

# Interface ICs



## Reference Guide

*STMicroelectronics*  
*More Intelligent Solutions*





# INTERFACE ICs STANDARDS

Interface ICs are a collection of standard functional blocks that provide a means to connect logic level signals to the various voltages and current requirements of transmission lines, buses, power. In this respect a variety of Recommended Standard (RS) have been developed.

## RS-232

A single-ended serial transmission schematic is implemented by this standard. Maximum data rate can now reach 120kbps through 10 to 20 meter cables, with a max load capacitance of 2500pF. Longer cable lengths and higher data rate require balanced connection lines.

## RS-422

This standard allows only one differential way communication mode, using a twisted media pair. The maximum data rate is 10Mbps. Max specified cable length is 1200m. Each driver can drive up to 10 receivers.

## RS-423

An unbalanced line is used even if only one end of the transmission system is grounded in order to prevent ground loops. Cable length rates between 30 (120kbs) and 1200 meters (3kpbs).

## RS-485

This is primarily an upgrade of the RS422 specified for multipoint bus to be constructed. This standard meets and improves all the requirements of the RS422 allowing, in addition, up to 32 drivers and 32 receivers to be connected to a single bus.

## LVDS (low Voltage Differential Signalling)

This is a specification designed to achieve high-speeds over short distances, with  $\pm 1V$  of common-mode rejection and low voltage differential data transmission following ANSI TIA/EIA 644 standard.

## USB (Universal Serial Bus)

This is a specification designed to connect up to 127 devices on one port. USB supplies power to the peripherals, reducing the need for wall warts, power bricks and power stealing from the keyboard connector. Full speed devices communicate with the PC at 12Mbps. Mice, keyboards etc. can communicate at a lower 1.5Mbps rate to reduce costs.

## SCSI (Small Computer System Interface)

There are two main electrical specifications referred to in the SCSI standard, single ended and differential. In the single ended the maximum line length being limited to 6 meters and the data rate is normally limited to 5 million transfers per second (Mxfers/s), although careful system design can create a maximum transfer rate up to 10 Mxfers/s. In the differential, the maximum line length is 25 meters with a data rate up to 20 Mxfers/s.

# RS-232

P/N	V <sub>CC</sub> (V)	n° DX/RX	I <sub>CC</sub> (mA) (typ)	Ext. cap (μF)	n° Ext. cap	High ESD protec. (kV)	Data rate kbps (typ)	Package	T. range (°C)
ST232	5	2/2	5	1, 0.1	4	std.	400	DIP-16, SO-16, SO-16L, TSSOP16	0 to +70, -40 to +85
ST202	5	2/2	1.5	0.1	4	std.	400	DIP-16, SO-16, SO-16L, TSSOP16	0 to +70, -40 to +85
ST232A	5	2/2	1.5	0.1	4	std.	400	DIP-16, SO-16, SO-16L, TSSOP16	0 to +70, -40 to +85
ST202E	5	2/2	5	0.1	4	15	400	DIP-16, SO-16, SO-16L, TSSOP16	0 to +70, -40 to +85
ST232E	5	2/2	5	1	4	15	400	DIP-16, SO-16, SO-16L, TSSOP16	0 to +70, -40 to +85
ST207E	5	5/3	2	0.1	4	15	230	SO-24, TSSOP24, SSOP24	0 to +70, -40 to +85, -40 to +125
ST207EH	5	5/3	1.5	0.1	4	15	480	SO-24, TSSOP24, SSOP24	0 to +70, -40 to +85
ST75C185	5 to ±12	3/5	0.95	-	-	10	230	DIP-20, SO-20, TSSOP20	0 to +70, -40 to +85
ST75185	5 to ±12	3/5	30	-	-	std.	200	SO-20, TSSOP20, SSOP20	0 to +70
ST75285	5 to ±12	6/10	60	-	-	std.	200	TSSOP38	0 to +70
MC1488	±9 to ±15	4/0	16	-	-	std.	120	DIP-14, SO-14	0 to +70
MC1489	5	0/4	16	-	-	std.	120	DIP-14, SO-14	0 to +70
ST3222	3	2/2	0.3	0.1	4	std.	250	SO-18, TSSOP20	0 to +70, -40 to +85
ST3232	3	2/2	0.3	0.1	4	std.	250	DIP-16, SO-16, SO-16L, TSSOP16	0 to +70, -40 to +85
ST3237	3	5/3	0.5	0.1	4	std.	250	SO-28, SSOP28, TSSOP28	0 to +70, -40 to +85
ST3243	3	3/5	0.3	0.1	4	std.	250	SO-28, SSOP28, TSSOP28	0 to +70, -40 to +85
ST3232E	3	2/2	0.3	0.1	4	15	250	DIP-16, SO-16, SO-16L, TSSOP16	0 to +70, -40 to +85
ST3222E	3	2/2	0.3	0.1	4	15	250	SO-18, TSSOP20, SSOP20	0 to +70, -40 to +85
ST3237E	3	5/3	0.3	0.1	4	15	250	SO-28, SSOP28, TSSOP28	0 to +70, -40 to +85
ST3243E	3	3/5	0.3	0.1	4	15	250	SO-28, SSOP28, TSSOP28, Flip-Chip28	0 to +70, -40 to +85
ST3241E	3	3/5	0.3	0.1	4	15	250	SO-28, SSOP28, TSSOP28	0 to +70, -40 to +85
ST3384E	3	2/2	0.3	0.1	4	15	250	SO-18, SSOP20	0 to +70, -40 to +85

