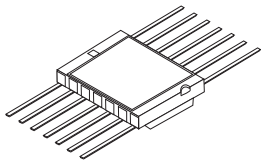
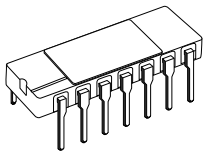
54ACxxxx, 54ACTxxxx

Rad-hard advanced high-speed 5 V CMOS logic series

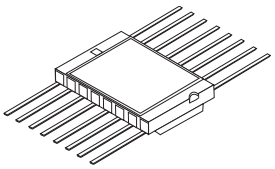
Data brief



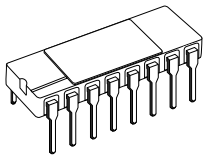
Flat-14



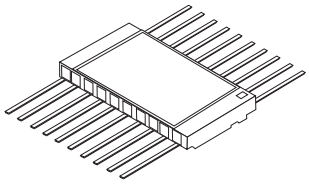
DIL-14



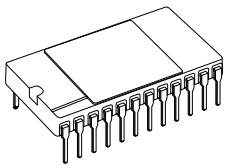
Flat-16



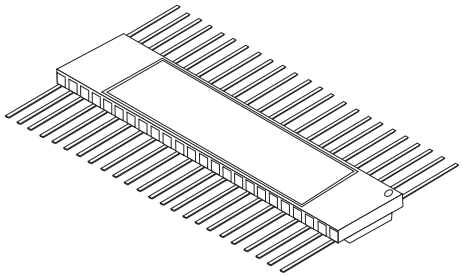
DIL-16



Flat-20



DIL-20



Flat-48

The upper metallic lid is not electrically connected to any pins, nor to the IC die inside the package.

Features

- AC: 2 to 6 V operating voltage
- ACT: 4.5 to 5.5 V operating voltage
- High speed T_{PD} = 4.5 ns (typ.)
- Low DC power dissipation: 8 µA max.
- Symmetrical 24 mA output characteristics
- High noise immunity: 28% of min. V_{CC}
- Power-down input protection
- Balanced propagation delays
- Improved electrical latch-up immunity
- Controlled rise and fall times
- Operating temperature: - 55 to 150 °C
- Hermetic packages
- Rad-hard: 300 kRad TID at any Mil1019 dose rates
- SEL immune to 110 MeV/cm²/mg LET ions
- RHA QML-V qualified
- Same die and electrical specification for engineering and flight models

Description

The 54AC and 54ACT series represent over 60 product types with different 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 interfaces, and several other functions. Their radiation hardness, immunity from single event latch-up (SEL) and single event upset (SEU), and housing in hermetic packages make them suitable for the most difficult environmental conditions. The complete specification for each type is available from the DSCC web site: www.dscc.dla.mil. STMicroelectronics guarantees full compliance of qualified parts with these DSCC specifications.

Contents

List of tables

List of figures

1 54AC and 54ACT series overview

Table 1. Device summary

Part number	Description	Radiation level	Agency qualification	EPPL	Sl det speci
54AC00	Rad-hard quad 2-input NAND gate	300 krad (Si)	QML-V	Y	5962
54ACT00	Rad-hard quad 2-input NAND gate			Y	5962
54AC02	Rad-hard quad 2-input NOR gate			Y	5962
54ACT02	Rad-hard quad 2-input NOR gate			-	5962
54AC04	Rad-hard hex inverter			Y	5962
54ACT04	Rad-hard hex inverter			-	5962
54AC08	Rad-hard quad 2-input AND gate			Y	5962
54ACT08	Rad-hard quad 2-input AND gate			-	5962
54AC10	Rad-hard triple 3-input NAND gate			Y	5962
54ACT10	Rad-hard triple 3-input NAND gate			-	5962
54AC11	Rad-hard triple 3-input AND gate			Y	5962
54ACT11	Rad-hard triple 3-input AND gate			-	5962
54AC14	Rad-hard hex Schmitt inverter			Y	5962
54AC14A	Rad-hard hex Schmitt inverter low power			-	5962
54ACT14	Rad-hard hex Schmitt inverter			-	5962
54AC32	Rad-hard quad 2-input OR gate			-	5962
54ACT32	Rad-hard quad 2-input OR gate			-	5962
54AC74	Rad-hard dual D-type flip-flop with preset and clear			Y	5962
54ACT74	Rad-hard dual D-type flip-flop with preset and clear			-	5962
54AC86	Rad-hard quad exclusive OR			-	5962

Table 1. Device summary (continued)

Part number	Description	Radiation level	Agency qualification	EPPL	Sl det speci
54ACT86	Rad-hard quad exclusive OR	300 krad (Si)	QML-V	Y	5962
54AC138	Rad-hard 3 to 8 line decoder inverter			Y	5962
54ACT138	Rad-hard 3 to 8 line decoder inverter			-	5962
54AC139	Rad-hard dual 2 to 4 line decoder/demultiplexer			Y	5962
54ACT139	Rad-hard dual 2 to 4 line decoder/demultiplexer			-	5962
54AC151	Rad-hard 8-channel multiplexer			-	5962
54ACT151	Rad-hard 8-channel multiplexer			-	5962
54AC157	Rad-hard quad 2-channel multiplexer			Y	5962
54ACT157	Rad-hard quad 2-channel multiplexer			-	5962
54AC161	Rad-hard synchronous binary counter with async. clear			Y	5962
54ACT161	Rad-hard synchronous binary counter with async. clear			-	5962
54AC174	Rad-hard hex D-type flip-flop with clear			-	5962
54ACT174	Rad-hard hex D-type flip-flop with clear			-	5962
54AC191	Rad-hard 4-bit synchronous binary up/down counter			-	5962
54ACT191	Rad-hard 4-bit synchronous binary up/down counter			-	5962
54AC240	Rad-hard octal bus buffer 3-state inverter			Y	5962
54ACT240	Rad-hard octal bus buffer 3-state inverter			Y	5962
54AC244	Rad-hard octal bus buffer 3-state			Y	5962
54ACT244	Rad-hard octal bus buffer 3-state			Y	5962
54AC245	Rad-hard octal bus transceiver 3-state			Y	5962
54ACT245	Rad-hard octal bus transceiver 3-state			Y	5962
54AC273	Rad-hard octal D-type flip-flop with clear			Y	5962
54ACT273	Rad-hard octal D-type flip-flop with clear			-	5962

Table 1. Device summary (continued)

