

TMP320C40KGDC, SMJ320C40KGDC FLOATING-POINT DIGITAL SIGNAL PROCESSOR KNOWN GOOD DIES

SGUS024A – MARCH 1997 – REVISED SEPTEMBER 1997

- **Commercial (L) Operating Temperature Range**
0°C to 70°C
- **Military (M) Operating Temperature Range**
–55°C to 125°C; QML Processing
- **Special (S) Temperature Range**
–55°C to 100°C
- **High-Performance Floating-Point Digital Signal Processor (DSP)**
- **'C40-60:**
 - 33-ns Instruction Cycle Time
330 MOPS (Million Operations per Second)
60 MFLOPS (Million Floating-Point Operations per Second)
30 MIPS (Million Instructions per Second)
384 MBps (Megabytes per Second)
 - S Temperature Range: –55°C to 100°C
- **'C40-50:**
 - 40-ns Instruction Cycle Time
275 MOPS
50 MFLOPS
20 MIPS
320 MBps
 - M Temperature Range: –55°C to 125°C
- **Six Communication Ports**
- **Six-Channel Direct Memory Access (DMA) Coprocessor**
- **Support for IEEE, 1/x, 1/√x**
- **Source-Code Compatible with TMP/SMJ320C30**
- **Validated Ada Compiler**
- **Single-Cycle 40-Bit Floating-Point, 32-Bit Integer Multipliers**
- **Twelve 40-Bit Registers, Eight Auxiliary Registers, 14 Control Registers, and Two Timers**
- **Two External Data and Address Buses Supporting Shared Memory Systems and High-Data-Rate, Single-Cycle Transfers:**
 - High Port-Data Rate of 80 MBps
 - 4G-Word Continuous Program/Data/Peripheral Address Space
 - Memory-Access Request for Fast, Intelligent Bus Arbitration
 - Separate Address, Data, and Control-Enable Pins
 - Four Sets of Memory-Control Signals Support Different Speed Memories in Hardware
- **Fabricated Using 0.72-μm Enhanced Performance Implanted CMOS (EPIC™) Technology by Texas Instruments (TI™)**
- **Separate Internal Program, Data, and DMA Coprocessor Buses for Support of Massive Concurrent Input/Output (I/O) of Program and Data Throughput, Maximizing Sustained CPU Performance**
- **On-Chip Program Cache and Dual-Access/Single-Cycle RAM for Increased Memory-Access Performance**
 - 128-Word Instruction Cache
 - 2K Words of Single-Cycle, Dual-Access Program or Data RAM
 - Boot Loader (ROM-Based) Supporting Program Bootup by Way of 8-, 16-, or 32-Bit Memories Over Any One of the Communication Ports
- **IEEE 1149.1† (JTAG) Boundary-Scan Compatible**

description

The TMP/SMJ320C40KGD DSP is a 32-bit, floating-point processor manufactured in 0.72-μm, double-level metal CMOS technology. It is the fourth generation of DSPs from Texas Instruments, and it is the world's first DSP designed for parallel processing. The on-chip parallel processing capabilities of the 'C40 make the floating-point performance required by many applications achievable and cost-effective.



Please be aware that an important notice concerning availability, standard warranty, and use in critical applications of Texas Instruments semiconductor products and disclaimers thereto appears at the end of this data sheet.

† IEEE Standard 1149.1–1990 Standard Test-Access Port and Boundary-Scan Architecture
EPIC and TI are trademarks of Texas Instruments Incorporated.

PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.



POST OFFICE BOX 1443 • HOUSTON, TEXAS 77251-1443

Copyright © 1997, Texas Instruments Incorporated

TMP320C40KGDC, SMJ320C40KGDC FLOATING-POINT DIGITAL SIGNAL PROCESSOR KNOWN GOOD DIES

SGUS024A – MARCH 1997 – REVISED SEPTEMBER 1997

description (continued)

The TMP/SMJ320C40 is the first DSP with on-chip communication ports for processor-to-processor communication using simple communication software with no external hardware. This allows connectivity with no external glue logic. The communication ports remove I/O bottlenecks, and the independent smart-DMA coprocessor is able to handle the CPU I/O requirements.

The features of the communication ports are:

- Six communication ports for direct interprocessor communication and processor I/O
- 20 MBps bidirectional interface on each communication port for high-speed and low-cost multiprocessor interface
- Separate input and output first-in, first-out (FIFO) buffers for I/O and processor-to-processor communication
- Automatic arbitration and handshaking for direct processor-to-processor connection

The DMA coprocessor allows concurrent I/O and CPU processing for superior sustained CPU performance. The key features of the DMA coprocessor:

- Link pointers that allow DMA channels to auto-initialize
- Parallel CPU operation and DMA transfers
- Six DMA channels support communication-port-to-memory data transfers

The TMP/SMJ320C40KGD CPU is configured for high-speed internal parallel processing. The key features of the CPU are:

- Eight operations/cycles
 - 40-/32-bit floating-point/integer multiply
 - 40-/32-bit floating-point/integer arithmetic and logic unit (ALU) operation
 - Two data accesses
 - Two address-register updates
- IEEE floating-point conversion
- Division and square-root support
- 'C30 assembly language compatibility
- Byte and halfword accessibility

Key factors in a parallel-processing implementation are the development tools that are available. The 'C40 is supported by a host of parallel-processing development tools for developing and simulating code and for debugging parallel-processing systems. The code generation tools include:

- Optimizing ANSI C compiler with a runtime library that supports use of communication ports and DMA
- SPOX™, by Spectron Microsystems Incorporated, which provides parallel processing support as well as DMA and communication port drivers
- Assembler and linker with support for mapping program and data to parallel processors.

