FEATURES

- Output voltage levels are compatible with input levels of K-MOS, N-MOS and TTL integrated circuits
- Supply voltage : 5V
- Low input current: 1.0µA; 0.1µA at T = 25℃
- Output current 24mA
- Latching current not less than 450mA at T = 25℃
- Enhanced ESD Specifications:
  ±15kV　IEC61000-4-2 Air Discharge
 ±8kV　IEC61000-4-2 Contact Discharge

GENERAL DESCRIPTION

IC CBM232 is purposed for application in high-performance information processing systems and control devices of wide application.

APPLICATIONS

- Computers
- Peripherals
- Modems
- Printers
- Instruments

Pin symbols in package
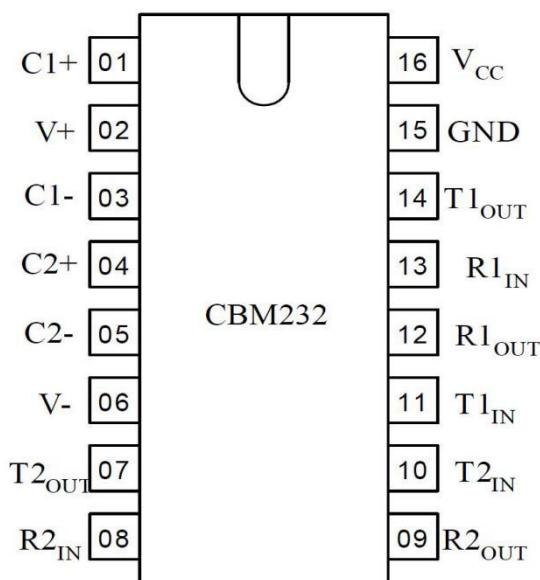
Inputs	Outputs
R_{IN}, T_{IN}	R_{OVT}, T_{OVT}
H	L
L	H
Note:	
H – voltage high level;	
L – low voltage level	

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	-	Continu-ously	mA
Ta	Ambient temperature	-60	150	℃

* Stresses beyond those listed under "absolute maximum ratings" may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied.

Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

Recommended Operating 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
Ta	Ambient temperature	-40	85	℃

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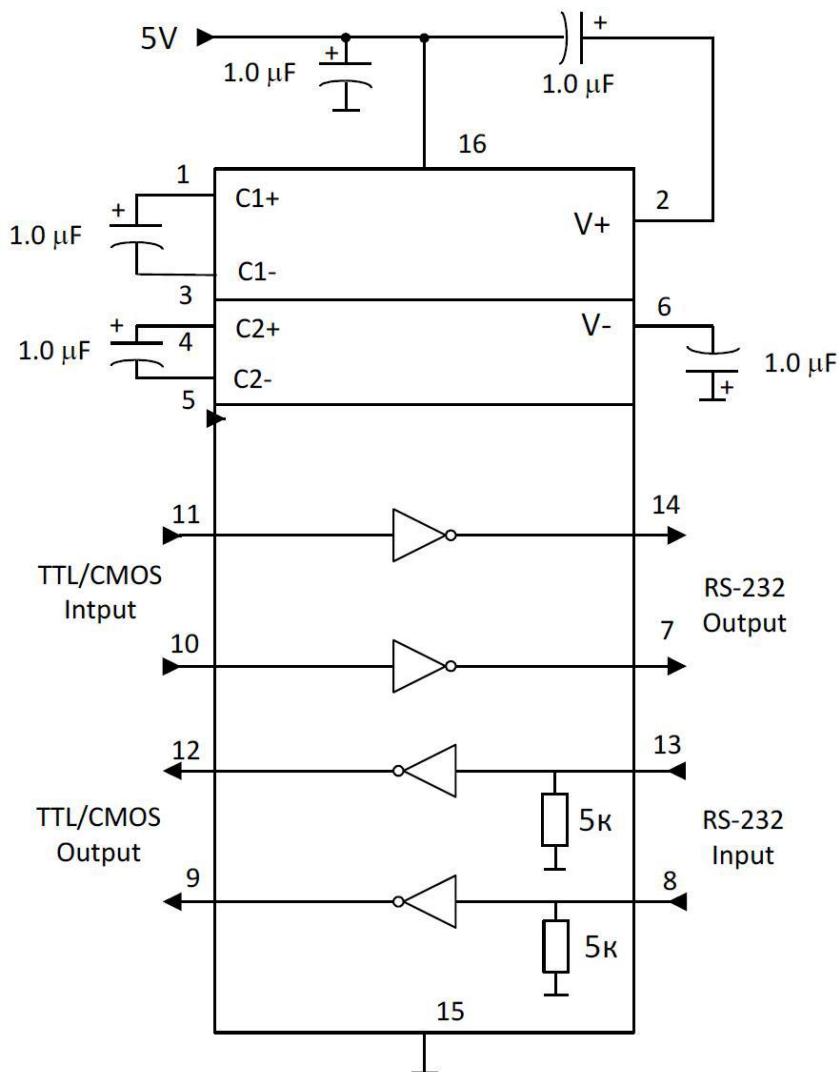
Static parameters

