

### Features

- 2 to 6 V operating voltage
- Low power DC dissipation: 1  $\mu$ A max. at 25 °C
- High speed  $t_{PD} = 8$  ns typ. at 25 °C
- Symmetrical outputs characteristics
- High noise immunity: 28 % of min.  $V_{CC}$
- Hermetic packages
- Rad-hard 50 krad (Si)
- SEL immune up to 110 MeV/mg/cm<sup>2</sup>
- ESCC qualified
- Same die and electrical specification for engineering and flight models
- The complete specification of each type is available from the ESCC web site: <https://escies.org> using its ESCC part number. STMicroelectronics® guarantees full compliance of qualified parts with these ESCC specifications.

### Description

The M54HCxxx and M54HCTxxx series are composed of 90 types of high speed CMOS functions specifically designed to meet the radiation requirements of the aerospace industry. They include a large set of gates, flip-flops, multiplexers, counters, bus interface and several other functions. The radiation hardness, the single event latch-up (SEL) immunity and the housing in hermetic packages of all types of both series make them ideally suited for use in the most difficult environmental conditions.

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# 1 M54HC and M54HCT families overview

Table 1. Device summary

Part number	Description	Radiation level	Agency qualification	EPPL	ESCC specification	Package	V <sub>CC</sub>		V <sub>IN</sub> range	Other features	Temp. range
							Min.	Max.			
M54HC00	Rad-hard quad 2-input NAND gate	50 krad (Si)	ESCC	Y	9201/105	Flat-14 - DIL-14	2.0	6.0	0 to V <sub>CC</sub>	-	-55 °C to 125 °C
M54HC02	Rad-hard quad 2-input NOR gate			Y	9201/113	Flat-14 - DIL-14	2.0	6.0			
M54HC03	Rad-hard quad 2-input NAND open drain			Y	9201/114	Flat-14 - DIL-14	2.0	6.0			
M54HC04	Rad-hard hex inverter			Y	9401/033	Flat-14 - DIL-14	2.0	6.0			
M54HC08	Rad-hard quad 2-input AND gate			Y	9201/106	Flat-14 - DIL-14	2.0	6.0			
M54HC10	Rad-hard triple 3-input NAND gate			Y	9201/107	Flat-14 - DIL-14	2.0	6.0			
M54HC11	Rad-hard triple 3-input AND gate			Y	9201/117	Flat-14 - DIL-14	2.0	6.0			
M54HC14	Rad-hard hex Schmitt inverter			Y	9409/007	Flat-14 - DIL-14	2.0	6.0			
M54HC20	Rad-hard dual 4-input NAND gate			Y	9201/118	Flat-14 - DIL-14	2.0	6.0			
M54HC21	Rad-hard dual 4-input AND gate			Y	9201/108	Flat-14 - DIL-14	2.0	6.0			
M54HC27	Rad-hard triple 3-input NOR gate			Y	9201/109	Flat-14 - DIL-14	2.0	6.0			
M54HC30	Rad-hard 8-input NAND gate			-	9201/110	Flat-14 - DIL-14	2.0	6.0			



Table 1. Device summary (continued)

Part number	Description	Radiation level	Agency qualification	EPPL	ESCC specification	Package	V <sub>CC</sub>		V <sub>IN</sub> range	Other features	Temp. range
							Min.	Max.			
M54HC32	Rad-hard quad 2-input OR gate	50 krad (Si)	ESCC	Y	9201/111	Flat-14 - DIL-14	2.0	6.0	0 to V <sub>CC</sub>	-	-55 °C to 125 °C
M54HC73	Rad-hard dual J-K flip-flop with clear			-	9203/071	Flat-14 - DIL-14	2.0	6.0		Negative edge	
M54HC74	Rad-hard dual D-type flip-flop with preset and clear			Y	9203/050	Flat-14 - DIL-14	2.0	6.0		Positive edge	
M54HCT74	Rad-hard dual D-type flip-flop with preset and clear			Y	9203/070	Flat-14 - DIL-14	4.5	5.5		Positive edge TTL compatible	
M54HC75	Rad-hard 4-bit D-type latch			-	9203/065	Flat-16 - DIL-16	2.0	6.0		-	
M54HC85	Rad-hard 4-bit magnitude comparator			Y	9209/004	Flat-16 - DIL-16	2.0	6.0		-	
M54HC86	Rad-hard quad exclusive OR gate			Y	9201/119	Flat-14 - DIL-14	2.0	6.0		Pinout 1	
M54HC109	Rad-hard dual J-K flip-flop with preset and clear			Y	9306/048	Flat-16 - DIL-16	2.0	6.0		Positive edge	
M54HC123	Rad-hard dual retriggerable monostable multivibrator with clear			-	9207/006	Flat-16 - DIL-16	2.0	6.0		-	
M54HC125	Rad-hard quad bus buffer 3-state			Y	9401/039	Flat-14	2.0	6.0		Inverted enables	
M54HC132	Rad-hard quad 2-input Schmitt NAND gate			Y	9201/120	Flat-14 - DIL-14	2.0	6.0		-	
M54HC137	Rad-hard 3-to-8 line decoder latch inverter			-	9205/013	Flat-16 - DIL-16	2.0	6.0		-	
M54HC138	Rad-hard 3-to-8 line decoder inverter			Y	9408/046	Flat-16 - DIL-16	2.0	6.0		-	



Table 1. Device summary (continued)

Part number	Description	Radiation level	Agency qualification	EPPL	ESCC specification	Package	V <sub>CC</sub>		V <sub>IN</sub> range	Other features	Temp. range
							Min.	Max.			
M54HC139	Rad-hard dual 2-to-4 line decoder/demultiplexer	50 krad (Si)	ESCC	Y	9205/017	Flat-16 - DIL-16	2.0	6.0	0 to V <sub>CC</sub>	-	-55 °C to 125 °C
M54HC148	Rad-hard 8-to-3 line priority encoder			-	9410/017	Flat-16 - DIL-16	2.0	6.0			
M54HC151	Rad-hard 8-channel multiplexer			Y	9408/054	Flat-16 - DIL-16	2.0	6.0			
M54HC153	Rad-hard dual 4-channel multiplexer			-	9408/038	Flat-16 - DIL-16	2.0	6.0			
M54HC154	Rad-hard 4-to-16 line decoder/demultiplexer			Y	9205/023	Flat-24 - DIL-24	2.0	6.0			
M54HC157	Rad-hard quad 2-channel multiplexer			Y	9408/057	Flat-16 - DIL-16	2.0	6.0			
M54HC158	Rad-hard quad 2-channel multiplexer Inverter			Y	9408/059	Flat-16 - DIL-16	2.0	6.0			
M54HC160	Rad-hard synchronous decade counter with async. clear			-	9204/062	DIL-16	2.0	6.0			
M54HC161	Rad-hard synchronous binary counter with async. clear			Y	9204/059	Flat-16 - DIL-16	2.0	6.0			
M54HC164	Rad-hard 8-bit SIPO shift register			Y	9306/041	Flat-14 - DIL-14	2.0	6.0			
M54HC165	Rad-hard 8-bit PISO shift register			Y	9306/042	Flat-16 - DIL-16	2.0	6.0			
M54HC166	Rad-hard 8-bit PISO shift register with clear			Y	9306/043	Flat-16 - DIL-16	2.0	6.0			
M54HC174	Rad-hard hex D-type flip-flop with clear			Y	9306/052	Flat-16 - DIL-16	2.0	6.0			
M54HC175	Rad-hard quad D-type flip-flop with clear	Y	9203/052	Flat-16 - DIL-16	2.0	6.0					



Table 1. Device summary (continued)

Part number	Description	Radiation level	Agency qualification	EPPL	ESCC specification	Package	V <sub>CC</sub>		V <sub>IN</sub> range	Other features	Temp. range
							Min.	Max.			
M54HC191	Rad-hard 4-bit synchronous binary up/down counter	50 krad (Si)	ESCC	Y	9204/066	Flat-16 - DIL-16	2.0	6.0	0 to V <sub>CC</sub>	-	-55 °C to 125 °C
M54HC193	Rad-hard synchronous up/down binary counter			Y	9204/065	Flat-16 - DIL-16	2.0	6.0		-	
M54HC194	Rad-hard 4-bit PIPO shift register			-	9306/047	Flat-16 - DIL-16	2.0	6.0		4 shift modes	
M54HC237	Rad-hard 3-to-8 line decoder latch			Y	9205/021	Flat-16 - DIL-16	2.0	6.0		-	
M54HC240	Rad-hard octal bus buffer 3-state inverter			Y	9401/034	Flat-20 - DIL-20	2.0	6.0		Independent enables TTL compatible	
M54HCT240	Rad-hard octal bus buffer 3-state inverter			Y	9401/045	Flat-20 - DIL-20	4.5	5.5		-	
M54HC244	Rad-hard octal bus buffer 3-state			Y	9401/048	Flat-20 - DIL-20	2.0	6.0		Inverted enables	
M54HCT244	Rad-hard octal bus buffer 3-state			Y	9402/009	Flat-20 - DIL-20	4.5	5.5		Inverted enables TTL compatible	
M54HC245	Rad-hard octal bus transceiver 3-state			Y	9405/013	Flat-20 - DIL-20	2.0	6.0		-	
M54HCT245	Rad-hard octal bus transceiver 3-state			Y	9405/014	Flat-20 - DIL-20	4.5	5.5		TTL compatible	
M54HC251	Rad-hard 8-channel multiplexer 3-state			-	9408/048	Flat-16 - DIL-16	2.0	6.0		-	
M54HC257	Rad-hard quad 2-channel multiplexer 3-state			Y	9408/047	Flat-16	2.0	6.0		-	
M54HC259	Rad-hard 8-bit addressable latch			-	9203/073	Flat-16 - DIL-16	2.0	6.0		-	

Table 1. Device summary (continued)

