Standard Logic ICs

Selection guide
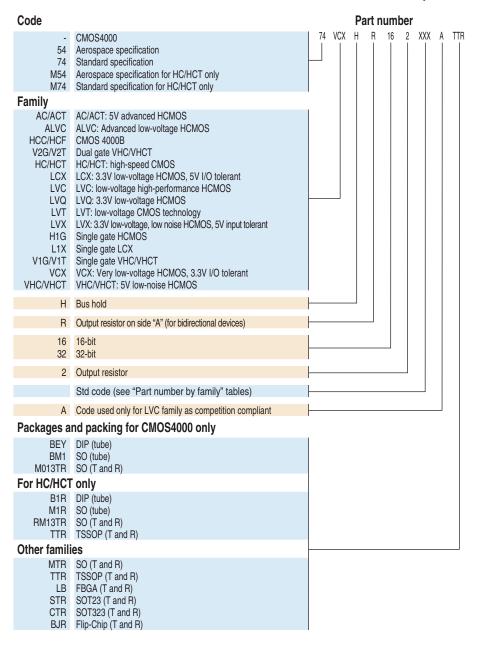
February 2005

www.st.com/stdlogic

Family	Electrical characteristics				Features					Packages						
	V_{DD} or V_{CC} [V]	V_I [V]	I_O (typ) [mA]	t_{PD} (typ) [ns]	Direct TTL interface	Input tolerant	Bus hold	Bus interface	Output resistor	DIP	SO	TSSOP	FBGA	SOT23	SOT323	Flip-Chip
CMOS4000B	3 to 18	0 to V_{DD}	7	45						●	●					
H1G	2 to 6	0 to V_{CC}												●		
HC	2 to 6	0 to V_{CC}	4	12						●	●	●				
HCT	4.5 to 5.5	0 to V_{CC}	4	12	●					●	●	●				
AC	2 to 6	0 to V_{CC}	24	4				●			●	●				
ACT	4.5 to 5.5	0 to V_{CC}	24	4	●			●			●	●				
VHC	2 to 5.5	0 to 5.5	8	4		●		●			●	●				
VHCT	4.5 to 5.5	0 to 5.5	8	4	●	●		●			●	●				
V1G	2 to 5.5	0 to 5.5	8	4		●								●	●	
V1T	4.5 to 5.5	0 to 5.5	8	4	●	●								●	●	
V2G	2 to 5.5	0 to 5.5	8	4		●								●		
V2T	4.5 to 5.5	0 to 5.5	8	4	●	●								●		
LVX	2 to 3.6	0 to 5.5	4	4.7	●	●		●			●	●				
LVQ	2 to 3.6	0 to V_{CC}	12	5	●						●	●				
LVT	2.7 to 3.6	0 to 3.6	64		●	●	●	●				●	●			
LCX	2 to 3.6	0 to 5.5	24	4	●	●	●	●	●		●	●				
LX1G	1.65 to 5.5	0 to 5.5	24	4	●	●								●	●	●
LVC	1.65 to 3.6	0 to 5.5	24	3	●	●					●	●				
ALVC	1.65 to 3.6	0 to 3.6	24	2	●	●	●	●				●	●			
VCX	1.8 to 3.6	0 to 3.6	24	2	●	●	●	●	●			●	●			

Part number description

Code		Part number
		74 VCX H R 16 2 XXX A TTR

Code	
-	CMOS4000
54	Aerospace specification
74	Standard specification
M54	Aerospace specification for HC/HCT only
M74	Standard specification for HC/HCT only

Family

Family	
AC/ACT	AC/ACT: 5V advanced HCMOS
ALVC	ALVC: Advanced low-voltage HCMOS
HCC/HCF	CMOS 4000B
V2G/V2T	Dual gate VHC/VHCT
HC/HCT	HC/HCT: high-speed CMOS
LCX	LCX: 3.3V low-voltage HCMOS, 5V I/O tolerant
LVC	LVC: low-voltage high-performance HCMOS
LVQ	LVQ: 3.3V low-voltage HCMOS
LVT	LVT: low-voltage CMOS technology
LVX	LVX: 3.3V low-voltage, low noise HCMOS, 5V input tolerant
H1G	Single gate HCMOS
L1X	Single gate LCX
V1G/V1T	Single gate VHC/VHCT
VCX	VCX: Very low-voltage HCMOS, 3.3V I/O tolerant
VHC/VHCT	VHC/VHCT: 5V low-noise HCMOS