SPOX is a trademark of Spectron Microsystems, Inc.



POST OFFICE BOX 1443 • HOUSTON, TEXAS 77251-1443

description (continued)

The simulation tools include:

- Parallel DSP system-level simulation, by Logic Modeling Corporation (LMC), which includes a hardware verification (HV) model and a full functional (FF) model
- TI software simulator with high-level language debugger interface for simulating a single processor

The hardware development and verification tools include:

- Parallel processor in-circuit emulator and high-level language debugger: XDS510™
- Parallel processor development system with four TMS320C40s, local and global memory, and communication port connections

known good die technology

Known good die (KGD) options are offered for use in multichip modules and chip-on-board (COB) applications. The current verification technology used to support KGD requirements for the TMP/SMJ320C40KGD is the removable tab (R-Tab). Future implementation can have only aluminum bond pads. Please contact the factory for current die information.

The availability of selected DSP products in a tape-automated bond (TAB) configuration has made possible the use of a removable TAB technique. The TAB leadframe is attached to a gold-bumped die using nonoptimal bonding parameters. This technique allows easy removal of the die after all needed screens and parametric tests are complete. The die is removed from the tested part and is shipped in a conventional die container. The gold bumps remain on the bond pads, which allow for subsequent attachment of gold-ball bonds.

electrical specifications

For military electrical and timing specifications, please refer to the *SMJ320C40 Digital Signal Processor* data sheet, literature number SGUS017A. For commercial electrical and timing specifications, see the *TMS320C40 Digital Signal Processor Data Sheet*, literature number SPRS038.

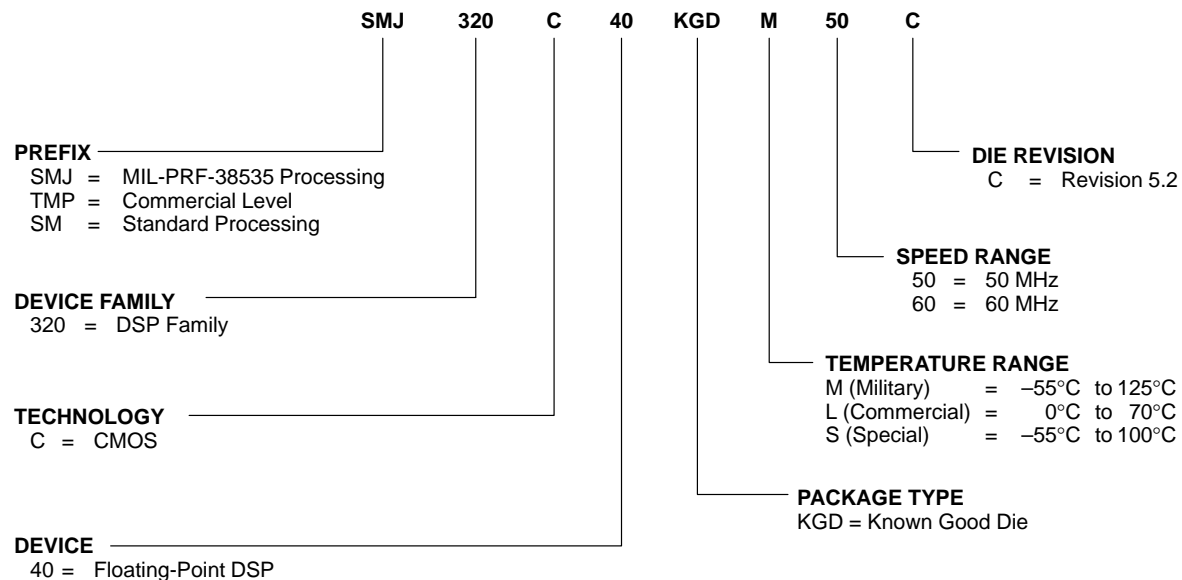


Figure 1. TMP/SMJ320C40KGD Device Nomenclature

XDS510 is a trademark of Texas Instruments Incorporated.



