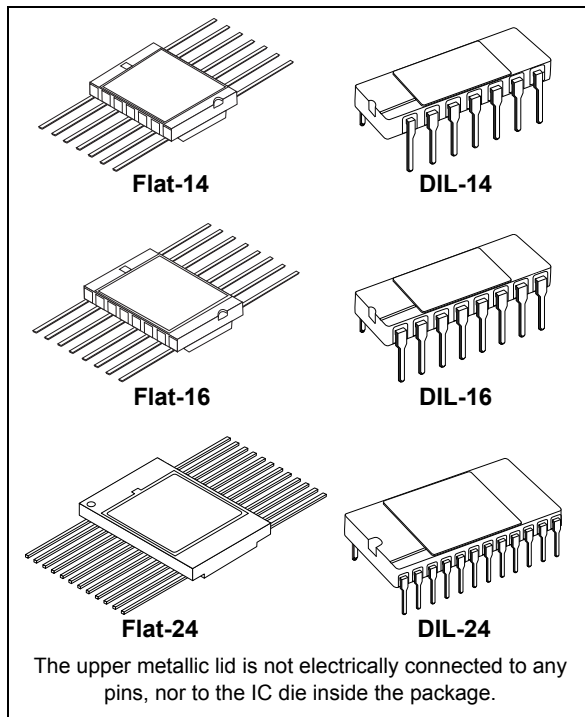


**Rad-hard, high voltage, CMOS logic series**

Datasheet - production data



- 50 ns typical propagation delays
- 100 nA max 25 °C input current
- 100 % tested 20 V quiescent current
- 5-10-15 V parametric testing
- Hermetic packages
- Rad-hard 100 kRad TID at 11rad/sec dose rate
- SEL-SEU immune to 72 MeV/cm<sup>2</sup>/mg LET ions
- ESCC qualified

**Description**

The HCC40xxx and HCC45xxx series are composed of 70 types of high voltage CMOS functions, offering a set of highly noise tolerant gates, Flip-Flops, multiplexers, counters, bus interfaces, and several other functions. The radiation hardness, single event latch-up (SEL), single event upset (SEU) immunity, and the housing in hermetic packages of all types of both series make them usable in the most difficult environmental conditions.

The complete specification of each type is available from the European Space Components Coordination (ESCC) web site: <https://spacecomponents.org/>. ST guarantees full compliance of qualified parts with these ESCC detailed specifications.

**Features**

- 3 to 20 V max operating voltage
- Buffered inputs and outputs
- Standardized symmetrical outputs characteristic

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# 1 HCC family overview

Table 1. Device summary

Part number	Description	Radiation level	Agency qualification	EPPL	ESCC specification	Package	
HCC4001B	Rad-hard quad 2-input NOR gate	100 krad (Si)	ESCC	Y	9201/041	Flat-14 and DIL-14	
HCC4002B	Rad-hard dual 4-input NOR gate			-	9201/042		
HCC4008B	Rad-hard 4-bit full adder			-	9202/039	Flat-16 and DIL-16	
HCC4011B	Rad-hard quad 2-input NAND gate			Y	9201/043	Flat-14 and DIL-14	
HCC4012B	Rad-hard dual 4-input NAND gate			-	9201/044		
HCC4013B	Rad-hard dual D Flip-Flop			Y	9203/023	Flat-16 and DIL-16	
HCC4014B	Rad-hard 8-stage static synchronous shift register				9306/014		
HCC4015B	Rad-hard dual 4-stage static shift register				9306/015		
HCC4017B	Rad-hard decade counter/divider				9204/020		
HCC4018B	Rad-hard presettable divide-by N counter				-		9204/021
HCC4019B	Rad-hard quad AND/OR select gate				Y		9202/051
HCC4020B	Rad-hard 14-stage binary/ripple counter				Y		9204/022
HCC4021B	Rad-hard 8-stage static shift register				-		9306/016
HCC4022B	Rad-hard divide-by-8 counter/divider				-		9204/023
HCC4023B	Rad-hard triple 3-input NAND gate				Y		9201/045
HCC4024B	Rad-hard 7-stage binary/ripple counter			Y	9204/024		
HCC4025B	Rad-hard triple 3-input NOR gate			-	9201/046	Flat-16 and DIL-16	
HCC4027B	Rad-hard dual J-K master-slave Flip-Flop			Y	9203/022		
HCC4028B	Rad-hard BCD-to-decimal decoder			Y	9205/010		
HCC4029B	Rad-hard presettable up/down counter			Y	9204/025	Flat-14 and DIL-14	
HCC4030B	Rad-hard quad exclusive OR gate	Y	9201/047				



Table 1. Device summary (continued)

Part number	Description	Radiation level	Agency qualification	EPPL	ESCC specification	Package		
HCC4034B	Rad-hard 8-stage static bidirectional bus register	100 krad (Si)	ESCC	-	9306/025	Flat-24 and DIL-24		
HCC4040B	Rad-hard 12-stage binary/ripple counter			Y	9204/026	Flat-16 and DIL-16		
HCC4041UB	Rad-hard quad true/complement buffer			-	-	-	9202/040	Flat-14 and DIL-14
HCC4042B	Rad-hard quad clocked D latch						9202/041	Flat-16 and DIL-16
HCC4043B	Rad-hard quad 3-state NOR R/S latch						9202/042	
HCC4044B	Rad-hard quad 3-state NAND R/S latch						9202/043	
HCC4046B	Rad-hard micropower phase locker loop						9202/044	
HCC4047B	Rad-hard monostable/astable multivibrator			Y	-	-	9207/003	Flat-14 and DIL-14
HCC4049UB	Rad-hard hex inverting buffer/converter						9202/045	Flat-16 and DIL-16
HCC4050B	Rad-hard hex non-inverting buffer/converter						9202/046	
HCC4051B	Rad-hard single 8-channel analog mux/demux			9202/047				
HCC4052B	Rad-hard different 4-channel analog mux/demux			-	-	-	9202/048	
HCC4053B	Rad-hard triple 2-channel analog mux/demux						9202/049	
HCC4060B	Rad-hard 14-stage counter/divider AND oscillator			Y	-	-	9204/052	Flat-14 and DIL-14
HCC4063B	Rad-hard 4-bit magnitude comparator						9209/001	
HCC4066B	Rad-hard quad bilateral switch			-	-	-	9408/005	Flat-14 and DIL-14
HCC4067B	Rad-hard single 16-channel analog mux/demux						9408/009	Flat-24 and DIL-24
HCC4068B	Rad-hard 8-input NAND/AND gate			Y	-	-	9201/061	Flat-14 and DIL-14
HCC4069UB	Rad-hard hex inverter						9401/010	
HCC4070B	Rad-hard quad exclusive OR gate						9201/048	
HCC4071B	Rad-hard quad 2-input OR gate						9201/063	
HCC4072B	Rad-hard dual 4-input OR gate						9201/082	
HCC4073B	Rad-hard triple 3-input AND gate			Y	-	-	9201/064	Flat-14 and DIL-14
HCC4075B	Rad-hard triple 3-input OR gate			-	-	-	9201/065	