Part number	Description	Radiation level	Agency qualification	EPPL	ESCC specification	Package	V <sub>CC</sub>		V <sub>IN</sub> range	Other features	Temp. range
							Min.	Max.			
M54HC273	Rad-hard octal d-type flip-flop with clear	50 krad (Si)	ESCC	Y	9203/053	Flat-20 - DIL-20	2.0	6.0	0 to V <sub>CC</sub>	-	-55 °C to 125 °C
M54HC283	Rad-hard 4-bit binary full adder			Y	9202/075	Flat-16 - DIL-16	2.0	6.0		-	
M54HC367	Rad-hard hex bus buffer 3-state			-	9401/044	Flat-16 - DIL-16	2.0	6.0		Independent enables	
M54HC373	Rad-hard octal D-type latch 3-state			Y	9203/059	Flat-20 - DIL-20	2.0	6.0		-	
M54HCT373	Rad-hard octal D-type latch 3-state			Y	9203/064	Flat-20 - DIL-20	4.5	5.5		TTL compatible	
M54HC374	Rad-hard octal D-type flip-flop 3-state			Y	9203/060	Flat-20 - DIL-20	2.0	6.0		-	
M54HC393	Rad-hard dual binary counter			-	9204/074	Flat-14 - DIL-14	2.0	6.0		-	
M54HC540	Rad-hard octal bus buffer 3-state inverter			Y	9401/049	Flat-20 - DIL-20	2.0	6.0		-	
M54HC541	Rad-hard octal bus buffer 3-state			Y	9401/047	Flat-20 - DIL-20	2.0	6.0		Non inverted enables	
M54HC573	Rad-hard octal D-type latch 3-state			Y	9202/072	Flat-20 - DIL-20	2.0	6.0		Through chip pinout	
M54HC574	Rad-hard octal D-type flip-flop 3-state			Y	9203/054	Flat-20 - DIL-20	2.0	6.0		Through chip pinout	
M54HC590	Rad-hard 8 bit binary counter register 3-state			Y	9204/071	Flat-16 - DIL-16	2.0	6.0		-	
M54HC595	Rad-hard 8 bit shift register output latch 3-state			Y	9306/051	Flat-16 - DIL-16	2.0	6.0		-	
M54HC597	Rad-hard 8 bit latch/shift register			Y	9306/054	Flat-16 - DIL-16	2.0	6.0		-	



Table 1. Device summary (continued)

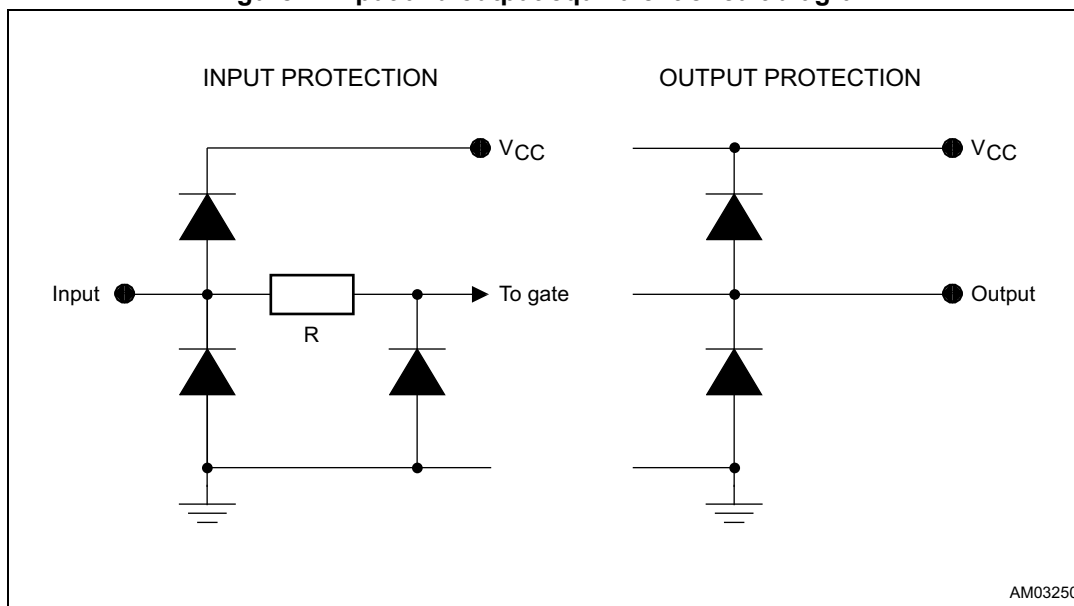
Part number	Description	Radiation level	Agency qualification	EPPL	ESCC specification	Package	V <sub>CC</sub>		V <sub>IN</sub> range	Other features	Temp. range
							Min.	Max.			
M54HC688	Rad-hard 8 bit equality comparator	50 krad (Si)	ESCC	Y	9209/005	Flat-20 - DIL-20	2.0	6.0	0 to V <sub>CC</sub>	-	-55 °C to 125 °C
M54HC4020	Rad-hard 14-stage binary counter			-	9204/070	Flat-16 - DIL-16	2.0	6.0			
M54HC4040	Rad-hard 12-stage binary counter			Y	9204/069	Flat-16 - DIL-16	2.0	6.0			
M54HC4049	Rad-hard hex buffer/converter inverter			Y	9401/037	Flat-16 - DIL-16	2.0	6.0			
M54HC4050	Rad-hard hex buffer/converter			Y	9401/038	Flat-16 - DIL-16	2.0	6.0			
M54HC4051	Rad-hard single 8-channel analog mux/demux			-	9408/064	Flat-16 - DIL-16	2.0	6.0			
M54HC4053	Rad-hard triple 2-channel analog mux/demux			-	9408/065	Flat-16 - DIL-16	2.0	6.0			
M54HC4060	Rad-hard 14-stage binary counter/oscillator			-	9204/076	Flat-16 - DIL-16	2.0	6.0			
M54HC4066	Rad-hard quad bilateral switch			-	9408/052	Flat-14 - DIL-14	2.0	6.0			
M54HC4078	Rad-hard 8-input NOR/OR gate			-	9201/123	Flat-14 - DIL-14	2.0	6.0			
M54HC4094	Rad-hard 8-bit SIPO shift register 3-state			-	9306/050	Flat-16 - DIL-16	2.0	6.0			
M54HC4514	Rad-hard 4-to-16 line decoder latch			-	9205/019	Flat-24 - DIL-24	2.0	6.0			

Note: Contact ST sales office for information about the specific conditions for other 54HC or 54HCT part numbers and for products in die form.



## 2 Input and output equivalent circuit diagram

Figure 1. Input and output equivalent circuit diagram



1. For the 54HC4049 input equivalent circuit, there is no diode connected to  $V_{CC}$ .

### 3 Maximum rating

#### 3.1 Absolute maximum ratings

##### 3.1.1 M54HC series

Table 2. Absolute maximum ratings - M54HC series

Symbol	Parameter	Value	Unit
$V_{CC}$	Supply voltage	-0.5 to +7	V
$V_I$	DC input voltage	-0.5 to $V_{CC} + 0.5$	V
$V_O$	DC output voltage	-0.5 to $V_{CC} + 0.5$	V
$I_{IK}$	DC input diode current	$\pm 20$	mA
$I_{OK}$	DC output diode current	$\pm 20$	mA
$I_O$	DC output current	$\pm 25$	mA
$I_{CC}$ or $I_{GND}$	DC $V_{CC}$ or ground current	$\pm 50$	mA
$P_D$	Power dissipation	300	mW
$T_{stg}$	Storage temperature	-65 to +150	$^{\circ}C$
$T_L$	Lead temperature (10 sec.)	265	$^{\circ}C$

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

##### 3.1.2 M54HCT series

Table 3. Absolute maximum ratings - M54HCT series<sup>(1), (2)</sup>

Symbol	Parameter	Value	Unit
$V_{CC}$	Supply voltage	-0.5 to +7	V
$V_I$	DC input voltage	-0.5 to $V_{CC} + 0.5$	V
$V_O$	DC output voltage	-0.5 to $V_{CC} + 0.5$	V
$I_{IK}$	DC input diode current	$\pm 20$	mA
$I_{OK}$	DC output diode current	$\pm 20$	mA
$I_O$	DC output current	$\pm 35$	mA
$I_{CC}$ or $I_{GND}$	DC $V_{CC}$ or ground current	$\pm 70$	mA
$P_D$	Power dissipation	420	mW
$T_{stg}$	Storage temperature	-65 to +150	$^{\circ}C$
$T_L$	Lead temperature (10 sec.)	265	$^{\circ}C$

1. All voltage values are referred to  $V_{SS}$  pin voltage.

2. All values concern all bus buffer devices with 3-state outputs and the M54HC4049 device.

## 3.2 Recommended operating conditions

### 3.2.1 M54HC series

Table 4. Recommended operating conditions

Symbol	Parameter	Value	Unit
$V_{CC}$	Supply voltage	2 to 6	V
$V_I$	Input voltage	0 to $V_{CC}$	V
$V_O$	Output voltage	0 to $V_{CC}$	V
$T_{op}$	Operating temperature	-55 to 125	°C
$t_r, t_f$	Input rise and fall time ( $V_{CC} = 4.5$ to $5.5$ V)	0 to 500	ns

### 3.2.2 M54HCT series

Table 5. Recommended operating conditions

Symbol	Parameter	Value	Unit
$V_{CC}$	Supply voltage	4.5 to 5.5	V
$V_I$	Input voltage	0 to $V_{CC}$	V
$V_O$	Output voltage	0 to $V_{CC}$	V
$T_{op}$	Operating temperature	-55 to 125	°C
$t_r, t_f$	Input rise and fall time ( $V_{CC} = 4.5$ to $5.5$ V)	0 to 500	ns

## 4 Radiation data

Each wafer lot is qualified at 50 krad (Si) total dose as per ESCC 22900 specification at 210 rad/hour.

The HC/HCT series is characterized under heavy Ion on 4 functions representative of the whole series and qualified as per the results of this characterization.