TMP320C40KGDC, SMJ320C40KGDC
FLOATING-POINT DIGITAL SIGNAL PROCESSOR
KNOWN GOOD DIES

SGUS024A – MARCH 1997 – REVISED SEPTEMBER 1997

JEDEC STANDARD

- Die thickness is approximately 15 mils \pm 1 mil.
- Backside surface finish is silicon.
- Maximum allowable die junction operating temperature is 175°C.
- Glassivation material is compressive nitride.
- Bond pad metal is composed of copper-doped aluminum.
- Percent defective allowed for burned-in die is 5.
- Life test data is available.
- Configuration control notification.
- Group A attribute summary is available (SMJ only).
- Suggested die-attach material is silver glass (QMI 2569F).
- Suggested bond wire size is 1.25 mil.
- Suggested bonding method is gold-ball bonding.
- ESD rating is Class II.
- Maximum allowable peak process temperature for die-attach is 440°C \pm 5°C (for QMS2569F)
- Saw kerf is dependent on blade size used.
- Die backside potential is left floating.



POST OFFICE BOX 1443 • HOUSTON, TEXAS 77251-1443

'320C40 (rev 5.2) known good die pad information

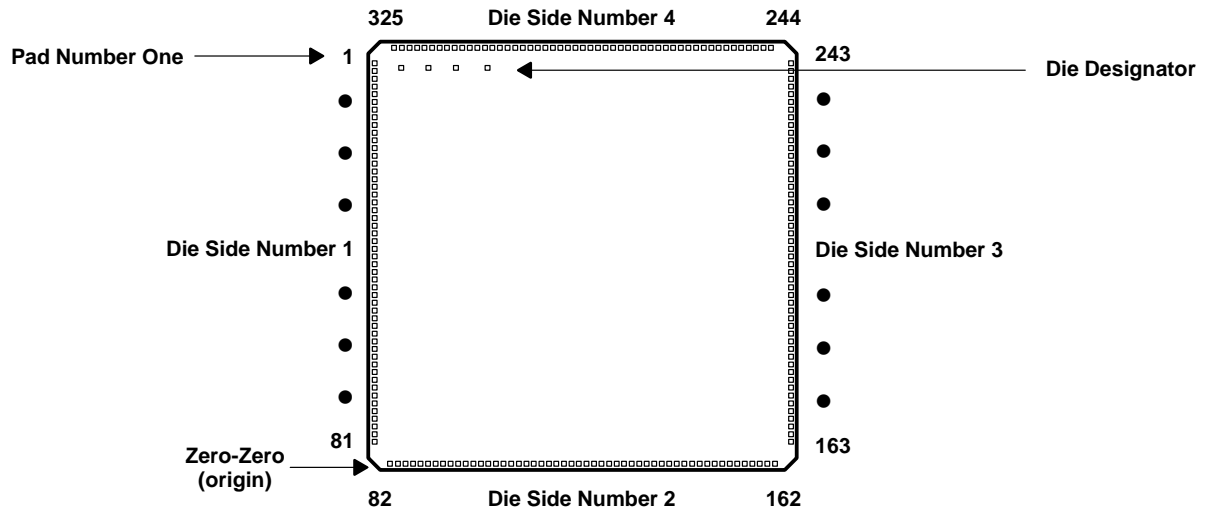


Figure 2. '320C40 Die Numbering Format
(See Table 1)

Table 1 provides a reference for the following:

- The 'C40 signal identities in relation to the pad numbers
- The 'C40 X,Y coordinates, where bond pad 82 serves as the origin (0,0)

In addition, the following notes are significant:

- A. X,Y coordinate data is in microns.
- B. The active silicon dimensions are 12424.86 μm \times 12035.52 μm (489.16 mils \times 473.83 mils).
- C. The die size is approximately 12598.40 μm \times 12192.00 μm (496.00 mils \times 480.00 mils).
- D. Bond pad dimensions are 108.00 μm \times 108.00 μm (4.25 mils \times 4.25 mils).
- E. Center of bond pad to edge of die min (without scribe) = 107.80 μm (4.24 mils).
- F. Gold bump dimensions are approximately 92 μm \times 92 μm (3.62 mils \times 3.62 mils).
- G. Coordinate origin is at (0,0) (center of bond pad 82).

TMP320C40KGDC, SMJ320C40KGDC
FLOATING-POINT DIGITAL SIGNAL PROCESSOR
KNOWN GOOD DIES

SGUS024A – MARCH 1997 – REVISED SEPTEMBER 1997

Table 1. '320C40 Die Pad/TAB Lead Information : Rev. 5.2 (0,72 µm)