**Table 1. Device summary (continued)**

Part number	Description	Radiation level	Agency qualification	EPPL	ESCC specification	Package	
HCC4076B	Rad-hard 4-bit D-type register	100 krad (Si)	ESCC	Y	9306/022	Flat-16 and DIL-16	
HCC4077B	Rad-hard quad exclusive NOR gate			-	9201/055	Flat-14 and DIL-14	
HCC4078B	Rad-hard 8-input NOR/OR gate			-	9201/062		
HCC4081B	Rad-hard quad 2-input AND gate			Y	9201/052		
HCC4082B	Rad-hard dual 4-input AND gate			-	9201/066		
HCC4093B	Rad-hard quad 2-input NAND Schmitt trigger			Y	9409/002		
HCC4094B	Rad-hard 8-stage shift-and-store bus register			-	9306/026		Flat-16 and DIL-16
HCC4098B	Rad-hard dual monostable multivibrator			-	9206/003		
HCC40103B	Rad-hard presettable 8-bit binary down counter			Y	-	9204/036	Flat-14 and DIL-14
HCC40106B	Rad-hard hex schmitt trigger				-	9409/005	
HCC40107B	Rad-hard dual 2-input NAND buffer/driver				-	9401/013	
HCC40109B	Rad-hard quad low-to-high voltage level shifter				-	9407/003	Flat-16 and DIL-16
HCC40161B	Rad-hard binary counter with asynchronous clear				-	9204/054	
HCC40174B	Rad-hard hex D Flip-Flop				-	9203/038	
HCC40193B	Rad-hard presettable 4-bit binary up-down counter				-	9204/041	
HCC4503B	Rad-hard hex buffer 3-state non-inverter				Y	9401/030	Flat-24 and DIL-24
HCC4512B	Rad-hard 8-channel data select with 3-state output				Y	9408/006	
HCC4514B	Rad-hard 4-bit Latch / 4-to-16 line decoder output high				-	-	9408/012
HCC4515B	Rad-hard 4-bit Latch / 4-to-16 line decoder output low			-		9205/011	
HCC4516B	Rad-hard presettable 4-bit binary up/down counter			-		9204/045	Flat-16 and DIL-16
HCC4520B	Rad-hard dual binary up-down counter			-		9204/028	
HCC4532B	Rad-hard 8-input priority encoder			-		9202/065	
HCC4538B	Rad-hard dual precision monostable multivibrator			-	9207/007	Flat-16 and DIL-16	
HCC4555B	Rad-hard dual 1-of-4 decoder/demux output high			Y	9408/011		



Table 1. Device summary (continued)

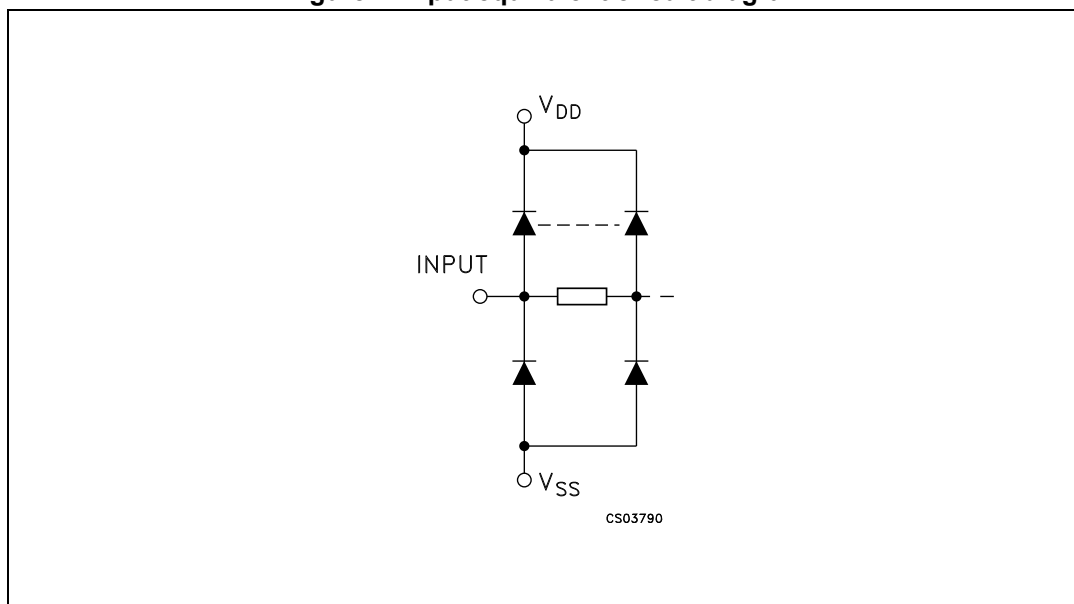
Part number	Description	Radiation level	Agency qualification	EPPL	ESCC specification	Package
HCC4556B	Rad-hard dual 1-of-4 decoder/demux output low			-	9408/025	Flat-16 and DIL-16

*Note:* Contact the ST sales office for information about the specific conditions for other CMOS4000 part numbers and products in die form.



## 2 Input equivalent circuit diagram

Figure 1. Input equivalent circuit diagram



### 3 Maximum ratings

Stressing the device above the rating listed in the “absolute maximum ratings” table may cause permanent damage to the device. These are stress ratings only and operation of the device at these or any other conditions above those indicated in the operating sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

**Table 2. Absolute maximum ratings**

Symbol	Parameter	Value	Unit
$V_{DD}$	Supply voltage	-0.5 to 22	V
$V_I$	DC input voltage	-0.5 to $V_{DD} + 0.5$	V
$I_I$	DC input current	$\pm 10$	mA
$P_D$	Power dissipation per package	200	mW
$T_{OP}$	Operating temperature	-55 to +125	°C
$T_{STG}$	Storage temperature	-65 to +150	°C

*Note:* All voltage values are referred to  $V_{SS}$  pin voltage.

