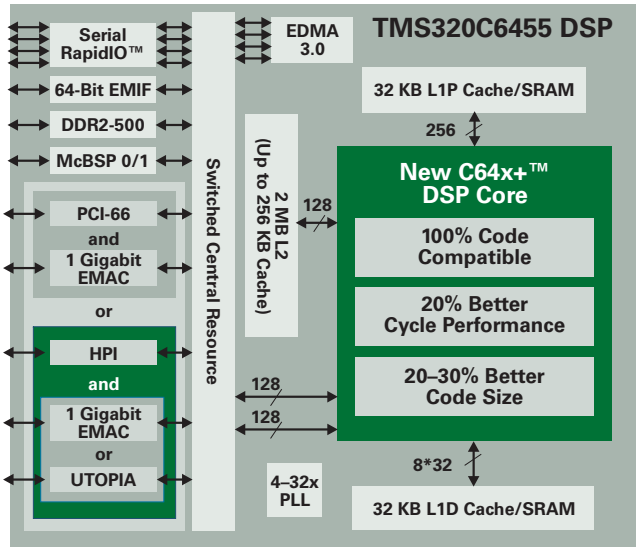
TMS320C6000™ DSP Platform: The Highest-Performance DSPs

Updated 1Q06

The software-compatible C6000™ DSP Platform is optimized for high-performance and performance value applications such as wired and wireless broadband networks, video, pro-audio and imaging.

TMS320C64x™ DSP Generation Block Diagram

Note: For actual peripherals on each device, see the device-specific data sheet.



The C64x+™ fixed-point DSPs offer the highest level of performance to address the demands of the digital age.

TMS320C6000 DSP Platform Generation Comparison

Parametric	C62x™ Fixed-Point DSPs	C64x™ Fixed-Point DSPs	C67x™ Floating-Point DSPs
MHz	150–300	400–1000	150–300
MIPS/MFLOPS	1200–2400 MIPS	3200–8000 MIPS	900–1800 MFLOPS
16-bit MMACs	300–600	1600–8000	200–550
8-bit MMACs	300–600	3200–8000	200–550
Special instructions/ capabilities	Multi-channel voice, data and imaging	Accelerated video, data, imaging and audio	IEEE single- and double-precision floating point
Active power	0.8–1.3 Watts	1.0–1.7+ Watts†	0.7–1.6 Watts
Pricing (1 KU)	U.S. $9.66–86.57	U.S. $16.89–292.67	U.S. $11.24–124.66
Peripherals/Coprocessors	McBSP, 32-bit/33-MHz PCI, 16-/32-bit HPI, 4-/16-channel DMA, 16-/32-bit EMIF, 32-bit expansion bus (XBus), timers	McBSP, 32-bit/33-MHz PCI, 16-/32-bit HPI, 64-channel DMA, 16-/64-bit EMIF, UTOPIA, timers, 10/100/1000 Ethernet MAC, Viterbi coprocessor, Turbo coprocessor, oscillator, audio serial port, DDR2, Serial RapidIO™	McASP, McBSP, 16-/32-bit HPI, 4-/16-channel DMA, 16-/32-bit EMIF, timers

† Power at 1 GHz is estimated.

