



Migration Guide for Numonyx™ Wireless Flash Memory (W18, 130 nm) to Numonyx™ Wireless Flash Memory (W18, 90 nm)

Application Note - 826

November 2007

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Revision History

Date of Revision	Revision	Description
04/04/2005	-001	Original version
November 2007	02	Applied Numonyx branding.

1.0 Introduction

This application note describes migrating from the Numonyx™ Wireless Flash Memory (W18 130 nm) device to the Numonyx™ Wireless Flash Memory (W18 90 nm) device.

Note: For the sake of brevity, throughout the rest of this document, the Numonyx™ Wireless Flash Memory (W18 130) nm device is referred to as the W18 130 nm device. The Numonyx™ Wireless Flash Memory (W18) 90 nm device is referred to as the W18 90 nm device.

This document was written based on device information available at the time. Any changes in specifications to either device might not be reflected in this document. Refer to the appropriate documents or sales personnel for the current product information before finalizing any design.

2.0 Features Comparison

The W18 130 nm device and the W18 90 nm device have the same product features. However, some of the electrical specifications vary slightly between the two lithographies. One of these differences is that the standby current increases on the W18 90 nm device. [Table 1](#) compares various features and specifications of each device.

Table 1: Device Comparison (Sheet 1 of 2)

Feature		Specification	
		W18 130 nm device	W18 90 nm device
Device Density	32-Mbit	Yes	Yes
	64-Mbit	Yes	Yes
	128-Mbit	Yes	No
Partition Architecture	Blocking	Asymmetrical	Asymmetrical
	Partition Size	4 Mbit	4 Mbit
	Main Blocks	64-KByte	64-KByte
	Parameter Blocks	8 x 8-KByte	8 x 8-KByte
Operating Voltage Range	V _{CC} (core)	1.70 V to 1.95 V	1.70 V to 1.95 V
	V _{CCQ} (I/O)	1.70 V to 2.24 V 1.35 V to 1.80 V	1.70 V to 1.95 V
	V _{PP}	11.4 V to 12.6 V	11.4 V to 12.6 V
Performance	Asynchronous Initial Read Access (t _{AVQV})	60 ns 80 ns	60 ns
	Asynchronous Page Access (t _{APA})	20 ns	20 ns
	Synchronous Read Support	66 MHz, t _{CHQV} = 11 ns	66 MHz, t _{CHQV} = 11 ns
	V _{CC} Standby Current (Typ/Max)	8/50 µA	22/50 µA
Security	Flexible Block Locking	Yes	Yes
	OTP Space	128 bits	128 bits
Program	Word Program	Yes	Yes
	Enhanced Factory Program	Yes	Yes
Erase	Cycles	100,000	100,000
Temperature	Operating Temperature	-40 °C to +85 °C	-40 °C to +85 °C

Table 1: Device Comparison (Sheet 2 of 2)

Feature		Specification	
		W18 130 nm device	W18 90 nm device
I/O Bus	Bus Width	x16	x16

