

JEDEC STANDARD

Common Flash Interface (CFI)

JESD68.01

(Minor Revision to JESD68, September 1999)

SEPTEMBER 2003

JEDEC SOLID STATE TECHNOLOGY ASSOCIATION



NOTICE

JEDEC standards and publications contain material that has been prepared, reviewed, and approved through the JEDEC Board of Directors level and subsequently reviewed and approved by the JEDEC legal counsel.

JEDEC standards and publications are designed to serve the public interest through eliminating misunderstandings between manufacturers and purchasers, facilitating interchangeability and improvement of products, and assisting the purchaser in selecting and obtaining with minimum delay the proper product for use by those other than JEDEC members, whether the standard is to be used either domestically or internationally.

JEDEC standards and publications are adopted without regard to whether or not their adoption may involve patents or articles, materials, or processes. By such action JEDEC does not assume any liability to any patent owner, nor does it assume any obligation whatever to parties adopting the JEDEC standards or publications.

The information included in JEDEC standards and publications represents a sound approach to product specification and application, principally from the solid state device manufacturer viewpoint. Within the JEDEC organization there are procedures whereby a JEDEC standard or publication may be further processed and ultimately become an ANSI/EIA standard.

No claims to be in conformance with this standard may be made unless all requirements stated in the standard are met.

Inquiries, comments, and suggestions relative to the content of this JEDEC standard or publication should be addressed to JEDEC at the address below, or call (703) 907-7559 or www.jedec.org

Published by
©JEDEC Solid State Technology Association 2003
2500 Wilson Boulevard
Arlington, VA 22201-3834

This document may be downloaded free of charge; however JEDEC retains the copyright on this material. By downloading this file the individual agrees not to charge for or resell the resulting material.

**PRICE: Please refer to the current
Catalog of JEDEC Engineering Standards and Publications online at
<http://www.jedec.org/Catalog/catalog.cfm>**

Printed in the U.S.A.
All rights reserved

PLEASE!

DON'T VIOLATE
THE
LAW!

This document is copyrighted by the JEDEC Solid State Technology Association
and may not be reproduced without permission.

Organizations may obtain permission to reproduce a limited number of copies
through entering into a license agreement. For information, contact:

JEDEC Solid State Technology Association
2500 Wilson Boulevard
Arlington, Virginia 22201-3834
or call (703) 907-7559

COMMON FLASH INTERFACE (CFI)

Contents

	Page
Introduction	ii
1 Scope	1
2 Overview	1
2.1 Operational summary	1
3 Hardware interface	1
3.1 Query command interface	1
3.2 Query structure output	4
3.3 Query structure	6
3.3.1 Query structure overview	6
3.3.2 Query identification string	7
3.3.3 Query system interface information	8
3.3.4 Device geomtry definition	9
3.3.5 Optional algorithm-specific extended	10
3.3.5.1 Query tables	10
4 Extensibility	10
Annex A	11
Tables	
1 Command write cycles for query select and deselect	3
2 Summary of command sequence as a function of device and mode	4
3 Example of query command sequence of a x8/x16 capable device with an address sensitive query command	4
4 Summary of query structure output as a function of device and mode	4
5 Example of query structure output of a x8/x16 capable device	6
6 Identification string	7
7 Device-system interface	8
8 Flash geometry	9
9 Primary algorithm-specific extended query	10
10 Alternate algorithm-specific extended query	10

Introduction

The Common Flash Interface (CFI) specification outlines a device and host system software interrogation handshake that allows specific software algorithms to be used for entire families of devices. This allows device-independent, JEDEC ID-independent, and forward- and backward-compatible software support for the specified flash device families. It allows flash vendors to standardize their existing interfaces for long-term compatibility.

COMMON FLASH INTERFACE (CFI)

(From JEDEC Board Ballots JCB-98-81 and JCB-03-42, formulated under the cognizance of the JC-42.4 Subcommittee on Nonvolatile Memories)

1 Scope

This release of the specification defines the basic Query interface for CFI-compliant devices. This allows parameterization of known and future flash Read/Write/Program/Erase control interfaces. This Query structure attempts to define all the critical parameters relevant to a broad base of flash memory devices. The CFI specification will not specify detail command sets, status polling methods, and software algorithms of individual flash vendors. A 16-bit ID code is assigned to specific algorithm interfaces, and it is up to the algorithm manufacturers to provide these detailed specifications.

2 Overview

2.1 Operational summary

After the Query command code has been issued, the device enters the Query mode, allowing reads out of the CFI Query data structure. The CFI Query data structure contains a 16-bit Command Set and Control Interface ID code that specifies an algorithm-specific control interface for a family of flash devices. Query also contains general, common flash memory parameters and algorithm-specified data areas. These provide all the necessary information for controlling Read/Write/Program/Erase operations of a particular family of flash devices according to a algorithm-specified interface. Any additional information not covered in the common CFI Query data structure is located in algorithm-specific extended Query Table 9 and Table 10, the address location(s) of which is (are) contained in the general CFI Query structure.

3 Hardware interface

3.1 Query command interface

The CFI Query structure is accessed similar to the existing “ID Mode” or “JEDEC ID” access for nonvolatile memories, but uses a different, non-conflicting command code. The Query access command is 98h, while the JEDEC ID mode access mode is 90h. The Query addressing is always relative to the device word (largest supported) with data always presented on the lowest order byte (D7 - D0 outputs).