# RS-422 / 423 / 485

P/N	V <sub>CC</sub> (V)	n° DX/RX	I <sub>CC</sub> (mA) (max)	Data rate Mbits/s	High ESD protec. (kV)	V <sub>OD</sub> (V) (min)	t <sub>PLH</sub> t <sub>PHL</sub> (ns) (typ)	Package	T. range (°C)
ST26C31	5	4/0	2	20	std.	2	6	DIP-16, SO-16, TSSOP16	-40 to +85
ST26C32A	5	0/4	23	20	std.	-	19	DIP-16, SO-16, TSSOP16	-40 to +85
ST34C86	5	0/4	23	20	std.	-	19	DIP-16, SO-16, TSSOP16	-40 to +85
ST34C87*	5	4/0	2	20	std.	2	6	DIP-16, SO-16, TSSOP16	-40 to +85
ST485	5	1/1	0.5	5	std.	1.5	130	DIP-8, SO-8	0 to +70, -40 to +85, -55 to +125
ST485E	5	1/1	0.5	5	15	1.5	130	DIP-8, SO-8	0 to +70, -40 to +85
ST485A	5	1/1	5	25	std.	1.5	18	DIP-8, SO-8	0 to +70, -40 to +85
ST490A	5	1/1	5	25	std.	1.5	18	DIP-8, SO-8	0 to +70, -40 to +85
ST491A	5	1/1	5	25	std.	1.5	18	DIP-8, SO-8	0 to +70, -40 to +85
ST75C176	5	1/1	0.5	5	std.	1.5	130	DIP-8, SO-8	0 to +70, -40 to +85
ST3293	5	1/1	2	24	std.	2	20	DIP-8, SO-8	0 to +70, -40 to +85
ST3485E*	3	1/1	1.9	12	15	1.5	130	DIP-8, SO-8	0 to +70, -40 to +85
ST1480A*	3	1/1	1.9	12	15	1.5	130	DIP-8, SO-8	0 to +70, -40 to +85

\* Coming soon

# LVDS

P/N	V <sub>CC</sub> (V)	n° DX/RX	I <sub>CC</sub> disabled (mA) (typ)	I <sub>CC</sub> enable (mA) (max)	Propag. delay (ns) (typ)	Pulse skew (ps) (typ)	Data rate Mbps	Package	T. range (°C)
STLVDS31	3.3	4/0	0.3	20	2	300/-	400	SO-16, TSSOP16	-40 to +85
STLVDS32	3.3	0/4	0.25	18	2.5	-/300	400	SO-16, TSSOP16	-40 to +85
STLVDS050	3.3	2/2	0.5	20	3	100/200	400	SO-16, TSSOP16	-40 to +85
STLVDS051	3.3	2/2	3	20	3	100/200	400	SO-16, TSSOP16	-40 to +85
STLVDS104	3.3	-/4	2.5	30	3.2	-/100	400	SO-16, TSSOP16	-40 to +85
STLVDS105	3.3	-/4	0.7	35	3.2	-/150	400	SO-16, TSSOP16	-40 to +85
STLVDS47	3.3	4/-	0.3	35	2.3	150/-	400	SO-16, TSSOP16	-40 to +85
STLVDS48*	3.3	-/4	0.25	18	2.5	-/100	400	SO-16, TSSOP16	-40 to +85
STLVD111	2.5	1:10 diff clock driver	16	150	2	50	900 <sup>Δ</sup>	TQFP32	-40 to +85
STLVD112	3.3	protection switching	-	110	-	-	200 <sup>Δ</sup>	TSSOP48	0 to +70, -40 to +85
STLVD210	2.5	dual 1:5 clock driver	18	150	2	50	900 <sup>Δ</sup>	TQFP32	-40 to +85