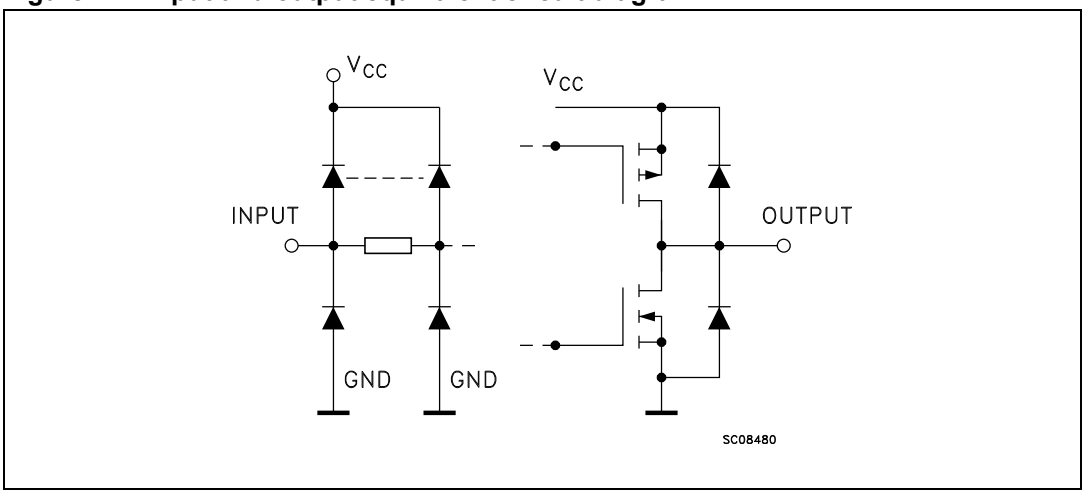
Part number	Description	Radiation level	Agency qualification	EPPL	Sl det speci
54AC373	Rad-hard octal D-type latch 3-state	300 krad (Si)	QML-V	Y	5962
54ACT373	Rad-hard octal D-type latch 3-state			-	5962
54AC374	Rad-hard octal D-type flip-flop 3-state			Y	5962
54ACT374	Rad-hard octal D-type flip-flop 3-state			-	5962
54AC521(1)	Rad-hard 8-bit comparator with enable			-	5962
54AC540(1)	Rad-hard octal buffer/line driver 3-state			-	5962
54AC541	Rad-hard octal bus buffer 3-state			Y	5962
54ACT541	Rad-hard octal bus buffer 3-state			-	5962
54AC574	Rad-hard octal D-type flip-flop 3-state			-	5962
54ACT574	Rad-hard octal D-type flip-flop 3-state			Y	5962
54AC2525(1)	Rad-hard 1 to 8 skew clock driver			-	5962
54AC16244	Rad-hard 16-bit bus transceiver non inverting			-	5962
54ACT16244	Rad-hard 16-bit bus transceiver non inverting			-	5962
54AC16245	Rad-hard 16-bit bus transceiver 3-inverting			-	5962
54ACT16245	Rad-hard 16-bit 3-state buffer transceiver			-	5962
54AC16373	Rad-hard 16 D-type latch 3-state			-	5962
54ACT16373	Rad-hard 16-bit 3-state D-type latch			-	5962
54AC16374	Rad-hard 16 D-type flip flop 3-state			-	5962
54ACT16374	Rad-hard 16-bit 3-state D-type flip-flop			-	5962
54AC164245	Rad-hard 16-bit 3 to 5 V level shifter transceiver 3-state	100 krad (Si)		-	5962

1. The product is not yet formally qualified by DSCC.

Contact ST sales office for information about the specific conditions for other 54AC or 54ACT part numbers, versions.

2 Input and output equivalent circuit diagram

Figure 1. Input and output equivalent circuit diagram



3 Maximum rating

3.1 Absolute maximum ratings

3.1.1 54AC series

Table 2. Absolute maximum ratings - 54AC series

Symbol	Parameter	Value	Unit
V_{CC}	Supply voltage	-0.5 to +7.0	V
V_I	DC input voltage	-0.5 to +7.0	V
V_O	DC output voltage	-0.5 to V_{CC} + 0.5	V
I_{IK}	DC input diode current	±20	mA
I_{OK}	DC output diode current	±50	mA
I_O	DC output current	±50	mA
I_{CC} or I_{GND}	DC V_{CC} or ground current	from 100 to 400	mA
T_{STG}	Storage temperature	-65 to +150	°C
T_L	Lead temperature (10 sec)	260	°C

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

3.1.2 54ACT series

Table 3. Absolute maximum ratings - 54ACT series

Symbol	Parameter	Value	Unit
V_{CC}	Supply voltage	-0.5 to +6.0	V
V_I	DC input voltage	-0.5 to +6.0	V
V_O	DC output voltage	-0.5 to V_{CC} + 0.5	V
I_{IK}	DC input diode current	±20	mA
I_{OK}	DC output diode current	±50	mA
I_O	DC output current	±50	mA
I_{CC} or I_{GND}	DC V_{CC} or ground current	from 100 to 400	mA
T_{STG}	Storage temperature	-65 to +150	°C
T_L	Lead temperature (10 sec)	260	°C

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

3.2 Recommended operating conditions

3.2.1 54AC series

Table 4. Recommended operating conditions for 54AC series

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 150	°C
dt/dv	Input rise and fall time(1) V_{CC} = 3.0, 4.5 or 5.5	0 to 8	ns/V

1. V_{IN} from 30% to 70% of V_{CC}.

3.2.2 54ACT series

Table 5. Recommended operating conditions for 54ACT series

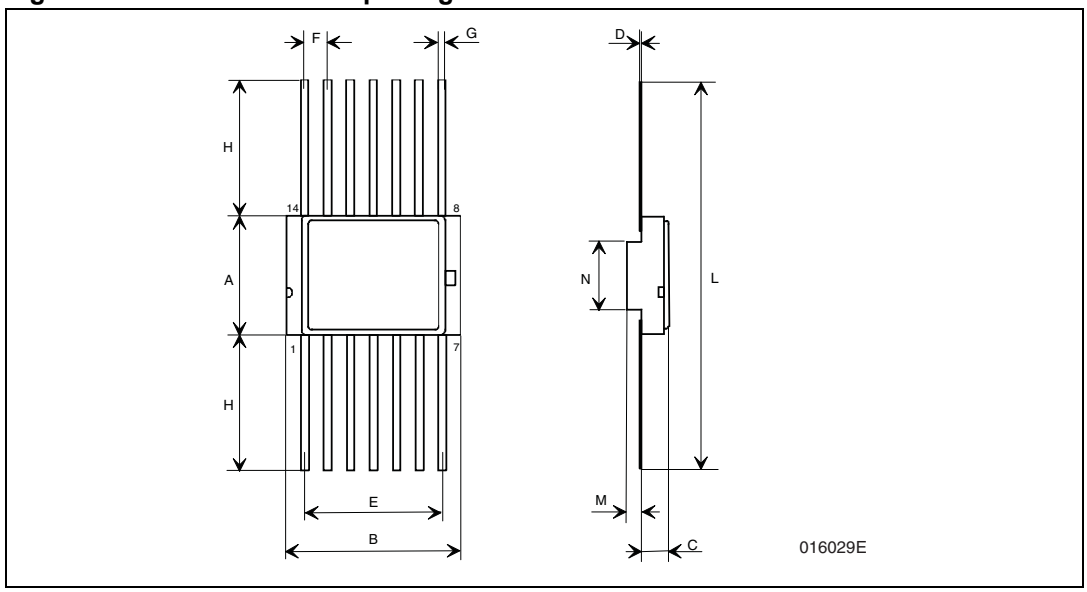
Symbol	Parameter	Value	Unit
V_{CC}	Supply voltage	4.5 to 5.5	V
V_I	Input voltage	0 to V_{CC}	V
V_O	Output voltage	0 to V_{CC}	V
T_{OP}	Operating temperature	-55 to 150	°C
dt/dv	Input rise and fall time(1) V_{CC} = 3.0, 4.5 or 5.5	0 to 8	ns/V

1. V_{IN} from 30% to 70% of V_{CC}.

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. ECOPACK is an ST trademark.

Figure 2. Ceramic Flat-14 package outline

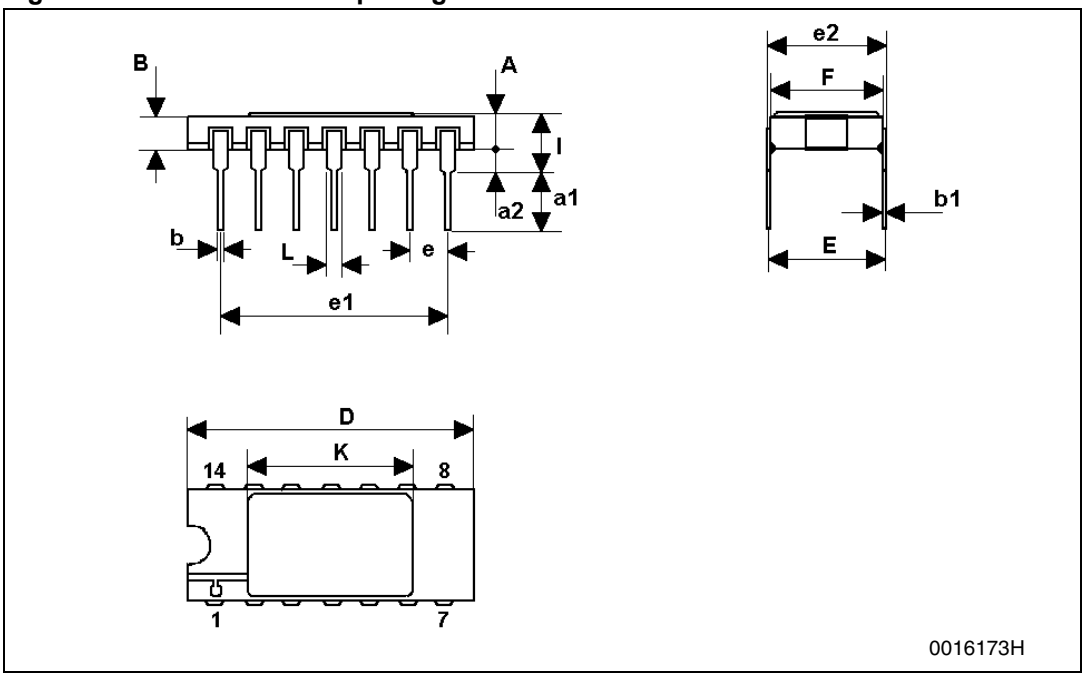


Note: The upper metallic lid is not electrically connected to any pins, nor to the IC die inside the package. Connecting unused pins or metal lid to ground or to the power supply will not affect the electrical characteristics.