#### 3.1 Recommended operating conditions

**Table 3. Recommended operating conditions**

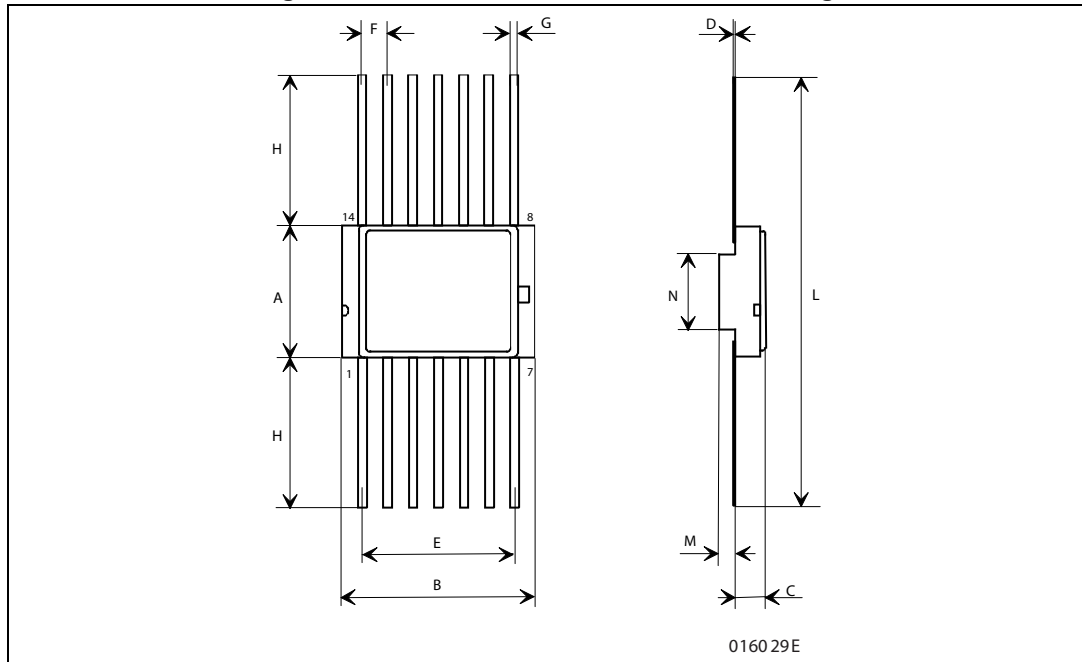
Symbol	Parameter	Value	Unit
$V_{DD}$	Supply voltage	20	V
$V_I$	Input voltage	0 to $V_{DD}$	V
$T_{OP}$	Operating temperature	-55 to +125	°C

## 4 Package mechanical data

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK® packages, depending on their level of environmental compliance. ECOPACK® specifications, grade definitions and product status are available at: [www.st.com](http://www.st.com). ECOPACK is an ST trademark.

### 4.1 Ceramic Flat-14 package

Figure 2. Ceramic Flat-14 mechanical drawing



1. The upper metallic lid is not electrically connected to any pins, nor to the IC die inside the package. Connecting unused pins or metal lid to ground or to the power supply does not affect the electrical characteristics.

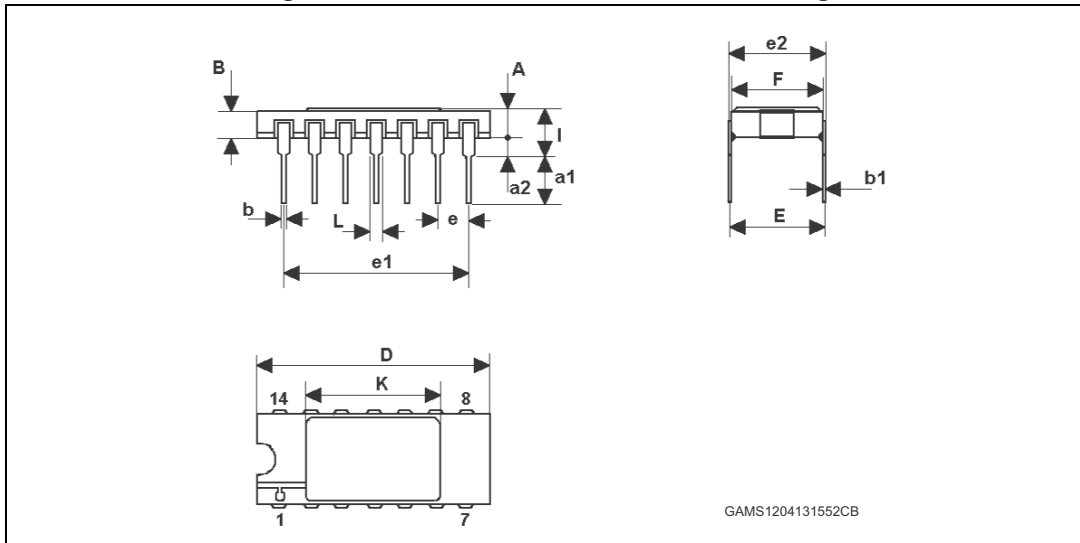
Table 4. Ceramic Flat-14 mechanical data

Ref	Dimensions					
	Millimeters			Inches <sup>(1)</sup>		
	Min	Typ	Max	Min	Typ	Max
A	6.75	6.91	7.06	0.266	0.272	0.278
B	9.76	9.95	10.14	0.384	0.392	0.399
C	1.49		1.95	0.059		0.077
D	0.10	0.127	0.15	0.004	0.005	0.006
E	7.50	7.62	7.75	0.295	0.300	0.305
F		1.27			0.050	
G	0.38	0.43	0.48	0.015	0.017	0.019
H		6.0			0.236	
L	18.75	en	22.0	0.738	en	0.866
M		0.38			0.015	
N		4.31			0.170	

1. Values in inches are rounded to three decimal digits.

## 4.2 Ceramic DIL-14 package

Figure 3. Ceramic DIL-14 mechanical drawing



1. The upper metallic lid is not electrically connected to any pins, nor to the IC die inside the package. Connecting unused pins or metal lid to ground or to the power supply does not affect the electrical characteristics.

