



钜地半导体
Tudi Semiconductor

Product Specification

TUDI-ADM202

High Speed, 5 V, 0.1 μ F CMOS RS-232 Driver/Receiver

网址 www.sztdbdt.com 🔍

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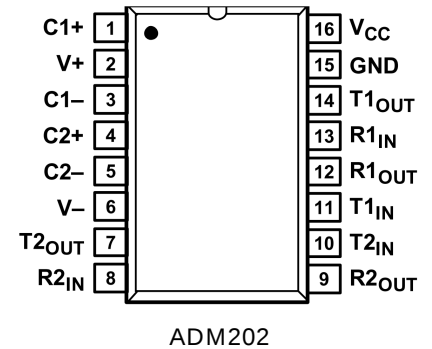
**semiconductor device
manufacturer**

- Design
- research and development
- production
- and sales



FEATURES

- 120 kB transmission rate
- Small (0.1 μ F) charge pump capacitors
- Single 5 V power supply
- Meets TIA/EIA-232-E and V.28 specifications
- 2 drivers and 2 receivers
- On-board dc-to-dc converters
- ± 9 V output swing with 5 V supply
- Low power BiCMOS: 2.5 mA I_{CC}
- ± 30 V receiver input levels



APPLICATIONS

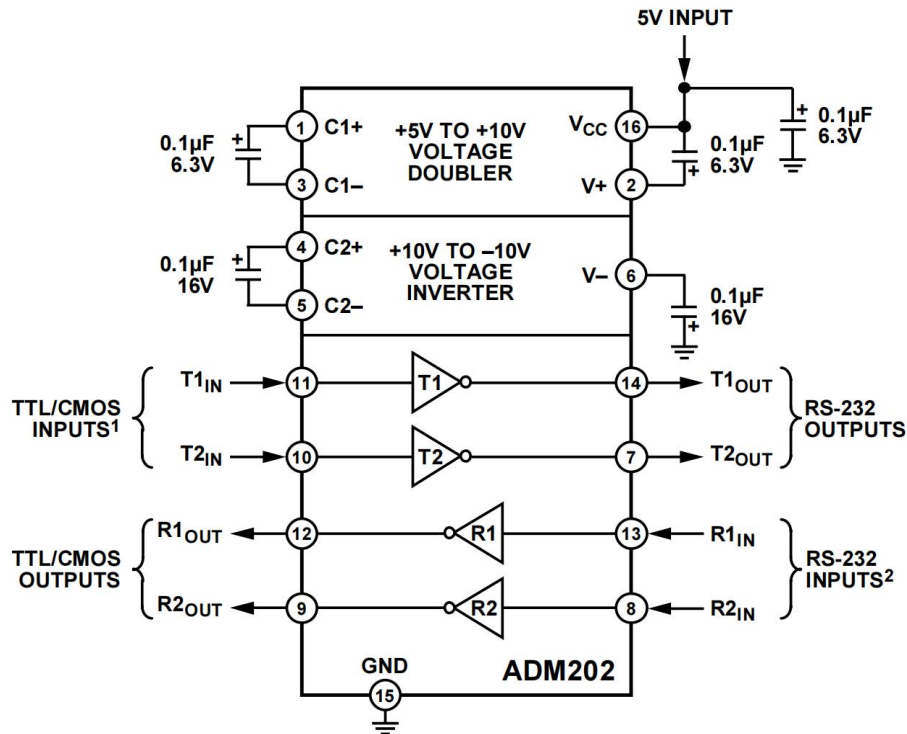
- Computers
- Peripherals
- Modems
- Printers
- Instruments

GENERAL DESCRIPTION

The ADM202 is a 2-channel RS-232 line driver/receiver pair designed to operate from a single 5V power supply. A highly efficient on-chip charge pump design permits RS-232 levels to be developed using charge pump capacitors as small as 0.1 μ F. This converter generates ± 10 V RS-232 output levels. The ADM202 meets or exceeds the TIA/EIA-232-E and V.28 specifications. Fast driver slew rates permit 120 kB operation, and high drive currents allow extended cable lengths. An epitaxial BiCMOS construction minimizes power consumption to 10 mW and guards against latch-up. Overvoltage protection is provided, allowing the receiver inputs to withstand continuous voltages in excess of ± 30 V. In addition, all pins contain ESD protection to levels greater than 2 kV. The ADM202 is available in a 16-lead PDIP and both narrow and wide 16-lead SOIC packages.



TYPICAL APPLICATION CIRCUIT



¹INTERNAL 400kΩ PULL-UP RESISTOR ON EACH TTL/CMOS INPUT.
²INTERNAL 5kΩ PULL-DOWN RESISTOR ON EACH RS-232 INPUT.