TMS320C64x™ DSP Generation – Performance Value Fixed-Point DSPs

Part Number	Internal RAM (Bytes) L1 Program Cache/ L1 Data Cache/ L2 Unified RAM/Cache	McBSP	Enhanced DMA (Channels)	COM[3]	Timers	MHz	MIPS	Power (W)[2] CPU and L1	Power (W)[2] Total	Voltage (V) Core	Voltage (V) I/O	Packaging	1 KU ($U.S.)[1]
Performance Value													
TMS320**C6410**GTS400[4]	16K/16K/128K	2	64	HPI 32/16	3	400	3200	0.58	1.0	1.2	3.3	288 BGA, 23 mm	16.89
TMS320**C6410**ZTSA400[8,9]	16K/16K/128K	2	64	HPI 32/16	3	400	3200	0.58	1.0	1.2	3.3	288 BGA, 23 mm	16.89
TMS320**C6413**GTS500[4,5]	16K/16K/256K	2	64	HPI 32/16	3	500	4000	0.58	1.1	1.2	3.3	288 BGA, 23 mm	27.06
TMS320**C6412**AGDK5[4,5]	16K/16K/256K	2	64	PCI/HPI/EMAC[6]	3	500	4000	0.66	1.3	1.2	3.3	548 BGA, 23 mm	39.88
TMS320**C6412**AGNZ5[4,5]	16K/16K/256K	2	64	PCI/HPI/EMAC[6]	3	500	4000	0.66	1.3	1.2	3.3	548 BGA, 27 mm	39.88
TMS320**C6412**AGDK6[4,5]	16K/16K/256K	2	64	PCI/HPI/EMAC[6]	3	600	4800	0.93	1.9	1.4	3.3	548 BGA, 23 mm	43.91
TMS320**C6412**AGNZ6[4,5]	16K/16K/256K	2	64	PCI/HPI/EMAC[6]	3	600	4800	0.93	1.9	1.4	3.3	548 BGA, 27 mm	43.91
TMS320**C6412**AGDK7[4]	16K/16K/256K	2	64	PCI/HPI/EMAC[6]	3	720	5760	0.93	2.15	1.4	3.3	548 BGA, 23 mm	68.69
TMS320**C6412**AGNZ7[4]	16K/16K/256K	2	64	PCI/HPI/EMAC[6]	3	720	5760	0.93	2.15	1.4	3.3	548 BGA, 27 mm	68.69
TMS320**C6418**GTS600[4]	16K/16K/512K	2	64	HPI 32/16	3	600	4800[7]	0.82	1.7	1.4	3.3	288 BGA, 23 mm	50.34
TMS320**C6418**ZTSA500[8,9]	16K/16K/512K	2	64	HPI 32/16	3	500	4000[7]	0.58	1.1	1.4	3.3	288 BGA, 23 mm	50.34

[1] Prices are quoted in U.S. dollars and represent year 2006 suggested resale pricing. All prices are subject to change. Customers are advised to obtain the most current and complete pricing information from TI prior to placing orders. TI may verify final pricing prior to accepting any order.
[2] Assumes 60% CPU utilization, 50% EMIF utilization (133 MHz for 1.4 V, 100 MHz for 1.2 V), 50% writes, 64-bits, 50% bit switching, 2 2-MHz McBSP at 100% utilization, and 2 75-MHz timers at 100% utilization. See SPRAA59 for the TMS320C6410 and TMS320C6413 DSPs. See SPRA967 for the TMS320C6412A DSP. See SPRAA60 for the TMS320C6418 DSP.
[3] HPI is selectable, 32-bit or 16-bit.
[4] Also available with lead-free balls option.
[5] Also available as extended temperature version.
[6] The C6412 can be configured to have either a 32-bit PCI or 32-bit HPI, or a 16-bit HPI with Ethernet MAC.
[7] Plus on-chip VITERBI (VCP) coprocessor.
[8] Lead-free balls version.
[9] Extended temperature version.
Note: Enhanced plastic and Military DSP versions are available for selected DSPs.