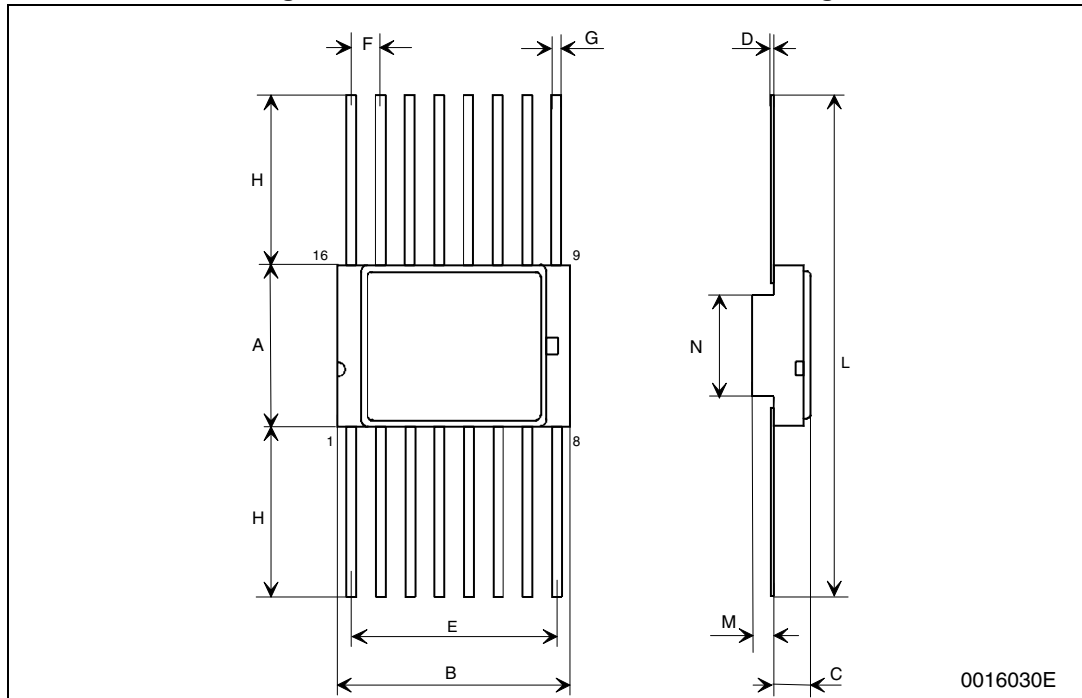
Table 5. Ceramic DIL-14 mechanical data

Ref	Dimensions					
	Millimeters			Inches <sup>(1)</sup>		
	Min	Typ	Max	Min	Typ	Max
A	2.1		2.54	0.083		0.100
a1	3.00		3.70	0.118		0.146
a2	0.63	0.88	1.14	0.025	0.035	0.045
B	1.82	2.03	2.39	0.072	0.080	0.094
b	0.40	0.45	0.50	0.016	0.018	0.020
b1	0.20	0.254	0.30	0.008	0.010	0.012
D	18.79	19.00	19.20	0.740	0.748	0.756
E	7.36	7.62	7.87	0.290	0.300	0.310
e		2.54			0.100	
e1	15.11	15.24	15.37	0.595	0.600	0.605
e2	7.62	7.87	8.12	0.300	0.310	0.320
F	7.11		7.75	0.280		0.305
I			3.70			0.146
K	10.90		12.1 n	0.429		0.476 n
L	1.14	1.27	1.5		0.050	0.059

1. Values in inches are rounded to three decimal digits.

### 4.3 Ceramic Flat-16 package

Figure 4. Ceramic Flat-16 mechanical drawing



1. The upper metallic lid is not electrically connected to any pins, nor to the IC die inside the package. Connecting unused pins or metal lid to ground or to the power supply does not affect the electrical characteristics.

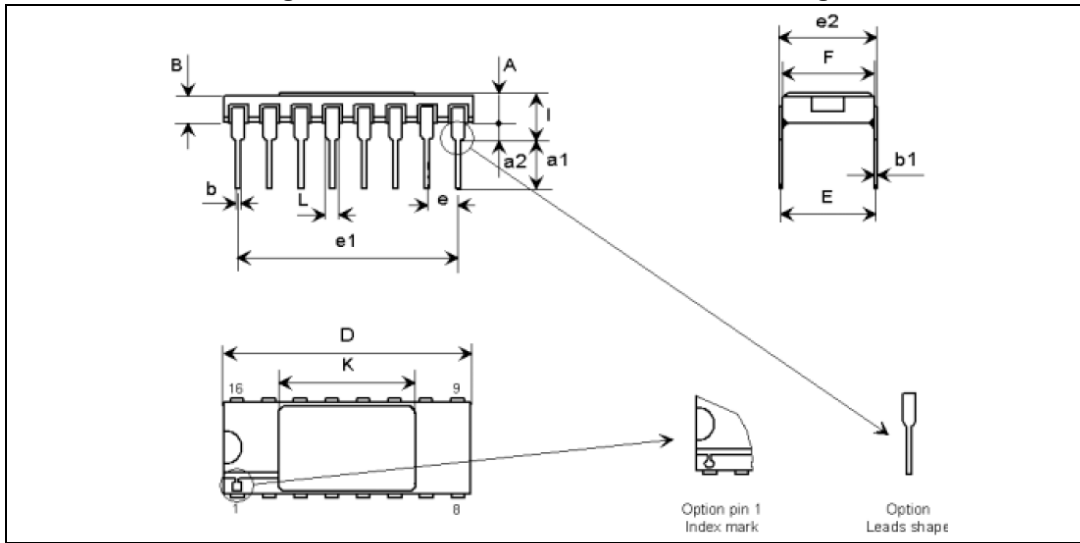
Table 6. Ceramic Flat-16 mechanical data

Ref	Dimensions					
	Millimeters			Inches <sup>(1)</sup>		
	Min	Typ	Max	Min	Typ	Max
A	6.75	6.91	7.06	0.266	0.272	0.278
B	9.76	9.94	10.14	0.384	0.391	0.399
C	1.49		1.95	0.059		0.077
D	0.102	0.127	0.152	0.004	0.005	0.006
E	8.76	8.89	9.01	0.345	0.350	0.355
F		1.27			0.050	
G	0.38	0.43	0.48	0.015	0.017	0.019
H	6.0			0.236		
L	18.75	en	22.0	0.738	en	0.866
M	0.33	0.38	0.43	0.013	0.015	0.017
N		4.31			0.170	

1. Values in inches are rounded to three decimal digits.

### 4.4 Ceramic DIL-16 package

Figure 5. Ceramic DIL-16 mechanical drawing



1. The upper metallic lid is not electrically connected to any pins, nor to the IC die inside the package. Connecting unused pins or metal lid to ground or to the power supply does not affect the electrical characteristics.

