+5 V-Powered,Multi-Channel RS-232 Drivers/Receivers

The ST232 have two drives and two receivers. The drivers and receivers meet all EIA/TIA-232E and CCITT V.28 specifications at data rates up to 120 kbps when loaded in accordance with the EIA/TIA-232E specification

- Operate from Single +5 V Power Supply;
- Guaranteed 120 kbps Data Rate;
- Latchup Free;
- ESD Protection ±2kV



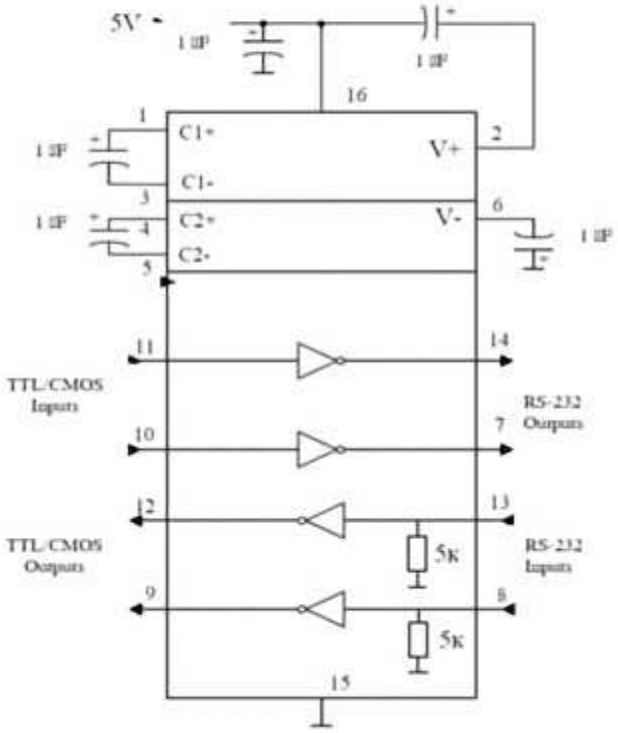
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ORDERING INFORMATION

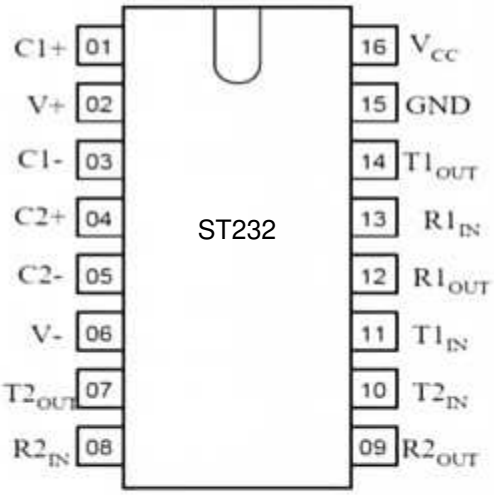
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T_A= from -40 to 85 °C
for all packages

Typical Operating Circuit



Pin configuration



`Pin descriptions

Pin No	Symbol	Function
01	C1+	Terminal for positive charge-pump capacitor
02	V+	+2 Vcc voltage generated by the charge-pump
03	C1-	Terminal for positive charge-pump capacitor
04	C2+	Terminal for negative charge-pump capacitor
05	C2-	Terminal for negative charge-pump capacitor
06	V-	-2 Vcc voltage generated by the charge-pump
07	$T2_{OUT}$	RS – 232 Driver Output
08	$R2_{IN}$	RS – 232 Receiver Input
09	$R2_{OUT}$	RS – 232 Receiver Output
10	$T2_{IN}$	RS – 232 Driver Input
11	$T1_{IN}$	RS – 232 Driver Input
12	$R1_{OUT}$	RS – 232 Receiver Output
13	$R1_{IN}$	RS – 232 Receiver Input
14	$T1_{OUT}$	RS – 232 Driver Output
15	GND	Ground
16	V_{CC}	+ 4.5 V to 5.5 V Supply Voltage Input

Absolute 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	-14	+0.3	
V_{TIN}	Transmitter input voltage	-0.3	V_{cc} +0.3	
V_{RIN}	Receiver input voltage	-30	30	
$V_{T\ OUT}$	Output voltages (transmitters)	V_- -0.3	V_+ +0.3	V
$V_{R\ OUT}$	Output voltages (receivers)	-0.3	V_{CC} +0.3	
P_D	Power dissipation DIP – package (derate 10.53 mW/°C above 70 °C) SO – package (derate 9.52 mW/°C above 70 °C)	-	 842 762	mW
I_{SC}	Short-Circuit Duration (T_{out})	-	Continu-ous	
T_{stg}	Storage temperature	-60	150	°C
T_A	Operating voltage range	-40	85	°C