Detailed results are provided in [Table 6](#):

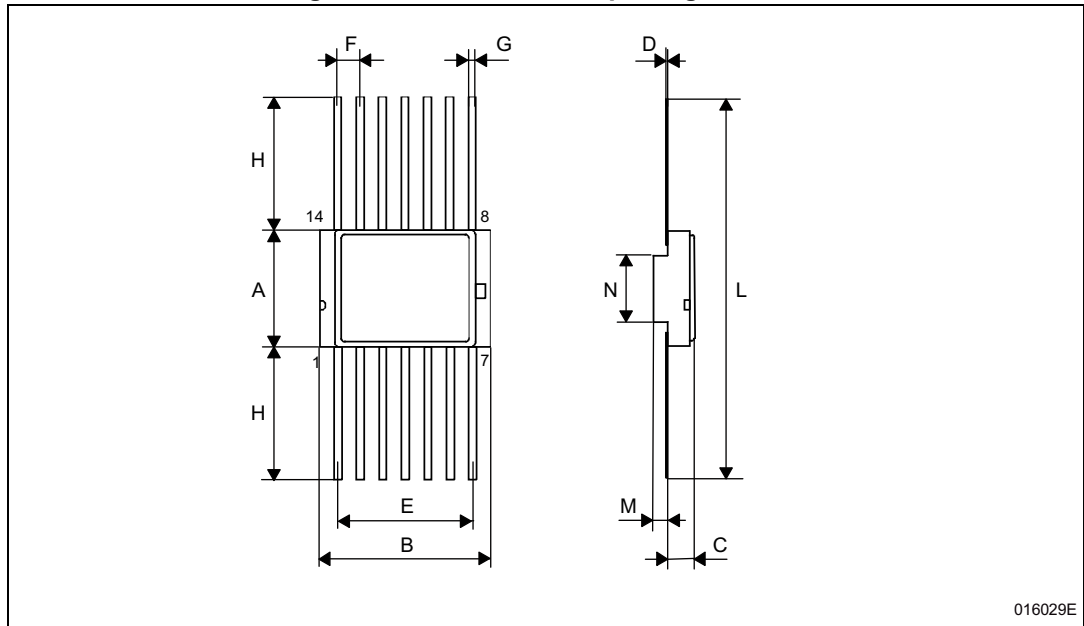
**Table 6. Radiation data**

Function	Result
Gate: 54HC08	SEL and SEU free for LET [ 111 MeV/mg/cm <sup>2</sup>
Multiplexer 54HC157	SEL and SEU free for LET [ 111 MeV/mg/cm <sup>2</sup>
Flip-flop 54HC273	SEL free for LET [ 111 MeV/mg/cm <sup>2</sup>
	SEU: LET <sub>th</sub> = 16 MeV/mg/cm <sup>2</sup> , $\sigma_{sat} = 1.7 \times 10^{-4} \text{ cm}^2$
Counter 54HC4040	SEL free for LET [ 111 MeV/mg/cm <sup>2</sup>
	SEU: LET <sub>th</sub> = 34 MeV/mg/cm <sup>2</sup> , $\sigma_{sat} = 4.2 \times 10^{-4} \text{ cm}^2$
Analog mux/demux 54HC4053	SEL free for LET [ 111 MeV/mg/cm <sup>2</sup>
	SEU: LET <sub>th</sub> = 7 MeV/mg/cm <sup>2</sup> , $\sigma_{sat} = 2.4 \times 10^{-4} \text{ cm}^2$

## 5 Package information

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.

Figure 2. Ceramic Flat-14 package outline



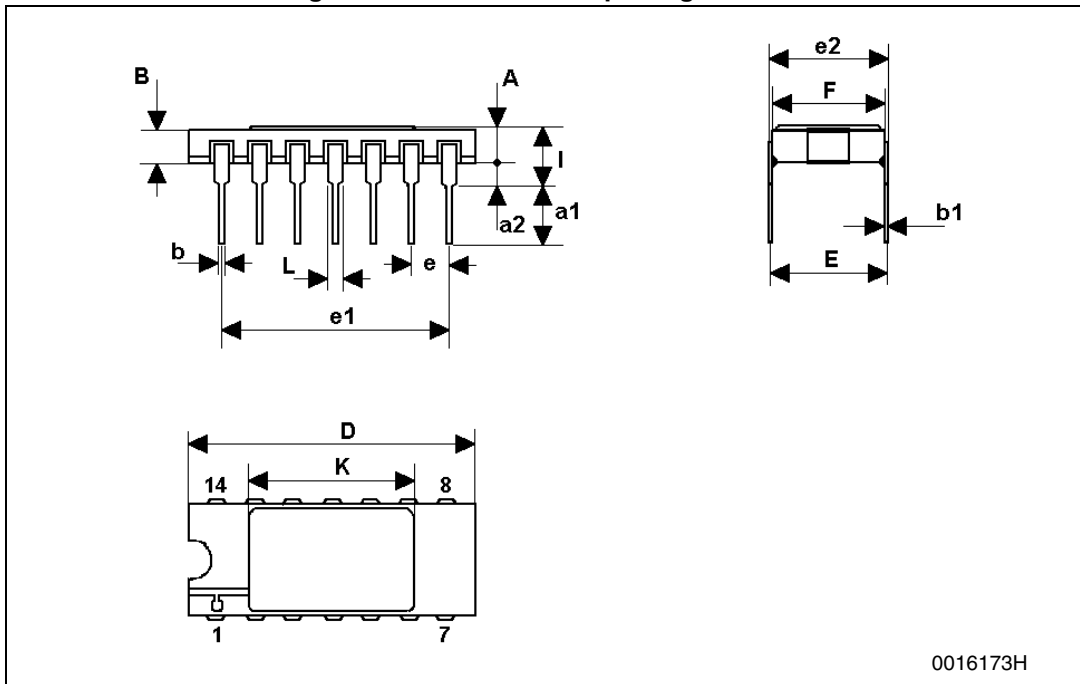
016029E

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

Table 7. Ceramic Flat-14 package mechanical data

Symbol	Dimensions (mm)		
	Min.	Typ.	Max.
A	6.75	6.91	7.06
B	9.76	9.95	10.14
C	1.49		1.95
D	0.10	0.127	0.15
E	7.50	7.62	7.75
F		1.27	
G	0.38	0.43	0.48
H		6.0	
L	18.75	en	22.0
M		0.38	
N		4.31	

Figure 3. Ceramic DIL-14 package outline

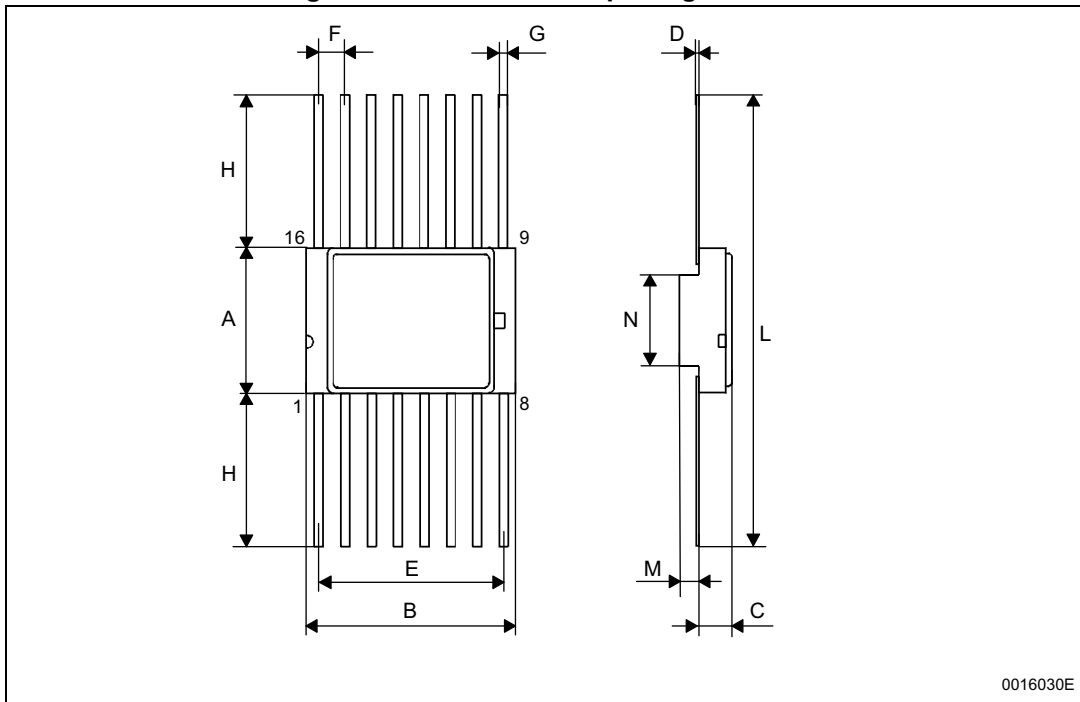


1. The upper metallic lid is not electrically connected to any pins, nor to the IC die inside the package. Connecting unused pins or the metallic lid to ground or to the power supply will not affect the electrical characteristics.

Table 8. Ceramic DIL-14 package mechanical data

Symbol	Dimensions (mm)		
	Min.	Typ.	Max.
A	2.1		2.54
a1	3.00		3.70
a2	0.63	0.88	1.14
B	1.82	2.03	2.39
b	0.40	0.45	0.50
b1	0.20	0.254	0.30
D	18.79	19.00	19.20
E	7.36	7.62	7.87
e		2.54	
e1	15.11	15.24	15.37
e2	7.62	7.87	8.12
F	7.11		7.75
I			3.70
K	10.90		12.1 n
L	1.14	1.27	1.5

Figure 4. Ceramic Flat-16 package outline

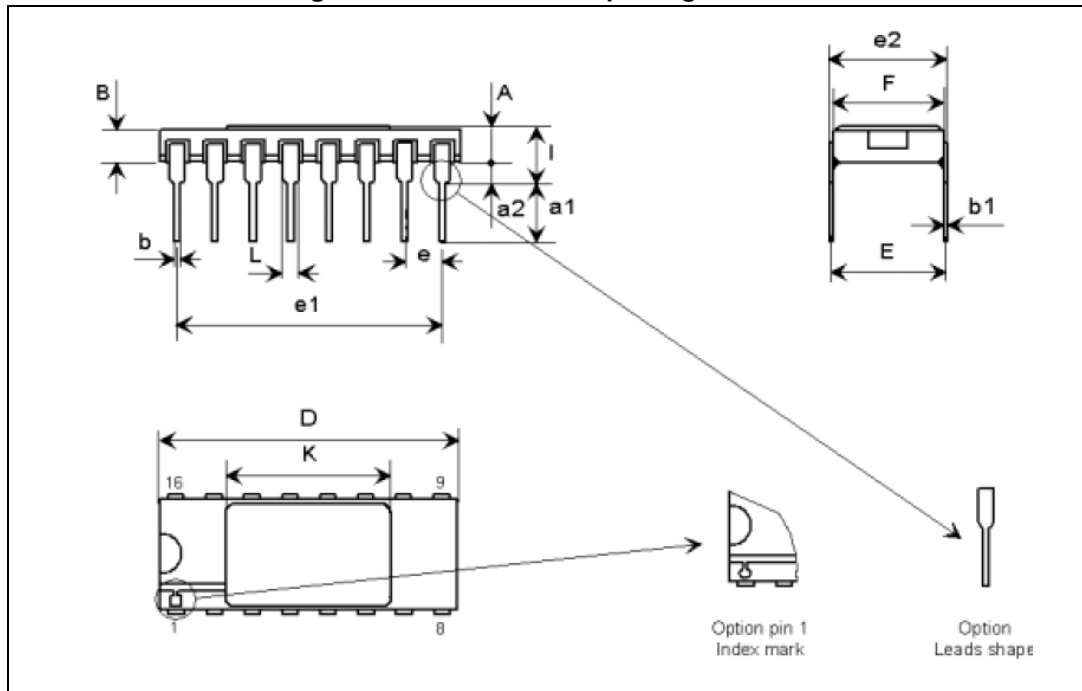


1. The upper metallic lid is not electrically connected to any pins, nor to the IC die inside the package. Connecting unused pins or the metallic lid to ground or to the power supply will not affect the electrical characteristics.