Table 6. Ceramic Flat-14 package mechanical data

Symbol	Dimensions (mm)			Dimensions (inches)		
	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		22.0	0.738		0.866
M		0.38			0.015	
N		4.31			0.170	

Figure 3. Ceramic DIL-14 package outline

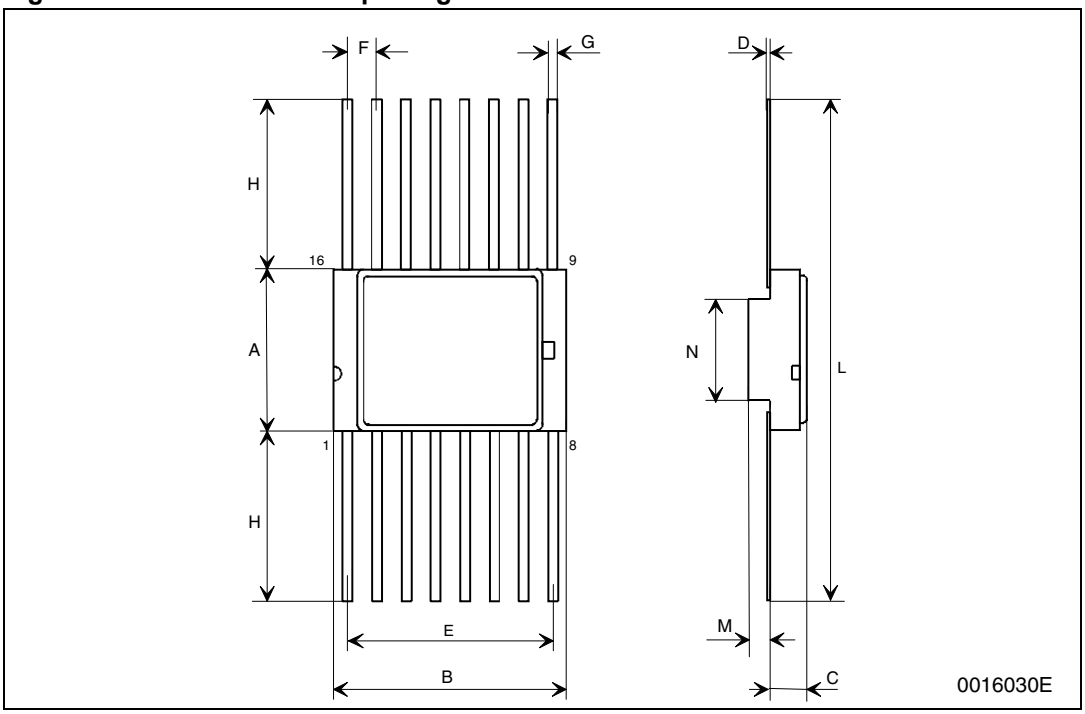


Note: The upper metallic lid is not electrically connected to any pins, nor to the IC die inside the package. Connecting unused pins or metal lid to ground or to the power supply will not affect the electrical characteristics.

Table 7. Ceramic DIL-14 package mechanical data

Symbol	Dimensions (mm)			Dimensions (inches)		
	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	0.429		0.476
L	1.14	1.27	1.5	0.045	0.050	0.059

Figure 4. Ceramic Flat-16 package outline

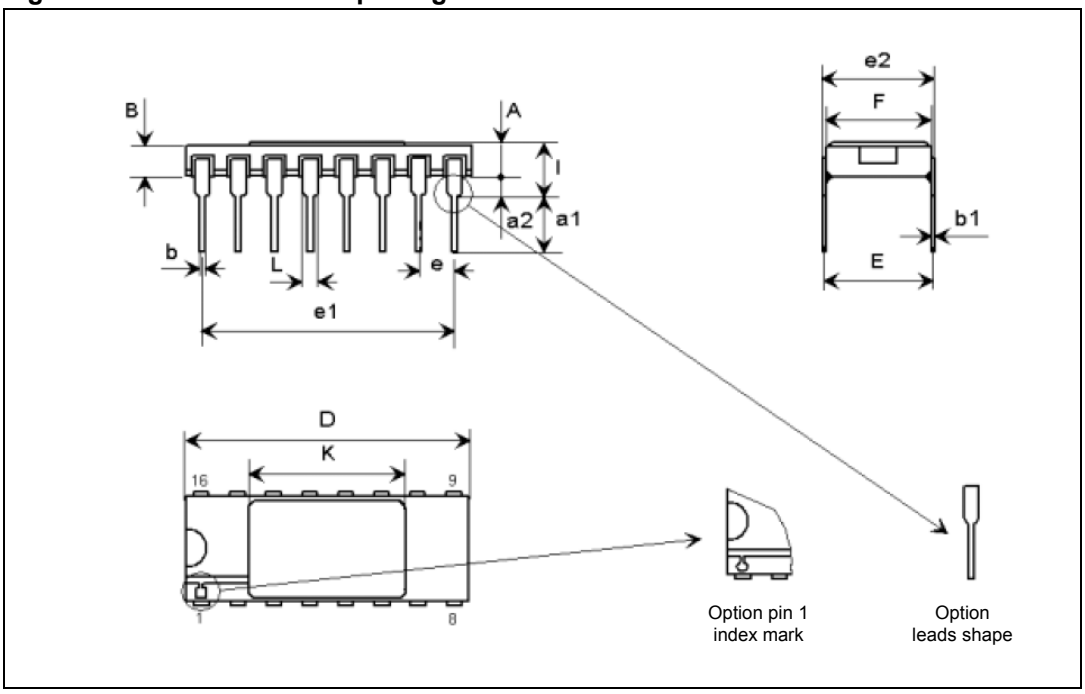


Note: The upper metallic lid is not electrically connected to any pins, nor to the IC die inside the package. Connecting unused pins or metal lid to ground or to the power supply will not affect the electrical characteristics.

Table 8. Ceramic Flat-16 package mechanical data

Symbol	Dimensions (mm)			Dimensions (inches)		
	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		22.0	0.738		0.866
M	0.33	0.38	0.43	0.013	0.015	0.017
N		4.31			0.170	