3.0 Package and Ballouts

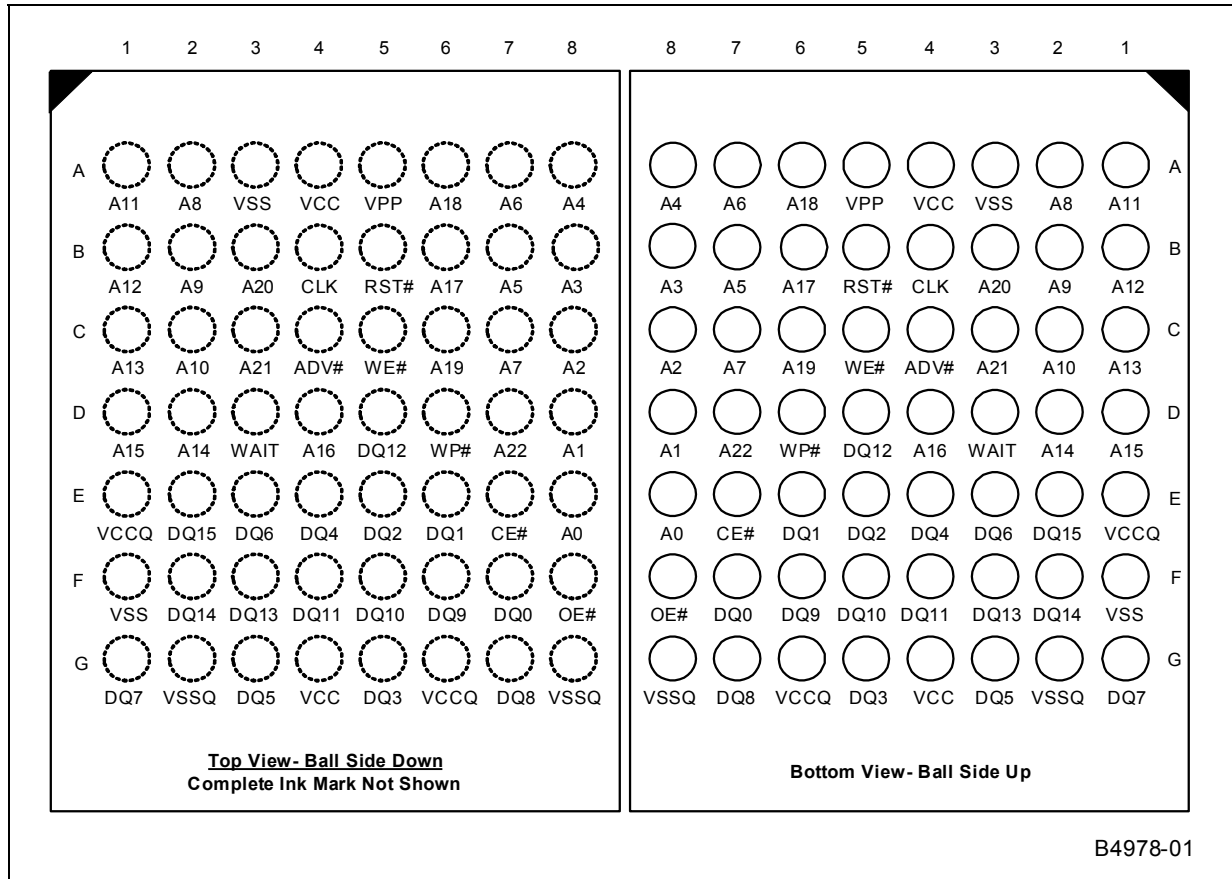
The W18 90 nm device is available in 32-Mbit and 64-Mbit densities in the Very Fine Ball Grid Array (VF BGA) package. This package provides socket compatibility with the W18 130 nm device in 32-Mbit and 64-Mbit densities only. [Table 2](#) shows the package size and ballout name for the W18 product family.

Table 2: Package Size/Ballout Comparison

