

ILX232

Interface transceiver of RS-232 standard with one supply voltage

IC ILX232 is purposed for application in high-performance information processing systems and control devices of wide application.

Input voltage levels are compatible with standard CMOS levels.

Output voltage levels are compatible with input levels of K-MOS, N-MOS and TTL integrated circuits.

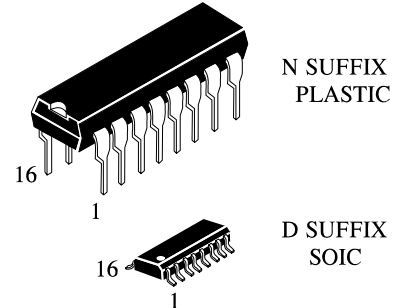
Supply voltage range from 2.0 to 6.0 V.

Low input current: 1.0 mA; 0.1 mA at $T = 25\text{ }^{\circ}\text{C}$.

Output current 24 mA.

Latching current not less than 450 mA at $T = 25\text{ }^{\circ}\text{C}$

Tolerable value of static potential not less than 2000V



Truth table

Inputs	Outputs
R_{IN}, T_{IN}	R_{OVT}, T_{OVT}
H	L
L	H

Note -
H – voltage high level;
L – low voltage level

IC marking in package

ILX232N Plastic DIP

ILX232D SOIC

$T_A =$ from -40 to $85\text{ }^{\circ}\text{C}$

For all packages

Pin symbols in package

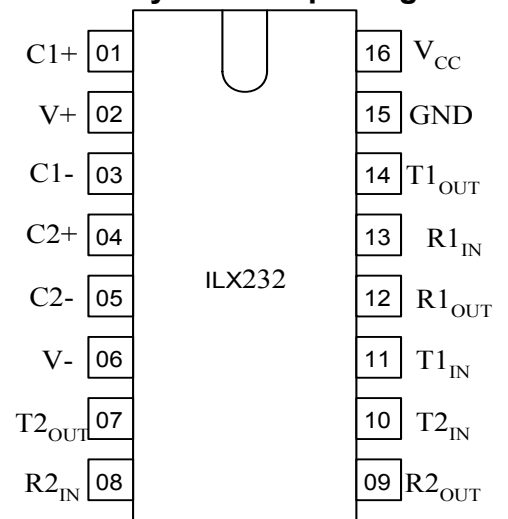


Table of pin description

Pin No.	Symbol	Pin name
01	C1+	Output of external capacitance of positive voltage multiplier unit
02	V+	Output of positive voltage of multiplier unit
03	C1-	Output of external capacitance of positive voltage multiplier unit
04	C2+	Output of external capacitance of negative voltage multiplier unit
05	C2-	Output of external capacitance of negative voltage multiplier unit
06	V-	Output of negative voltage of multiplier unit
07	T2 _{OUT}	Output of transmitter data (levels RS – 232)
08	R2 _{IN}	Input of receiver data (levels RS – 232)
09	R2 _{OUT}	Output of receiver data (levels TTL/KMOS)
10	T2 _{IN}	Input of transmitter data (levels TTL/KMOS)
11	T1 _{IN}	Input of transmitter data (levels TTL/KMOS)
12	R1 _{OUT}	Output of receiver data (levels TTL/KMOS)
13	R1 _{IN}	Input of receiver data (levels RS – 232)
14	T1 _{OUT}	Output of transmitter data (levels RS – 232)
15	GND	Common output
16	V _{CC}	Supply output of voltage source