\* Coming soon <sup>Δ</sup> MHz

# CROSS REFERENCE

ST TYPE	MAXIM	TI	LTC	AD	SIPEX	NATIONAL
C=0°C to 70°C B=-40°C to 85°C N=DIP D=SO (Narrow) W=SO (Large) P=SSOP* T=TSSOP*	C=0°C to 70°C E=-40°C to 85°C P=DIP S=SO (Narrow) W=SO (Large) A=SSOP U=TSSOP	75=0°C to 70°C 65=-40°C to 85°C P=DIP D=SO (Narrow) DW=SO (Large) DB=SSOP PW=TSSOP	C=0°C to 70°C I=-40°C to 85°C N=DIP S=SO (Narrow) SW=SO (Large) G=SSOP F=TSSOP	J=0°C to 70°C A=-40°C to 85°C N=DIP RN=SO (Narrow) RW=SO (Large) RS=SSOP RU=TSSOP	C=0°C to 70°C E=-40°C to 85°C S=P=DIP N=SO (Narrow) T=SO (Large) A=SSOP Y=TSSOP	C=0°C to 70°C T=-40°C to 85°C N=DIP M=SO (Narrow) WM=SO (Large) ME=SSOP MTC=TSSOP

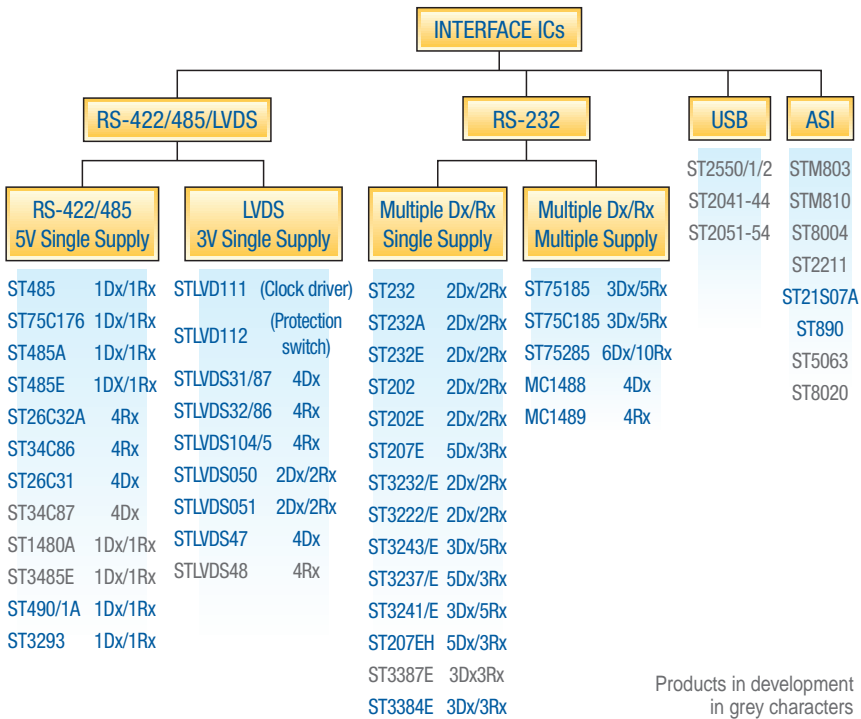
\* Available only Tape & Reel

# APPLICATION SPECIFIC

P/N	Description	V <sub>CC</sub> (V)	I <sub>CC</sub> mA (max)	Package	T. range °C	Application
STM803*	Solenoid current controller IC with smart switch providing in-rush and holding modes.	8 to 35	1.2	SO-8	-40 to +85	Automotive
ST890	1.2A current limit, power switch for USB and card hot-swap	2.7 to 5.5	0.025	SO-8	0 to 70 -40 to +85	STB, Computer
ST2211*	PC card power-interface switch provides an integrated power-management solution for a single PC card.	3.3, 5, 12	0.15	SSOP16	-40 to +85	STB, Computer
ST8004*	Complete cost effective analog interface between card and microcontroller for asynchronous 3V and 5V smart cards.	V <sub>thsel</sub> = V <sub>DD</sub> 2.7 to 6.5 V <sub>thsel</sub> = GND 3.15 to 6.5	1.2 1.5	SO-28, TSSOP28	-40 to +85	STB
P/N	Description	V <sub>ref</sub> V (typ)	V <sub>drop</sub> V (typ)	Package	T. range °C	Application
ST21S07A	The SCSI-2 and SCSI-3 standards recommend the use of active terminations at both ends of every cable segment in a SCSI system with single-ended drivers and receivers.	2.85	0.3	SO-16L TSSOP16	0 to +70	Computer