Table 9. Ceramic Flat-16 package mechanical data

Symbol	Dimensions (mm)		
	Min.	Typ.	Max.
A	6.75	6.91	7.06
B	9.76	9.94	10.14
C	1.49		1.95
D	0.102	0.127	0.152
E	8.76	8.89	9.01
F		1.27	
G	0.38	0.43	0.48
H	6.0		
L	18.75	20.38	22.0
M	0.33	0.38	0.43
N		4.31	

Figure 5. Ceramic DIL-16 package outline



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

Table 10. Ceramic DIL-16 package mechanical data

Symbol	Dimensions (mm)		
	Min.	Typ.	Max.
A	2.10		2.71
a1	3.00		3.70
a2	0.63	0.88	1.14
B	1.82		2.39
b	0.40	0.45	0.50
b1	0.20	0.254	0.30
D	20.06	20.32	20.58
E	7.36	7.62	7.87
e		2.54	
e1	17.65	17.78	17.90
e2	7.62	7.87	8.12
F	7.29	7.49	7.70
I			3.83
K	10.90		12.10
L	1.14		1.50



Figure 6. Ceramic Flat-20 package outline

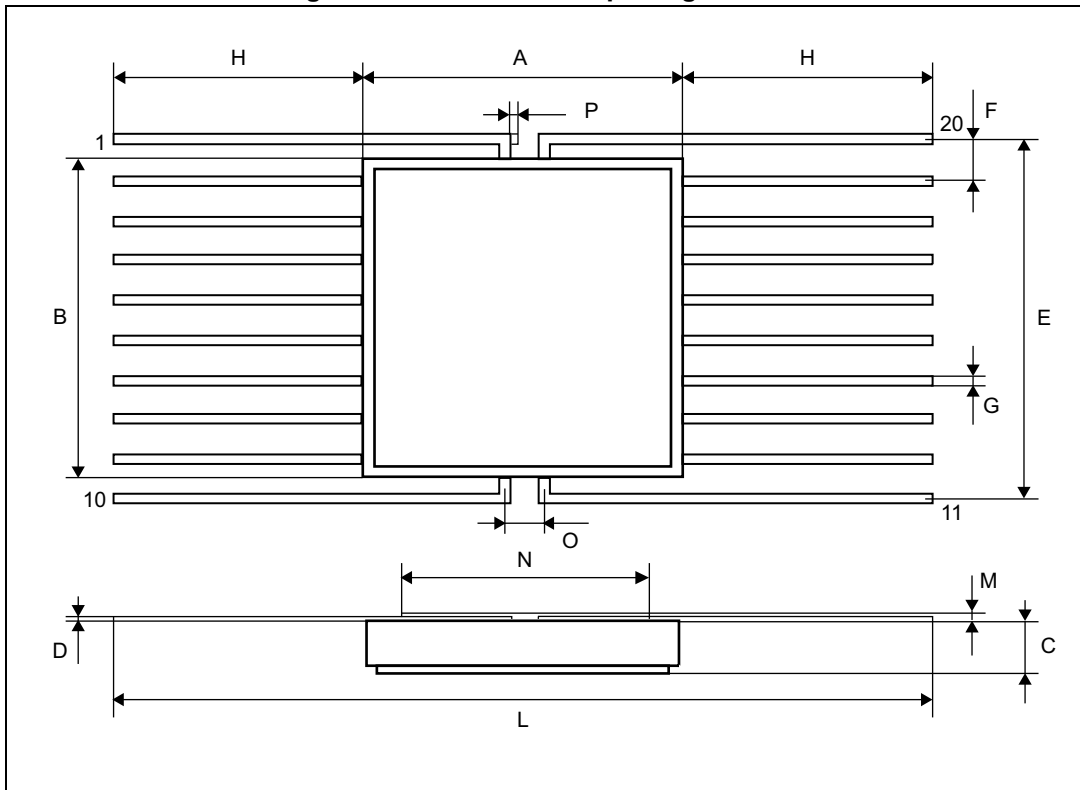


Table 11. Ceramic Flat-20 package mechanical data

Symbol	Dimensions (mm)		
	Min.	Typ.	Max.
A	9.98	10.16	10.34
B	9.98	10.16	10.34
C	1.45	1.61	1.78
D	0.10	0.127	0.18
E	11.30	11.43	11.56
F		1.27	
G	0.38	0.43	0.48
H	7.24		8.16
L	24.46		26.67
M	0.45	0.50	0.55
N		7.87	
O	1.14	1.27	1.40
P	0.10	0.18	0.25

Figure 7. Ceramic DIL-20 package outline

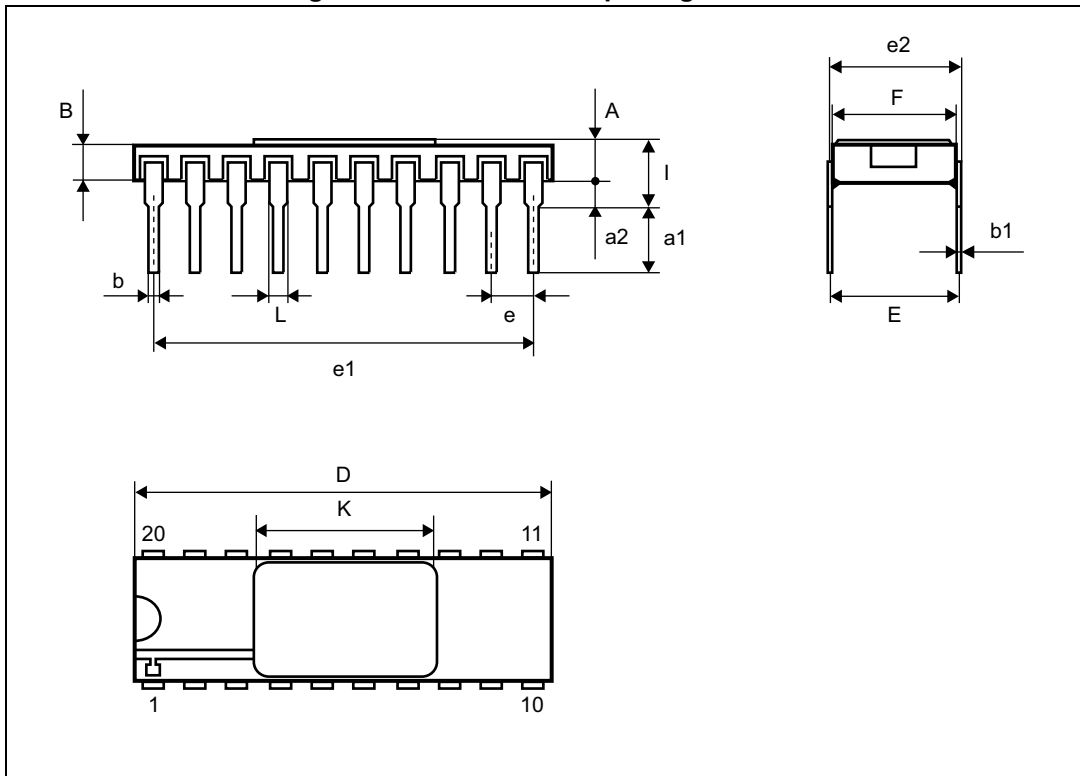
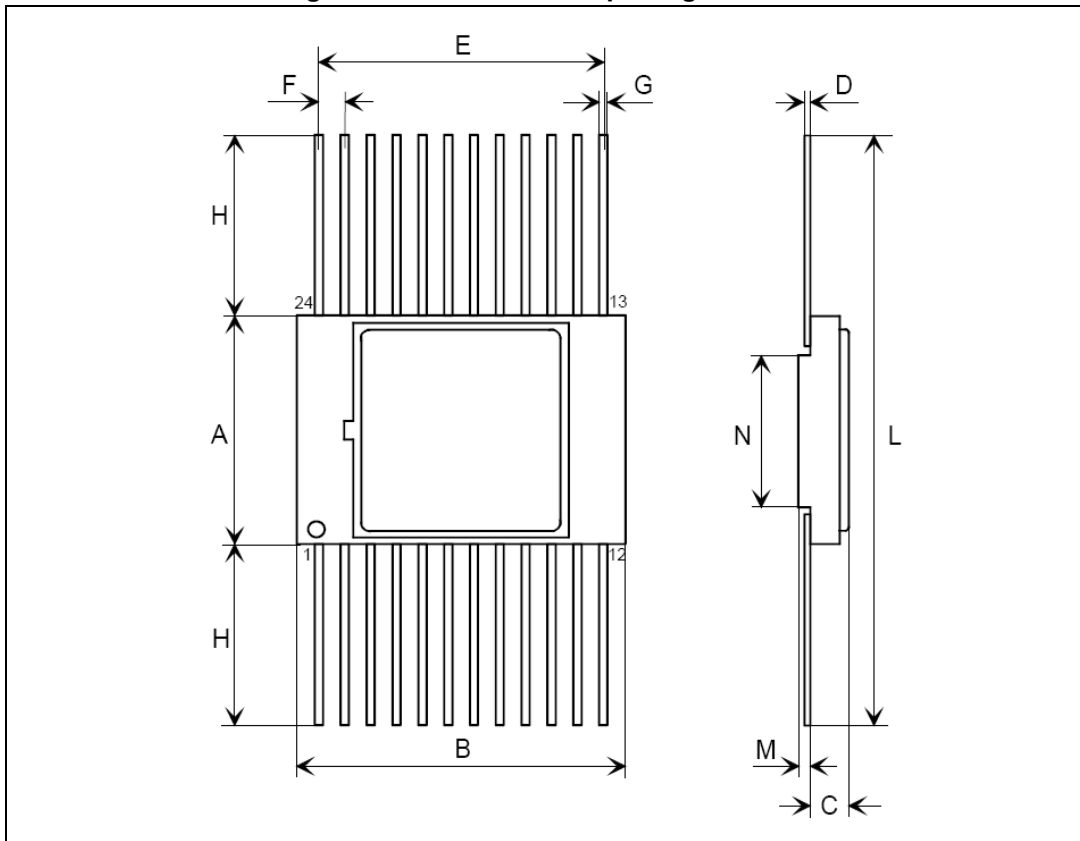