DIE SIDE #1				
C40 DIE BOND PAD LOCATIONS	DIE/TAB BOND PAD IDENTITY	X-COORDINATE OF DIE BOND PAD	Y-COORDINATE OF DIE BOND PAD	PITCH OF LEAD (#, #) REFERENCES WHICH DIE BOND PADS
1	D31	- 429.48	11368.44	126.00 (1, 2)
2	D30		11242.44	126.00 (2, 3)
3	D29		11116.44	126.00 (3, 4)
4	D28		10990.44	126.00 (4, 5)
5	D27		10864.44	126.00 (5, 6)
6	D26		10738.44	126.00 (6, 7)
7	GDDV _{DD}		10612.44	126.00 (7, 8)
8	D25		10486.44	126.00 (8, 9)
9	D24		10360.44	126.00 (9, 10)
10	D23		10234.44	126.00 (10, 11)
11	D22		10108.44	126.00 (11, 12)
12	D21		9982.44	126.00 (12, 13)
13	D20		9856.44	126.00 (13, 14)
14	D19		9730.44	126.00 (14, 15)
15	D18		9604.44	126.00 (15, 16)
16	D17		9478.44	126.00 (16, 17)
17	D16		9352.44	126.00 (17, 18)
18	CV _{SS}		9226.44	126.00 (18, 19)
19	IV _{SS}		9100.44	126.00 (19, 20)
20	GDDV _{DD}		8974.44	126.00 (20, 21)
21	DV _{SS}		8848.44	126.00 (21, 22)
22	D15		8722.44	126.00 (22, 23)
23	D14		8596.44	126.00 (23, 24)
24	D13		8470.44	126.00 (24, 25)
25	D12		8344.44	126.00 (25, 26)
26	D11		8218.44	126.00 (26, 27)
27	D10		8092.44	126.00 (27, 28)
28	D9		7966.44	126.00 (28, 29)
29	D8		7840.44	126.00 (29, 30)
30	D7		7714.44	126.00 (30, 31)
31	D6		7588.44	126.00 (31, 32)
32	D5		7462.44	126.00 (32, 33)
33	GDDV _{DD}		7336.44	126.00 (33, 34)
34	D4		7210.44	126.00 (34, 35)
35	D3		7084.44	126.00 (35, 36)
36	D2		6958.44	126.00 (36, 37)
37	D1		6832.44	126.00 (37, 38)
38	D0		6706.44	156.42 (38, 39)
39	CE1		6550.02	172.80 (39, 40)
40	RDY1		6377.22	152.10 (40, 41)
41	DV _{SS}		6225.12	126.00 (41, 42)
42	CV _{SS}		6099.12	126.00 (42, 43)



POST OFFICE BOX 1443 • HOUSTON, TEXAS 77251-1443

TMP320C40KGDC, SMJ320C40KGDC
FLOATING-POINT DIGITAL SIGNAL PROCESSOR
KNOWN GOOD DIES

SGUS024A – MARCH 1997 – REVISED SEPTEMBER 1997

Table 1. '320C40 Die Pad/TAB Lead Information : Rev. 5.2 (0,72 μ m) (Continued)

DIE SIDE #1 (CONTINUED)				
C40 DIE BOND PAD LOCATIONS	DIE/TAB BOND PAD IDENTITY	X-COORDINATE OF DIE BOND PAD	Y-COORDINATE OF DIE BOND PAD	PITCH OF LEAD (#, #) REFERENCES WHICH DIE BOND PADS
43	LOCK	– 429.48	5973.12	126.00 (43, 44)
44	VDDL		5847.12	126.00 (44, 45)
45	VSSL		5721.12	156.42 (45, 46)
46	CE0		5564.70	172.80 (46, 47)
47	RDY0		5391.90	172.80 (47, 48)
48	DE		5219.10	172.80 (48, 49)
49	TCK		5046.30	152.10 (49, 50)
50	TDO		4894.20	156.42 (50, 51)
51	TDI		4737.78	172.80 (51, 52)
52	TMS		4564.98	172.80 (52, 53)
53	TRST		4392.18	151.10 (53, 54)
54	EMU0		4240.08	126.00 (54, 55)
55	EMU1		4114.08	126.00 (55, 56)
56	DVSS		3988.08	126.00 (56, 57)
57	DVDD		3962.08	126.00 (57, 58)
58	PAGE1		3736.08	126.00 (58, 59)
59	R/W1		3610.08	126.00 (59, 60)
60	STRB1		3484.08	126.00 (60, 61)
61	STAT0		3358.08	126.00 (61, 62)
62	STAT1		3232.08	126.00 (62, 63)
63	IVSS		3106.08	126.00 (63, 64)
64	STAT2		2980.08	126.00 (64, 65)
65	STAT3		2854.08	127.44 (65, 66)
66	PAGE0		2726.64	126.00 (66, 67)
67	R/W0		2600.64	126.00 (67, 68)
68	STRB0		2474.64	156.42 (68, 69)
69	AE		2318.22	174.24 (69, 70)
70	RESETLOC 1		2143.98	152.10 (70, 71)
71	DVDD		1991.88	156.42 (71, 72)
72	RESETLOC 0		1835.46	172.80 (72, 73)
73	RESET		1662.66	172.80 (73, 74)
74	CRDY5		1510.56	126.00 (74, 75)
75	CSTRB5		1384.56	126.00 (75, 76)
76	CACK5		1258.56	126.00 (76, 77)
77	CREQ5		1132.56	126.00 (77, 78)
78	CRDY4		1006.56	126.00 (78, 79)
79	CSTRB4		880.56	126.00 (79, 80)
80	CACK4		754.56	126.00 (80, 81)
81	CREQ4		628.56	