ELECTRICAL CHARACTERISTICS

(Vcc = 4.5V to 5.5V, C1-C4 =1μF; T_A = -40 to +85°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Max	Units
DC CHARACTERISTICS					
Vcc	Operating Voltage Range	V_{IL}=0V	4.5	5.5	V
I_{CC}	Vcc Suppiy Current	No load, T_A = 25°C		10.0	mA
LOGIC					
I_I	Input Leakage Current	T_IN = 0V to V_{CC}	0.2	±10	μA
V_{IL}	Input Threshold Low	T_IN		0.8	V
V_{IH}	Input Threshold High	T_IN	2.0		V
V_{OL}	Output Voltage Low	R_OUT; IOUT = 3.2mA		0.4	V
V_{OH}	Output Voltage High	R_OUT; IOUT = -1.0mA	3.5		V
RECEIVER INPUTS					
V_{RIN}	Input Voltage Range	All parts, normal operation	-30	+30	V
V_{ff}	Input Threshold Low	T_A = +25°C, Vcc=5V	0,8		V
I_{on}	Input Threshold High	T_A = +25°C, Vcc=5V	-	2.4	V
V_h	Input Hysteresis	V_{CC} =5 V	0.2	1.0	V
R_I	Input Resistance	T_A = +25°C, Vcc=5V	3	7	kΩ
TRANSMITTER OUTPUTS					
Δ V_O	Output Voltage Swing	All driver inputs loaded with 3kΩ to ground	±5.0		V
R_O	Output resistance	V_{CC}=V+=V-=0V; VOUT=±2V	300		Ω
I_{SC}	Output Short-Circuit Current			±60	mA
TIMING CHARACTERISTICS					
ST	Maximum Data Rate	R_L=3.0kΩ to 7 kΩ, C_L=50pF to 1000pF, one transmitter switcing	120		kbps
t_{PLHR}, t_{PHLR}	Reseiver Propagation Delay	CL = 150pF All parts, normal operation (Fig. 1)		10	μS
t_{PLHT}, t_{PHLT}	Transmitter Propagation Delay	RL=3.0kΩ, CL=2500pF, all transmitters loaded (Fig. 2)		6.0	μS
SR	Transition-Region Slew Rate	TA = 25°C, Vcc = 5V, RL=3.0kΩ to 7 kΩ, CL=50pF to 2500pF, measured from –3V to +3V or +3V to -3V (Fig. 3)	3	30	V/μS