TMS320C64x™ DSP Generation – Highest-Performance Fixed-Point DSPs

Part Number	Internal RAM (Bytes) L1 Program Cache/ L1 Data Cache/ L2 Unified RAM/Cache	McBSP	Enhanced DMA (Channels)	COM[3]	Timers	MHz	MIPS	Power (W)[2] CPU and L1	Power (W)[2] Total	Voltage (V) Core	Voltage (V) I/O	Packaging	1 KU ($U.S.)[1]
Highest Performance													
TMX320**C6455**ZTZ[4]	32K/32K/2M	2+Utopia[7]	64	Serial RapidIO/HPI/ PCI/Gigabit EMAC	2[9]	1000	8000[10]	TBD	TBD	1.2	3.3, 1.8, 1.5, 1.2	697 BGA, 24 mm	292.67
TMX320**C6455**ZTZ8[4]	32K/32K/2M	2+Utopia[7]	64	Serial RapidIO/HPI/ PCI/Gigabit EMAC	2[9]	850	6800[10]	TBD	TBD	1.2	3.3, 1.8, 1.5, 1.2	697 BGA, 24 mm	247.47
TMX320**C6455**ZTZ7[4]	32K/32K/2M	2+Utopia[7]	64	Serial RapidIO™/HPI/ PCI/Gigabit EMAC	2[9]	720	5760[10]	TBD	TBD	1.2	3.3, 1.8, 1.5, 1.2	697 BGA, 24 mm	202.27
TMS320**C6416T**GLZ1[6]	16K/16K/1M	2+Utopia[8]	64	PCI/HPI 32/16	3	1000	8000[10]	0.44	1.65	1.2	3.3	532 BGA, 23 mm	234.99
TMS320**C6416T**GLZ8[5,6]	16K/16K/1M	2+Utopia[8]	64	PCI/HPI 32/16	3	850	6800[10]	TBD	TBD	1.2	3.3	532 BGA, 23 mm	173.92
TMS320**C6416T**GLZ7[5,6]	16K/16K/1M	2+Utopia[8]	64	PCI/HPI 32/16	3	720	5760[10]	0.44	1.36	1.2	3.3	532 BGA, 23 mm	118.05
TMS320**C6416T**GLZ6[5]	16K/16K/1M	2+Utopia[8]	64	PCI/HPI 32/16	3	600	4800[10]	0.39	1.1	1.1	3.3	532 BGA, 23 mm	94.43
TMS320**C6415T**GLZ1[6]	16K/16K/1M	2+Utopia[8]	64	PCI/HPI 32/16	3	1000	8000	0.44	1.65	1.2	3.3	532 BGA, 23 mm	209.13
TMS320**C6415T**GLZ8[5,6]	16K/16K/1M	2+Utopia[8]	64	PCI/HPI 32/16	3	850	6800	TBD	TBD	1.2	3.3	532 BGA, 23 mm	158.11
TMS320**C6415T**GLZ7[5,6]	16K/16K/1M	2+Utopia[8]	64	PCI/HPI 32/16	3	720	5760	0.44	1.36	1.2	3.3	532 BGA, 23 mm	107.32
TMS320**C6415T**GLZ6[5]	16K/16K/1M	2+Utopia[8]	64	PCI/HPI 32/16	3	600	4800	0.39	1.1	1.1	3.3	532 BGA, 23 mm	85.85
TMS320**C6414T**GLZ1[6]	16K/16K/1M	3	64	HPI 32/16	3	1000	8000	0.44	1.65	1.2	3.3	532 BGA, 23 mm	198.68
TMS320**C6414T**GLZ8[5,6]	16K/16K/1M	3	64	HPI 32/16	3	850	6800	TBD	TBD	1.2	3.3	532 BGA, 23 mm	150.20
TMS320**C6414T**GLZ7[5,6]	16K/16K/1M	3	64	HPI 32/16	3	720	5760	0.44	1.36	1.2	3.3	532 BGA, 23 mm	101.95
TMS320**C6414T**GLZ6[5,6]	16K/16K/1M	3	64	HPI 32/16	3	600	4800	0.39	1.1	1.1	3.3	532 BGA, 23 mm	81.55