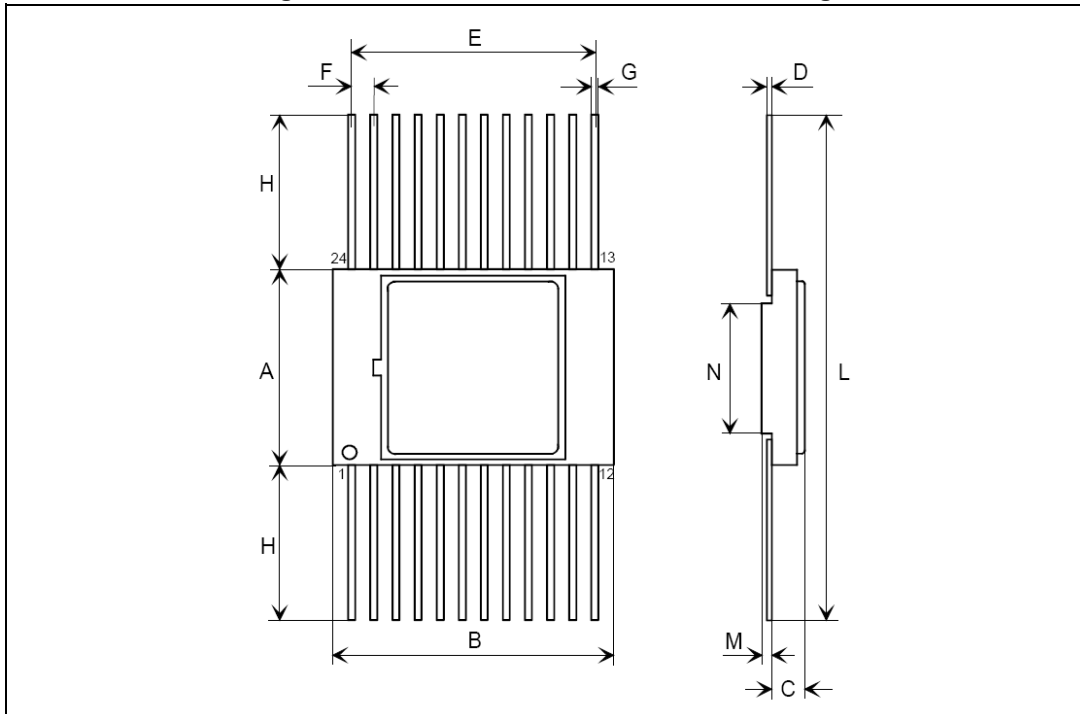
Table 7. Ceramic DIL-16 mechanical data

Ref	Dimensions					
	Millimeters			Inches <sup>(1)</sup>		
	Min	Typ	Max	Min	Typ	Max
A	2.10		2.71	0.083		0.107
a1	3.00		3.70	0.118		0.146
a2	0.63	0.88	1.14	0.025	0.035	0.045
B	1.82		2.39	0.072		0.094
b	0.40	0.45	0.50	0.016	0.018	0.020
b1	0.20	0.254	0.30	0.008	0.010	0.012
D	20.06	20.32	20.58	0.790	0.800	0.810
E	7.36	7.62	7.87	0.290	0.300	0.310
e		2.54			0.100	
e1	17.65	17.78	17.90	0.695	0.700	0.705
e2	7.62	7.87	8.12	0.300	0.310	0.320
F	7.29	7.49	7.70	0.287	0.295	0.303
I			3.83			0.151
K	10.90		12.10	0.429		0.476
L	1.14		1.50	0.045		0.059

1. Values in inches are rounded to three decimal digits.

### 4.5 Ceramic Flat-24 package

Figure 6. Ceramic Flat-24 mechanical drawing



1. The upper metallic lid is not electrically connected to any pins, nor to the IC die inside the package. Connecting unused pins or metal lid to ground or to the power supply does not affect the electrical characteristics.

Table 8. Ceramic Flat-24 mechanical data

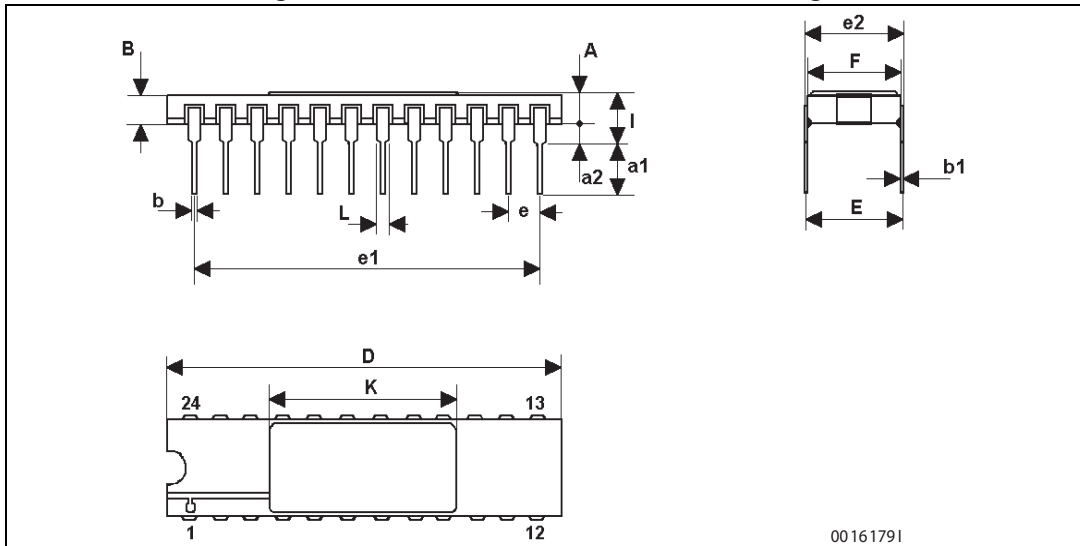
Ref	Dimensions					
	Millimeters			Inches <sup>(1)</sup>		
	Min	Typ	Max	Min	Typ	Max
A	10.70	11.00	11.30	0.421	0.433	0.445
B	15.30	15.49	15.70	0.602	0.610	0.618
C	1.45		1.90	0.057		0.075
D	0.23	0.254	0.30	0.009	0.010	0.012
E	13.84	13.97	14.10	0.545	0.550	0.555
F	1.22	1.27	1.32	0.048	0.050	0.052
G	0.45	0.508	0.55	0.018	0.020	0.022
H	7.25		8.25	0.285		0.325
L	25.00		28.00	0.984		1.102
M	0.45	0.508	0.55	0.018	0.020	0.022
N		7.01			0.276	

1. Values in inches are rounded to three decimal digits.



### 4.6 Ceramic DIL-24 package

Figure 7. Ceramic DIL-24 mechanical drawings



1. The upper metallic lid is not electrically connected to any pins, nor to the IC die inside the package. Connecting unused pins or metal lid to ground or to the power supply does not affect the electrical characteristics.