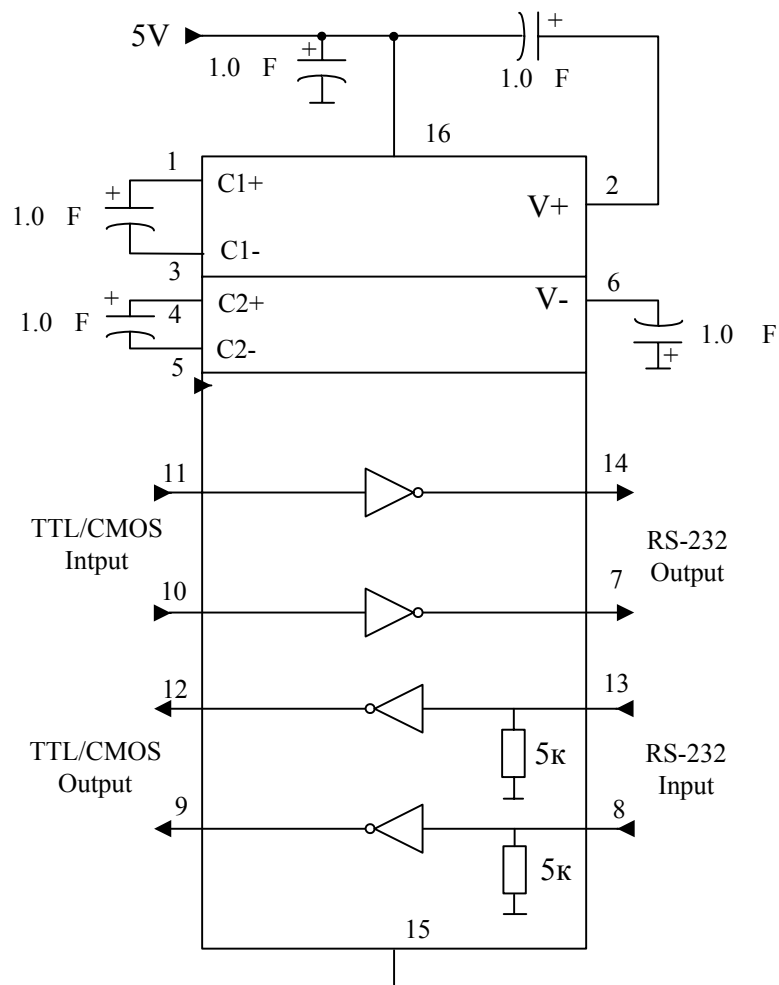
Maximum conditions

Symbol	Parameter	Rate		Unit
		min	max	
V _{CC}	Supply voltage	-0.3	6.0	V
V+	Transmitter high output voltage	V _{CC} -0.3	14	
V-	Transmitter low output voltage	-0.3	-14	
V _{TIN}	Transmitter input voltage	-0.3	V+ +0.3	
V _{RIN}	Receiver input voltage	-30	30	
P _D	Dissipated power DIP – package SO - package	-	842 762	mW
I _{SC}	Output current of transmitter short circuit	-	Continuously	mA
T _a	Ambient temperature	-60	150	°C

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Absolute maximum conditions

Symbol	Parameter	Rate		Unit
		min	max	
V_{CC}	Supply voltage	4.5	5.5	V
V_{+}	Transmitter output high voltage	5.0	-	
V_{-}	Transmitter output low voltage	-5.0	-	
V_{TIN}	Transmitter input voltage	0	V_{CC}	
V_{RIN}	Receiver input voltage	-30	30	
I_{SC}	Transmitter short circuit output current	-	60	mA
T_a	Ambient temperature	-40	85	$^{\circ}C$