\* Coming soon

# PRODUCT TREE



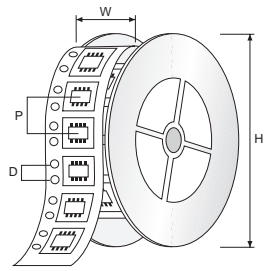
# TAPE & REEL SPECIFICATIONS

Dimensions	SO-8	SO-14, SO-16, TSSOP14, TSSOP16	SO-16*, TSSOP20, TSSOP24, SSOP24, SSOP28, TSSOP28, TQFP32, TSSOP38	Flip-Chip 28 bumps	SO-18, SO-20, SO-24, TSSOP48
H (inch)	13	13	13	13	13
W (mm)	12	16	16	12	24
P (mm)	8	8	12	4	12
D (mm)	4	4	4	4	4

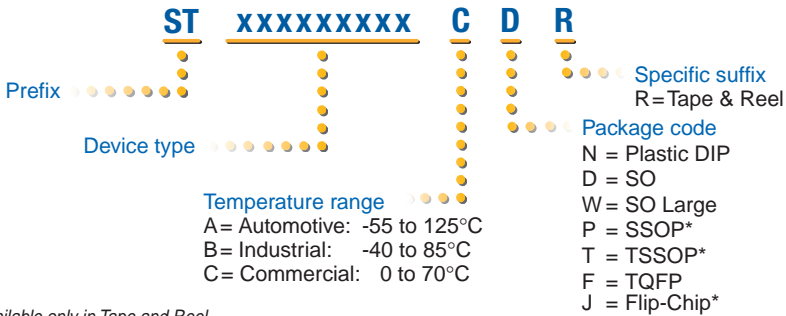
\* large version

## Base Quantity

Package	Quantity
SO-8, SO-14, SO-16, TSSOP14, TSSOP16, TSSOP20, TSSOP28, Flip-Chip28, TSSOP38	2,500 pcs
SO-16L, SO-20, SO-24, SO-28, TSSOP48	1,000 pcs
SSOP24, SSOP28	1,350 pcs
TQFP32	2,400 pcs

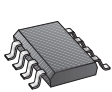


# ORDERING CODE

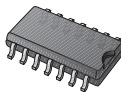


\* Available only in Tape and Reel

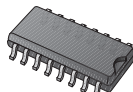
# PACKAGE RANGE



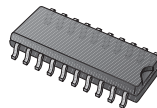
SO-8



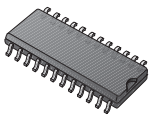
SO-14



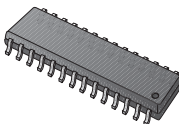
SO-16  
SO-16L



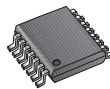
SO-20



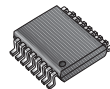
SO-24



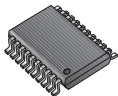
SO-28



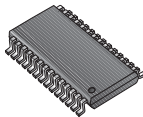
TSSOP14



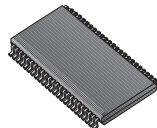
TSSOP16



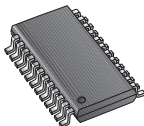
TSSOP20



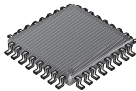
TSSOP28



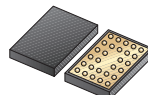
TSSOP38  
TSSOP48



SSOP24  
SSOP28



TQFP32



Flip-Chip  
28 balls



© STMicroelectronics - November 2002 - Printed in Italy - All rights reserved  
 The STMicroelectronics corporate logo is a registered trademark of the STMicroelectronics group of companies.  
 All other names are the property of their respective owners.

**For selected STMicroelectronics sales offices fax:**

France +33 1 55489569; Germany +49 89 4605454; Italy +39 02 8250449; Japan +81 3 57838216; Singapore +65 64815124;  
 Sweden +46 8 7504950; Switzerland +41 22 9292900; United Kingdom and Eire +44 1628 890391; USA +1 781 861 2678

Full product information at [www.st.com/interface](http://www.st.com/interface)