Timing diagram

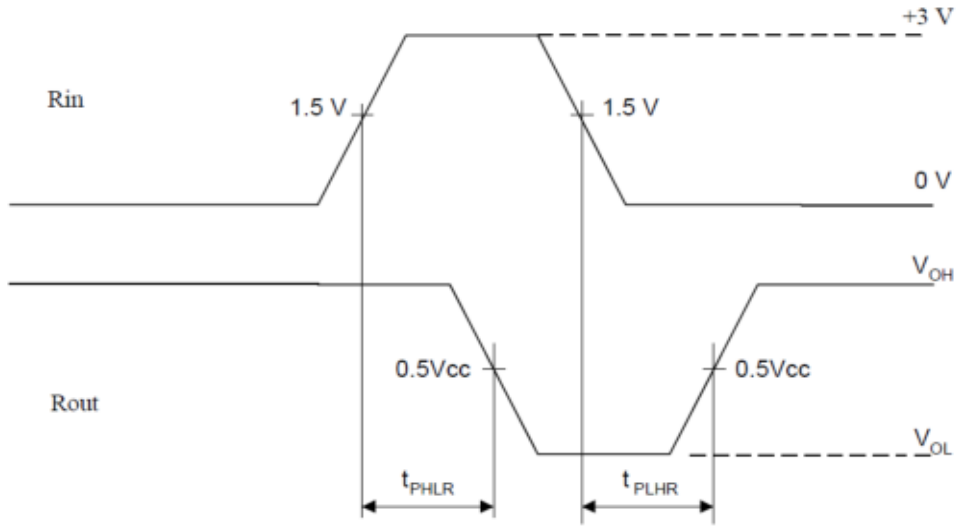


Figure 1

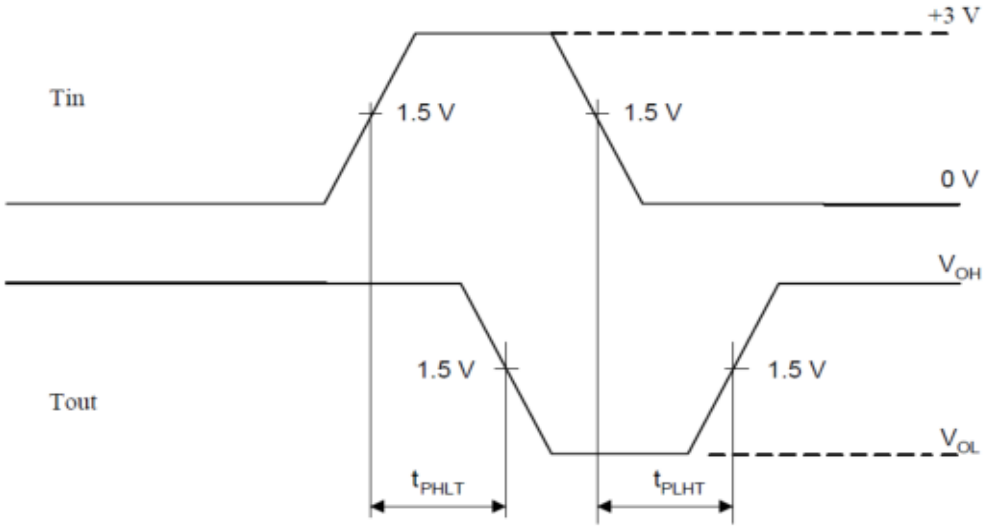


Figure 2

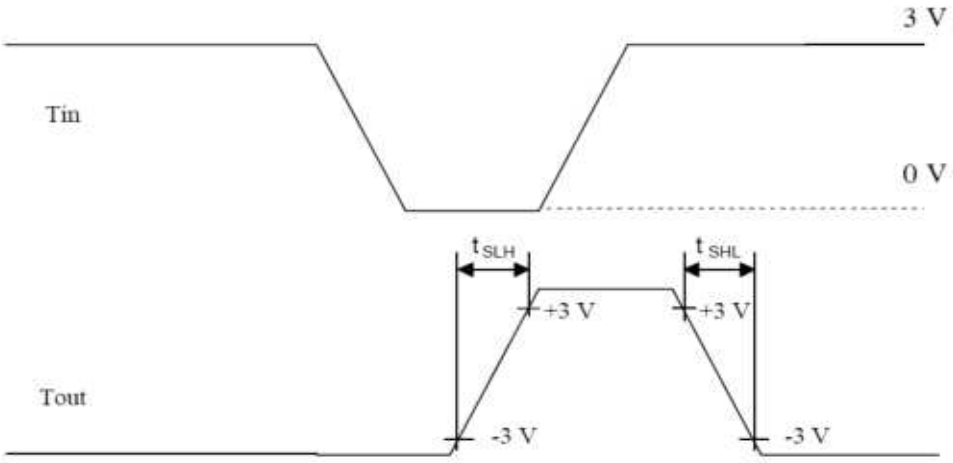
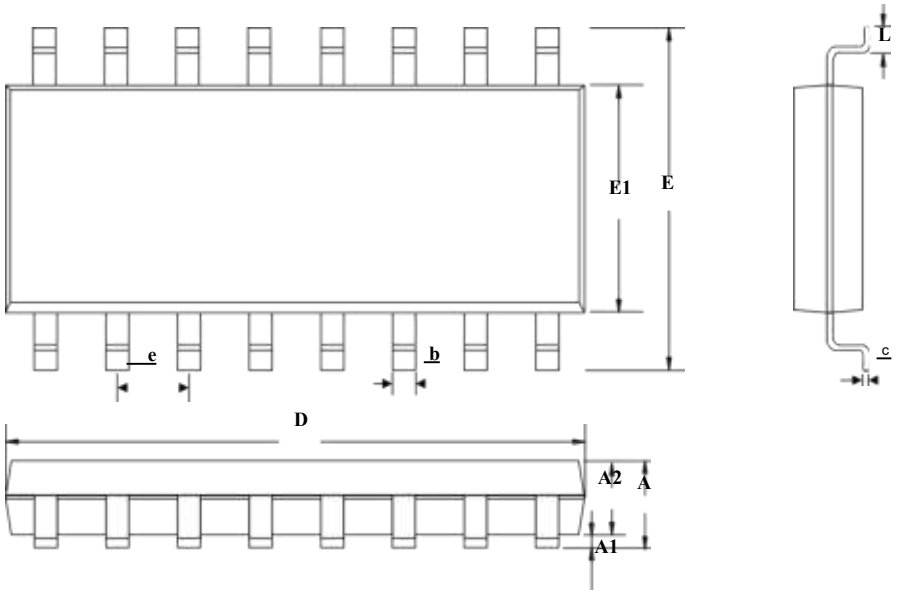


Figure 3

PACKAGE OUTLINE

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UNIT: mm



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	—	—	1.80
A1	0.10	0.15	0.25
A2	1.25	1.45	1.65
b	0.33	—	0.51
c	0.17	—	0.25
D	9.50	—	10.20
E	5.80	6.00	6.20
E1	3.70	—	4.10
e	1.27BSC		
L	0.45	0.60	0.80

Ordering information

Order code	Package	Baseqty	Deliverymode	Operating temperature range
UMW ST232BDR	SOP-16	2500	Tape and reel	-40°- +85°