slave Interface	APBslave	Connect this interface to any available slave slot on the APB Bus.
FROM Address Bus	FROMAddr	7-bit FROM address bus This port should be connected to the subsystem top level for subsequent connection to an FROM instance.
FROM Data Bus	FROMData	8-bit FROM data bus This port should be connected to the subsystem top level for subsequent connection to an FROM instance.

Programmer's Model

When CoreFROM is connected to the FROM Access component, the contents of the FROM appear at the base address of the APB slot where CoreFROM Access component is located. The FROM contents are also aliased throughout this APB slot.

The data stored in the FROM is read only and cannot be changed by the processor.

The FROM data can only be accessed one byte at a time; it is not possible to read a word or half-word of FROM data in one step.

Table 2 shows how the FROM data appears to the processor.

Table 2 • **FROM Data**

Offset	Data			
Base address + 0x00	Byte 3	Byte 2	Byte 1	Byte 0
Base address + 0x04	Byte 7	Byte 6	Byte 5	Byte 4
Base address + 0x08	Byte 11	Byte 10	Byte 9	Byte 8
Base address + 0x0C	Byte 15	Byte 14	Byte 13	Byte 12
Base address + 0x10	Byte 19	Byte 18	Byte 17	Byte 16
Base address + 0x14	Byte 23	Byte 22	Byte 21	Byte 20
Base address + 0x18	Byte 27	Byte 26	Byte 25	Byte 24
Base address + 0x1C	Byte 31	Byte 30	Byte 29	Byte 28
Base address + 0x20	Byte 35	Byte 34	Byte 33	Byte 32
Base address + 0x24	Byte 39	Byte 38	Byte 37	Byte 36
Base address + 0x28	Byte 43	Byte 42	Byte 41	Byte 40
Base address + 0x2C	Byte 47	Byte 46	Byte 45	Byte 44
Base address + 0x30	Byte 51	Byte 50	Byte 49	Byte 48
Base address + 0x34	Byte 55	Byte 54	Byte 53	Byte 52
Base address + 0x38	Byte 59	Byte 58	Byte 57	Byte 56
Base address + 0x3C	Byte 63	Byte 62	Byte 61	Byte 60
Base address + 0x40	Byte 67	Byte 66	Byte 65	Byte 64
Base address + 0x44	Byte 71	Byte 70	Byte 69	Byte 68
Base address + 0x48	Byte 75	Byte 74	Byte 73	Byte 72
Base address + 0x4C	Byte 79	Byte 78	Byte 77	Byte 76
Base address + 0x50	Byte 83	Byte 82	Byte 81	Byte 80
Base address + 0x54	Byte 87	Byte 86	Byte 85	Byte 84
Base address + 0x58	Byte 91	Byte 90	Byte 89	Byte 88

Table 2 • **FROM Data (Continued)**

Offset	Data			
Base address + 0x5C	Byte 95	Byte 94	Byte 93	Byte 92
Base address + 0x60	Byte 99	Byte 98	Byte 97	Byte 96
Base address + 0x64	Byte 103	Byte 102	Byte 101	Byte 100
Base address + 0x68	Byte 107	Byte 106	Byte 105	Byte 104
Base address + 0x6C	Byte 111	Byte 110	Byte 109	Byte 108
Base address + 0x70	Byte 115	Byte 114	Byte 113	Byte 112
Base address + 0x74	Byte 119	Byte 118	Byte 117	Byte 116
Base address + 0x78	Byte 123	Byte 122	Byte 121	Byte 120
Base address + 0x7C	Byte 127	Byte 126	Byte 125	Byte 124

Resource Requirements

The utilization for CoreFROM in a ProASIC3 device is 20 tiles.

Ordering Information

CoreFROM is included in the SysBASIC core bundle that is supplied with the Actel CoreConsole IP Deployment Platform tool. The obfuscated RTL version of SysBASIC (SysBASIC-OC) is available for free with CoreConsole. The source RTL version of SysBASIC (SysBASIC-RM) can be ordered through your local Actel sales representative. CoreFROM cannot be ordered separately from the SysBASIC core bundle.

List of Changes

The following table lists critical changes that were made in the current version of the document.

Previous Version	Changes in Current Version (v2.1)	Page
v2.0	The "Supported Device Families" section was updated to include ProASIC3L.	1
	The "Resource Requirements" section was updated to change ProASIC3E to ProASIC3.	3
Advanced v0.1	The "Product Summary" section and "General Description" section were updated to include Cortex-M1 and IGLOO/e information.	1

Datasheet Categories

In order to provide the latest information to designers, some datasheets are published before data has been fully characterized. Datasheets are designated as "Product Brief," "Advanced," "Production," and "Datasheet Supplement." The definitions of these categories are as follows:

Product Brief

The product brief is a summarized version of a datasheet (advanced or production) containing general product information. This brief gives an overview of specific device and family information.

Advanced

This datasheet version contains initial estimated information based on simulation, other products, devices, or speed grades. This information can be used as estimates, but not for production.

Unmarked (production)

This datasheet version contains information that is considered to be final.

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