TMP320C40KGDC, SMJ320C40KGDC
FLOATING-POINT DIGITAL SIGNAL PROCESSOR
KNOWN GOOD DIES

SGUS024A – MARCH 1997 – REVISED SEPTEMBER 1997

Table 1. '320C40 Die Pad/TAB Lead Information : Rev. 5.2 (0,72 μ m) (Continued)

DIE SIDE #2				
C40 DIE BOND PAD LOCATIONS	DIE/TAB BOND PAD IDENTITY	X-COORDINATE OF DIE BOND PAD	Y-COORDINATE OF DIE BOND PAD	PITCH OF LEAD (#, #) REFERENCES WHICH DIE BOND PADS
82	CVSS	0.00	0.00	1062.00 (82, 83)
83	DVSS	1062.00		126.00 (83, 84)
84	DVDD	1188.00		126.00 (84, 85)
85	C5D7	1314.00		126.00 (85, 86)
86	C5D6	1440.00		126.00 (86, 87)
87	C5D5	1566.00		126.00 (87, 88)
88	C5D4	1692.00		126.00 (88, 89)
89	C5D3	1818.00		126.00 (89, 90)
90	C5D2	1944.00		126.00 (90, 91)
91	C5D1	2070.00		126.00 (91, 92)
92	C5D0	2196.00		126.00 (92, 93)
93	DVDD	2322.00		126.00 (93, 94)
94	C4D7	2448.00		126.00 (94, 95)
95	C4D6	2574.00		126.00 (95, 96)
96	C4D5	2700.00		126.00 (96, 97)
97	C4D4	2813.40		126.00 (97, 98)
98	C4D3	2952.00		126.00 (98, 99)
99	C4D2	3078.00		126.00 (99, 100)
100	C4D1	3204.00		126.00 (100, 101)
101	C4D0	3330.00		126.00 (101, 102)
102	CVSS	3456.00		126.00 (102, 103)
103	DVSS	3582.00		126.00 (103, 104)
104	DVDD	3708.00		126.00 (104, 105)
105	C3D7	3834.00		126.00 (105, 106)
106	C3D6	3960.00		126.00 (106, 107)
107	C3D5	4086.00		126.00 (107, 108)
108	C3D4	4212.00		126.00 (108, 109)
109	C3D3	4338.00		126.00 (109, 110)
110	C3D2	4464.00		126.00 (110, 111)
111	C3D1	4590.00		126.00 (111, 112)
112	C3D0	4716.00		126.00 (112, 113)
113	DVDD	4842.00		126.00 (113, 114)
114	IVSS	4968.00		126.00 (114, 115)
115	C2D7	5094.00		126.00 (115, 116)
116	C2D6	5220.00		126.00 (116, 117)
117	C2D5	5346.00		126.00 (117, 118)
118	C2D4	5472.00		126.00 (118, 119)
119	C2D3	5598.00		126.00 (119, 120)
120	C2D2	5724.00		126.00 (120, 121)
121	C2D1	5850.00		126.00 (121, 122)
122	C2D0	5976.00		126.00 (122, 123)
123	CVSS	6102.00		126.00 (123, 124)



POST OFFICE BOX 1443 • HOUSTON, TEXAS 77251-1443

TMP320C40KGDC, SMJ320C40KGDC
FLOATING-POINT DIGITAL SIGNAL PROCESSOR
KNOWN GOOD DIES

SGUS024A – MARCH 1997 – REVISED SEPTEMBER 1997

Table 1. '320C40 Die Pad/TAB Lead Information : Rev. 5.2 (0,72 μ m) (Continued)

DIE SIDE #2 (CONTINUED)				
C40 DIE BOND PAD LOCATIONS	DIE/TAB BOND PAD IDENTITY	X-COORDINATE OF DIE BOND PAD	Y-COORDINATE OF DIE BOND PAD	PITCH OF LEAD (#, #) REFERENCES WHICH DIE BOND PADS
124	DV _{SS}	6228.00	0.00	126.00 (124, 125)
125	DV _{DD}	6354.00		126.00 (125, 126)
126	<u>CRDY3</u>	6480.00		126.00 (126, 127)
127	<u>CSTRB3</u>	6606.00		126.00 (127, 128)
128	<u>CACK3</u>	6732.00		126.00 (128, 129)
129	<u>CREQ3</u>	6858.00		126.00 (129, 130)
130	V _{DDL}	6984.00		126.00 (130, 131)
131	V _{SSL}	7110.00		126.00 (131, 132)
132	<u>CRDY2</u>	7236.00		126.00 (132, 133)
133	<u>CSTRB2</u>	7362.00		126.00 (133, 134)
134	<u>CACK2</u>	7488.00		126.00 (134, 135)
135	<u>CREQ2</u>	7614.00		126.00 (135, 136)
136	DV _{DD}	7740.00		126.00 (136, 137)
137	<u>CRDY1</u>	7866.00		126.00 (137, 138)
138	<u>CSTRB1</u>	7992.00		126.00 (138, 139)
139	<u>CACK1</u>	8118.00		126.00 (139, 140)
140	<u>CREQ1</u>	8244.00		126.00 (140, 141)
141	<u>CRDY0</u>	8370.00		126.00 (141, 142)
142	<u>CSTRB0</u>	8496.00		126.00 (142, 143)
143	<u>CACK0</u>	8622.00		126.00 (143, 144)
144	<u>CREQ0</u>	8748.00		126.00 (144, 145)
145	CV _{SS}	8874.00		126.00 (145, 146)
146	DV _{SS}	9000.00		126.00 (146, 147)
147	IV _{SS}	9126.00		126.00 (147, 148)
148	DV _{DD}	9252.00		126.00 (148, 149)
149	C1D7	9378.00		126.00 (149, 150)
150	C1D6	9504.00		126.00 (150, 151)
151	C1D5	9630.00		126.00 (151, 152)
152	C1D4	9756.00		126.00 (152, 153)
153	C1D3	9882.00		126.00 (153, 154)
154	C1D2	10008.00		126.00 (154, 155)
155	C1D1	10134.00		126.00 (155, 156)
156	C1D0	10260.00		126.00 (156, 157)
157	DV _{DD}	10386.00		126.00 (157, 158)
158	C0D7	10512.00		126.00 (158, 159)
159	C0D6	10638.00		126.00 (159, 160)
160	C0D5	10764.00		126.00 (160, 161)
161	C0D4	10890.00		126.00 (161, 162)
162	C0D3	11016.00		