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Static parameters

Symbol	Parameter	Test conditions	Rate				Unit
			25 C		от -40 C до 85 C		
			min	max	min	max	
I_{CC}	Consumption current static	$V_{CC} = 5.5 V$ $V_{IL} = 0 V$	-	10.0	-	14.0	mA
Receiver electrical parameters							
V_h	Hysteresis voltage	$V_{CC} = 5.0 V$	0.2	0.9	0.2	1.0	V
V_{On}	On (operation) voltage	$V_O = 0.1 V$ $I_{OL} = 20 mA$	-	2.4	-	2.3	
V_{Off}	Off (dropout) voltage	$V_O = V_{CC} - 0.1 V$ $I_{OH} = -20 mA$	0.8	-	0.9	-	
V_{OL}	Output low voltage	$I_{OL} = 3.2 mA$ $V_{CC} = 4.5 V$ $V_{IH} = 2.4 V$	-	0.3	-	0.4	
V_{OH}	Output high voltage	$I_{OH} = -1.0 mA$ $V_{CC} = 4.5 V$ $V_{IL} = 0.8 V$	3.6	-	3.5	-	
R_I	Input resistance	$V_{CC} = 5.0 V$	3.0	7.0	3.0	7.0	kOhm
Transmitter electrical parameters							
V_{OL}	Output low voltage	$V_{CC} = 4.5 V$ $V_{IH} = 2.0 V$ $R_L = 3.0 kOhm$	-	-5.2	-	-5.0	V
V_{OH}	Output high voltage	$V_{CC} = 4.5 V$ $V_{IL} = 0.8 V$ $R_L = 3.0 kOhm$	5.2	-	5.0	-	
I_{IL}	Input low current	$V_{CC} = 5.5 V$ $V_{IL} = 0 V$	-	-1.0	-	-10.0	mA
I_{IH}	Input high current	$V_{CC} = 5.5 V$ $V_{IH} = V_{CC}$		1.0		10.0	
SR	Speed of output front change	$V_{CC} = 5.0 V$ $C_L = 50 - 1000 pF$ $R_L = 3.0 - 7.0 kOhm$	3.0	30	2.7	27	V/mks
R_O	Output resistance	$V_{CC} = V_+ = V_- = 0 V$ $V_O = 2 V$	350	-	300	-	Ohm
I_{SC}	Short circuit output current	$V_{CC} = 5.5 V$ $V_O = 0 V$ $V_I = V_{CC}$ $V_I = 0 V$		-50 50		-60 60	mA
ST	Speed of information transmission	$V_{CC} = 4.5 V$ $C_L = 1000 pF$ $R_L = 3.0 kOhm$ $t_w = 7mks$ (for extreme - $t_w = 8mks$)	140	-	120	-	

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Dynamic parameters

Symbol	Parameter	Test conditions	Rate				Unit
			25 C		from -40 C to 85 C		
			min	max	min	max	
t_{PHLR} (t_{PLHR})	Signal propagation delay time when switching on (off)	$V_{CC} = 4.5 V$ $C_L = 150 pF$ $V_{IL} = 0 V$ $V_{IH} = 3.0 V$ $t_{LH} = t_{HL} = 10 ns$	-	9.7	-	10	mks
t_{PHLT} (t_{PLHT})	Signal propagation delay time when switching on (off)	$V_{CC} = 4.5 V$ $C_L = 2500 pF$ $V_{IL} = 0 V$ $V_{IH} = 3.0 V$ $R_L = 3 k\Omega$ $t_{LH} = t_{HL} = 10 ns$		5.0		6.0	

Capacitance

Symbol	Parameter	V_{CC} , V	Rate	Unit
C_{IN}	Input capacitance	5.0	9.0	pF
C_{PD}	Dynamic capacitance		90	