Table 12. Ceramic DIL-20 package mechanical data

Symbol	Dimensions (mm)		
	Min.	Typ.	Max.
A	2.10		2.72
a1	3.00		3.70
a2	0.63	0.88	1.14
B	1.93	2.03	2.23
b	0.40	0.45	0.50
b1	0.20	0.254	0.30
D	25.14	25.40	25.65
E	7.36	7.62	7.87
e		2.54	
e1	22.73	22.86	22.99
e2	7.62	7.87	8.12
F	7.29	7.49	7.62
I			3.86
K	11.30		11.56
L	1.14	1.27	1.40

Figure 8. Ceramic Flat-24 package outline

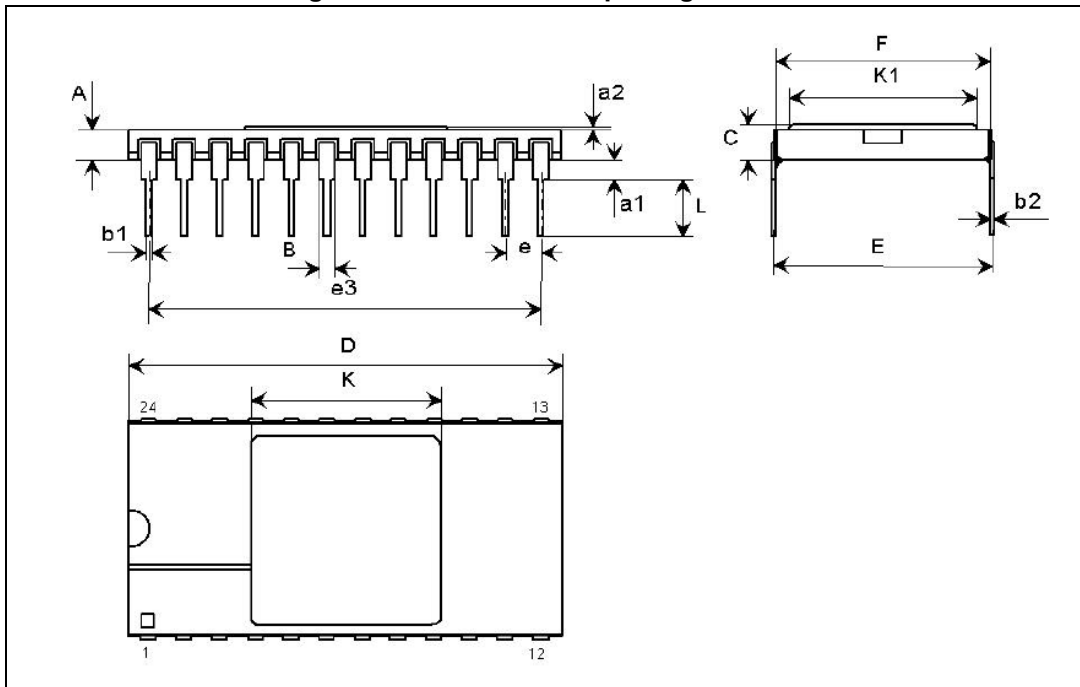


1. The upper metallic lid is not electrically connected to any pins, nor to the IC die inside the package. Connecting unused pins or the metallic lid to ground or to the power supply will not affect the electrical characteristics.

Table 13. Ceramic Flat-24 package mechanical data

Symbol	Dimensions (mm)		
	Min.	Typ.	Max.
A	10.70	11.00	11.30
B	15.30	15.49	15.70
C	1.45		1.90
D	0.23	0.254	0.30
E	13.84	13.97	14.10
F	1.22	1.27	1.32
G	0.45	0.508	0.55
H	7.25		8.25
L	25.00		28.00
M	0.45	0.508	0.55
N		7.01	

Figure 9. Ceramic DIL-24 package outline



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

Table 14. Ceramic DIL-24 package mechanical data

Symbol	Dimensions (mm)		
	Min.	Typ.	Max.
A	2.159	1.931	2.387
a1	1.270	1.016	1.524
a2	.307	.274	.340
B	1.270		
b1	0.457	0.407	0.507
b2	.254	0.229	0.304
C	2.466	2.205	2.727
D	30.48	30.17	30.78
E	15.24	14.98	15.49
e	2.540	2.410	2.670
e3	27.94	27.81	28.06
F	15.11	14.85	15.36
K	12.80	12.60	13.00
K1	12.80	12.60	13.00
L	3.300	3.000	3.800



## 6 Order codes

Table 15. Ordering information<sup>(1)</sup>

Order code	ESCC detailed specification	Quality level	Radiation level	Package	Lead finish	Marking <sup>(2)</sup>	Mass (g)	EPPL	Packing
M54HC00KG	9201/105/01F	ESCC	50 krad ESCC	Flat-14	Gold	920110501F	0.70	Y	Strip pack
M54HC00KT	9201/105/02F				Solder dip	920110502F			
M54HC00DG	9201/105/03F			DIL-14	Gold	920110503F	2.20	-	
M54HC00DT	9201/105/04F				Solder dip	920110504F			
M54HC02KG	9201/113/01F	ESCC	50 krad ESCC	Flat-14	Gold	920111301F	0.70	Y	Strip pack
M54HC02KT	9201/113/02F				Solder dip	920111302F			
M54HC02DG	9201/113/03F			DIL-14	Gold	920111303F	2.20	-	
M54HC02DT	9201/113/04F				Solder dip	920111304F			
M54HC03KG	9201/114/01F	ESCC	50 krad ESCC	Flat-14	Gold	920111401F	0.70	Y	Strip pack
M54HC03KT	9201/114/02F				Solder dip	920111402F			
M54HC03DG	9201/114/03F			DIL-14	Gold	920111403F	2.20	-	
M54HC03DT	9201/114/04F				Solder dip	920111404F			
M54HC04KG	9401/033/01F	ESCC	50 krad ESCC	Flat-14	Gold	940103301F	0.70	Y	Strip pack
M54HC04DT	9401/033/02F				Solder dip	940103302F			
M54HC04DG	9401/033/03F			DIL-14	Gold	940103303F	2.20	-	
M54HC04DT	9401/033/04F				Solder dip	940103304F			
M54HC08KG	9201/106/01F	ESCC	50 krad ESCC	Flat-14	Gold	920110601F	0.70	Y	Strip pack
M54HC08KT	9201/106/02F				Solder dip	920110602F			
M54HC08DG	9201/106/03F			DIL-14	Gold	9201/106/03F	2.20	-	
M54HC08DT	9201/106/04F				Solder dip	9201/106/04F			

Table 15. Ordering information<sup>(1)</sup> (continued)

Order code	ESCC detailed specification	Quality level	Radiation level	Package	Lead finish	Marking <sup>(2)</sup>	Mass (g)	EPPL	Packing
M54HC10KG	9201/107/01F	ESCC	50 krad ESCC	Flat-14	Gold	920110701F	0.70	Y	Strip pack
M54HC10KT	9201/107/02F				Solder dip	920110702F			
M54HC10DG	9201/107/03F			DIL-14	Gold	920110703F	2.20	-	
M54HC10DT	9201/107/04F				Solder dip	920110704F			
M54HC11KG	9201/117/01F	ESCC	50 krad ESCC	Flat-14	Gold	920111701F	0.70	Y	Strip pack
M54HC11KT	9201/117/02F				Solder dip	920111702F			
M54HC11DG	9201/117/03F			DIL-14	Gold	920111703F	2.20	-	
M54HC11DT	9201/117/04F				Solder dip	920111704F			
M54HC14KG	9409/007/01F	ESCC	50 krad ESCC	Flat-14	Gold	940900701F	0.70	Y	Strip pack
M54HC14KT	9409/007/02F				Solder dip	940900702F			
M54HC14DG	9409/007/03F			DIL-14	Gold	940900703F	2.20	-	
M54HC14DT	9409/007/04F				Solder dip	940900704F			
M54HC20KG	9201/118/01F	ESCC	50 krad ESCC	Flat-14	Gold	920111801F	0.70	Y	Strip pack
M54HC20KT	9201/118/02F				Solder dip	920111802F			
M54HC20DG	9201/118/03F			DIL-14	Gold	920111803F	2.20	-	
M54HC20DT	9201/118/04F				Solder dip	920111804F			
M54HC21KG	9201/108/01F	ESCC	50 krad ESCC	Flat-14	Gold	920110801F	0.70	Y	Strip pack
M54HC21KT	9201/108/02F				Solder dip	920110802F			
M54HC21DG	9201/108/03F			DIL-14	Gold	920110803F	2.20	-	
M54HC21DT	9201/108/04F				Solder dip	920110804F			
M54HC27KG	9201/109/01F	ESCC	50 krad ESCC	Flat-14	Gold	920110901F	0.70	Y	Strip pack
M54HC27KT	9201/109/02F				Solder dip	920110902F			
M54HC27DG	9201/109/03F			DIL-14	Gold	920110903F	2.20	-	
M54HC27DT	9201/109/04F				Solder dip	920110904F			