H	Bus hold
R	Output resistor on side "A" (for bidirectional devices)
16	16-bit
32	32-bit
2	Output resistor
	Std code (see "Part number by family" tables)
A	Code used only for LVC family as competition compliant

Packages and packing for CMOS4000 only

BEY	DIP (tube)
BM1	SO (tube)
M013TR	SO (T and R)

For HC/HCT only

B1R	DIP (tube)
M1R	SO (tube)
RM13TR	SO (T and R)
TTR	TSSOP (T and R)

Other families

MTR	SO (T and R)
TTR	TSSOP (T and R)
LB	FBGA (T and R)
STR	SOT23 (T and R)
CTR	SOT323 (T and R)
BJR	Flip-Chip (T and R)

Mandatory fields
Optional fields

M22100 is a non-standard code

Function selector

Function		Standard code	
		HC/HCT, AC/ACT, LCX, VHC/VHCT, LVQ, LVX, VCX, LVC, LVT, ALVC, V1G, V1T, H1G, LX1G, V2G, V2T	CMOS 4000
Gate	NAND	00; 03; 10; 20; 30; 132; 133	4011; 4012; 4093
	NOR	02; 27	4001; 4002
	AND	08; 09; 11; 21	4073; 4081
	OR	32; 4072; 4075	4071; 4072; 4075
	EX NOR	266; 7266	
	EX OR	86	
	Inverter	04; 05; 14; U04	4069U; 4502
	Multifunction	51; 4078	4019; 4030; 4048; 4068; 4077; 4078
Buffer		07; 4049; 4050; 7007	4007U; 4041U; 4049U; 4050; 40106; 40107
	3-State	125; 126; 240; 241; 244; 365; 366; 367; 368; 540; 541; 16240; 16244; 16541; 162244; 162541; H162244; H16244	
	Bidirectional	243; 245; 623; 640; 3245; 4245; 16245; 162245; 1632245; C3245; C4245; H162245; H16245; H32245; HR162245; R162245	
Flip-Flop	J-K	73; 76; 107; 109; 112	4027
	D	74; 79; 80; 174; 175; 273; 377	4013
	3-State	374; 534; 564; 574; 646; 651; 652; 16374; H16374	
Interface circuit			4009U; 4010; 40109
Latch		75; 77; 259; 279; 7259	4042; 4099
	3-State	373; 533; 563; 573; 16373; H16373	
Multivibrator		123; 221; 423; 4538	4047; 4098; 4538
Decoder		42; 137; 138; 139; 155; 237; 238; 4514; 4515	4028; 4555; 4556
Encoder		147; 148	4532
Display driver		4511; 4543	4033; 4054; 4056; 4511
Register		164; 165; 166; 298; 594; 595; 597	4006; 4014; 4015; 4021; 4035
	3-State	173; 299; 670	4094; 4517
Counter	Binary	161; 163; 191; 393; 590; 592; 4020; 4024; 4040; 4060; 4520	4020; 4024; 4040; 4060; 4520; 4536; 4541; 40103; 40161
	Decade	160; 190; 192; 390; 4518	4029; 4510; 4516; 4518; 40162
	Divider	292; 294; 4017; 40103	4017; 4018; 4022
Multiplexer/ demultiplexer	Digital	4016; 4051; 4052; 4053; 4316; 4351; 4851; 4852	4016; 4051; 4052; 4053; 4067; 4097
	Analog	151; 153; 157; 158; 251; 253; 257	4512; 40257
Switch		66; 70; 384; 4066;	4066
Phase locked loop			4046
Crosspoint			M22100
Others	Adder	283	
	Comparator	85; 688	4063; 4585
	Alu/multiplexer		4089; 4527
	Parity tree	280	