Feature		Specification (Dimensions in mm)			
		W18 130 nm device		W18 90 nm device	
		Size (mm)	Ballout Name	Size (mm)	Ballout Name
Package	32-Mbit	9x7.7x1.0	VF BGA	9x7.7x1.0	VF BGA
	64-Mbit	9x7.7x1.0	VF BGA	9x7.7x1.0	VF BGA
	128-Mbit	9x11x1.0	VF BGA	N/A	N/A
	128-Mbit	8x10x1.2	QUAD+	N/A	N/A

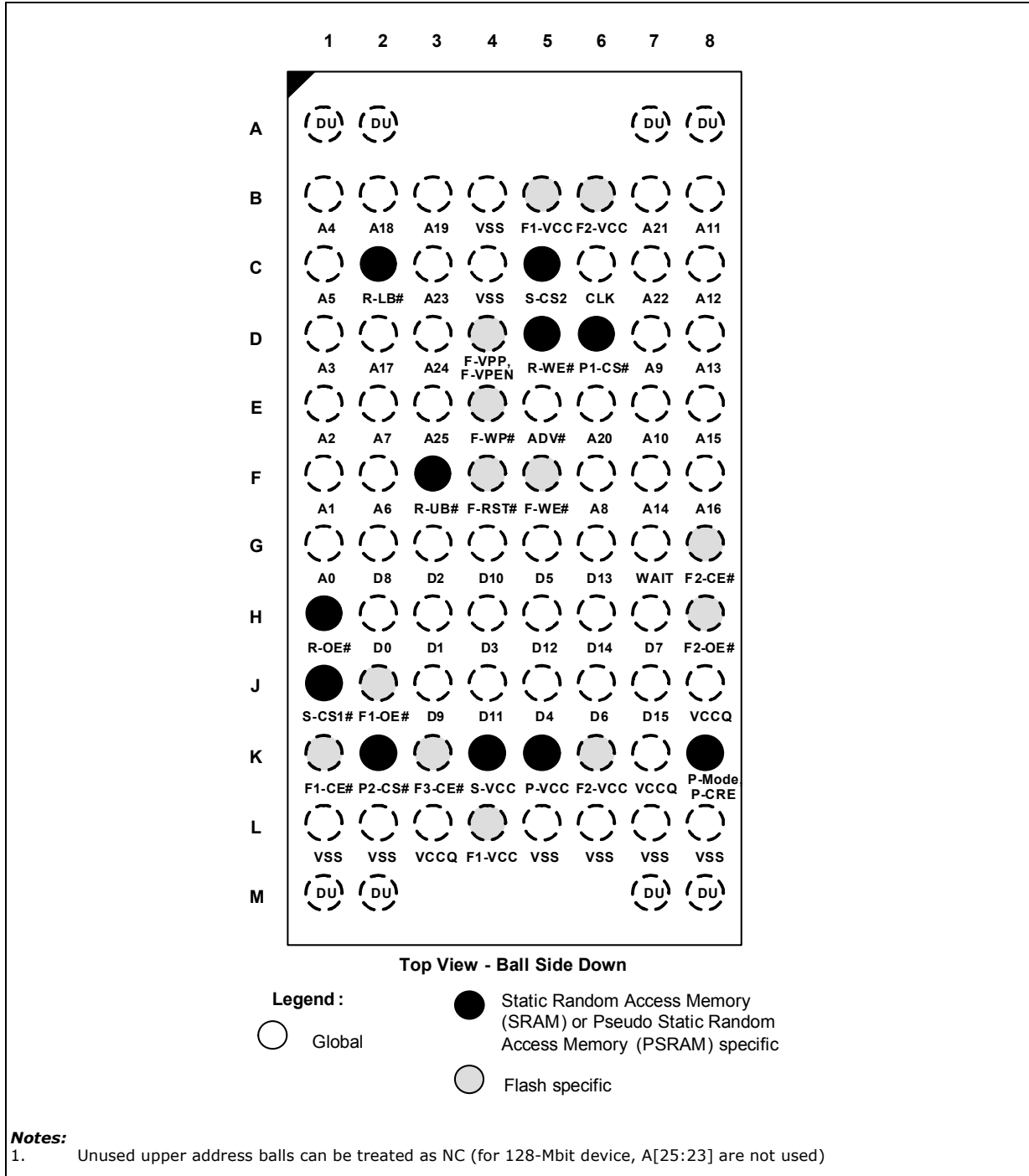
3.1 56-Ball Very-thin-profile Fine-pitch Ball Grid Array (VF BGA) Ballout Package