Table 15. Ordering information<sup>(1)</sup> (continued)

Order code	ESCC detailed specification	Quality level	Radiation level	Package	Lead finish	Marking <sup>(2)</sup>	Mass (g)	EPPL	Packing	
M54HC30KG	9201/110/01F	ESCC	50 krad ESCC	Flat-14	Gold	920111001F	0.70	-	Strip pack	
M54HC30KT	9201/110/02F				Solder dip	920111002F				
M54HC30DG	9201/110/03F			DIL-14	Gold	920111003F	2.20			
M54HC30DT	9201/110/04F				Solder dip	920111004F				
M54HC32KG	9201/111/01F	ESCC	50 krad ESCC	Flat-14	Gold	920111101F	0.70	Y	Strip pack	
M54HC32KT	9201/111/02F				Solder dip	920111102F				
M54HC32DG	9201/111/03F			DIL-14	Gold	920111103F	2.20			-
M54HC32DT	9201/111/04F				Solder dip	920111104F				
M54HC73KG	9203/071/01F	ESCC	50 krad ESCC	Flat-14	Gold	920307101F	0.70	-	Strip pack	
M54HC73KT	9203/071/02F				Solder dip	920307102F				
M54HC73DG	9203/071/03F			DIL-14	Gold	920307103F	2.20			
M54HC73DT	9203/071/04F				Solder dip	920307104F				
M54HC74KG	9203/050/01F	ESCC	50 krad ESCC	Flat-14	Gold	920305001F	0.70	Y	Strip pack	
M54HC74KT	9203/050/02F				Solder dip	920305002F				
M54HC74DG	9203/050/03F			DIL-14	Gold	920305003F	2.20			-
M54HC74DT	9203/050/04F				Solder dip	920305004F				
M54HCT74KG	9203/070/01F	ESCC	50 krad ESCC	Flat-14	Gold	920307001F	0.70	Y	Strip pack	
M54HCT74KT	9203/070/02F				Solder dip	920307002F				
M54HCT74DG	9203/070/03F			DIL-14	Gold	920307003F	2.20			-
M54HCT74DT	9203/070/04F				Solder dip	920307004F				
M54HC75KG	9203/065/01F	ESCC	50 krad ESCC	Flat-16	Gold	920306501F	0.70	-	Strip pack	
M54HC75KT	9203/065/02F				Solder dip	920306502F				
M54HC75DG	9203/065/10F			DIL-16	Gold	920306510F	2.20			
M54HC75DT	9203/065/11F				Solder dip	920306511F				

Table 15. Ordering information<sup>(1)</sup> (continued)

Order code	ESCC detailed specification	Quality level	Radiation level	Package	Lead finish	Marking <sup>(2)</sup>	Mass (g)	EPPL	Packing
M54HC85KG	9209/004/01F	ESCC	50 krad ESCC	Flat-16	Gold	920900401F	0.70	Y	Strip pack
M54HC85KT	9209/004/02F				Solder dip	920900402F			
M54HC85DG	9209/004/10F			DIL-16	Gold	920900410F	2.20	-	
M54HC85DT	9209/004/11F				Solder dip	920900411F			
M54HC86KG	9201/119/01F	ESCC	50 krad ESCC	Flat-14	Gold	920111901F	0.70	Y	Strip pack
M54HC86KT	9201/119/02F				Solder dip	920111902F			
M54HC86DG	9201/119/03F			DIL-14	Gold	920111903F	2.20	-	
M54HC86DT	9201/119/04F				Solder dip	920111904F			
M54HC109KG	9306/048/01F	ESCC	50 krad ESCC	Flat-16	Gold	930604801F	0.70	Y	Strip pack
M54HC109KT	9306/048/02F				Solder dip	930604802F			
M54HC109DG	9306/048/10F			DIL-16	Gold	930604810F	2.20	-	
M54HC109DT	9306/048/11F				Solder dip	930604811F			
M54HC123KG	9207/006/01F	ESCC	50 krad ESCC	Flat-16	Gold	920700601F	0.70	-	Strip pack
M54HC123KT	9207/006/02F				Solder dip	920700602F			
M54HC123DG	9207/006/10F			DIL-16	Gold	920700610F	2.20	-	
M54HC123DT	9207/006/11F				Solder dip	920700611F			
M54HC125KG	9401/039/01F	ESCC	50 krad ESCC	Flat-14	Gold	940103901F	0.70	Y	Strip pack
M54HC125KT	9401/039/02F				Solder dip	940103902F			
M54HC132KG	9201/120/01F	ESCC	50 krad ESCC	Flat-14	Gold	920112001F	0.70	Y	Strip pack
M54HC132KT	9201/120/02F				Solder dip	920112002F			
M54HC132DG	9201/120/03F			DIL-14	Gold	920112003F	2.20	-	
M54HC132DT	9201/120/04F				Solder dip	920112004F			



Table 15. Ordering information<sup>(1)</sup> (continued)

Order code	ESCC detailed specification	Quality level	Radiation level	Package	Lead finish	Marking <sup>(2)</sup>	Mass (g)	EPPL	Packing
M54HC137KG	9205/013/01F	ESCC	50 krad ESCC	Flat-16	Gold	920501301F	0.70	-	Strip pack
M54HC137KT	9205/013/02F				Solder dip	920501302F			
M54HC137DG	9205/013/10F			DIL-16	Gold	920501310F	2.20		
M54HC137DT	9205/013/11F				Solder dip	920501311F			
M54HC138KG	9408/046/01F	ESCC	50 krad ESCC	Flat-16	Gold	940804601F	0.70	Y	Strip pack
M54HC138KT	9408/046/02F				Solder dip	940804602F			
M54HC138DG	9408/046/10F			DIL-16	Gold	940804610F	2.20		
M54HC138DT	9408/046/11F				Solder dip	940804611F			
M54HC139KG	9205/017/01F	ESCC	50 krad ESCC	Flat-16	Gold	920501701F	0.70	Y	Strip pack
M54HC139KT	9205/017/02F				Solder dip	920501702F			
M54HC139DG	9205/017/10F			DIL-16	Gold	920501710F	2.20		
M54HC139DT	9205/017/11F				Solder dip	920501711F			
M54HC148KG	9410/017/01F	ESCC	50 krad ESCC	Flat-16	Gold	941001701F	0.70	-	Strip pack
M54HC148KT	9410/017/02F				Solder dip	941001702F			
M54HC148DG	9410/017/10F			DIL-16	Gold	941001710F	2.20		
M54HC148DT	9410/017/11F				Solder dip	941001711F			
M54HC151KG	9408/054/01F	ESCC	50 krad ESCC	Flat-16	Gold	940805401F	0.70	Y	Strip pack
M54HC151KT	9408/054/02F				Solder dip	940805402F			
M54HC151DG	9408/054/10F			DIL-16	Gold	940805410F	2.20		
M54HC151DT	9408/054/11F				Solder dip	940805411F			
M54HC153KG	9408/038/01F	ESCC	50 krad ESCC	Flat-16	Gold	940803801F	0.70	-	Strip pack
M54HC153KT	9408/038/02F				Solder dip	940803802F			
M54HC153DG	9408/038/10F			DIL-16	Gold	940803810F	2.20		
M54HC153DT	9408/038/11F				Solder dip	940803811F			

Table 15. Ordering information<sup>(1)</sup> (continued)

Order code	ESCC detailed specification	Quality level	Radiation level	Package	Lead finish	Marking <sup>(2)</sup>	Mass (g)	EPPL	Packing
M54HC154KG	9205/023/01F	ESCC	50 krad ESCC	Flat-24	Gold	920502301F	1.70	Y	Strip pack
M54HC154KT	9205/023/02F				Solder dip	920502302F			
M54HC154DG	9205/023/03F			DIL-24	Gold	920502303F	5.20	-	
M54HC154DT	9205/023/04F				Solder dip	920502304F			
M54HC157KG	9408/057/01F	ESCC	50 krad ESCC	Flat-16	Gold	940805701F	0.70	Y	Strip pack
M54HC157KT	9408/057/02F				Solder dip	940805702F			
M54HC157DG	9408/057/10F			DIL-16	Gold	940805710F	2.20	-	
M54HC157DT	9408/057/11F				Solder dip	940805711F			
M54HC158KG	9408/059/01F	ESCC	50 krad ESCC	Flat-16	Gold	940805901F	0.70	Y	Strip pack
M54HC158KT	9408/059/02F				Solder dip	940805902F			
M54HC158DG	9408/059/10F			DIL-16	Gold	940805910F	2.20	-	
M54HC158DT	9408/059/11F				Solder dip	940805911F			
M54HC160DG	9204/062/10F	ESCC	50 krad ESCC	DIL-16	Gold	920406210F	2.20	-	Strip pack
M54HC160DT	9204/062/11F				Solder dip	920406211F			
M54HC161KG	9204/059/01F	ESCC	50 krad ESCC	Flat-16	Gold	920405901F	0.70	Y	Strip pack
M54HC161KT	9204/059/02F				Solder dip	920405902F			
M54HC161DG	9204/059/10F			DIL-16	Gold	920405910F	2.20	-	
M54HC161DT	9204/059/11F				Solder dip	920405911F			
M54HC164KG	9306/041/01F	ESCC	50 krad ESCC	Flat-14	Gold	930604101F	0.70	Y	Strip pack
M54HC164KT	9306/041/02F				Solder dip	930604102F			
M54HC164DG	9306/041/03F			DIL-14	Gold	930604103F	2.20	-	
M54HC164DT	9306/041/04F				Solder dip	930604104F			

Table 15. Ordering information<sup>(1)</sup> (continued)