[1] Prices are quoted in U.S. dollars and represent year 2006 suggested resale pricing. All prices are subject to change. Customers are advised to obtain the most current and complete pricing information from TI prior to placing orders. TI may verify final pricing prior to accepting any order.
New devices are listed in red.
[2] Assumes 60% CPU utilization, 50% EMIF utilization (133 MHz for 1.4 V, 100 MHz for 1.2 V), 50% writes, 64-bits, 50% bit switching, 2 2-MHz McBSP at 100% utilization, and 2 75-MHz timers at 100% utilization. See SPRAA45 for TMS320C6414T, TMS320C6415T and TMS320C6416T DSPs.
[3] HPI is selectable, 32-bit or 16-bit.
[4] Lead-free balls version.
[5] Also available as extended temperature version.
[6] Available with lead-free balls option.
[7] UTOPIA pins muxed with a second McBSP.
[8] UTOPIA pins muxed with a third McBSP.
[9] 64-bit configurable timers.
[10] Plus on-chip Turbo (TCP) and VITERBI (VCP) coprocessors.
Note: Enhanced plastic and Military DSP versions are available for selected DSPs.

TMS320C62x™ DSP Generation – Fixed-Point DSPs

Part Number	RAM (Bytes) Data	RAM (Bytes) Prog	McBSP	DMA	COM	MHz	Cycle (ns)	MIPS	Typical Activity Total Internal Power (W) (Full Device Speed)	Voltage (V) Core	Voltage (V) I/O	Packaging	1 KU ($U.S.)[1]
TMS320**C6204**GHK200[2]	64K	64K	2	4	Exp. Bus/32	200	5	1600	0.8	1.5	3.3	288 BGA, 16 mm	9.66
TMS320**C6204**GLW200	64K	64K	2	4	Exp. Bus/32	200	5	1600	0.8	1.5	3.3	340 BGA, 18 mm	21.90
TMS320**C6205**GHK200[2]	64K	64K	2	4	PCI/32	200	5	1600	0.8	1.5	3.3	288 BGA, 16 mm	10.43
TMS320**C6211B**GFN150[2]	4K/4K/64K[3]		2	16[4]	HPI/16	150	6.7	1200	0.9	1.8	3.3	256 BGA, 27 mm	22.54
TMS320**C6211B**GFN167	4K/4K/64K[3]		2	16[4]	HPI/16	167	6	1336	1.0	1.8	3.3	256 BGA, 27 mm	28.18
TMS320**C6202B**GNZ250[2]	128K	256K	3	4	Exp. Bus/32	250	4	2000	0.9	1.5	3.3	352 BGA, 27 mm	58.57
TMS320**C6202B**GNY250	128K	256K	3	4	Exp. Bus/32	250	4	2000	0.9	1.5	3.3	384 BGA, 18 mm	58.57
TMS320**C6202B**GNZ300	128K	256K	3	4	Exp. Bus/32	300	3.3	2400	1.0	1.5	3.3	352 BGA, 27 mm	70.29
TMS320**C6202B**GNY300	128K	256K	3	4	Exp. Bus/32	300	3.3	2400	1.0	1.5	3.3	384 BGA, 18 mm	70.29
TMS320**C6203B**GNZ300	512K	384K	3	4	Exp. Bus/32	300	3.3	2400	1.3	1.5	3.3	352 BGA, 27 mm	74.96
TMS320**C6203B**GNY300	512K	384K	3	4	Exp. Bus/32	300	3.3	2400	1.3	1.5	3.3	384 BGA, 18 mm	74.96
TMS320**C6203B**GNZ173[2]	512K	384K	3	4	Exp. Bus/32	173	5.78	1384	1.1	1.5[5]	3.3	352 BGA, 27 mm	63.26
TMS320**C6203B**GNY173	512K	384K	3	4	Exp. Bus/32	173	5.78	1384	1.1	1.5[5]	3.3	384 BGA, 18 mm	63.26
TMS320**C6201**GJC200[2]	64K	64K	2	4	HPI/16	200	5	1600	1.3	1.8	3.3	352 BGA, 35 mm	86.57
TMS320**C6201**GJL200[2]	64K	64K	2	4	HPI/16	200	5	1600	1.3	1.8	3.3	352 BGA, 27 mm	86.57