Figure 5. Ceramic DIL-16 package outline

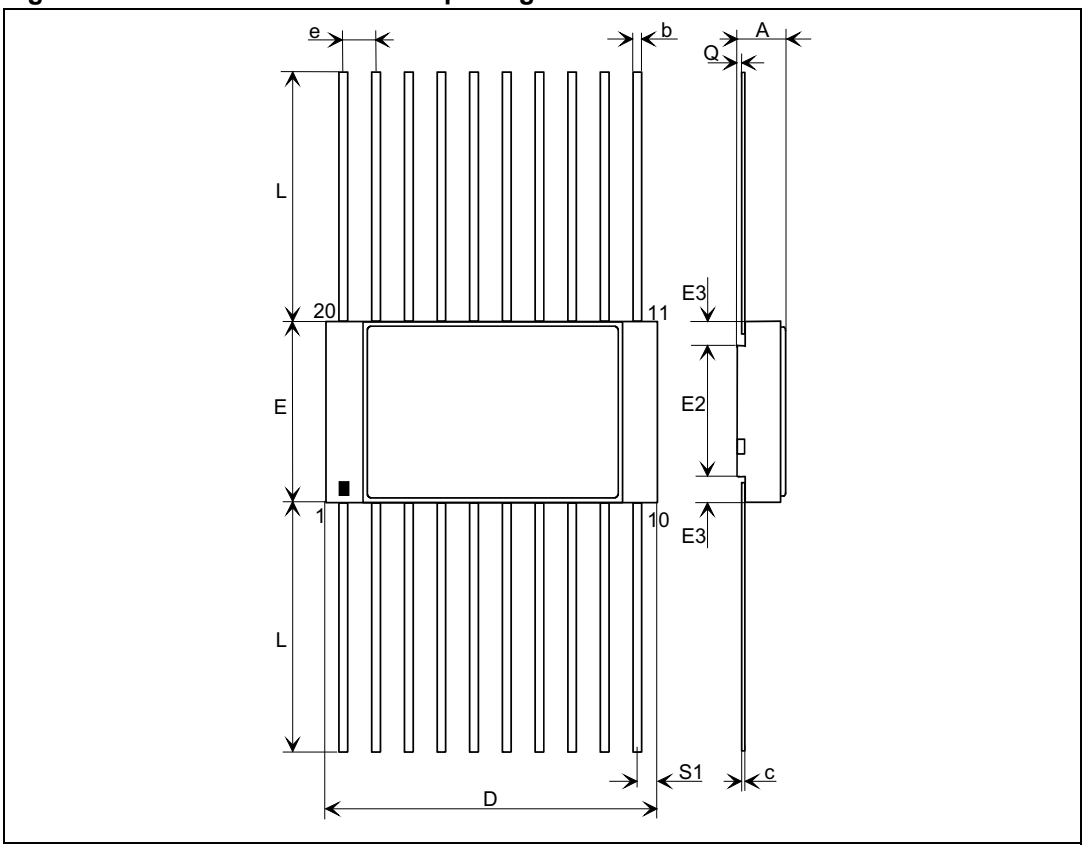


Note: The upper metallic lid is not electrically connected to any pins, nor to the IC die inside the package. Connecting unused pins or metal lid to ground or to the power supply will not affect the electrical characteristics.

Table 9. Ceramic DIL-16 package mechanical data

Symbol	Dimensions (mm)			Dimensions (inches)		
	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

Figure 6. Ceramic DSCC Flat-20 package outline

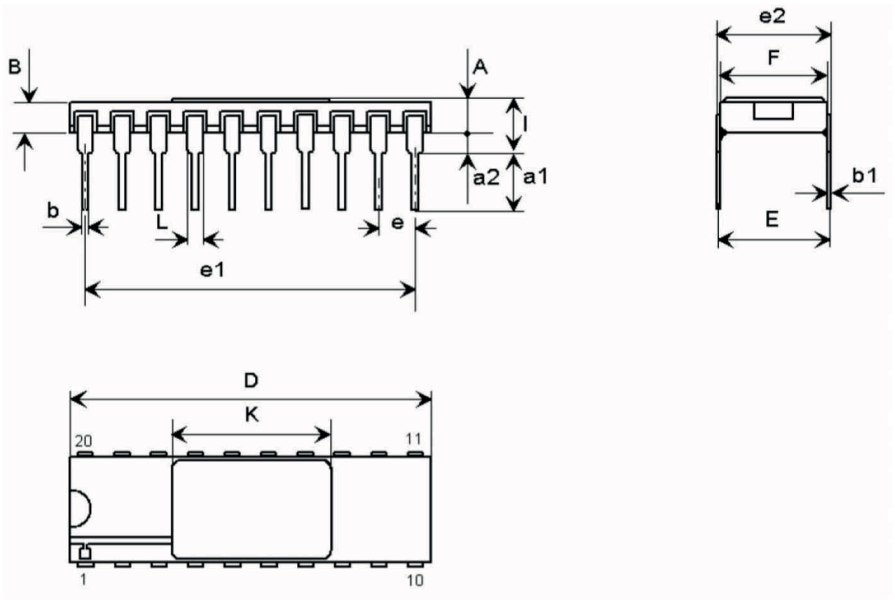


Note: The upper metallic lid is not electrically connected to any pins, nor to the IC die inside the package. Connecting unused pins or metal lid to ground or to the power supply will not affect the electrical characteristics.

Table 10. Ceramic DSCC Flat-20 package mechanical data

Symbol	Dimensions (mm)			Dimensions (inches)		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	1.91		2.21	0.075		0.087
b	0.38		0.48	0.015		0.019
c	0.076		0.152	0.003		0.006
D	12.83		13.08	0.505		0.515
E	6.99		7.24	0.275		0.285
E2	5.05	5.21	5.36	0.199	0.205	0.211
E3		0.95			0.037	
e	1.14		1.40	0.045		0.055
L	6.35		9.39	0.250		0.370
Q	0.25			0.010		
S1		0.55			0.022	

Figure 7. Ceramic DIL-20 package outline

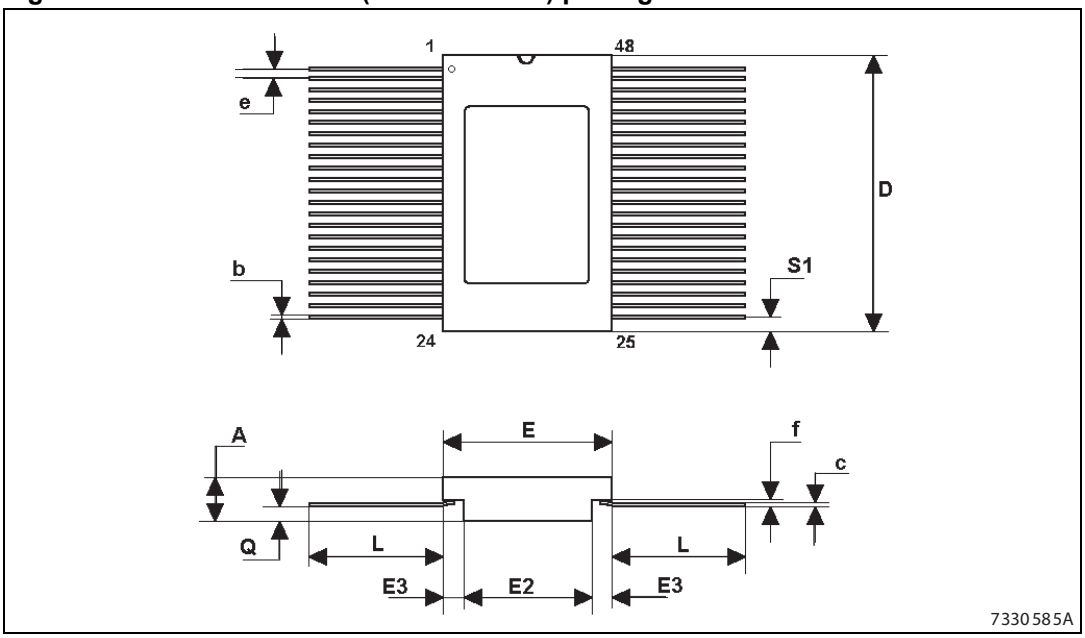


Note: The upper metallic lid is not electrically connected to any pins, nor to the IC die inside the package. Connecting unused pins or metal lid to ground or to the power supply will not affect the electrical characteristics.

Table 11. Ceramic DIL-20 package mechanical data

Symbol	Dimensions (mm)			Dimensions (inches)		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.1		2.72	0.083		0.107
a1	3		3.7	0.118		0.146
a2	0.63	0.88	1.14	0.025	0.035	0.045
B	1.93	2.03	2.23	0.076	0.080	0.088
b	0.4	0.45	0.5	0.016	0.018	0.020
b1	0.2	0.254	0.3	0.008	0.010	0.012
D	25.14	25.4	25.65	0.990	1.000	1.010
E	7.36	7.62	7.87	0.290	0.300	0.310
e		2.54			0.100	
e1	22.73	22.86	22.99	0.895	0.900	0.905
e2	7.62	7.87	8.12	0.300	0.310	0.320
F	7.29	7.49	7.62	0.287	0.295	0.300
I			3.86			0.152
K	11.3		11.56	0.445		0.455
L	1.14	1.27	1.4	0.045	0.050	0.055

Figure 8. Ceramic Flat-48 (MIL-STD-1835) package outline



Note: 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 will not affect the electrical characteristics.