TMP320C40KGDC, SMJ320C40KGDC
FLOATING-POINT DIGITAL SIGNAL PROCESSOR
KNOWN GOOD DIES

SGUS024A – MARCH 1997 – REVISED SEPTEMBER 1997

Table 1. '320C40 Die Pad/TAB Lead Information : Rev. 5.2 (0,72 μ m) (Continued)

DIE SIDE #3				
C40 DIE BOND PAD LOCATIONS	DIE/TAB BOND PAD IDENTITY	X-COORDINATE OF DIE BOND PAD	Y-COORDINATE OF DIE BOND PAD	PITCH OF LEAD (#, #) REFERENCES WHICH DIE BOND PADS
163	C0D2	11779.74	810.00	126.00 (163, 164)
164	C0D1		936.00	126.00 (164, 165)
165	C0D0		1062.00	126.00 (165, 166)
166	CVSS		1188.00	126.00 (166, 167)
167	DVDD		1314.00	156.42 (167, 168)
168	ROMEN		1470.42	152.46 (168, 169)
169	IIOF0		1622.88	126.00 (169, 170)
170	DVSS		1748.88	126.00 (170, 171)
171	IIOF1		1874.88	126.00 (171, 172)
172	IIOF2		2000.88	126.00 (172, 173)
173	IIOF3		2126.88	156.42 (173, 174)
174	NMI		2283.30	152.10 (174, 175)
175	LSTRB0		2435.40	126.00 (175, 176)
176	LR/W0		2561.40	126.00 (176, 177)
177	LPAGE0		2687.40	156.42 (177, 178)
178	LRDY0		2843.82	172.80 (178, 179)
179	LCE0		3016.62	152.10 (179, 180)
180	LSTRB1		3168.72	126.00 (180, 181)
181	LR/W1		3294.72	126.00 (181, 182)
182	DVDD		3420.72	126.00 (182, 183)
183	CVSS		3546.72	126.00 (183, 184)
184	LPAGE1		3672.72	156.42 (184, 185)
185	LRDY1		3829.14	172.80 (185, 186)
186	LCE1		4001.94	172.80 (186, 187)
187	LDE		4174.74	152.10 (187, 188)
188	TCLK0		4326.84	126.00 (188, 189)
189	TCLK1		4452.84	126.00 (189, 190)
190	H3		4578.84	126.00 (190, 191)
191	H1		4704.84	156.42 (191, 192)
192	LAE		4861.26	152.10 (192, 193)
193	IVSS		5013.36	126.00 (193, 194)
194	LLOCK		5139.36	126.00 (194, 195)
195	LSTAT0		5265.36	126.00 (195, 196)
196	LSTAT1		5391.36	126.00 (196, 197)
197	LSTAT2		5517.36	126.00 (197, 198)
198	LSTAT3		5643.36	127.44 (198, 199)
199	IACK		5770.80	126.00 (199, 200)
200	VDDL		5896.80	126.00 (200, 201)
201	VSSL		6022.80	131.94 (201, 202)
202	X1		6154.74	171.58 (202, 203)
203	X2/CLKIN		6326.28	168.12 (203, 204)
204	CVSS		6494.40	126.00 (204, 205)



POST OFFICE BOX 1443 • HOUSTON, TEXAS 77251-1443

TMP320C40KGDC, SMJ320C40KGDC
FLOATING-POINT DIGITAL SIGNAL PROCESSOR
KNOWN GOOD DIES

SGUS024A – MARCH 1997 – REVISED SEPTEMBER 1997

Table 1. '320C40 Die Pad/TAB Lead Information : Rev. 5.2 (0,72 μ m) (Continued)