Part number by family

Std code	Standard families														Single gate				Dual gate		PIN *
	HC	HCT	AC	ACT	VHC	VHCT	LCX	LVQ	LVX	VCX	LVC	LVT	ALVC	CMOS4000B	V1G	V1T	H1G	LX1G	V2G	V2T	
00	●	●	●	●	●	●	●	●	●		●				●	●		●	●	●	14
02	●	●	●	●	●	●	●	●	●						●	●		●	●	●	14
03	●				●	●			●						●	●		●	●	●	14
04	●	●	●	●	●	●	●	●	●		●				●	●		●	●	●	14
05	●				●	●	●		●						●	●		●	●	●	14
07					●										●	●		●	●	●	14
08	●	●	●	●	●	●	●	●	●		●				●	●		●	●	●	14
09	●																				14
10	●	●	●	●				●													14
11	●		●																		14
14	●	●	●	●	●			●	●		●				●	●		●	●	●	14
20	●		●	●	●	●			●												14
21	●																				14
27	●			●	●				●												14
30	●																				14
32	●	●	●	●	●	●	●	●	●		●				●	●		●	●	●	14
42	●																				16
51	●																				14
66															●	●	●		●	●	
70															●	●		●	●	●	
73	●																				14
74	●	●	●	●	●	●	●	●	●												14
75	●																				16
76	●																				16
77															●	●					
79															●	●					
80															●	●					
85	●																				16
86	●	●	●	●	●	●	●	●	●		●				●	●		●	●	●	14
107	●																				14
109	●																				16
112	●																				16
123	●																				16
125	●	●	●	●	●	●	●	●	●		●				●	●		●	●	●	14
126	●	●			●	●			●		●				●	●		●	●	●	14
132	●	●			●	●			●									●	●	●	14
133	●																				14
137	●																				16
138	●	●	●	●	●	●	●	●	●												16
139	●				●	●	●		●												16
147	●																				16
148	●																				16
151	●																				16
153	●																				16
155	●																				16
157	●	●	●	●	●	●	●	●	●												16
158		●	●	●																	16
160	●																				16
161			●	●					●												16
163	●		●	●					●												16

*Not for single or dual gate   Single gate = 5 pin packages   Dual gate = 8 pin package

Part number by family

Std code	Standard families														Single gate				Dual gate		PIN *
	HC	HCT	AC	ACT	VHC	VHCT	LCX	LVQ	LVX	VCX	LVC	LVT	ALVC	CMOS4000B	V1G	V1T	H1G	LX1G	V2G	V2T	PIN *
164	●	●																			14
165	●																				16
166	●																				16
173	●																				16
174	●	●	●	●	●	●	●	●	●												16
175	●																				16
190	●																				16
191	●																				16
192	●																				16
221	●																				16
237	●																				16
238	●				●	●			●												16
240	●	●	●	●	●	●		●	●												20
241	●							●											●	●	20
243	●																				14
244	●	●	●	●	●	●	●	●	●		●										20
245	●	●	●	●	●	●	●	●	●		●										20
251	●																				16
253	●																				16
257	●		●	●	●	●	●		●												16
259	●																				16
266	●																				14
273	●	●	●	●	●	●		●	●												20
279	●																				16
280	●			●				●													14
283	●																				16
292	●																				16
294	●																				16
298	●																				16
299	●		●	●				●													20
365	●																				16
366	●																				20
367	●	●																			16
368	●																				16
373	●	●	●	●	●	●	●	●	●		●										20
374	●	●	●	●	●	●	●	●	●												20
377	●																				20
384															●	●			●	●	
390	●																				16
393	●																				14
423	●																				16
533	●																				20
534	●																				20
540	●	●				●															20
541	●	●	●	●	●	●		●	●												20
563	●																				20
564	●																				20
573	●	●	●	●	●	●	●	●	●		●										20
574	●	●	●	●	●	●	●	●	●												20
590	●																				16

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Part number by family

Std code	Standard families														Single gate				Dual gate		PIN *
	HC	HCT	AC	ACT	VHC	VHCT	LCX	LVQ	LVX	VCX	LVC	LVT	ALVC	CMOS4000B	V1G	V1T	H1G	LX1G	V2G	V2T	
592	●																				16
594					●				●												20
595	●																				16
597	●																				16
623	●																				20
640	●	●																			20
646	●	●					●														24
651	●																				24
652		●					●														24
670	●																				16
688	●	●																			20
4001														●							14
4002														●							14
4006														●							14
4010														●							16
4011														●							14
4012														●							14
4013														●							14
4014														●							16
4015														●							16
4016	●													●							14
4017	●													●							16
4018														●							16
4019														●							16
4020	●													●							16
4021														●							16
4022														●							16
4024	●													●							14
4025														●							14
4027														●							16
4028	●													●							16
4029														●							16
4030														●							14
4033														●							16
4035														●							16
4040	●													●							16
4042														●							16
4046														●							16
4047														●							14
4048														●							16
4049	●													●							16
4050	●													●							16
4051	●	●												●							16
4052	●	●												●							16
4053	●	●												●							16
4054														●							16
4056														●							16
4060	●													●							16
4063														●							16
4066	●								●					●							14