Order code	ESCC detailed specification	Quality level	Radiation level	Package	Lead finish	Marking <sup>(2)</sup>	Mass (g)	EPPL	Packing
M54HC165KG	9306/042/01F	ESCC	50 krad ESCC	Flat-16	Gold	930604201F	0.70	Y	Strip pack
M54HC165KT	9306/042/02F				Solder dip	930604202F			
M54HC165DG	9306/042/10F			DIL-16	Gold	930604210F	2.20	-	
M54HC165DT	9306/042/11F				Solder dip	930604211F			
M54HC166KG	9306/043/01F	ESCC	50 krad ESCC	Flat-16	Gold	930604301F	0.70	Y	Strip pack
M54HC166KT	9306/043/02F				Solder dip	930604302F			
M54HC166DG	9306/043/10F			DIL-16	Gold	930604310F	2.20	-	
M54HC166DT	9306/043/11F				Solder dip	930604311F			
M54HC174KG	9306/052/01F	ESCC	50 krad ESCC	Flat-16	Gold	930605201F	0.70	Y	Strip pack
M54HC174KT	9306/052/02F				Solder dip	930605202F			
M54HC174DG	9306/052/10F			DIL-16	Gold	930605210F	2.20	-	
M54HC174DT	9306/052/11F				Solder dip	930605211F			
M54HC175KG	9203/052/01F	ESCC	50 krad ESCC	Flat-16	Gold	920305201F	0.70	Y	Strip pack
M54HC175KT	9203/052/02F				Solder dip	920305202F			
M54HC175DG	9203/052/10F			DIL-16	Gold	920305210F	2.20	-	
M54HC175DT	9203/052/11F				Solder dip	920305211F			
M54HC191KG	9204/066/01F	ESCC	50 krad ESCC	Flat-16	Gold	920406601F	0.70	Y	Strip pack
M54HC191KT	9204/066/02F				Solder dip	920406602F			
M54HC191DG	9204/066/10F			DIL-16	Gold	920406610F	2.20	-	
M54HC191DT	9204/066/11F				Solder dip	920406611F			
M54HC193KG	9204/065/01F	ESCC	50 krad ESCC	Flat-16	Gold	920406501F	0.70	Y	Strip pack
M54HC193KT	9204/065/02F				Solder dip	920406502F			
M54HC193DG	9204/065/10F			DIL-16	Gold	920406510F	2.20	-	
M54HC193DT	9204/065/11F				Solder dip	920406511F			

Table 15. Ordering information<sup>(1)</sup> (continued)

Order code	ESCC detailed specification	Quality level	Radiation level	Package	Lead finish	Marking <sup>(2)</sup>	Mass (g)	EPPL	Packing
M54HC194KG	9306/047/01F	ESCC	50 krad ESCC	Flat-16	Gold	930604701F	0.70	-	Strip pack
M54HC194KT	9306/047/02F				Solder dip	930604702F			
M54HC194DG	9306/047/10F			DIL-16	Gold	930604710F	2.20		
M54HC194DT	9306/047/11F				Solder dip	930604711F			
M54HC237KG	9205/021/01F	ESCC	50 krad ESCC	Flat-16	Gold	920502101F	0.70	Y	Strip pack
M54HC237KT	9205/021/02F				Solder dip	920502102F			
M54HC237DG	9205/021/10F			DIL-16	Gold	920502110F	2.20		
M54HC237DT	9205/021/11F				Solder dip	920502111F			
M54HC240KG	9401/034/01F	ESCC	50 krad ESCC	Flat-20	Gold	940103401F	0.90	Y	Strip pack
M54HC240KT	9401/034/02F				Solder dip	940103402F			
M54HC240DG	9401/034/03F			DIL-20	Gold	940103403F	3.20		
M54HC240DT	9401/034/04F				Solder dip	940103404F			
M54HCT240KG	9401/045/01F	ESCC	50 krad ESCC	Flat-20	Gold	940104501F	0.90	Y	Strip pack
M54HCT240KT	9401/045/02F				Solder dip	940104502F			
M54HCT240DG	9401/045/03F			DIL-20	Gold	940104503F	3.20		
M54HCT240DT	9401/045/04F				Solder dip	940104504F			
M54HC244KG	9401/048/01F	ESCC	50 krad ESCC	Flat-20	Gold	940104801F	0.90	Y	Strip pack
M54HC244KT	9401/048/02F				Solder dip	940104802F			
M54HC244DG	9401/048/03F			DIL-20	Gold	940104803F	3.20		
M54HC244DT	9401/048/04F				Solder dip	940104804F			
M54HCT244KG	9402/009/01F	ESCC	50 krad ESCC	Flat-20	Gold	940200901F	0.90	Y	Strip pack
M54HCT244KT	9402/009/02F				Solder dip	940200902F			
M54HCT244DG	9402/009/03F			DIL-20	Gold	940200903F	3.20		
M54HCT244DT	9402/009/04F				Solder dip	940200904F			

Table 15. Ordering information<sup>(1)</sup> (continued)

Order code	ESCC detailed specification	Quality level	Radiation level	Package	Lead finish	Marking <sup>(2)</sup>	Mass (g)	EPPL	Packing
M54HC245KG	9405/013/01F	ESCC	50 krad ESCC	Flat-20	Gold	940501301F	0.90	Y	Strip pack
M54HC245KT	9405/013/02F				Solder dip	940501302F			
M54HC245DG	9405/013/023			DIL-20	Gold	940501303F	3.20	-	
M54HC245DT	9405/013/04F				Solder dip	940501304F			
M54HCT245KG	9405/014/01F	ESCC	50 krad ESCC	Flat-20	Gold	940501401F	0.90	Y	Strip pack
M54HCT245KT	9405/014/02F				Solder dip	940501402F			
M54HCT245DG	9405/014/03F			DIL-20	Gold	940501403F	3.20	-	
M54HCT245DT	9405/014/04F				Solder dip	940501404F			
M54HC251KG	9408/048/01F	ESCC	50 krad ESCC	Flat-16	Gold	940804801F	0.70	-	Strip pack
M54HC251KT	9408/048/02F				Solder dip	940804802F			
M54HC251DG	9408/048/10F			DIL-16	Gold	940804810F	2.20		
M54HC251DT	9408/048/11F				Solder dip	940804811F			
M54HC257KG	9408/047/01F	ESCC	50 krad ESCC	Flat-16	Gold	940804701F	0.70	Y	Strip pack
M54HC257KT	9408/047/02F				Solder dip	940804702F			
M54HC259KG	9203/073/01F	ESCC	50 krad ESCC	Flat-16	Gold	920307301F	0.70	-	Strip pack
M54HC259KT	9203/073/02F				Solder dip	920307302F			
M54HC259DG	9203/073/10F			DIL-16	Gold	920307310F	2.20		
M54HC259DT	9203/073/11F				Solder dip	920307311F			
M54HC273KG	9203/053/01F	ESCC	50 krad ESCC	Flat-20	Gold	920305301F	0.90	Y	Strip pack
M54HC273KT	9203/053/02F				Solder dip	920305302F			
M54HC273DG	9203/053/03F			DIL-20	Gold	920305303F	3.20	-	
M54HC273DT	9203/053/04F				Solder dip	920305304F			

Table 15. Ordering information<sup>(1)</sup> (continued)

Order code	ESCC detailed specification	Quality level	Radiation level	Package	Lead finish	Marking <sup>(2)</sup>	Mass (g)	EPPL	Packing
M54HC283KG	9202/075/01F	ESCC	50 krad ESCC	Flat-16	Gold	920207501F	0.70	Y	Strip pack
M54HC283KT	9202/075/02F				Solder dip	920207502F			
M54HC283DG	9202/075/10F			DIL-16	Gold	920207510F	2.20	-	
M54HC283DT	9202/075/11F				Solder dip	920207511F			
M54HC367KG	9401/044/01F	ESCC	50 krad ESCC	Flat-16	Gold	940104401F	0.70	-	Strip pack
M54HC367KT	9401/044/02F				Solder dip	940104402F			
M54HC367DG	9401/044/10F			DIL-16	Gold	940104410F	2.20	-	
M54HC367DT	9401/044/11F				Solder dip	940104411F			
M54HC373KG	9203/059/01F	ESCC	50 krad ESCC	Flat-20	Gold	920305901F	0.90	Y	Strip pack
M54HC373KT	9203/059/02F				Solder dip	920305902F			
M54HC373DG	9203/059/03F			DIL-20	Gold	920305903F	3.20	-	
M54HC373DT	9203/059/04F				Solder dip	920305904F			
M54HCT373KG	9203/064/01F	ESCC	50 krad ESCC	Flat-20	Gold	920306401F	0.90	Y	Strip pack
M54HCT373KT	9203/064/02F				Solder dip	920306402F			
M54HCT373DG	9203/064/03F			DIL-20	Gold	920306403F	3.20	-	
M54HCT373DT	9203/064/04F				Solder dip	920306404F			
M54HC374KG	9203/060/01F	ESCC	50 krad ESCC	Flat-20	Gold	920306001F	0.90	Y	Strip pack
M54HC374KT	9203/060/02F				Solder dip	920306002F			
M54HC374DG	9203/060/03F			DIL-20	Gold	920306003F	3.20	-	
M54HC374DT	9203/060/04F				Solder dip	920306004F			
M54HC393KG	9204/074/01F	ESCC	50 krad ESCC	Flat-14	Gold	920407401F	0.70	-	Strip pack
M54HC393KT	9204/074/02F				Solder dip	920407402F			
M54HC393DG	9204/074/03F			DIL-14	Gold	920407403F	2.20	-	
M54HC393DG	9204/074/04F				Solder dip	920407404F			

Table 15. Ordering information<sup>(1)</sup> (continued)