Table 12. Ceramic Flat-48 (MIL-STD-1835) package mechanical data

Symbol	Dimensions (mm)			Dimensions (inches)		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.18	2.47	2.72	0.086	0.097	0.107
b	0.20	0.254	0.30	0.008	0.010	0.012
c	0.12	0.15	0.18	0.005	0.006	0.007
D	15.57	15.75	15.92	0.613	0.620	0.627
E	9.52	9.65	9.78	0.375	0.380	0.385
E2	6.22	6.35	6.48	0.245	0.250	0.255
E3	1.52	1.65	1.78	0.060	0.065	0.070
e		0.635			0.025	
f		0.20			0.008	
L	6.85	8.38	9.40	0.270	0.330	0.370
Q	0.66	0.79	0.92	0.026	0.031	0.036
S1	0.25	0.43	0.61	0.010	0.017	0.024

5 Ordering information

Table 13. Ordering information

Order codes	SMD pin	Quality level	Package	Lead finish	Marking[1]
RHFAC00K1	-	Engineering model	Flat-14	Gold	RHFAC00K1
RHFAC00K01V	5962F8754901VXC	QML-V flight	Flat-14	Gold	5962F8754901V
RHFAC00K02V	5962F8754901VXA	QML-V flight	Flat-14	Solder dip	5962F8754901V
RHFAC00D03V	5962F8754901VCC	QML-V flight	DIL-14	Gold	5962F8754901V
RHFACT00K1	-	Engineering model	Flat-14	Gold	RHFACT00K1
RHFACT00K01V	5962F8769903VXC	QML-V flight	Flat-14	Gold	5962F8769903V
RHFACT00K02V	5962F8769903VXA	QML-V flight	Flat-14	Solder dip	5962F8769903V
RHFACT00D03V	5962F8769903VCC	QML-V flight	DIL-14	Gold	5962F8769903V
RHFAC02K1	-	Engineering model	Flat-14	Gold	RHFAC02K1
RHFAC02K01V	5962F8761201VXC	QML-V flight	Flat-14	Gold	5962F8761201V
RHFAC02K02V	5962F8761201VXA	QML-V flight	Flat-14	Solder dip	5962F8761201V
RHFAC02D03V	5962F8761201VCC	QML-V flight	DIL-14	Gold	5962F8761201V
RHFACT02K1	-	Engineering model	Flat-14	Gold	RHFACT02K1
RHFACT02K01V	5962F8979101VXC	QML-V flight	Flat-14	Gold	5962F8979101V
RHFACT02K02V	5962F8979101VXA	QML-V flight	Flat-14	Solder dip	5962F8979101V
RHFAC04K1	-	Engineering model	Flat-14	Gold	RHFAC04K1
RHFAC04K01V	5962F8760901VXC	QML-V flight	Flat-14	Gold	5962F8760901V
RHFAC04K02V	5962F8760901VXA	QML-V flight	Flat-14	Solder dip	5962F8760901V
RHFAC04D03V	5962F8760901VCC	QML-V flight	DIL-14	Gold	5962F8760901V
RHFACT04K1	-	Engineering model	Flat-14	Gold	RHFACT04K1
RHFACT04K01V	5962F8973403VXC	QML-V flight	Flat-14	Gold	5962F8973403V
RHFACT04K02V	5962F8973403VXA	QML-V flight	Flat-14	Solder dip	5962F8973403V

Table 13. Ordering information (continued)

Order codes	SMD pin	Quality level	Package	Lead finish	Marking[1]
RHFACT04D03V	5962F8973403VCC	QML-V flight	DIL-14	Gold	5962F8973403V
RHFAC08K1	-	Engineering model	Flat-14	Gold	RHFAC08K1
RHFAC08K01V	5962F8761501VXC	QML-V flight	Flat-14	Gold	5962F8761501V
RHFAC08K02V	5962F8761501VXA	QML-V flight	Flat-14	Solder dip	5962F8761501V
RHFAC08D03V	5962F8761501VCC	QML-V flight	DIL-14	Gold	5962F8761501V
RHFACT08K1	-	Engineering model	Flat-14	Gold	RHFACT08K1
RHFACT08K01V	5962F8954703VXC	QML-V flight	Flat-14	Gold	5962F8954703V
RHFACT08K02V	5962F8954703VXA	QML-V flight	Flat-14	Solder dip	5962F8954703V
RHFACT08D03V	5962F8954703VCC	QML-V flight	DIL-14	Gold	5962F8954703V
RHFAC10K1	-	Engineering model	Flat-14	Gold	RHFAC10K1
RHFAC10K01V	5962F8761001VXC	QML-V flight	Flat-14	Gold	5962F8761001V
RHFAC10K02V	5962F8761001VXA	QML-V flight	Flat-14	Solder dip	5962F8761001V
RHFAC10D03V	5962F8761001VCC	QML-V flight	DIL-14	Gold	5962F8761001V
RHFACT10K1	-	Engineering model	Flat-14	Gold	RHFACT10K1
RHFACT10K01V	5962F9218202VXC	QML-V flight	Flat-14	Gold	5962F9218202V
RHFACT10K02V	5962F9218202VXA	QML-V flight	Flat-14	Solder dip	5962F9218202V
RHFAC11K1	-	Engineering model	Flat-14	Gold	RHFAC11K1
RHFAC11K01V	5962F8761101VXC	QML-V flight	Flat-14	Gold	5962F8761101V
RHFAC11K02V	5962F8761101VXA	QML-V flight	Flat-14	Solder dip	5962F8761101V
RHFAC11D03V	5962F8761101VCC	QML-V flight	DIL-14	Gold	5962F8761101V
RHFACT11K1	-	Engineering model	Flat-14	Gold	RHFACT11K1
RHFACT11K01V	5962F9077202VXC	QML-V flight	Flat-14	Gold	5962F9077202V
RHFACT11K02V	5962F9077202VXA	QML-V flight	Flat-14	Solder dip	5962F9077202V
RHFAC14K1	-	Engineering model	Flat-14	Gold	RHFAC14K1
RHFAC14K01V	5962F8762401VXC	QML-V flight	Flat-14	Gold	5962F8762401V

Table 13. Ordering information (continued)

Order codes	SMD pin	Quality level	Package	Lead finish	Marking[1]
RHFAC14K02V	5962F8762401VXA	QML-V flight	Flat-14	Solder dip	5962F8762401V
RHFAC14D03V	5962F8762401VCC	QML-V flight	DIL-14	Gold	5962F8762401V
RHFAC14D04V	5962F8762401VCA	QML-V flight	DIL-14	Solder dip	5962F8762401V
RHFAC14AK1	-	Engineering model	Flat-14	Gold	RHFAC14AK1
RHFAC14AK01V	5962F8762403VXC	QML-V flight	Flat-14	Gold	5962F8762403V
RHFAC14AK02V	5962F8762403VXA	QML-V flight	Flat-14	Solder dip	5962F8762403V
RHFACT14K1	-	Engineering model	Flat-14	Gold	RHFACT14K1
RHFACT14K01V	5962F9681301VXC	QML-V flight	Flat-14	Gold	5962F9681301V
RHFACT14K02V	5962F9681301VXA	QML-V flight	Flat-14	Solder dip	5962F9681301V
RHFAC32K1	-	Engineering model	Flat-14	Gold	RHFAC32K1
RHFAC32K01V	5962F8761401VXC	QML-V flight	Flat-14	Gold	5962F8761401V
RHFAC32K02V	5962F8761401VXA	QML-V flight	Flat-14	Solder dip	5962F8761401V
RHFAC32D03V	5962F8761401VCC	QML-V flight	DIL-14	Gold	5962F8761401V
RHFACT32K1	-	Engineering model	Flat-14	Gold	RHFACT32K1
RHFACT32K01V	5962F8973603VXC	QML-V flight	Flat-14	Gold	5962F8973603V
RHFACT32K02V	5962F8973603VXA	QML-V flight	Flat-14	Solder dip	5962F8973603V
RHFACT32D03V	5962F8973603VCC	QML-V flight	DIL-14	Gold	5962F8973603V
RHFAC74K1	-	Engineering model	Flat-14	Gold	RHFAC74K1
RHFAC74K01V	5962F8852003VXC	QML-V flight	Flat-14	Gold	5962F8852003V
RHFAC74K02V	5962F8852003VXA	QML-V flight	Flat-14	Solder dip	5962F8852003V
RHFAC74D03V	5962F8852003VCC	QML-V flight	DIL-14	Gold	5962F8852003V
RHFACT74K1	-	Engineering model	Flat-14	Gold	RHFACT74K1
RHFACT74K01V	5962F87525 03VXC	QML-V flight	Flat-14	Gold	5962F87525 03V
RHFACT74K02V	5962F87525 03VXA	QML-V flight	Flat-14	Solder dip	5962F87525 03V
RHFACT74D03V	5962F87525 03VCC	QML-V flight	DIL-14	Gold	5962F87525 03V