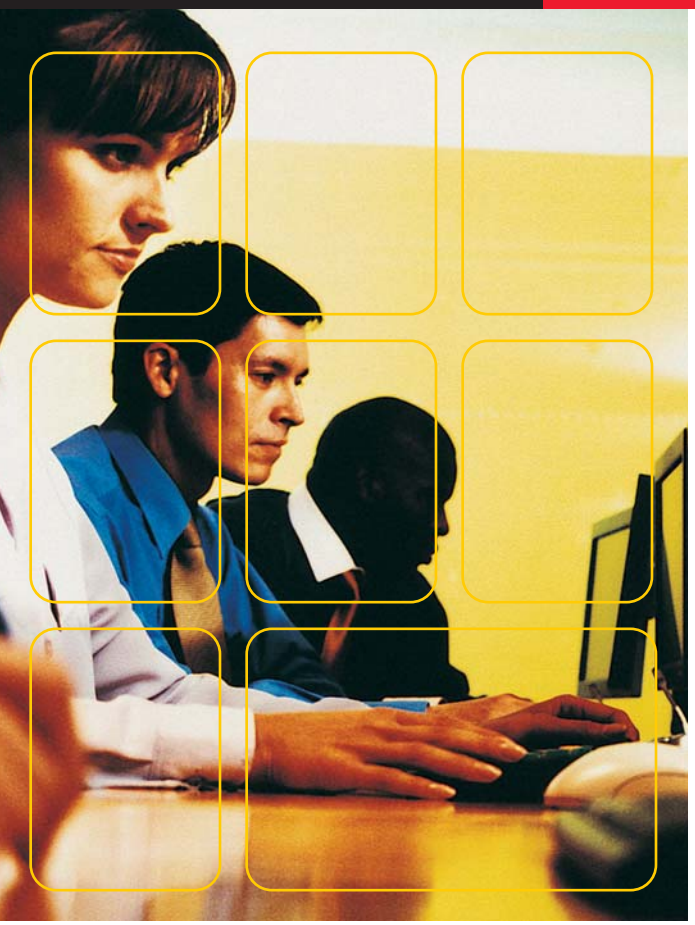
[1] Prices are quoted in U.S. dollars and represent year 2006 suggested resale pricing. All prices are subject to change. Customers are advised to obtain the most current and complete pricing information from TI prior to placing orders. TI may verify final pricing prior to accepting any order.
[2] Extended temperature versions available for C6201, C6202, C6203, C6204, C6205 and C6211 for additional charge.
[3] The C6211 DSP's 72 KBytes of cache memory is comprised of 4 KBytes data cache, 4 KBytes program cache and 64 KBytes unified cache memory.
[4] Enhanced DMA.
[5] Device may operate at 300 MHz with 1.7-V core.
Note: All devices include two timers.
Note: Enhanced plastic and Military DSP versions are available for selected DSPs.