Table 9. Ceramic DIL-24 mechanical data

Ref	Dimensions					
	Millimeters			Inches <sup>(1)</sup>		
	Min	Typ	Max	Min	Typ	Max
A	2.159	1.931	2.387	0.085	0.076	0.094
a1	1.270	1.016	1.524	0.050	0.040	0.060
a2	0.307	0.274	0.340	0.012	0.011	0.013
B	1.270			0.050		
b1	0.457	0.407	0.507	0.018	0.016	0.020
b2	.254	0.229	0.304	0.010	0.009	0.012
C	2.466	2.205	2.727	0.097	0.087	0.107
D	30.48	30.17	30.78	1.200	1.188	1.212
E	15.24	14.98	15.49	0.600	0.590	0.610
e	2.540	2.410	2.670	0.100	0.095	0.105
e3	27.94	27.81	28.06	1.100	1.095	1.105
F	15.11	14.85	15.36	0.595	0.585	0.605
K	12.80	12.60	13.00	0.504	0.496	0.512
K1	12.80	12.60	13.00	0.504	0.496	0.512
L	3.300	3.000	3.800	0.130	0.118	0.150

1. Values in inches are rounded to three decimal digits.

## 5 Order codes



Table 10. Ordering information

Order code	ESCC detailed specification	Quality level	Comment	Package	Lead finish	Marking <sup>(1)</sup>	Mass (g)	EPPL	Packing
HCC4001BK	9201/041/01 or 02	ESCC flight	Specify ESCC variant number in PO	Flat-14	Gold or solder dip	920104101 or 02	0.70	Y	Strip pack
HCC4001BD	9201/041/03 or 04			DIL-14		920104103 or 04	2.20	-	
HCC4002BK	9201/042/01 or 02			Flat-14		920104201 or 02	0.70	-	
HCC4002BD	9201/042/03 or 04			DIL-14		920104203 or 04	2.20	-	
HCC4008BK	9202/039/01 or 02			Flat-16		920203901 or 02	0.70	-	
HCC4008BD	9202/039/08 or 09			DIL-16		920203908 or 09	2.20	-	
HCC4011BK	9201/043/01 or 02			Flat-14		920104301 or 02	0.70	-	
HCC4011BD	9201/043/03 or 04			DIL-14		920104303 or 04	2.20	-	
HCC4012BK	9201/044/01 or 02			Flat-14		920104401 or 02	0.70	-	
HCC4012BD	9201/044/03 or 04			DIL-14		920104403 or 04	2.20	-	
HCC4013BK	9203/023/01 or 02			Flat-14		920302301 or 02	0.70	Y	
HCC4013BD	9203/023/03 or 04			DIL-14		920302303 or 04	2.20	-	
HCC4014BK	9306/014/01 or 02			Flat-16		930601401 or 02	0.70	Y	
HCC4014BD	9306/014/08 or 09			DIL-16		930601408 or 09	2.20	-	
HCC4015BK	9306/015/01 or 02			Flat-16		930601501 or 02	0.70	Y	
HCC4015BD	9306/015/08 or 09			DIL-16		930601508 or 09	2.20	-	
HCC4017BK	9204/020/01 or 02			Flat-16		920402001 or 02	0.70	Y	
HCC4017BD	9204/020/08 or 09			DIL-16		920402008 or 09	2.20	-	
HCC4018BK	9204/021/01 or 02			Flat-16		920402101 or 02	0.70	-	
HCC4018BD	9204/021/08 or 09			DIL-16		920402108 or 09	2.20	-	
HCC4019BK	9202/051/01 or 02	Flat-16	920205101 or 02	0.70	Y				
HCC4019BD	9202/051/08 or 09	DIL-16	920205108 or 09	2.20	-				



Table 10. Ordering information (continued)

Order code	ESCC detailed specification	Quality level	Comment	Package	Lead finish	Marking <sup>(1)</sup>	Mass (g)	EPPL	Packing
HCC4020BK	9204/022/01 or 02	ESCC flight	Specify ESCC variant number in PO	Flat-16	Gold or solder dip	920402201 or 02	0.70	Y	Strip pack
HCC4020BD	9204/022/08 or 09			DIL-16		920402208 or 09	2.20	-	
HCC4021BK	9306/016/01 or 02			Flat-16		930601601 or 02	0.70	Y	
HCC4021BD	9306/016/08 or 09			DIL-16		930601608 or 09	2.20	-	
HCC4022BK	9204/023/01 or 02			Flat-16		920402301 or 02	0.70	-	
HCC4022BD	9204/023/08 or 09			DIL-16		920402308 or 09	2.20	-	
HCC4023BK	9201/045/01 or 02			Flat-14		920104501 or 02	0.70	Y	
HCC4023BD	9201/045/03 or 04			DIL-14		920104503 or 04	2.20	-	
HCC4024BK	9204/024/01 or 02			Flat-14		920402401 or 02	0.70	Y	
HCC4024BD	9204/024/03 or 04			DIL-14		920402403 or 04	2.20	-	
HCC4025BK	9201/046/01 or 02			Flat-14		920104601 or 02	0.70	-	
HCC4025BD	9201/046/03 or 04			DIL-14		920104603 or 04	2.20	-	
HCC4027BK	9203/022/01 or 02			Flat-16		920302201 or 02	0.70	Y	
HCC4027BD	9203/022/08 or 09			DIL-16		920302208 or 09	2.20	-	
HCC4028BK	9205/010/01 or 02			Flat-16		920501001 or 02	0.70	Y	
HCC4028BD	9205/010/08 or 09			DIL-16		920501008 or 09	2.20	-	
HCC4029BK	9204/025/01 or 02			Flat-16		920402501 or 02	0.70	Y	
HCC4029BD	9204/025/08 or 09			DIL-16		920402508 or 09	2.20	-	
HCC4030BK	9201/047/01 or 02			Flat-14		920104701 or 02	0.70	Y	
HCC4030BD	9201/047/03 or 04			DIL-14		920104703 or 04	2.20	-	
HCC4034BK	9306/025/01 or 02			Flat-24		930602501 or 02	1.70	-	
HCC4034BD	9306/025/03 or 04			DIL-24		930602503 or 04	5.20	-	
HCC4040BK	9204/026/01 or 02			Flat-16		920402601 or 02	0.70	Y	
HCC4040BD	9204/026/08 or 09			DIL-16		920402608 or 09	2.20	-	
HCC4041UBK	9202/040/01 or 02			Flat-14		920204001 or 02	0.70	-	