Table 13. Ordering information (continued)

Order codes	SMD pin	Quality level	Package	Lead finish	Marking[1]
RHFAC86K1	-	Engineering model	Flat-14	Gold	RHFAC86K1
RHFAC86K01V	5962F8955001VXC	QML-V flight	Flat-14	Gold	5962F8955001V
RHFAC86K02V	5962F8955001VXA	QML-V flight	Flat-14	Solder dip	5962F8955001V
RHFAC86D03V	5962F8955001VCC	QML-V flight	DIL-14	Gold	5962F8955001V
RHFACT86K1	-	Engineering model	Flat-14	Gold	RHFACT86K1
RHFACT86K01V	5962F9068702VXC	QML-V flight	Flat-14	Gold	5962F9068702V
RHFACT86K02V	5962F9068702VXA	QML-V flight	Flat-14	Solder dip	5962F9068702V
RHFAC138K1	-	Engineering model	Flat-16	Gold	RHFAC138K1
RHFAC138K01V	5962F8762201VXC	QML-V flight	Flat-16	Gold	5962F8762201V
RHFAC138K02V	5962F8762201VXA	QML-V flight	Flat-16	Solder dip	5962F8762201V
RHFAC138D03V	5962F8762201VEC	QML-V flight	DIL-16	Gold	5962F8762201V
RHFACT138K1	-	Engineering model	Flat-16	Gold	RHFACT138K1
RHFACT138K01V	5962F8755403VXC	QML-V flight	Flat-16	Gold	5962F8755403V
RHFACT138K02V	5962F8755403VXA	QML-V flight	Flat-16	Solder dip	5962F8755403V
RHFAC139K1	-	Engineering model	Flat-16	Gold	RHFAC139K1
RHFAC139K01V	5962F8762301VXC	QML-V flight	Flat-16	Gold	5962F8762301V
RHFAC139K02V	5962F8762301VXA	QML-V flight	Flat-16	Solder dip	5962F8762301V
RHFACT139K1	-	Engineering model	Flat-16	Gold	RHFACT139K1
RHFACT139K01V	5962F8755302VXC	QML-V flight	Flat-16	Gold	5962F8755302V
RHFACT139K02V	5962F8755302VXA	QML-V flight	Flat-16	Solder dip	5962F8755302V
RHFACT139D03V	5962F8755302VEC	QML-V flight	DIL-16	Gold	5962F8755302V
RHFAC151K1	-	Engineering model	Flat-16	Gold	RHFAC151K1
RHFAC151K01V	5962F8769102VXC	QML-V flight	Flat-16	Gold	5962F8769102V
RHFAC151K02V	5962F8769102VXA	QML-V flight	Flat-16	Solder dip	5962F8769102V
RHFACT151K1	-	Engineering model	Flat-16	Gold	RHFACT151K1

Table 13. Ordering information (continued)

Order codes	SMD pin	Quality level	Package	Lead finish	Marking[1]
RHFACT151K01V	5962F8875602VXC	QML-V flight	Flat-16	Gold	5962F8875602V
RHFACT151K02V	5962F8875602VXA	QML-V flight	Flat-16	Solder dip	5962F8875602V
RHFAC157K1	-	Engineering model	Flat-16	Gold	RHFAC157K1
RHFAC157K01V	5962F8953901VXC	QML-V flight	Flat-16	Gold	5962F8953901V
RHFAC157K02V	5962F8953901VXA	QML-V flight	Flat-16	Solder dip	5962F8953901V
RHFAC157D03V	5962F8953901VEC	QML-V flight	DIL-16	Gold	5962F8953901V
RHFACT157K1	-	Engineering model	Flat-16	Gold	RHFACT157K1
RHFACT157K01V	5962F8968802VXC	QML-V flight	Flat-16	Gold	5962F8968802V
RHFACT157K02V	5962F8968802VXA	QML-V flight	Flat-16	Solder dip	5962F8968802V
RHFACT157D03V	5962F8968802VEC	QML-V flight	DIL-16	Gold	5962F8968802V
RHFAC161K1	-	Engineering model	Flat-16	Gold	RHFAC161K1
RHFAC161K01V	5962F8956101VXC	QML-V flight	Flat-16	Gold	5962F8956101V
RHFAC161K02V	5962F8956101VXA	QML-V flight	Flat-16	Solder dip	5962F8956101V
RHFAC161D03V	5962F8956101VEC	QML-V flight	DIL-16	Gold	5962F8956101V
RHFACT161K1	-	Engineering model	Flat-16	Gold	RHFACT161K1
RHFACT161K01V	5962F9172202VXC	QML-V flight	Flat-16	Gold	5962F9172202V
RHFACT161K02V	5962F9172202VXA	QML-V flight	Flat-16	Solder dip	5962F9172202V
RHFAC174K1	-	Engineering model	Flat-16	Gold	RHFAC174K1
RHFAC174K01V	5962F8762602VXC	QML-V flight	Flat-16	Gold	5962F8762602V
RHFAC174K02V	5962F8762602VXA	QML-V flight	Flat-16	Solder dip	5962F8762602V
RHFACT174K1	-	Engineering model	Flat-16	Gold	RHFACT174K1
RHFACT174K01V	5962F8775702VXC	QML-V flight	Flat-16	Gold	5962F8775702V
RHFACT174K02V	5962F8775702VXA	QML-V flight	Flat-16	Solder dip	5962F8775702V
RHFAC191K1	-	Engineering model	Flat-16	Gold	RHFAC191K1
RHFAC191K01V	5962F8974902VXC	QML-V flight	Flat-16	Gold	5962F8974902V

Table 13. Ordering information (continued)

Order codes	SMD pin	Quality level	Package	Lead finish	Marking[1]
RHFAC191K02V	5962F8974902VXA	QML-V flight	Flat-16	Solder dip	5962F8974902V
RHFAC191D03V	5962F8974902VEC	QML-V flight	DIL-16	Gold	5962F8974902V
RHFACT191K1	-	Engineering model	Flat-16	Gold	RHFACT191K1
RHFACT191K01V	5962F0422801VXC	QML-V flight	Flat-16	Gold	5962F0422801V
RHFACT191K02V	5962F0422801VXA	QML-V flight	Flat-16	Solder dip	5962F0422801V
RHFAC240K1	-	Engineering model	Flat-20	Gold	RHFAC240K1
RHFAC240K01V	5962F8755001VXC	QML-V flight	Flat-20	Gold	5962F8755001V
RHFAC240K02V	5962F8755001VXA	QML-V flight	Flat-20	Solder dip	5962F8755001V
RHFACT240K1	-	Engineering model	Flat-20	Gold	RHFACT240K1
RHFACT240K01V	5962F8775903VXC	QML-V flight	Flat-20	Gold	5962F8775903V
RHFACT240K02V	5962F8775903VXA	QML-V flight	Flat-20	Solder dip	5962F8775903V
RHFAC244K1	-	Engineering model	Flat-20	Gold	RHFAC244K1
RHFAC244K01V	5962F8755201VXC	QML-V flight	Flat-20	Gold	5962F8755201V
RHFAC244K02V	5962F8755201VXA	QML-V flight	Flat-20	Solder dip	5962F8755201V
RHFACT244K1	-	Engineering model	Flat-20	Gold	RHFACT244K1
RHFACT244K01V	5962F8776003VXC	QML-V flight	Flat-20	Gold	5962F8776003V
RHFACT244K02V	5962F8776003VXA	QML-V flight	Flat-20	Solder dip	5962F8776003V
RHFAC245K1	-	Engineering model	Flat-20	Gold	RHFAC245K1
RHFAC245K01V	5962F8775802VXC	QML-V flight	Flat-20	Gold	5962F8775802V
RHFAC245K02V	5962F8775802VXA	QML-V flight	Flat-20	Solder dip	5962F8775802V
RHFACT245K1	-	Engineering model	Flat-20	Gold	RHFACT245K1
RHFACT245K01V	5962F8766303VXC	QML-V flight	Flat-20	Gold	5962F8766303V
RHFACT245K02V	5962F8766303VXA	QML-V flight	Flat-20	Solder dip	5962F8766303V
RHFAC273K1	-	Engineering model	Flat-20	Gold	RHFAC273K1
RHFAC273K01V	5962F8775601VXC	QML-V flight	Flat-20	Gold	5962F8775601V