Figure 1.

Table 3. Pin Function Descriptions

Pin No.	Mnemonic	Description
1	C1+	External Positive Capacitor 1 Connection. The positive terminal is connected to this pin.
2	V+	Internally Generated Positive Supply (+10 V nominal).
3	C1-	External Negative Capacitor 1 Connection. The negative terminal is connected to this pin.
4	C2+	External Positive Capacitor 2 Connection. The positive terminal is connected to this pin.
5	C2-	External Negative Capacitor 1 Connection. The negative terminal is connected to this pin.
6	V-	Internally Generated Negative Supply (-10 V Nominal).
7, 14	T2OUT, T1OUT	Transmitter (Driver) Outputs. These outputs are RS-232 levels (typically ±10 V).
8, 13	R2IN, R1IN	Receiver Inputs. These inputs accept RS-232 signal levels. An internal 5 kΩ pull-down resistor to GND is connected on each of these inputs.
9, 12	R2OUT, R1OUT	Receiver Outputs. These outputs are TTL/CMOS levels.
10, 11	T2IN, T1IN	Transmitter (Driver) Inputs. These inputs accept TTL/CMOS levels. An internal 400 kΩ pull-up resistor to V _{CC} is connected on each input.
15	GND	Ground. This pin must be connected to 0 V.
16	V _{CC}	Power Supply Input, 5 V ± 10%.



SPECIFICATIONS

$V_{CC} = 5\text{ V} \pm 10\%$, ($C1$ to $C4 = 0.1\text{ }\mu\text{F}$). All specifications T_{MIN} to T_{MAX} , unless otherwise noted.

Table 1.

Parameter	Min	Typ	Max	Unit	Test Conditions/Comments
OUTPUT VOLTAGE SWING	± 5	± 9		V	$V_{CC} = 5\text{ V} \pm 5\%$; $T1_{OUT}$ and $T2_{OUT}$ loaded with $3\text{ k}\Omega$ to GND
	± 5	± 9		V	$V_{CC} = 5\text{ V} \pm 10\%$; $T_A = 25^\circ\text{C}$; $T1_{OUT}$ and $T2_{OUT}$ loaded with $3\text{ k}\Omega$ to GND
V_{CC} POWER SUPPLY CURRENT (I_{CC})		2.5	6.0	mA	No load; $T1_{IN}$ and $T2_{IN} = V_{CC}$, or $T1_{IN}$ and $T2_{IN} = \text{GND}$
INPUT LOGIC THRESHOLD					
Low, V_{INL}			0.8	V	Tx_{IN}
High, V_{INH}	2.4			V	Tx_{IN}
LOGIC PULL-UP CURRENT		12	25	μA	$Tx_{IN} = 0\text{ V}$
RS-232 INPUT					
Voltage Range	-30		+30	V	
Threshold					
Low	0.8	1.2		V	
High		1.6	2.4	V	
Hysteresis	0.2	0.4	1.0	V	
Resistance	3	5	7	$\text{k}\Omega$	$T_A = 0^\circ\text{C}$ to 85°C
TTL/CMOS Output Voltage					
Low, V_{OL}			0.4	V	$I_{OUT} = 1.6\text{ mA}$
High, V_{OH}	3.5			V	$I_{OUT} = -1.0\text{ mA}$
PROPAGATION DELAY		0.3	5	μs	RS-232 to TTL
TRANSITION REGION SLEW RATE		8		V/ μs	$R_L = 3\text{ k}\Omega$, $C_L = 1000\text{ pF}$, measured from $+3\text{ V}$ to -3 V or -3 V to $+3\text{ V}$
BAUD RATE	120			kB	$R_L = 3\text{ k}\Omega$, $C_L = 1\text{ nF}$
OUTPUT					
Output Resistance	300			Ω	$V_{CC} = V+ = V- = 0\text{ V}$, $V_{OUT} = \pm 2\text{ V}$
RS-232 Output Short-Circuit Current		± 10	± 60	mA	



ABSOLUTE MAXIMUM RATINGS

$T_A = 25^\circ\text{C}$, unless otherwise noted.

Table 2.