DIE SIDE #3 (CONTINUED)				
C40 DIE BOND PAD LOCATIONS	DIE/TAB BOND PAD IDENTITY	X-COORDINATE OF DIE BOND PAD	Y-COORDINATE OF DIE BOND PAD	PITCH OF LEAD (#, #) REFERENCES WHICH DIE BOND PADS
205	DV _{DD}	11779.74	6620.40	126.00 (205, 206)
206	DV _{SS}		6746.40	127.44 (206, 207)
207	LA30		6873.84	126.00 (207, 208)
208	LA29		6999.84	126.00 (208, 209)
209	LA28		7125.84	126.00 (209, 210)
210	LA27		7251.84	126.00 (210, 211)
211	LADV _{DD}		7377.84	126.00 (211, 212)
212	LA26		7503.84	126.00 (212, 213)
213	LA25		7629.84	126.00 (213, 214)
214	LA24		7755.84	126.00 (214, 215)
215	LA23		7881.84	126.00 (215, 216)
216	LA22		8007.84	126.00 (216, 217)
217	LA21		8133.84	126.00 (217, 218)
218	LA20		8259.84	126.00 (218, 219)
219	LA19		8385.84	126.00 (219, 220)
220	LA18		8511.84	126.00 (220, 221)
221	LA17		8637.84	126.00 (221, 222)
222	LA16		8763.84	126.00 (222, 223)
223	LADV _{DD}		8889.84	126.00 (223, 224)
224	CV _{SS}		9015.84	126.00 (224, 225)
225	DV _{SS}		9141.84	126.00 (225, 226)
226	LA15		9267.84	126.00 (226, 227)
227	LA14		9393.84	126.00 (227, 228)
228	LA13		9519.84	126.00 (228, 229)
229	LA12		9645.84	126.00 (229, 230)
230	LA11		9771.84	126.00 (230, 231)
231	LA10		9897.84	126.00 (231, 232)
232	LA9		10023.84	126.00 (232, 233)
233	LA8		10149.84	126.00 (233, 234)
234	LA7		10275.84	126.00 (234, 235)
235	LA6		10401.84	126.00 (235, 236)
236	LA5		10527.84	126.00 (236, 237)
237	LA4		10653.84	126.00 (237, 238)
238	LADV _{DD}		10779.84	126.00 (238, 239)
239	LA3		10905.84	126.00 (239, 240)
240	LA2		11031.84	126.00 (240, 241)
241	LA1		11157.84	126.00 (241, 242)
242	LA0		11283.84	205.92 (242, 243)
243	DV _{SS}		11489.76	



TMP320C40KGDC, SMJ320C40KGDC
FLOATING-POINT DIGITAL SIGNAL PROCESSOR
KNOWN GOOD DIES

SGUS024A – MARCH 1997 – REVISED SEPTEMBER 1997

Table 1. '320C40 Die Pad/TAB Lead Information : Rev. 5.2 (0,72 μ m) (Continued)

DIE SIDE #4				
C40 DIE BOND PAD LOCATIONS	DIE/TAB BOND PAD IDENTITY	X-COORDINATE OF DIE BOND PAD	Y-COORDINATE OF DIE BOND PAD	PITCH OF LEAD (#, #) REFERENCES WHICH DIE BOND PADS
244	CV _{SS}	10953.72	11819.88	126.00 (244, 245)
245	LD31	10827.72		126.00 (245, 246)
246	LD30	10701.72		126.00 (246, 247)
247	LD29	10575.72		126.00 (247, 248)
248	LD28	10449.72		126.00 (248, 249)
249	LDDV _{DD}	10323.72		126.00 (249, 250)
250	LD27	10197.72		126.00 (250, 251)
251	LD26	10071.72		126.00 (251, 252)
252	LD25	9945.72		126.00 (252, 253)
253	LD24	9819.72		126.00 (253, 254)
254	LD23	9693.72		126.00 (254, 255)
255	LD22	9567.72		126.00 (255, 256)
256	LD21	9441.72		126.00 (256, 257)
257	LD20	9315.72		126.00 (257, 258)
258	LD19	9189.72		126.00 (258, 259)
259	LD18	9063.72		126.00 (259, 260)
260	LD17	8937.72		126.00 (260, 261)
261	LDDV _{DD}	8811.72		126.00 (261, 262)
262	CV _{SS}	8685.72		126.00 (262, 263)
263	DV _{SS}	8559.72		126.00 (263, 264)
264	IV _{SS}	8433.72		126.00 (264, 265)
265	LD16	8307.72		126.00 (265, 266)
266	LD15	8181.72		126.00 (266, 267)
267	LD14	8055.72		126.00 (267, 268)
268	LD13	7929.72		126.00 (268, 269)
269	LD12	7803.72		126.00 (269, 270)
270	LD11	7677.72		126.00 (270, 271)
271	LD10	7551.72		126.00 (271, 272)
272	LD9	7425.72		126.00 (272, 273)
273	LD8	7299.72		126.00 (273, 274)
274	LD7	7173.72		126.00 (274, 275)
275	LD6	7047.72		126.00 (275, 276)
276	LD5	6921.72		126.00 (276, 277)
277	LDDV _{DD}	6795.72		126.00 (277, 278)
278	LD4	6669.72		126.00 (278, 279)
279	LD3	6543.72		126.00 (279, 280)
280	LD2	6417.72		126.00 (280, 281)
281	LD1	6291.72		126.00 (281, 282)
282	LD0	6165.72		127.62 (282, 283)
283	V _{DDL}	6038.10		126.00 (283, 284)
284	V _{SSL}	5912.10		126.00 (284, 285)
285	CV _{SS}	5786.10		126.00 (285, 286)