TMS320C67x™ DSP Generation – Floating-Point DSPs

Device	RAM (Bytes) Data/Prog	McBSP	McASP	DMA	COM	SPI/ I²C	MHz	Cycle (ns)	MFLOPS	Typical Activity Total Internal Power (W) (Full Device Speed)	Voltage (V) Core	Voltage (V) I/O	Package(s)	Price[1]
TMS320**C6712D**GDP150	4K/4K/64K[2]	2	—	16[3]	—	—	150	6.7	900	0.7	1.2	3.3	272 BGA, 27 mm	13.77
TMS320**C6722**RFP200[4,5]	32K/128K/384K[7]	—	2	dMAX	—	2/2	200	5	1200	0.8	1.2	3.3	144 PQFP, 22 mm	11.24
TMS320**C6722**RFPA225[4,5,6]	32K/128K/384K[7]	—	2	dMAX	—	2/2	225	4.4	1350	0.8	1.2	3.3	144 PQFP, 22 mm	13.05
TMS320**C6722**RFP250[4,5]	32K/128K/384K[7]	—	2	dMAX	—	2/2	250	4	1500	0.9	1.2	3.3	144 PQFP, 22 mm	13.05
TMS320**C6711D**GDP200	4K/4K/64K[2]	2	—	16[3]	HPI/16	—	200	5	1200	0.9	1.2	3.3	272 BGA, 27 mm	17.12
TMS320**C6726**RFPA225[4,5,6]	32K/256K/384K[7]	—	3[8]	dMAX	—	2/2	225	4.4	1350	0.8	1.2	3.3	144 PQFP, 22 mm	15.93
TMS320**C6726**RFP250[4,5]	32K/256K/384K[7]	—	3[8]	dMAX	—	2/2	250	4	1500	0.9	1.2	3.3	144 PQFP, 22 mm	15.93
TMS320**C6713B**PYP200	4K/4K/256K[2]	2[9]	2[9]	16[3]	HPI/16	—	200	5	1200	1.0	1.2	3.3	208 TQFP, 28 mm	20.02
TMS320**C6727**GDHA250[4,5,10]	32K/256K/384K[7]	—	3	dMAX	UHPI	2/2	300	3.3	1800	1.1	1.2	3.3	256 BGA, 17 mm	22.54
TMS320**C6727**ZDH250[4,5]	32K/256K/384K[7]	—	3	dMAX	UHPI	2/2	250	4	1500	1.0	1.2	3.3	256 BGA, 17 mm	19.94
TMS320**C6727**ZDH300[4,5,10]	32K/256K/384K[7]	—	3	dMAX	UHPI	2/2	300	3.3	1800	1.1	1.2	3.3	256 BGA, 17 mm	22.54
TMS320**C6713B**PYP225	4K/4K/256K[2]	2[9]	2[9]	16[3]	HPI/16	—	225	4.4	1350	1.0	1.2	3.3	208 TQFP, 28 mm	23.09
TMS320**C6713B**GDP225	4K/4K/256K[2]	2[9]	2[9]	16[3]	HPI/16	—	225	4.4	1350	1.1	1.2	3.3	272 BGA, 27 mm	26.30
TMS32**C6713B**GDP300	4K/4K/256K[2]	2[9]	2[9]	16[3]	HPI/16	—	300	3.3	1800	1.6	1.4	3.3	272 BGA, 27 mm	34.97
TMS320**C6701**GJC150	64K/64K	2	—	4	HPI/16	—	150	6.7	900	1.3	1.8	3.3	352 BGA, 35 mm	82.24
TMS**C6701**GJC16719V	64K/64K	2	—	4	HPI/16	—	167	6	1000	1.4	1.9	3.3	352 BGA, 35 mm	124.66

[1] Suggested resale price in U.S. dollars in quantities of 1,000.
New products are listed in red.
[2] Format represents cache memory architecture: [data cache] / [program cache] / [unified cache].
[3] Enhanced DMA.
[4] Extended temperature versions available for C6722, C6726, C6727, C6713, C6711D DSPs.
[5] RFP and ZDH packages are Pb-Free.
[6] The "A" designation is for industrial temperature range.
[7] Format represents program cache/program or data memory/ROM.
[8] McASP2 DIT only.
[9] The C6713 DSP can be configured to have up to three serial ports in various McASP/McBSP combinations by not utilizing the HPI. Other configurable serial options include I²C and additional GPIO.
[10] Also available in 256-pin BGA, 17-mm (GDH) package.
Note: All devices include two timers.
Note: Enhanced plastic and Military DSP versions are available for selected DSPs.

For the most up-to-date information, visit www.ti.com/c6000dsp



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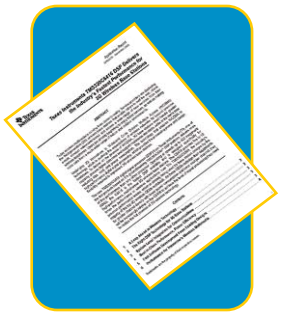

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