Symbol	Parameter	Test conditions	25℃		-40℃ to 85℃		Unit
			Min	Max	Min	Max	
I_{CC}	Consumption current static	V_{CC} =5.0 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_{On}	On (operation) voltage	V_O≤0.1 V I_{OL}≤20uA	-	2.4	-	2.3	
V_{off}	Off (dropout) voltage	V_O≥V_{CC} -0.1 V I_{OH}≤-20uA	0.8	-	0.9	-	
V_{OL}	Output low voltage	I_{OL} = 3.2mA V_{CC} = 4.5 V V_{IH} = 2.4 V	-	0.3	0.4		V
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} = 4.5V V_{IH} = 2.0V R_L = 3.0kOhm	-	-5.2	-	5.0	V
V_{OH}	Output high voltage	V_{CC} = 4.5V V_{IL} = 0.8V R_L = 3.0kOhm	5.2	-	5.0	-	
I_{IL}	Input low current	V_{CC} =5.5V V_{IL} = 0V	-	-1.0	-	-10.0	uA
I_{IH}	Input high current	V_{CC} =5.5V V_{IH} = V_{CC}	-	1.0	-	10.0	
SR	Speed of output front change	V_{CC} =5.0V C_L=50 - 1000pF R_L=3.0-7.0kOhm	3.0	30	2.7	27	V/µs
RO	Output resistance	V_{CC}=V+=V-=0V V_O=2V	350	-	300	-	Ohm

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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 = 3.0kOhm t_W = 7us (for extreme -t_W = 8us)	140	-	120	-	kbps
Dynamic parameters							
t_{PHLR} (t_{PLHR})	Signal propagation delay time when switching on (off)	V_{CC} = 4.5V C_L = 150pF V_{IL} = 0V V_{IH} = 3.0V t_{LH} = t_{HL}≤10 ns	-	9.7	-	10	us
t_{PHLT} (t_{PLHT})	Signal propagation delay time when switching on (off)	V_{CC} = 4.5V C_L = 2500pF V_{IL} = 0V V_{IH} = 3.0 V R_L = 3kOhm t_{LH} = t_{HL}≤10 ns	-	5.0^*		6.0^*	

