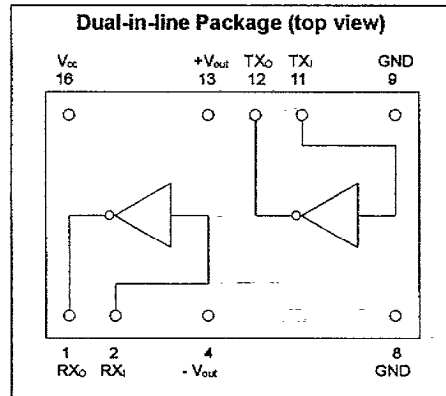


- ☐ 5 Volt only operation
- ☐ EIA – RS232C compatible
- ☐ DIL 0.5" package
- ☐ Low profile
- ☐ Low power consumption
- ☐ Flexible supply voltage range
- ☐ TTL/CMOS logic compatible
- ☐ High reliability hybrid circuitry



description

The NM232C is designed to interface data terminal equipment (DTE) with data communications equipment (DCE) in conformance with the specifications of EIA standard RS232C. The device provides one data receive channel and one data transmit channel. Each channel is completely RS232C compatible at the interface boundary and TTL/CMOS compatible at the logic connections. The internally generated positive and negative supplies are made available for external use at limited current levels. Total device no-load power consumption is typically 70mW.

absolute maximum ratings over operating free-air temperature range

Supply voltage V_{cc}	4V to 7V
Input voltage at receiver	$\pm 30V$
Output current from receiver	30mA
Output voltage at transmitter	$\pm 15V$
Input voltage to transmitter	- 0.3V to 30V

NM232C operating free-air temperature range	0C to 70C
NM232CX operating free-air temperature range	- 40C to 80C
Storage temperature range	- 55C to 125C
Lead temperature 1.5mm from case for 10 seconds	300C

Current supplied by V_{OUT} or $-V_{OUT}$ singularly	15mA
Current supplied by V_{OUT} and $-V_{OUT}$ combined per output	10mA

NM232C RS232C Transmitter and Receiver

Transmitter

electrical characteristics over operating free-air temperature range $V_{CC} = 5V$

Parameter	Test Conditions	Min	Typ	Max	Unit
V_{IH} High-level input voltage		1.9			V
V_{IL} Low-level input voltage				0.8	V
V_{OH} High-level output voltage	$V_{IL} = 0.8V$ $V_{CC} = 5V$	8.0	9.0		V

	$R_L = 3k\Omega$ $V_{CC} = 4.5V$	-6.5	-7.0		
I_{IH} High-level input current	$V_{IN} = 5V$			0.25	μA
I_{IL} Low-level input current	$V_{IN} = 0V$			0.25	μA
$I_{OS(H)}$ Short-circuit output current	$V_{IN} = 0.8V$	15	20		mA
$I_{OS(L)}$ Short-circuit output current	$V_{IN} = 1.9V$	-10	-15		mA
R_0 Output resistance power off	$V_{CC} = 0V$	300			Ω

all typical values are at $T_a = 25C$

switching characteristics $V_{CC} = 5V$

Parameter	Test Conditions	Min	Typ	Max	Unit
t_{PLH} Propagation delay time L to H	$R_L = 3k\Omega$ $C_L = 30pF$		650	800	ns
t_{PHL} Propagation delay time H to L			1.0	1.2	ms
t_{TLH} Transition time L to H level			0.9	1.0	μs
t_{THL} Transition time H to L level			0.9	1.0	μs
t_{TLH} Transition time L to H level	$R_L = 3k\Omega$ to $7k\Omega$ $C_L = 2500pF$		2.0	2.5	ms
t_{THL} Transition time H to L level			2.0	2.5	μs

all typical values are at $T_a = 25C$

NM232C

RS232C Transmitter and Receiver

Receiver

electrical characteristics over operating free-air temperature range $V_{CC} = 5V$

Parameter	Test Conditions	Min	Typ	Max	Unit
V_{T+} Positive going threshold			2.0	2.4	V
V_{T-} Negative going threshold		1.0	1.6		V
V_{OH} High-level output voltage	$V_{IN} = 0.75V$ $I_{OH} = -0.5mA$	4.4		5.0	V
	Input open $I_{OH} = -0.5mA$	4.4		5.0	
V_{OL} Low-level output voltage	$V_{IN} = 3V$ $I_{OL} = 10mA$	0.05	0.1	0.2	V
I_{IH} High-level input current	$V_{IN} = 25V$	5.5		6.3	mA
	$V_{IN} = 3V$		0.6	0.65	
I_{IL} Low-level input current	$V_{IN} = -25V$	-6.0		-6.8	mA
	$V_{IN} = -3V$		-0.6	-0.65	
I_{OS} Short-circuit output current	$V_{IN} = 0V$		-5.0		mA

all typical values are at $T_a = 25C$

switching characteristics $V_{CC} = 5V$, $V_{IN} = \pm 6V$

Parameter	Test Conditions ⁽¹⁾	Min	Typ	Max	Unit
t_{PLH} Propagation delay time L to H	$C_L = 30pF$ $R_L = 3.9k\Omega$		1.3		μs
t_{PHL} Propagation delay time H to L	$C_L = 30pF$ $R_L = 390\Omega$		350	450	ns
t_{TLH} Transition time L to H level	$C_L = 30pF$ $R_L = 3.9k\Omega$		500		ns
t_{THL} Transition time H to L level	$C_L = 30pF$ $R_L = 390\Omega$		250		ns

all typical values are at $T_a = 25C$

(1) Test load is simulated TTL and STTL

NM232C RS232C Transmitter and Receiver

Transmitter and Receiver

electrical characteristics over operating free-air temperature range $V_{CC} = 5V$

Parameter	Test Conditions	Min	Typ	Max	Unit
I_{CC} Supply current	$R_L = 3k\Omega$ at T1 OUT	Input at 0.8V	27		mA
		Input at 1.9V	20		
P_D Total power dissipation	No Load	$V_{CC} = 5V$	70	100	mW
		$V_{CC} = 4.5V$	65	95	
V_{OUT+} Positive output voltage	No external load	10	11.5	13	V
	10mA external load		10		
V_{OUT-} Negative output voltage	No external load	- 10.5	- 11.5	- 12.5	V
	10mA external load		- 9.5		

all typical values are at $T_a = 25^\circ C$

ordering information

Part No.	Function	Package Style
NM232C	5 volt only RS232C transmitter and transceiver	2
NM232CX	NM232C with extended temperature range	2

