

Fact Sheet

Military Semiconductor Products

320MCM42 Multichip Module

SGYV001B March 2002

DUAL 320C40 Multichip Module with 8 or 16 Megabit of SRAM— Not Recommended for New Designs

HIGHLIGHTS

The 320MCM42 provides two 320C40 Digital Signal Processors (DSP) with either 128Kx32 (42D) or 256Kx32 (42C) zero wait state SRAM mapped to each local bus in a single package. The module provides 80 MFLOPS performance. Global address and data busses with independent control signals are routed externally for each processor for access to external memory. Address reach of each global bus is 2 Gigawords. The 2 C40's communicate with each other via an internal communication port connection. 10 communication ports are pinned out externally for module to module or external processor communication.

PERFORMANCE

40MHz (80 MFLOPS) / 5% power supply

ADDITIONAL INFORMATION

Product Information Center (972) 644-5588

DSP Hotline Internet URL Address: <http://www.ti.com/sc/docs/dsps/expsys.htm>

MCM Internet URL Address: <http://www.ti.com/sc/docs/military/product/index.htm>

DSP Bulletin Board (713) 274-2323

—application code, questions and answers (technical, non-real time), development tools.

TECHNOLOGY

320C40: 0.72 micron double level metal EPIC™ G1ZSE CMOS

SRAM: 128K X 8 or 256K x 8, 25 ns, CMOS

PACKAGING

HFN: 408-pin ceramic quad flatpack with 25 mil pitch and non-conductive tie bar. Requires approximately 8.7 square inches of board area, an approximate 30% reduction from individual surface mount components for the 256Kx32 memory option and an approximate 54% reduction for the 512Kx32 memory option. Package height is 175 mils maximum.

R θ JA: 20.5°C/W, R θ JC: 2.1°C/W

Weight: 63 grams

R θ JA Thermal resistance of a package without a path for heat dissipation. This is specified at a zero linear feet per minute air flow.

R θ JC Thermal resistance of a package assuming an infinite path for heat dissipation.

POWER DISSIPATION

Typical 3.5 Watts; I_{cc}: 700 mA Conditions: 5.0V, 25C, 40 MHz

Maximum 5.9 Watts; I_{cc}: 1100 mA Conditions: 5.25V, -55C, 40 MHz

TEST

Testing of the module is designed to verify the interconnects, functionality and at-speed performance. The module conforms to the requirements of the IEEE 1149.1 testability standard. The JTAG TAP is pinned out externally and the 320C40's are connected to form a single boundary scannable register. The C40 XDS510 emulator is used to verify SRAM functionality. The module supports the ASSET diagnostic family of products for verification of module interconnects and debug of components, boards and systems.

EPIC is a trademark of Texas Instruments.

DSCC SMD

Device Name	Speed	Local Memory	Total Memory	DSCC SMD
SMJ320MCM42DHFNM40	40 MHz	128Kx32 SRAM	256Kx32 SRAM	5962-9678901QXC
SMJ320MCM42CHFNM40	40 MHz	256Kx32 SRAM	512Kx32 SRAM	5962-9678902QXC

PROCESS/PERFORMANCE OPTIONS

LEVEL	TEMP RANGE	MODULE 100% PROCESSING	PERFORMANCE MHz	AT-SPEED TEST	QUALIFICATION TEST
SMJ	M: -55C TO 125C	QML based	40	YES	PER MIL-PRF-38535

TOOLS

The dual C40 utilizes common development tools applicable to the 320C40 DSP.

ASSEMBLER.....	Converts assembly language to machine language.
LINKER.....	Combines object modules into a single executable object file, performs relocation and resolves external references.
C COMPILER.....	Translates C source code into 320C40 assembly source code
Ada COMPILER....	Translates Ada source code into 320C40 assembly source code TI Tartan Phone: (412) 856-3600
SIMULATOR.....	Software debugger tool that simulates the operation of the 320C40.
XDS-510XL.....	Hardware controller card for in-system emulation. XL suffix denotes IBM-PC compatible card. WS suffix denotes workstation compatible card.
ASSET	JTAG based scan tool

ORDERING INFORMATION

Example:	SMJ 320 MCM 4 2 D HFN M 40
PREFIX:	SMJ = QML Processing
320	320 DSP family designator
MCM	Multichip Module
Processor	4 = 320C40
DSP's/module	2 = Dual
Module Revision	C = One piece HTCC package and 256K X 32 Memory D = One piece HTCC package and 128K X 32 Memory
Package	HFN = 408 pin ceramic quad flatpack with non-conductive tie bar
Temperature Range	M = -55C to 125C
Speed Designator	40 = 40 MHz

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

Mailing Address:

Texas Instruments
Post Office Box 655303
Dallas, Texas 75265