Order code	ESCC detailed specification	Quality level	Radiation level	Package	Lead finish	Marking <sup>(2)</sup>	Mass (g)	EPPL	Packing
M54HC540KG	9401/049/01F	ESCC	50 krad ESCC	Flat-20	Gold	940104901F	0.90	Y	Strip pack
M54HC540KT	9401/049/02F				Solder dip	940104902F			
M54HC540DG	9401/049/03F			DIL-20	Gold	940104903F	3.20	-	
M54HC540DT	9401/049/04F				Solder dip	940104904F			
M54HC541KG	9401/047/01F	ESCC	50 krad ESCC	Flat-20	Gold	940104701F	0.90	Y	Strip pack
M54HC541KT	9401/047/02F				Solder dip	940104702F			
M54HC541DG	9401/047/03F			DIL-20	Gold	940104703F	3.20	-	
M54HC541DT	9401/047/04F				Solder dip	940104704F			
M54HC573KG	9202/072/01F	ESCC	50 krad ESCC	Flat-20	Gold	920207201F	0.90	Y	Strip pack
M54HC573KT	9202/072/02F				Solder dip	920207202F			
M54HC573DG	9202/072/03F			DIL-20	Gold	920207203F	3.20	-	
M54HC573DT	9202/072/04F				Solder dip	920207204F			
M54HC574KG	9203/054/01F	ESCC	50 krad ESCC	Flat-20	Gold	920305401F	0.90	Y	Strip pack
M54HC574KT	9203/054/02F				Solder dip	920305402F			
M54HC574DG	9203/054/03F			DIL-20	Gold	920305403F	3.20	-	
M54HC574DT	9203/054/04F				Solder dip	920305404F			
M54HC590KG	9204/071/01F	ESCC	50 krad ESCC	Flat-16	Gold	920407101F	0.70	Y	Strip pack
M54HC590KT	9204/071/02F				Solder dip	920407102F			
M54HC590DG	9204/071/10F			DIL-16	Gold	920407110F	2.20	-	
M54HC590DT	9204/071/11F				Solder dip	920407111F			
M54HC595KG	9306/051/01F	ESCC	50 krad ESCC	Flat-16	Gold	930605101F	0.70	Y	Strip pack
M54HC595KT	9306/051/02F				Solder dip	930605102F			
M54HC595DG	9306/051/10F			DIL-16	Gold	930605110F	2.20	-	
M54HC595DT	9306/051/11F				Solder dip	930605111F			

Table 15. Ordering information<sup>(1)</sup> (continued)

Order code	ESCC detailed specification	Quality level	Radiation level	Package	Lead finish	Marking <sup>(2)</sup>	Mass (g)	EPPL	Packing
M54HC597KG	9306/054/01F	ESCC	50 krad ESCC	Flat-16	Gold	930605401F	0.70	Y	Strip pack
M54HC597KT	9306/054/02F				Solder dip	930605402F			
M54HC597DG	9306/054/10F			DIL-16	Gold	930605410F	2.20	-	
M54HC597DT	9306/054/11F				Solder dip	930605411F			
M54HC688KG	9209/005/01F	ESCC	50 krad ESCC	Flat-20	Gold	920900501F	0.90	Y	Strip pack
M54HC688KT	9209/005/02F				Solder dip	920900502F			
M54HC688DG	9209/005/03F			DIL-20	Gold	920900503F	3.20	-	
M54HC688DT	9209/005/04F				Solder dip	920900504F			
M54HC4020KG	9204/070/01F	ESCC	50 krad ESCC	Flat-16	Gold	920407001F	0.70	-	Strip pack
M54HC4020KT	9204/070/02F				Solder dip	920407002F			
M54HC4020DG	9204/070/10F			DIL-16	Gold	920407010F	2.20		
M54HC4020DT	9204/070/11F				Solder dip	920407011F			
M54HC4040KG	9204/069/01F	ESCC	50 krad ESCC	Flat-16	Gold	920406901F	0.70	Y	Strip pack
M54HC4040KT	9204/069/02F				Solder dip	920406902F			
M54HC4040DG	9204/069/10F			DIL-16	Gold	920406910F	2.20	-	
M54HC4040DT	9204/069/11F				Solder dip	920406911F			
M54HC4049KG	9401/037/01F	ESCC	50 krad ESCC	Flat-16	Gold	940103701F	0.70	Y	Strip pack
M54HC4049KT	9401/037/02F				Solder dip	940103702F			
M54HC4049DG	9401/037/10F			DIL-16	Gold	940103710F	2.20	-	
M54HC4049DT	9401/037/11F				Solder dip	940103711F			
M54HC4050KG	9401/038/01F	ESCC	50 krad ESCC	Flat-16	Gold	940103801F	0.70	Y	Strip pack
M54HC4050KT	9401/038/02F				Solder dip	940103802F			
M54HC4050DG	9401/038/10F			DIL-16	Gold	940103810F	2.20	-	
M54HC4050DT	9401/038/11F				Solder dip	940103811F			



Table 15. Ordering information<sup>(1)</sup> (continued)

Order code	ESCC detailed specification	Quality level	Radiation level	Package	Lead finish	Marking <sup>(2)</sup>	Mass (g)	EPPL	Packing
M54HC4051KG	9408/064/01F	ESCC	50 krad ESCC	Flat-16	Gold	940806401F	0.70	-	Strip pack
M54HC4051KT	9408/064/02F				Solder dip	940806402F			
M54HC4051DG	9408/064/10F			DIL-16	Gold	940806410F	2.20		
M54HC4051DT	9408/064/11F				Solder dip	940806411F			
M54HC4053KG	9408/065/01F	ESCC	50 krad ESCC	Flat-16	Gold	940806501F	0.70	-	Strip pack
M54HC4053KT	9408/065/02F				Solder dip	940806502F			
M54HC4053DG	9408/065/10F			DIL-16	Gold	940806510F	2.20		
M54HC4053DT	9408/065/11F				Solder dip	940806511F			
M54HC4060KG	9204/076/01F	ESCC	50 krad ESCC	Flat-16	Gold	920407601F	0.70	-	Strip pack
M54HC4060KT	9204/076/02F				Solder dip	920407602F			
M54HC4060DG	9204/076/10F			DIL-16	Gold	920407610F	2.20		
M54HC4060DT	9204/076/11F				Solder dip	920407611F			
M54HC4066KG	9408/052/01F	ESCC	50 krad ESCC	Flat-14	Gold	940805201F	0.70	-	Strip pack
M54HC4066KT	9408/052/02F				Solder dip	940805202F			
M54HC4066DG	9408/052/03F			DIL-14	Gold	940805203F	2.20		
M54HC4066DT	9408/052/04F				Solder dip	940805204F			
M54HC4078KG	9201/123/01F	ESCC	50 krad ESCC	Flat-14	Gold	920112301F	0.70	-	Strip pack
M54HC4078KT	9201/123/02F				Solder dip	920112302F			
M54HC4078DG	9201/123/03F			DIL-14	Gold	920112303F	2.20		
M54HC4078DT	9201/123/04F				Solder dip	920112304F			
M54HC4094KG	9306/050/01F	ESCC	50 krad ESCC	Flat-16	Gold	930605001F	0.70	-	Strip pack
M54HC4094KT	9306/050/02F				Solder dip	930605002F			
M54HC4094DG	9306/050/10F			DIL-16	Gold	930605010F	2.20		
M54HC4094DT	9306/050/11F				Solder dip	930605011F			


**Table 15. Ordering information<sup>(1)</sup> (continued)**

Order code	ESCC detailed specification	Quality level	Radiation level	Package	Lead finish	Marking <sup>(2)</sup>	Mass (g)	EPPL	Packing
M54HC4514KG	9205/019/01F	ESCC	50 krad ESCC	Flat-24	Gold	920501901F	1.70	-	Strip pack
M54HC4514KT	9205/019/02F				Solder dip	920501902F			
M54HC4514DG	9205/019/03F			DIL-24	Gold	920501903F	5.20		
M54HC4514DT	9205/019/04F				Solder dip	920501904F			

1. Contact ST sales office for information about the specific conditions for other 54HC or 54HCT part numbers and for products in die form.
2. Specific marking only. Complete marking includes the following: ST logo; ESA logo; Date code (details of the date code are provided in [Section 7.1: Date code](#)); ESCC part number (as mentioned in above table); Country of origin (FR = France); Part serial number within the assembly lot.

## 7 Other information

### 7.1 Date code

Date code is structured as described below:

- EM xyywwz
- ESCC flight yywwz

where:

- x (EM only): 3, assembly location Rennes (France)
- yy: last two digits year
- ww: week digits
- z: lot index in the week

### 7.2 Documentation

In [Table 16](#) is a summary of the documentation provided with each type of products.

**Table 16. Documentation provided for each type of product**

Quality level	Documentation
Engineering model	-
ESCC flight	Certificate of conformance Radiation verification test report

## 8 Revision history

**Table 17. Document revision history**

Date	Revision	Changes
14-Apr-2010	1	First release
02-Aug-2011	2	Added <i>Note: on page 14, 1. on page 14, 1. on page 15, 1. on page 16, 1. on page 19, 1. on page 20</i> and in the "Pin connections" diagram on the coverpage
29-May-2013	3	<p>Updated Flat-24 package in figure on page 1.</p> <p>Updated <i>Section 2: Input and output equivalent circuit diagram</i> (updated titles - added "output", updated <i>Figure 1</i>, added note 1. below <i>Figure 1</i>).</p> <p>Updated <i>Table 1</i> (removed M54HCU04, M54HC163, M54HC238, M54HC241, M54HC253, M54HC365, M54HCT374, M54HC390, M54HC4002, M54HC4072, and M54HC4075 device).</p> <p>Updated note 1. below <i>Table 1</i> (removed "QML-Q versions").</p> <p>Added note 2. below <i>Table 3</i>, renumbered notes below <i>Table 3</i>.</p> <p>Added <math>t_r, t_f</math> symbols, parameters, values and units to <i>Table 4</i>.</p> <p>Updated <i>Section 5: Package information</i> (added <i>Figure 6</i> and <i>Figure 7</i>, <i>Table 11</i> and <i>Table 12</i>, reversed order of <i>Figure 2</i> to <i>Figure 5</i>, <i>Figure 8</i> and <i>Figure 9</i>, <i>Table 8</i> to <i>Table 10</i>, <i>Table 13</i> and <i>Table 14</i>, corrected typ. dimension for symbol "L" in <i>Table 9</i>).</p> <p>Updated <i>Table 15</i> (removed M54HCU04K/D, M54HC163K/D, M54HC238K/D, M54HC241K/D, M54HC253K/D, M54HC365K/D, M54HCT374K/D, M54HC390K/D, M54HC4002K/D, M54HC4072K/D, and M54HC4075K/D device).</p> <p>Added note 2. below <i>Table 15</i>, updated note 1. (removed "QML-Q versions"), renumbered notes below <i>Table 15</i>.</p> <p>Added <i>Section 7: Other information</i>.</p> <p>Minor corrections throughout document.</p>
01-Apr-2014	4	<i>Table 15: Ordering information</i> : All order codes changed to the new ST ordering code scheme, updated footnote 2.

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