Parameter	Rating
V_{CC}	6 V
V_+	$(V_{CC} - 0.3 \text{ V})$ to $+14 \text{ V}$
V_-	$+0.3 \text{ V}$ to -14 V
Input Voltages	
$T1_{IN}, T2_{IN}$	-0.3 V to $(V_{CC} + 0.3 \text{ V})$
$R1_{IN}, R2_{IN}$	$\pm 30 \text{ V}$
Output Voltages	
$T1_{OUT}, T2_{OUT}$	$((V_+) + 0.3 \text{ V})$ to $((V_-) - 0.3 \text{ V})$
$R1_{OUT}, R2_{OUT}$	-0.3 V to $(V_{CC} + 0.3 \text{ V})$
Short-Circuit Duration	
$T1_{OUT}, T2_{OUT}$	Continuous
Power Dissipation	
16-Lead PDIP (N-16)	470 mW
16-Lead SOIC (R-16)	600 mW
16-Lead SOIC (RW-16)	500 mW
Thermal Impedance, θ_{JA}	
16-Lead PDIP (N-16)	135°C/W
16-Lead SOIC (R-16)	105°C/W
16-Lead SOIC (RW-16)	105°C/W
Operating Temperature Range	
Commercial (J Version)	0°C to 70°C
Storage Temperature Range	-65°C to $+150^\circ\text{C}$
Lead Temperature Soldering	
Vapor Phase (60 sec)	215°C
Infrared (15 sec)	220°C
ESD Rating	$>2000 \text{ V}$

Stresses at or above those listed under Absolute Maximum Ratings may cause permanent damage to the product. This is a stress rating only; functional operation of the product at these or any other conditions above those indicated in the operational section of this specification is not implied. Operation beyond the maximum operating conditions for extended periods may affect product reliability.

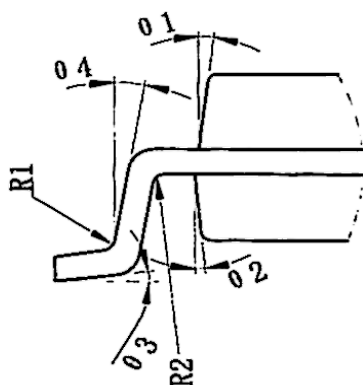
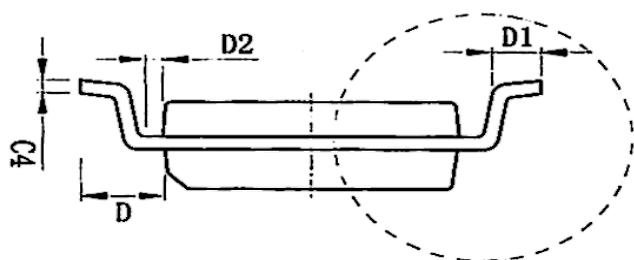
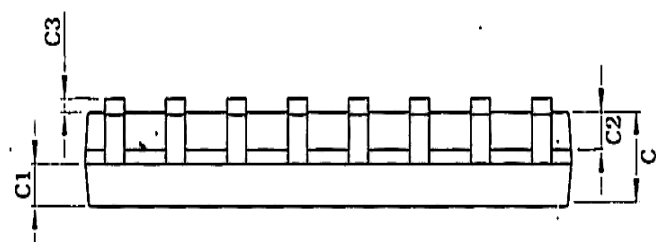
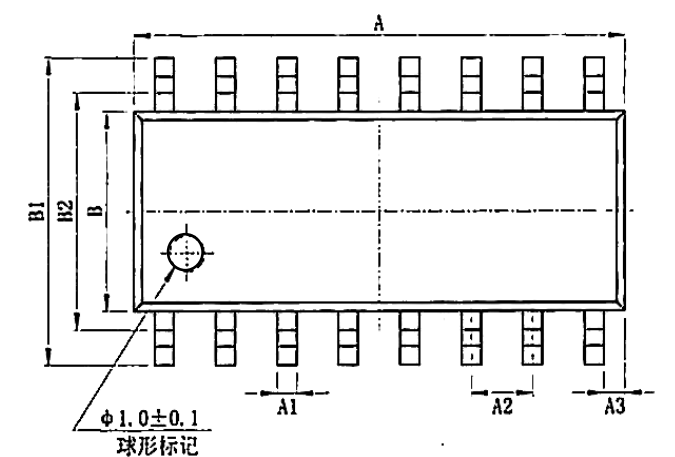


Order information

Order Number	Package	Package Quantity	Marking On The park
ADM202JRNZ-REEL-TUDI	SOP16	Tape,Reel,2500	ADM202JRNZ-REEL



Package SOP16



SIZE SYMBOL	MIN./mm	MAX./mm
A	9.80	10.00
A1	0.356	0.456
A2	1.27TYP	
A3	0.302TYP	
B	3.85	3.95
B1	5.84	6.24
B2	5.00 TYP	
C	1.40	1.60
C1	0.61	0.71
C2	0.54	0.64
C3	0.05	0.25
C4	0.203	0.233
D	1.05 TYP	
D1	0.40	0.70
D2	0.15	0.25
R1	0.20TYP	
R2	0.20TYP	
O1	8°~12°TYP4	
O2	8°~12°TYP4	
O3	0°~8°	
O4	4°~12°	



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