POST OFFICE BOX 1443 • HOUSTON, TEXAS 77251-1443

TMP320C40KGDC, SMJ320C40KGDC
FLOATING-POINT DIGITAL SIGNAL PROCESSOR
KNOWN GOOD DIES

SGUS024A – MARCH 1997 – REVISED SEPTEMBER 1997

Table 1. '320C40 Die Pad/TAB Lead Information : Rev. 5.2 (0,72 μ m) (Continued)

DIE SIDE #4 (CONTINUED)				
C40 DIE BOND PAD LOCATIONS	DIE/TAB BOND PAD IDENTITY	X-COORDINATE OF DIE BOND PAD	Y-COORDINATE OF DIE BOND PAD	PITCH OF LEAD (#, #) REFERENCES WHICH DIE BOND PADS
286	DV _{SS}	5660.10	11819.88	126.00 (286, 287)
287	A30	5534.10		126.00 (287, 288)
288	A29	5408.10		126.00 (288, 289)
289	A28	5282.10		126.00 (289, 290)
290	GADV _{DD}	5156.10		126.00 (290, 291)
291	A27	5030.10		126.00 (291, 292)
292	A26	4904.10		126.00 (292, 293)
293	A25	4778.10		126.00 (293, 294)
294	A24	4652.10		126.00 (294, 295)
295	A23	4526.10		126.00 (295, 296)
296	A22	4400.10		126.00 (296, 297)
297	A21	4274.10		126.00 (297, 298)
298	A20	4148.10		126.00 (298, 299)
299	A19	4022.10		126.00 (299, 300)
300	A18	3896.10		126.00 (300, 301)
301	A17	3770.10		126.00 (301, 302)
302	GADV _{DD}	3644.10		126.00 (302, 303)
303	CV _{SS}	3518.10		126.00 (303, 304)
304	DV _{SS}	3392.10		126.00 (304, 305)
305	A16	3266.10		126.00 (305, 306)
306	A15	3140.10		126.00 (306, 307)
307	A14	3014.10		126.00 (307, 308)
308	A13	2888.10		126.00 (308, 309)
309	A12	2762.10		126.00 (309, 310)
310	A11	2636.10		126.00 (310, 311)
311	A10	2510.10		126.00 (311, 312)
312	A9	2384.10		126.00 (312, 313)
313	A8	2258.10		126.00 (313, 314)
314	A7	2132.10		126.00 (314, 315)
315	A6	2006.10		126.00 (315, 316)
316	A5	1880.10		126.00 (316, 317)
317	A4	1754.10		126.00 (317, 318)
318	GADV _{DD}	1628.10		126.00 (318, 319)
319	A3	1502.10		126.00 (319, 320)
320	A2	1376.10		126.00 (320, 321)
321	A1	1250.10		126.00 (321, 322)
322	A0	1124.10		126.00 (322, 323)
323	CV _{SS}	998.10		558.00 (323, 324)
324	DV _{SS}	440.10		630.00 (324, 325)
325	SUBS	- 189.90		

IMPORTANT NOTICE

Texas Instruments (TI) reserves the right to make changes to its products or to discontinue any semiconductor product or service without notice, and advises its customers to obtain the latest version of relevant information to verify, before placing orders, that the information being relied on is current.

TI warrants performance of its semiconductor products and related software to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are utilized to the extent TI deems necessary to support this warranty. Specific testing of all parameters of each device is not necessarily performed, except those mandated by government requirements.

Certain applications using semiconductor products may involve potential risks of death, personal injury, or severe property or environmental damage ("Critical Applications").

TI SEMICONDUCTOR PRODUCTS ARE NOT DESIGNED, INTENDED, AUTHORIZED, OR WARRANTED TO BE SUITABLE FOR USE IN LIFE-SUPPORT APPLICATIONS, DEVICES OR SYSTEMS OR OTHER CRITICAL APPLICATIONS.

Inclusion of TI products in such applications is understood to be fully at the risk of the customer. Use of TI products in such applications requires the written approval of an appropriate TI officer. Questions concerning potential risk applications should be directed to TI through a local SC sales office.

In order to minimize risks associated with the customer's applications, adequate design and operating safeguards should be provided by the customer to minimize inherent or procedural hazards.

TI assumes no liability for applications assistance, customer product design, software performance, or infringement of patents or services described herein. Nor does TI warrant or represent that any license, either express or implied, is granted under any patent right, copyright, mask work right, or other intellectual property right of TI covering or relating to any combination, machine, or process in which such semiconductor products or services might be or are used.