Timing diagram when measuring IC dynamic parameters

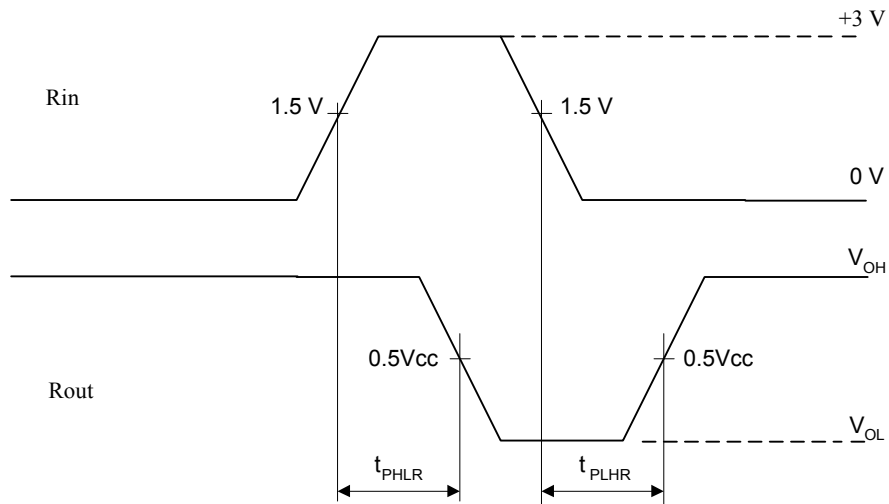


Figure 3

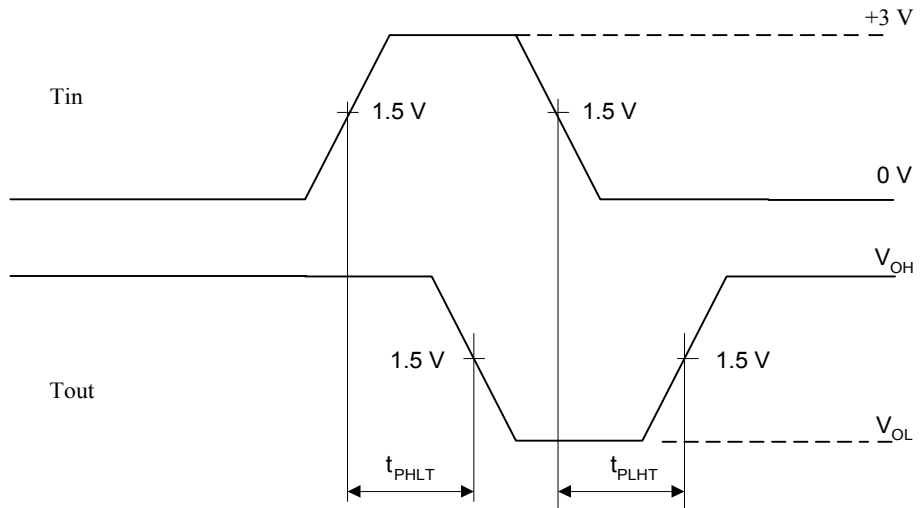


Figure 4

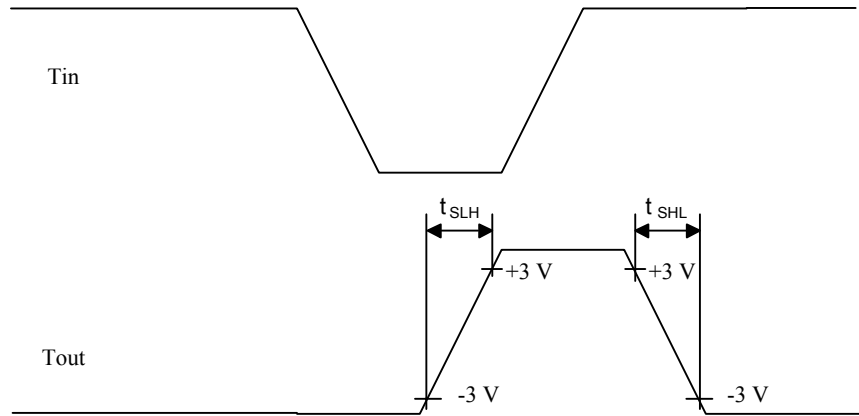


Figure 5

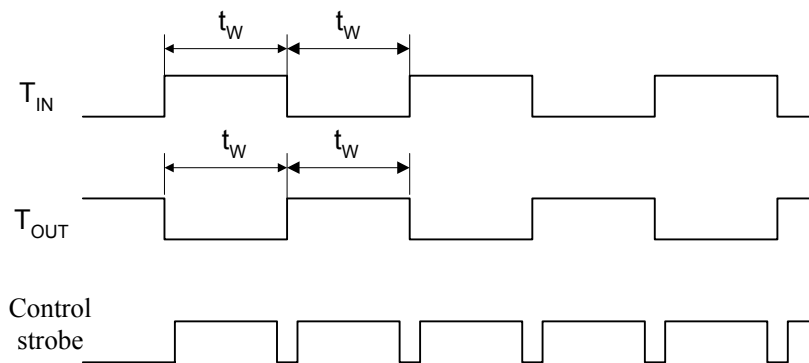
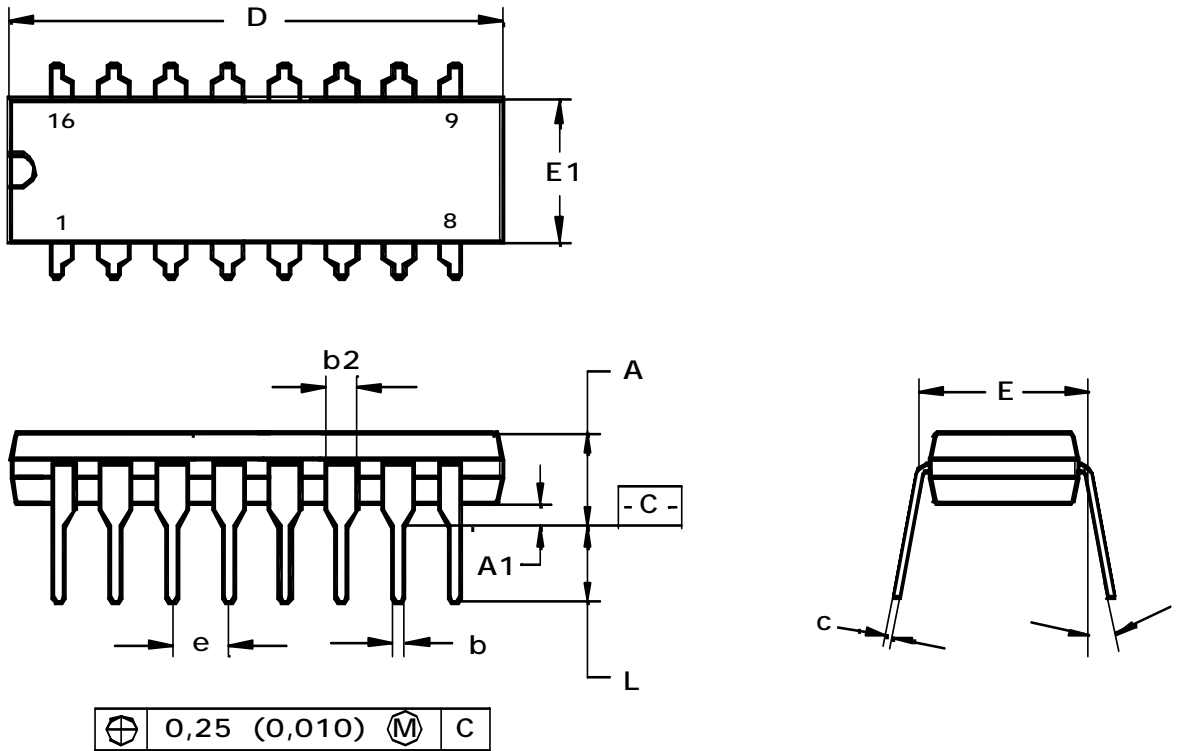


Figure 6

Package overall dimensions

N SUFFIX PLASTIK DIP
(MS-001BB)



Note:

Dimensions D, E1 do not include fin size which shall not exceed 0,25 (0,010) per side.

	D	E1	A	b	b2	e	L	E	c	A1	
Millimeters											
min	9,02	6,07		0,36	1,14		0°	2,93	7,62	0,20	0,38
max	10,16	7,11	5,33	0,56	1,78	2,54	15°	3,81	8,26	0,36	
Inches											
min	0,355	0,240		0,014	0,045		0°	0,115	0,300	0,008	0,015
max	0,400	0,280	0,210	0,022	0,070	0,1	15°	0,150	0,325	0,014	