Table 10. Ordering information (continued)

Order code	ESCC detailed specification	Quality level	Comment	Package	Lead finish	Marking <sup>(1)</sup>	Mass (g)	EPPL	Packing	
HCC4041UBD	9202/040/03 or 04	ESCC flight	Specify ESCC variant number in PO	DIL-14	Gold or solder dip	920204003 or 04	2.20	-	Strip pack	
HCC4042BK	9202/041/01 or 02			Flat-16		920204101 or 02	0.70			
HCC4042BD	9202/041/08 or 09			DIL-16		920204108 or 09	2.20			
HCC4043BK	9202/042/01 or 02			Flat-16		920204201 or 02	0.70			
HCC4043BD	9202/042/08 or 09			DIL-16		920204208 or 09	2.20			
HCC4044BK	9202/043/01 or 02			Flat-16		920204301 or 02	0.70			
HCC4044BD	9202/043/08 or 09			DIL-16		920204308 or 09	2.20			
HCC4046BK	9202/044/01 or 02			Flat-16		920204401 or 02	0.70			
HCC4046BD	9202/044/08 or 09			DIL-16		920204408 or 09	2.20			
HCC4047BK	9207/003/01 or 02			Flat-14		920700301 or 02	0.70			Y
HCC4047BD	9207/003/03 or 04			DIL-14		920700303 or 04	2.20			-
HCC4049UBK	9202/045/01 or 02			Flat-16		920204501 or 02	0.70			Y
HCC4049UBD	9202/045/08 or 09			DIL-16		920204508 or 09	2.20			-
HCC4050BK	9202/046/01 or 02			Flat-16		920204601 or 02	0.70			Y
HCC4050BD	9202/046/08 or 09			DIL-16		920204608 or 09	2.20			-
HCC4051BK	9202/047/01 or 02			Flat-16		920204701 or 02	0.70			Y
HCC4051BD	9202/047/08 or 09			DIL-16		920204708 or 09	2.20			-
HCC4052BK	9202/048/01 or 02			Flat-16		920204801 or 02	0.70			
HCC4052BD	9202/048/08 or 09			DIL-16		920204808 or 09	2.20			
HCC4053BK	9202/049/01 or 02			Flat-16		920204901 or 02	0.70			
HCC4053BD	9202/049/08 or 09			DIL-16		920204908 or 09	2.20			
HCC4060BK	9204/052/01 or 02			Flat-16		920405201 or 02	0.70			
HCC4060BD	9204/052/08 or 09			DIL-16		920405208 or 09	2.20			
HCC4063BK	9209/001/01 or 02			Flat-16		920900101 or 02	0.70			
HCC4063BD	9209/001/08 or 09			DIL-16		920900108 or 09	2.20			-



Table 10. Ordering information (continued)

Order code	ESCC detailed specification	Quality level	Comment	Package	Lead finish	Marking <sup>(1)</sup>	Mass (g)	EPPL	Packing
HCC4066BK	9408/005/01 or 02	ESCC flight	Specify ESCC variant number in PO	Flat-14	Gold or solder dip	940800501 or 02	0.70	Y	Strip pack
HCC4066BD	9408/005/03 or 04			DIL-14		940800503 or 04	2.20	-	
HCC4067BK	9408/009/01 or 02			Flat-24		940800901 or 02	1.70	-	
HCC4067BD	9408/009/03 or 04			DIL-24		940800903 or 04	5.20	-	
HCC4068BK	9201/061/01 or 02			Flat-14		920106101 or 02	0.70	-	
HCC4068BD	9201/061/03 or 04			DIL-14		920106103 or 04	2.20	-	
HCC4069UBK	9401/010/01 or 02			Flat-14		940101001 or 02	0.70	Y	
HCC4069UBD	9401/010/03 or 04			DIL-14		940101003 or 04	2.20	-	
HCC4070BK	9201/048/01 or 02			Flat-14		920104801 or 02	0.70	-	
HCC4070BD	9201/048/03 or 04			DIL-14		920104803 or 04	2.20	-	
HCC4071BK	9201/063/01 or 02			Flat-14		920106301 or 02	0.70	Y	
HCC4071BD	9201/063/03 or 04			DIL-14		920106303 or 04	2.20	-	
HCC4072BK	9201/082/01 or 02			Flat-14		920108201 or 02	0.70	-	
HCC4072BD	9201/082/03 or 04			DIL-14		920108203 or 04	2.20	-	
HCC4073BK	9201/064/01 or 02			Flat-14		920106401 or 02	0.70	Y	
HCC4073BD	9201/064/03 or 04			DIL-14		920106403 or 04	2.20	-	
HCC4075BK	9201/065/01 or 02			Flat-14		920106501 or 02	0.70	-	
HCC4075BD	9201/065/03 or 04			DIL-14		920106503 or 04	2.20	-	
HCC4076BK	9306/022/01 or 02			Flat-16		930602201 or 02	0.70	Y	
HCC4076BD	9306/022/08 or 09			DIL-16		930602208 or 09	2.20	-	
HCC4077BK	9201/055/01 or 02			Flat-14		920105501 or 02	0.70	-	
HCC4077BD	9201/055/03 or 04			DIL-14		920105503 or 04	2.20	-	
HCC4078BK	9201/062/01 or 02			Flat-14		920106201 or 02	0.70	-	
HCC4078BD	9201/062/03 or 04			DIL-14		920106203 or 04	2.20	-	
HCC4081BK	9201/052/01 or 02			Flat-14		920105201 or 02	0.70	Y	



Table 10. Ordering information (continued)