Figure 1: 56-Ball VF BGA Ballout



3.2 88-Ball Quad+ Ballout Package

Figure 2: 88-Ball (80 Active Balls) QUAD+ Ballout



Appendix A Ordering Information

Figure 3: Very-thin-profile Fine-pitch Ball Grid Array (VF BGA) Ordering Information

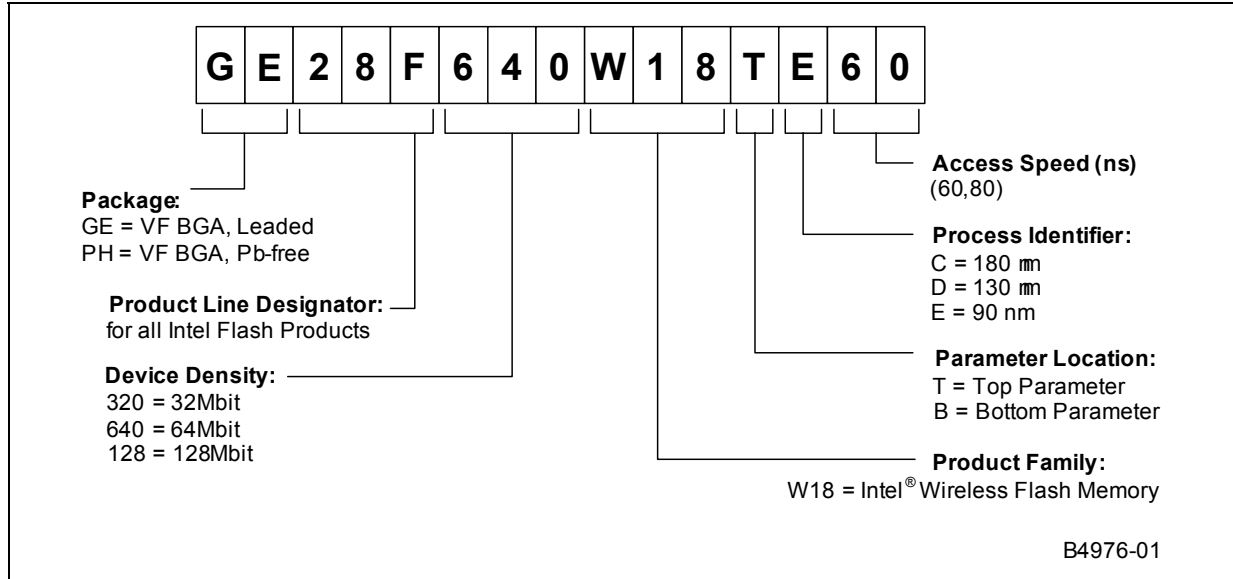


Figure 4: Stacked Chip Scale Package (SCSP) Ordering Information

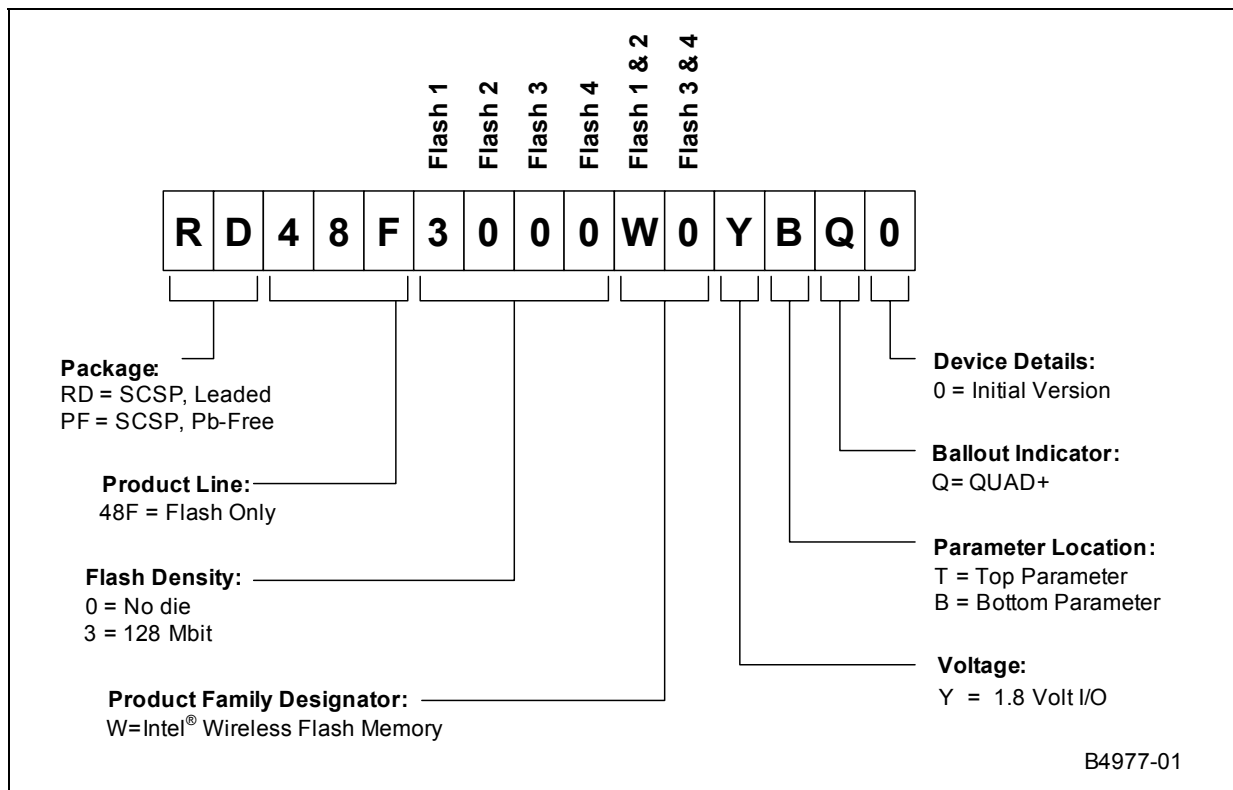


Table 3: Available Product Ordering Information

I/O Voltage (V)	Flash Density	Package			Part Number
		Size (mm)	Ballout Name	Ballout Type	
1.8	32 Mbit	9x7.7x1.0	VF BGA	Leaded	GE28F320W18TD60 GE28F320W18BD60 GE28F320W18TE60 GE28F320W18BE60
				Pb-Free ¹	PH28F320W18TD60 PH28F320W18BD60 PH28F320W18TE60 PH28F320W18BE60
	64 Mbit	9x7.7x1.0	VF BGA	Leaded	GE28F640W18TD60 GE28F640W18BD60 GE28F640W18TE60 GE28F640W18BE60 GE28F640W18TD80 GE28F640W18BD80
				Pb-Free ¹	PH28F640W18TD60 PH28F640W18BD60 PH28F640W18TE60 PH28F640W18BE60
	128 Mbit	9x11x1.0	VF BGA	Leaded	GE28F128W18TD60 GE28F128W18BD60
				Pb-Free ¹	PH28F128W18TD60 PH28F128W18BD60
		10x8x1.2	SCSP	Leaded	RD48F3000L0YTQ0 RD48F3000L0YBQ0
				Pb-Free ¹	PF48F3000L0YTQ0 PF48F3000L0YBQ0

¹ All Pb-free packages listed here also comply with Reduction of Hazardous Substances (RoHS) standards. Pb-free packages designated as PH (see [Figure 3 on page 9](#)) or PF (see [Figure 4 on page 9](#)) are RoHS-compliant.