Table 13. Ordering information (continued)

Order codes	SMD pin	Quality level	Package	Lead finish	Marking[1]
RHFAC273K02V	5962F8775601VXA	QML-V flight	Flat-20	Solder dip	5962F8775601V
RHFACT273K1	-	Engineering model	Flat-20	Gold	RHFACT273K1
RHFACT273K01V	5962F0152701VXC	QML-V flight	Flat-20	Gold	5962F0152701V
RHFACT273K02V	5962F0152701VXA	QML-V flight	Flat-20	Solder dip	5962F0152701V
RHFAC373K1	-	Engineering model	Flat-20	Gold	RHFAC373K1
RHFAC373K01V	5962F8755501VXC	QML-V flight	Flat-20	Gold	5962F8755501V
RHFAC373K02V	5962F8755501VXA	QML-V flight	Flat-20	Solder dip	5962F8755501V
RHFACT373K1	-	Engineering model	Flat-20	Gold	RHFACT373K1
RHFACT373K01V	5962F8755603VXC	QML-V flight	Flat-20	Gold	5962F8755603V
RHFACT373K02V	5962F8755603VXA	QML-V flight	Flat-20	Solder dip	5962F8755603V
RHFAC374K1	-	Engineering model	Flat-20	Gold	RHFAC374K1
RHFAC374K01V	5962F8769401VXC	QML-V flight	Flat-20	Gold	5962F8769401V
RHFAC374K02V	5962F8769401VXA	QML-V flight	Flat-20	Solder dip	5962F8769401V
RHFACT374K1	-	Engineering model	Flat-20	Gold	RHFACT374K1
RHFACT374K01V	5962F8763103VXC	QML-V flight	Flat-20	Gold	5962F8763103V
RHFACT374K02V	5962F8763103VXA	QML-V flight	Flat-20	Solder dip	5962F8763103V
RHFAC521K1	-	Engineering model	Flat-20	Gold	RHFAC521K1
RHFAC521K01V	-	QML-V flight	Flat-20	Gold	
RHFAC521K02V	-	QML-V flight	Flat-20	Solder dip	
RHFAC540K1	-	Engineering model	Flat-20	Gold	RHFAC540K1
RHFAC540K01V	-	QML-V flight	Flat-20	Gold	
RHFAC540K02V	-	QML-V flight	Flat-20	Solder dip	
RHFAC541K1	-	Engineering model	Flat-20	Gold	RHFAC541K1
RHFAC541K01V	5962F8870601VXC	QML-V flight	Flat-20	Gold	5962F8870601V
RHFAC541K02V	5962F8870601VXA	QML-V flight	Flat-20	Solder dip	5962F8870601V

Table 13. Ordering information (continued)

Order codes	SMD pin	Quality level	Package	Lead finish	Marking(1)
RHFACT541K1	-	Engineering model	Flat-20	Gold	RHFACT541K1
RHFACT541K01V	5962F8979502VXC	QML-V flight	Flat-20	Gold	5962F8979502V
RHFACT541K02V	5962F8979502VXA	QML-V flight	Flat-20	Solder dip	5962F8979502V
RHFAC574K1	-	Engineering model	Flat-20	Gold	RHFAC574K1
RHFAC574K01V	5962F9677302VXC	QML-V flight	Flat-20	Gold	5962F9677302V
RHFAC574K02V	5962F9677302VXA	QML-V flight	Flat-20	Solder dip	5962F9677302V
RHFACT574K1	-	Engineering model	Flat-20	Gold	RHFACT574K1
RHFACT574K01V	5962F8960102VXC	QML-V flight	Flat-20	Gold	5962F8960102V
RHFACT574K02V	5962F8960102VXA	QML-V flight	Flat-20	Solder dip	5962F8960102V
RHFAC2525K1	-	Engineering model	Flat-14	Gold	RHFAC2525K1
RHFAC2525K01V	5962F9217402VXC	QML-V flight	Flat-14	Gold	5962F9217402V
RHFAC2525K02V	5962F9217402VXA	QML-V flight	Flat-14	Solder dip	5962F9217402V
RHFAC16244K1	-	Engineering model	Flat-48	Gold	RHFAC16244K
RHFAC16244K01V	5962F0421001VXC	QML-V flight	Flat-48	Gold	5962F0421001V
RHFAC16244K02V	5962F0421001VXA	QML-V flight	Flat-48	Solder dip	5962F0421001V
RHFACT16244K1	-	Engineering model	Flat-48	Gold	RHFACT16244K
RHFACT16244K01V	5962F9202202VYC	QML-V flight	Flat-48	Gold	5962F9202202V
RHFACT16244K02V	5962F9202202VYA	QML-V flight	Flat-48	Solder dip	5962F9202202V
RHFAC16245K1	-	Engineering model	Flat-48	Gold	RHFAC16245K
RHFAC16245K01V	5962F0421101VXC	QML-V flight	Flat-48	Gold	5962F0421101V
RHFAC16245K02V	5962F0421101VXA	QML-V flight	Flat-48	Solder dip	5962F0421101V
RHFACT16245K1	-	Engineering model	Flat-48	Gold	RHFACT16245K
RHFACT16245K01V	5962F9202302VYC	QML-V flight	Flat-48	Gold	5962F9202302V
RHFACT16245K02V	5962F9202302VYA	QML-V flight	Flat-48	Solder dip	5962F9202302V
RHFAC16373K1	-	Engineering model	Flat-48	Gold	RHFAC16373K

Table 13. Ordering information (continued)

Order codes	SMD pin	Quality level	Package	Lead finish	Marking[1]
RHFAC16373K01V	5962F0421201VXC	QML-V flight	Flat-48	Gold	5962F0421201V
RHFAC16373K02V	5962F0421201VXA	QML-V flight	Flat-48	Solder dip	5962F0421201V
RHFACT16373K1	-	Engineering model	Flat-48	Gold	RHFACT16373K
RHFACT16373K01V	5962F9202402VYC	QML-V flight	Flat-48	Gold	5962F9202402V
RHFACT16373K02V	5962F9202402VYA	QML-V flight	Flat-48	Solder dip	5962F9202402V
RHFAC16374K1	-	Engineering model	Flat-48	Gold	RHFAC16374K
RHFAC16374K01V	5962F0421301VXC	QML-V flight	Flat-48	Gold	5962F0421301V
RHFAC16374K02V	5962F0421301VXA	QML-V flight	Flat-48	Solder dip	5962F0421301V
RHFACT16374K1	-	Engineering model	Flat-48	Gold	RHFACT16374K
RHFACT16374K01V	5962F9202502VYC	QML-V flight	Flat-48	Gold	5962F9202502V
RHFACT16374K02V	5962F9202502VYA	QML-V flight	Flat-48	Solder dip	5962F9202502V
RHRAC164245K1	-	Engineering model	Flat-48	Gold	RHFAC164245K
RHRAC164245K01V	5962R9858008VYC	QML-V flight	Flat-48	Gold	5962R9858008V

1. Specific marking only. Complete marking includes the following:
   - SMD pin (as indicated in above table)
   - ST logo
   - Date code (date the package was sealed) in YYWWA (year, week, and lot index of week)
   - QML logo (Q or V)
   - Country of origin (FR = France)

Note: Contact an ST sales office for information about the specific conditions for other 54AC or 54AC die form, and QML-Q versions.