Not for single or dual gate   Single gate = 5 pin packages   Dual gate = 8 pin package

| Std code | Standard families | | | | | | | | | | | | | | Single gate | | | | Dual gate | | PIN * |
	HC	HCT	AC	ACT	VHC	VHCT	LCX	LVQ	LVX	VCX	LVC	LVT	ALVC	CMOS4000B	V1G	V1T	H1G	LX1G	V2G	V2T	
4067														●							24
4068														●							14
4071														●							14
4072	●													●							14
4073														●							14
4075	●													●							14
4077														●							14
4078	●													●							14
4081														●							14
4089														●							16
4093														●							14
4094	●													●							16
4097														●							24
4098														●							16
4099														●							16
4316	●																				16
4351	●																				20
4502														●							16
4510														●							16
4511	●													●							16
4512														●							16
4514	●																				24
4515	●																				24
4516														●							16
4517														●							16
4518	●													●							16
4520	●													●							16
4527														●							16
4532														●							16
4536														●							16
4538	●													●							16
4541														●							14
4543	●													●							16
4555														●							16
4556														●							16
4585														●							16
4851	●																				16
7007		●																			14
7259		●																			16
7266	●																				14
40103	●													●							16
40106														●							14
40107														●							8
40109														●							16
40161														●							16
40162														●							16
40257														●							16
4007U														●							14
4009U														●							16
4041U														●							14

*Not for single or dual gate   Single gate = 5 pin packages   Dual gate = 8 pin package

Part number by family

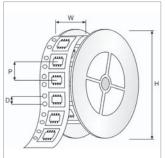| Std code	Standard families														Single gate				Dual gate		PIN *
	HC	HCT	AC	ACT	VHC	VHCT	LCX	LVQ	LVX	VCX	LVC	LVT	ALVC	CMOS4000B	V1G	V1T	H1G	LX1G	V2G	V2T	
4049U														●							16
4069U														●							14
1284				●																	20
3245							●														24
4245							●														24
8244				●																	20
16240				●	●	●			●	●											48
16244			●	●	●	●	●		●	●		●									48
16245			●	●	●		●		●	●											48
16373			●	●	●		●		●	●											48
16374			●	●	●		●		●	●											48
16541			●	●			●														48
161284											●										48
162244							●			●											48
162245										●											48
162541							●														48
1632245										●											48
C3245							●														24
C4245							●														24
H162244							●														48
H162245										●											48
H16244										●			●								48
H16245							●			●			●								48
H16373										●			●								48
H16374										●			●								48
H32245										●			●								96
HR162245							●														48
R162245							●														48
U04	●			●			●		●		●				●			●	●		14
Z161284											●										48

* Not for single or dual gate   Single gate = 5 pin packages   Dual gate = 8 pin package
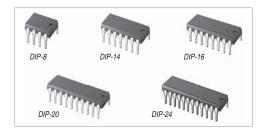
Surface mounting packages

SO-8   SO-14   SO-16   SO-16L   SO-20   SO-24

TSSOP14   TSSOP16   TSSOP20   TSSOP24   TSSOP48

SOT23-8L   SOT23-5L   SOT323-5L   Flip-Chip4   µFBGA42   TFBGA54   TFBGA96

SO, TSSOP, SOT23-XL and SOT323-XL tape and reel (EIA RS 481 outline)

Package	H (inch)	W (tape width mm)	P (mm)	D (mm)
SO-8, TFBGA42	13	12	8	4
SO-14, SO-16, TSSOP14, TSSOP16, TFBGA54	13	16	8	4
SO-16L, TSSOP20, TSSOP24	13	16	12	4
SO-20, SO-24, TSSOP48	13	24	12	4
SOT23-5L/8L, SOT323-5L, Flip-Chip4	7	8	4	4
LFBGA96	13	24	8	4

Package	Quantity
SO-8, SO-14, SO-16, TSSOP16, TSSOP20, TSSOP24, TFBGA54	2,500 pcs
TSSOP48	2,000 pcs
SO-16L, SO-20, SO-24	1,000 pcs
SOT323-5L, SOT23-5L/8L, TFBGA42, Flip-Chip4	3,000 pcs
LFBGA96	3,500 pcs

Through-hole packages

DIP-8   DIP-14   DIP-16

DIP-20   DIP-24

Package	Base qty	Bulk qty
DIP-8	50 pcs	2,000 pcs
DIP-14/16	25 pcs	1,000 pcs
DIP-20	20 pcs	1,000 pcs
DIP-24	15 pcs	750 pcs

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