Capacitance

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

Timing diagram when measuring IC dynamic parameters

Rin

1.5 V

1.5 V

+3 V

0 V

Rout

V_{OH}

0.5Vcc

0.5Vcc

V_{OL}

t_{PHLR}

t_{PLHR}

Tin

1.5 V

1.5 V

+3 V

0 V

Tout

V_{OH}

1.5 V

1.5 V

V_{OL}

t_{PHLT}

t_{PLHT}

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Tin

Tout

t_{SLH}

t_{SHL}

+3 V

+3 V

-3 V

-3 V

T_{IN}

t_W

t_W

T_{OUT}

t_W

t_W

Control strobe
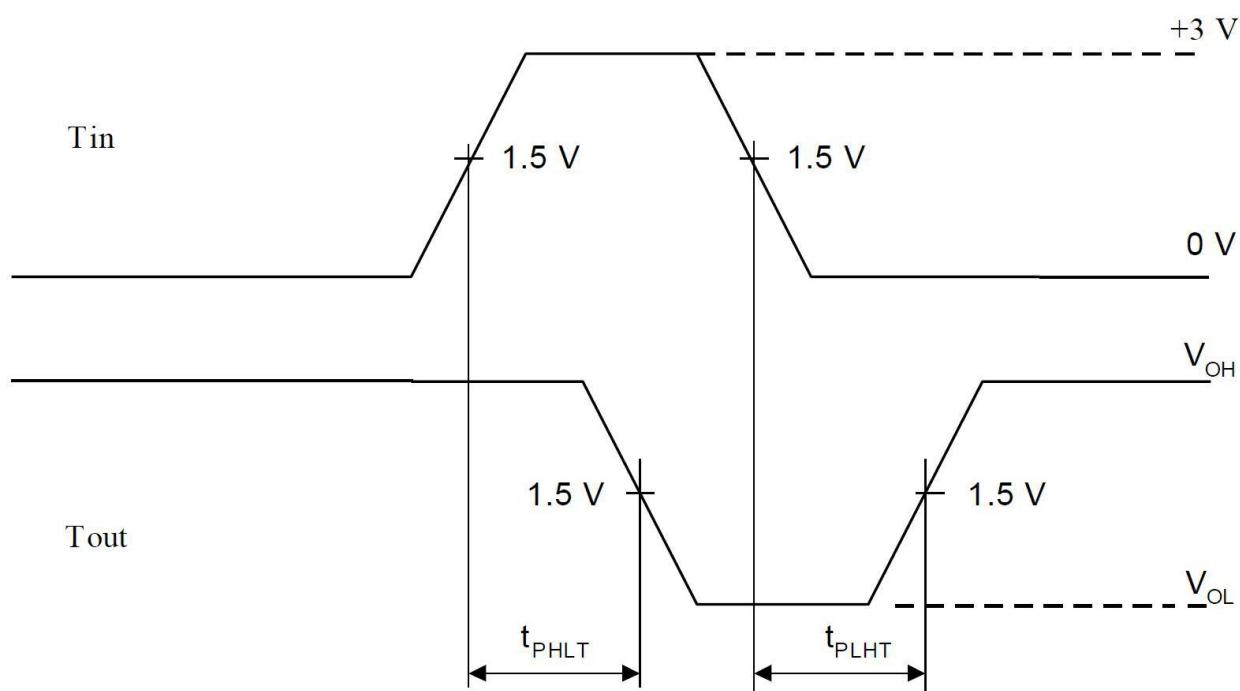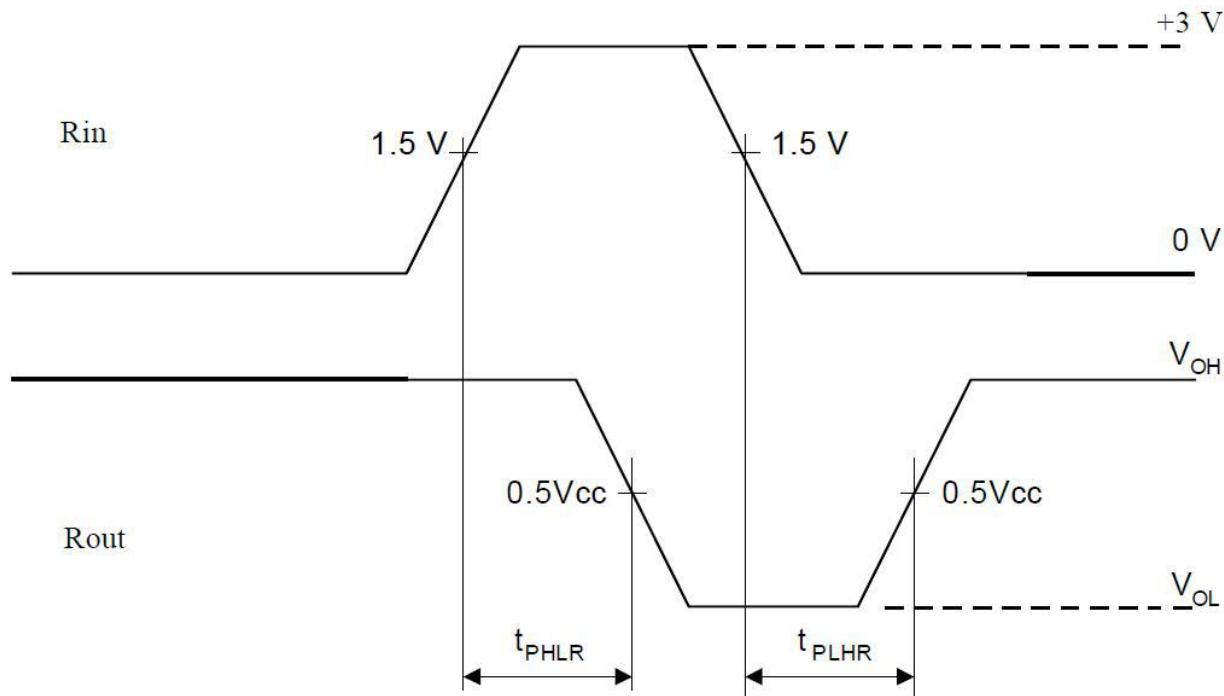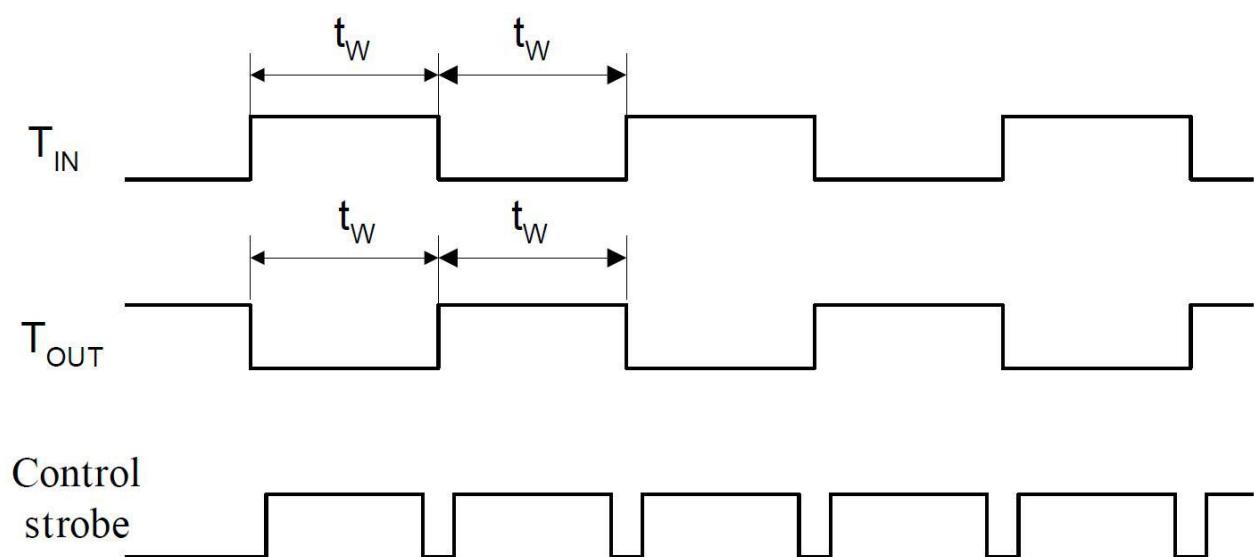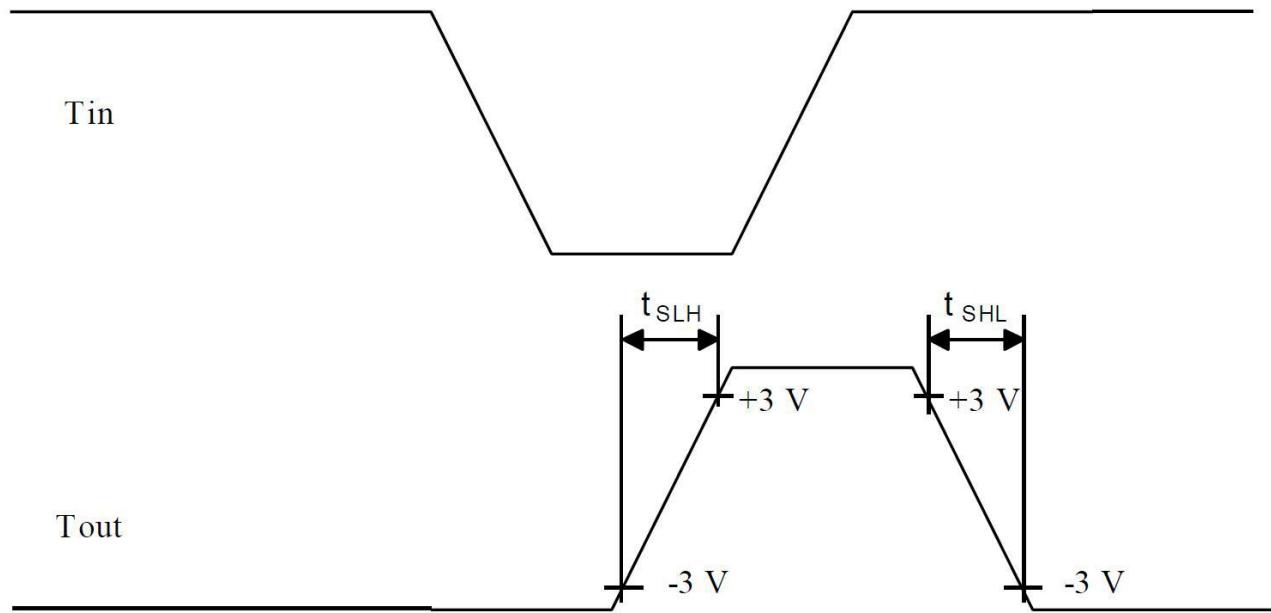
PACKAGE
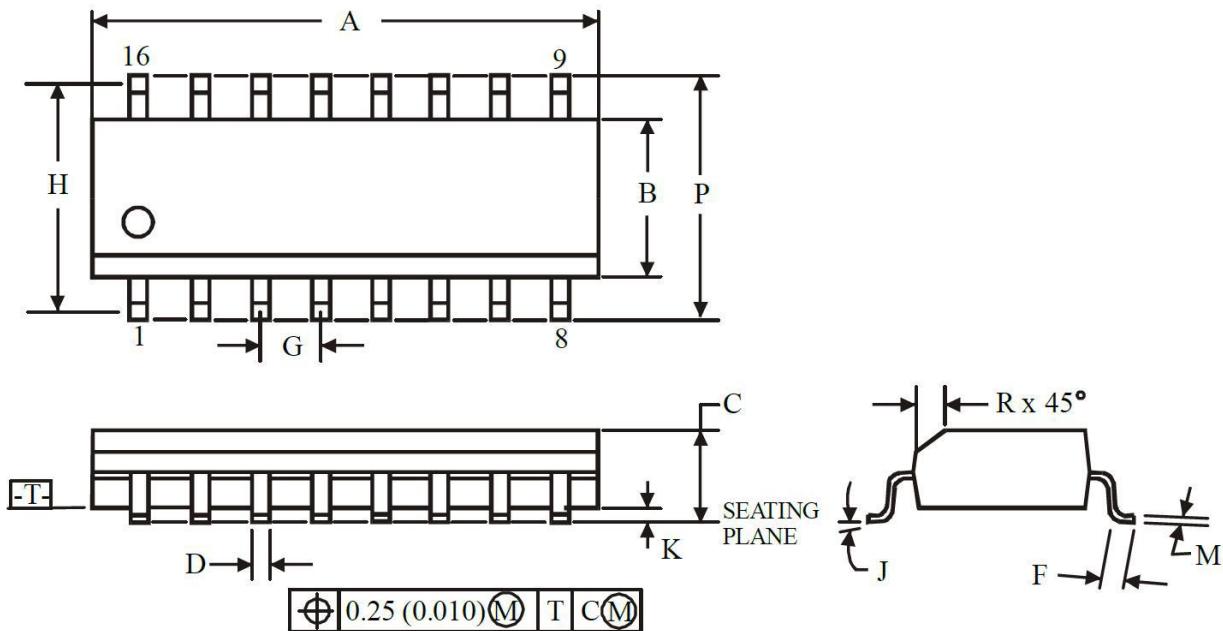
NOTES: 1. Dimensions A and B do not include mold flash or protrusion.

2. Maximum mold flash or protrusion 0.15 mm (0.006) per side for A; for B－0.25 mm (0.010) per side.

Symbol	Dimensions ,mm	
	Min	Max
A	9.8	10
B	3.8	4
C	1.35	1.75
D	0.33	0.51
F	0.4	1.27
G	1.27	
H	5.72	
J	0°	8°
K	0.1	0.25
M	0.19	0.25
P	5.8	6.2
R	0.25	0.5

PACKAGE/ORDERING INFORMATION

PRODUCT	ORDERING NUMBER	TEMPRANGE	PACKAGE	PAKEAGE MARKING	TRANSPOT MEDIA,QUANTILY
CBM232	CBM232AS16	-40℃~85℃	SOP-16	CBM232A	Tape and Reel,2500
	CBM232ACS16	-0℃~70℃	SOP-16	CBM232AC	Tape and Reel,2500

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