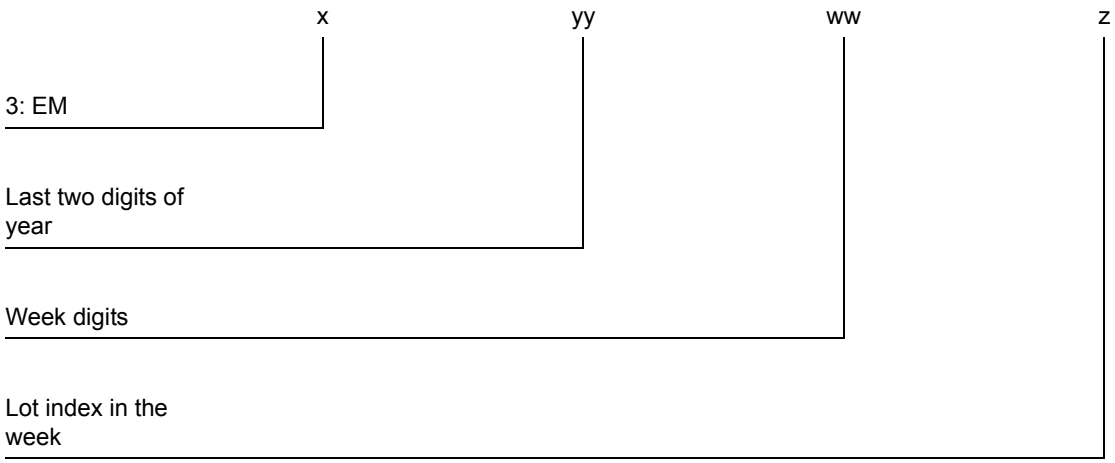
6 Other information

6.1 Date code

The date code is structured as shown below:

- EM xyywwz
- QML-V yywwz

where:



6.2 Documentation

Table 14. Documentation provided for ESCC flight

Quality level	Documentation
Engineering model	Certificate of conformance QCI(1) (groups A, B, C, D, and E) Screening electrical data
QML-V flight	Certificate of conformance QCI(1) (groups A, B, C, D, and E) Screening electrical data Precap report PIND(2) test SEM(3) inspection report X-Ray report

1. QCI = quality conformance inspection
2. PIND = particle impact noise detection
3. SEM = scanning electron microscope

7 Revision history

Table 15. Document revision history

Date	Revision	Changes
06-Apr-2010	1	Initial release. The information in this data brief was previously published in a datasheet (document ID 17145).
02-Aug-2011	2	Added *Note: on page 11*, *Note: on page 12*, *Note: on page 13*, *Note: on page 14*, *Note: on page 15*, *Note: on page 15*, *Note: on page 17* and in the “Pin connections” diagram on the coverpage
23-Apr-2012	3	Updated drawing Flat-20 on the coverpage, added list of tables and figures, updated title of *Table 4* and *Table 5*, reformatted *Section 4: Package mechanical data* and updated titles of *Figure 2* to *8* and titles and headers of *Table 6* to *12*, updated data of *Table 10* and *Table 12*, minor text corrections throughout document.
23-May-2013	4	Updated operating voltage in *Features* Updated *Table 1: Device summary*, *Table 6*, *Table 7*, *Table 8*, *Table 9*, *Table 10*, *Table 11*, *Table 12*, and *Table 13: Ordering information*. Added *Section 6: Other information*

Please Read Carefully:

Information in this document is provided solely in connection with ST products. STMicroelectronics NV and its subsidiaries (“ST”) reserve the right to make changes, corrections, modifications or improvements, to this document, and the products and services described herein at any time, without notice.

All ST products are sold pursuant to ST’s terms and conditions of sale.

Purchasers are solely responsible for the choice, selection and use of the ST products and services described herein, and ST assumes no liability whatsoever relating to the choice, selection or use of the ST products and services described herein.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted under this document. If any part of this document refers to any third party products or services it shall not be deemed a license grant by ST for the use of such third party products or services, or any intellectual property contained therein or considered as a warranty covering the use in any manner whatsoever of such third party products or services or any intellectual property contained therein.

UNLESS OTHERWISE SET FORTH IN ST’S TERMS AND CONDITIONS OF SALE ST DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY WITH RESPECT TO THE USE AND/OR SALE OF ST PRODUCTS INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION), OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT.

ST PRODUCTS ARE NOT AUTHORIZED FOR USE IN WEAPONS. NOR ARE ST PRODUCTS DESIGNED OR AUTHORIZED FOR USE IN: (A) SAFETY CRITICAL APPLICATIONS SUCH AS LIFE SUPPORTING, ACTIVE IMPLANTED DEVICES OR SYSTEMS WITH PRODUCT FUNCTIONAL SAFETY REQUIREMENTS; (B) AERONAUTIC APPLICATIONS; (C) AUTOMOTIVE APPLICATIONS OR ENVIRONMENTS, AND/OR (D) AEROSPACE APPLICATIONS OR ENVIRONMENTS. WHERE ST PRODUCTS ARE NOT DESIGNED FOR SUCH USE, THE PURCHASER SHALL USE PRODUCTS AT PURCHASER’S SOLE RISK, EVEN IF ST HAS BEEN INFORMED IN WRITING OF SUCH USAGE, UNLESS A PRODUCT IS EXPRESSLY DESIGNATED BY ST AS BEING INTENDED FOR “AUTOMOTIVE, AUTOMOTIVE SAFETY OR MEDICAL” INDUSTRY DOMAINS ACCORDING TO ST PRODUCT DESIGN SPECIFICATIONS. PRODUCTS FORMALLY ESCC, QML OR JAN QUALIFIED ARE DEEMED SUITABLE FOR USE IN AEROSPACE BY THE CORRESPONDING GOVERNMENTAL AGENCY.

Resale of ST products with provisions different from the statements and/or technical features set forth in this document shall immediately void any warranty granted by ST for the ST product or service described herein and shall not create or extend in any manner whatsoever, any liability of ST.

ST and the ST logo are trademarks or registered trademarks of ST in various countries.
Information in this document supersedes and replaces all information previously supplied.
The ST logo is a registered trademark of STMicroelectronics. All other names are the property of their respective owners.

STMicroelectronics group of companies

Australia - Belgium - Brazil - Canada - China - Czech Republic - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Philippines - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States of America

www.st.com

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Buffers & Line Drivers ***category:***

Click to view products by STMicroelectronics ***manufacturer:***

Other Similar products are found below :

5962-9217601MSA 634810D 875140G HEF4022BP HEF4043BP NL17SG125DFT2G NL17SZ126P5T5G NLU1GT126CMUTCG NLU3G16AMX1TCG NLV27WZ125USG MC74HCT365ADTR2G BCM6306KMLG 54FCT240CTDB Le87401NQC Le87402MQC 028192B 042140C 051117G 070519XB 065312DB 091056E 098456D NL17SG07DFT2G NL17SG17DFT2G NL17SG34DFT2G NL17SZ07P5T5G NL17SZ125P5T5G NLU1GT126AMUTCG NLV27WZ16DFT2G 5962-8982101PA 5962-9052201PA 74LVC07ADR2G MC74VHC1G125DFT1G NL17SH17P5T5G NL17SZ125CMUTCG NLV17SZ07DFT2G NLV37WZ17USG NLVHCT244ADTR2G NC7WZ17FHX 74HCT126T14-13 NL17SH125P5T5G NLV14049UBDTR2G NLV37WZ07USG 74VHC541FT(BE) RHFAC244K1 74LVC1G17FW4-7 74LVC1G126FZ4-7 BCM6302KMLG 74LVC1G07FZ4-7 74LVC1G125FW4-7