Order code	ESCC detailed specification	Quality level	Comment	Package	Lead finish	Marking <sup>(1)</sup>	Mass (g)	EPPL	Packing
HCC4081BD	9201/052/03 or 04	ESCC flight	Specify ESCC variant number in PO	DIL-14	Gold or solder dip	920105203 or 04	2.20	-	Strip pack
HCC4082BK	9201/066/01 or 02			Flat-14		920106601 or 02	0.70		
HCC4082BD	9201/066/03 or 04			DIL-14		920106603 or 04	2.20		
HCC4093BK	9409/002/01 or 02			Flat-14		940900201 or 02	0.70	Y	
HCC4093BD	9409/002/03 or 04			DIL-14		940900203 or 04	2.20	-	
HCC4094BK	9306/026/01 or 02			Flat-16		930602601 or 02	0.70	Y	
HCC4094BD	9306/026/08 or 09			DIL-16		930602608 or 09	2.20	-	
HCC4098BK	9206/003/01 or 02			Flat-16		920600301 or 02	0.70	Y	
HCC4098BD	9206/003/08 or 09			DIL-16		920600308 or 09	2.20	-	
HCC40103BK	9204/036/01 or 02			Flat-16		920403601 or 02	0.70	Y	
HCC40103BD	9204/036/08 or 09			DIL-16		920403608 or 09	2.20	-	
HCC40106BK	9409/005/01 or 02			Flat-14		940900501 or 02	0.70	Y	
HCC40106BD	9409/005/03 or 04			DIL-14		940900503 or 04	2.20	-	
HCC40107BK	9401/013/01 or 02			Flat-14		940101301 or 02	0.70	Y	
HCC40107BD	9401/013/03 or 04			DIL-14		940101303 or 04	2.20	-	
HCC40109BK	9407/003/01 or 02			Flat-16		940700301 or 02	0.70	Y	
HCC40109BD	9407/003/08 or 09			DIL-16		940700308 or 09	2.20	-	
HCC40161BK	9204/054/01 or 02			Flat-16		920405401 or 02	0.70	Y	
HCC40161BD	9204/054/08 or 09			DIL-16		920405408 or 09	2.20	-	
HCC40174BK	9203/038/01 or 02			Flat-16		920303801 or 02	0.70	Y	
HCC40174BD	9203/038/08 or 09			DIL-16		920303808 or 09	2.20	-	
HCC40193BK	9204/041/01 or 02			Flat-16		920404101 or 02	0.70		
HCC40193BD	9204/041/08 or 09			DIL-16		920404108 or 09	2.20	Y	
HCC4503BK	9401/030/01 or 02			Flat-16		940103001 or 02	0.70		
HCC4503BD	9401/030/08 or 09			DIL-16		940103008 or 09	2.20	-	



Table 10. Ordering information (continued)

Order code	ESCC detailed specification	Quality level	Comment	Package	Lead finish	Marking <sup>(1)</sup>	Mass (g)	EPPL	Packing
HCC4512BK	9408/006/01 or 02	ESCC flight	Specify ESCC variant number in PO	Flat-16	Gold or solder dip	940800601 or 02	0.70	Y	Strip pack
HCC4512BD	9408/006/08 or 09			DIL-16		940800608 or 09	2.20	-	
HCC4514BK	9408/012/01 or 02			Flat-24		940801201 or 02	1.70	-	
HCC4514BD	9408/012/03 or 04			DIL-24		940801203 or 04	5.20	-	
HCC4515BK	9205/011/01 or 02			Flat-24		920501101 or 02	1.70	-	
HCC4515BD	9205/011/03 or 04			DIL-24		920501103 or 04	5.20	-	
HCC4516BK	9204/045/01 or 02			Flat-16		920404501 or 02	0.70	-	
HCC4516BD	9204/045/08 or 09			DIL-16		920404508 or 09	2.20	-	
HCC4520BK	9204/028/01 or 02			Flat-16		920402801 or 02	0.70	-	
HCC4520BD	9204/028/08 or 09			DIL-16		920402808 or 09	2.20	-	
HCC4532BK	9202/065/01 or 02			Flat-16		920206501 or 02	0.70	-	
HCC4532BD	9202/065/08 or 09			DIL-16		920206508 or 09	2.20	-	
HCC4538BK	9207/007/01 or 02			Flat-16		920700701 or 02	0.70	-	
HCC4538BD	9207/007/08 or 09			DIL-16		920700708 or 09	2.20	-	
HCC4555BK	9408/011/01 or 02			Flat-16		940801101 or 02	0.70	Y	
HCC4555BD	9408/011/08 or 09			DIL-16		940801108 or 09	2.20	-	
HCC4556BK	9408/025/01 or 02			Flat-16		940802501 or 02	0.70	-	
HCC4556BD	9408/025/08 or 09			DIL-16		940802508 or 09	2.20	-	

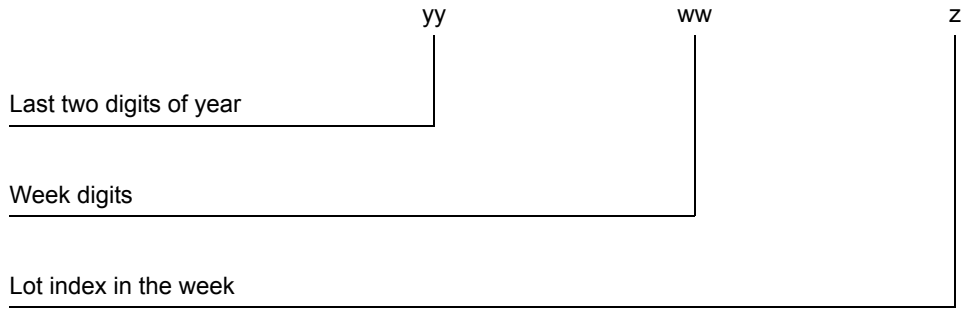
1. Specific marking only. Complete marking includes the following:
- ST logo
  - ESA logo
  - Date code (date the package was sealed) in YYWWA (year, week number, and week index)
  - ESCC part number (as mentioned in above table)
  - Country of origin (FR = France)
  - Part serial number within the assembly lot

**Note:** -Contact the ST sales office for information about the specific conditions for other CMOS4000 part numbers and products in die form.

## 6 Other information

### 6.1 Data code

The data code for “ESCC flight” is structured as follows: yywwz, where:



### 6.2 Documentation

**Table 11. Documentation provided for ESCC flight**

Quality level	Documentation
ESCC flight	Certificate of conformance
	0.1 rad/s radiation verification test report



## 7 Revision history

**Table 12. Document revision history**

Date	Revision	Changes
24-Mar-2010	1	First release
29-Mar-2010	2	Updated cover page description
10-Aug-2011	3	Added <i>note 1. on page 12, note 1. on page 13, note 1. on page 14, note 1. on page 15, note 1. on page 16, note 1. on page 17</i> and in the "Pin connections" diagram on the cover page.
26-Apr-2013	4	<p>Small text change to <i>Description</i>.</p> <p><i>Table 1: Device summary</i>: removed part numbers HCC4016B, HCC4035B, HCC4099B, HCC4502B, and HCC4508B; updated ESCC specification for HCC4098B (9206/003 instead of 9206/002).</p> <p>Added "inches" dimensions to <i>Table 4, Table 5, Table 6, Table 7, Table 8, and Table 9</i>.</p> <p>Updated <i>Table 11: Documentation provided for ESCC flight</i>.</p> <p>Added <i>Section 6: Other information</i>.</p>

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