

## Octal Line Receiver

### **FEATURES**

- Meets EIA 232E/423A/422A and CCITT V.10, V.11, V.28, X.26, X.27
- Single +5V Supply--TTL Compatible • Outputs
- Differential Inputs Withstand ± 25V •
- Low Open Circuit Voltage for Improved Failsafe Characteristic
- Reduced Supply Current--35 mA Max •
- Input Noise Filter •
- Internal Hysteresis •

### DESCRIPTION

The UC5180C is an octal line receiver designed to meet a wide range of digital communications requirements as outlined in EIA standards EIA232E, EIA423A, EIA422A, and CCITT V.10, V.11, V.28, X.26, and X.27. The UC5180C includes an input noise filter and is intended for applications employing data rates up to 200 KBPS. A failsafe function allows these devices to "fail" to a known state under a wide variety of fault conditions at the inputs.

### ABSOLUTE MAXIMUM RATINGS (Note 1)

Supply Voltage, Vcc
Output Sink Current
Output Short Circuit Time 1 Sec
Common Mode Input Range 15V
Differential Input Range 25V
Failsafe Voltage0.3 to Vcc
PLCC Power Dissipation, TA = 25°C (Note 2) 1000 mW
DIP Power Dissipation, TA = 25°C (Note 2) 1200 mW
Storage Temperature Range65°C to +150°C
Lead Temperature (Soldering, 10 Seconds)
Note 1: All voltages are with respect to ground, pin 14. Currents are positive into, negative out of the specified terminal

Note 2: Consult Packaging Section of Databook for thermal limitations and considerations of package.

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22 G-

21 FS2

20 Fo

19 F+

H-

Go

G+



### CONNECTION DIAGRAMS

### UC5180C

PARAMETERS	SYMBOL	L TEST CONDITIONS				180C	UNITS				
						MAX					
DC Input Resistance	RIN	$3V \leq  V_{IN}  \leq 25V$				7	kΩ				
Failsafe Output Voltage	Vofs	Inputs Open or Shorted	$0 \le IOUT \le 8mA$ , VFAILSAFE = $0V$			0.45	V				
		Together, or One Input Open and One Grounded	0 ≥ Iout ≥ Vfailsafe	D ≥ IOUT ≥ - 400 μA, VFailsafe = Vcc							
Differential Input High	Vтн	Vout = 2.7V, lout = 440 μA		Rs = 0 (Note 2)	50	200	mV				
Threshold		(See Figure 1)		Rs = 500 (Note 2)		400					
Differential Input Low	Vtl	Vout = 0.45V, lout = 440 mA (See Figure 1)		Rs = 0 (Note 2)	-200	-50	mV				
Threshold				Rs = 500 (Note 2)	-400						
Hysteresis	Vн	Fs = 0V or Vcc (See Figure 1)		50	140	mV					
Open Circuit Input Voltage	Vicc					75	mV				
Input Capacitance	Сі					20	pF				
High Level Output Voltage	Vсн	Vid = 1V, Ιουτ = - 440μΑ			2.7		V				
Low Level Output Voltage	Vol	VID = -1V		IOUT = 4 mA		0.4	V				
		(Note 3)		IOUT = 8 mA		0.45					
Short Circuit Output Current	los	Note 4			20	100	mA				
Supply Current	lcc	$4.75V \le Vcc \le 5.25V$				35	mA				
Input Current	lin	Other Inputs Grounded		VIN = +10V		3.25	mA				
				VIN = -10V	-3.25						

# **DC ELECTRICAL CHARACTERISTICS:** Unless otherwise stated these specifications apply for TA = 0°C to +70°C, Vcc = $5V \pm 5\%$ , Input Common Mode Range $\pm 7V$ , TA =TJ

Note 2: Rs is a resistor in series with each input.

Note 3: Measured after 100ms warm up (at  $0^{\circ}$ C)

Note 4: Only 1 output may be shorted at one time and then only for a maximum of 1 sec.





### AC ELECTRICAL CHARACTERISTICS: Vcc = 5V $\pm$ 5%, TA = 0°C to + 70°C, Figure 2, TA = TJ.

PARAMETERS	RS SYMBOL TEST C		UC5180C		UNITS
			MIN	MAX	
Propagation Delay - Low to High	<b>t</b> PLH	CL = 50pF, VIN = ± 500mV		550	ns
Propagation Delay - High to Low	<b>t</b> PHL	CL = 50pF, VIN = ± 500mV		550	ns
Acceptance Input Frequency	fA	Unused Input Grounded, VIN = $\pm 200$ mV		0.1	MHz
Rejectable Input Frequency	fR	Unused Input Grounded, VIN = $\pm$ 500mV	5.5		MHz



Figure 2. AC Test Circuit

### **APPLICATIONS INFORMATION**

### **Failsafe Operation**

These devices provide a failsafe operating mode to guard against input fault conditions as defined in EIA422A and EIA423A standards. These fault conditions are (1) drive in power-off condition, (2) receiver not interconnected with driver, (3) open-circuited interconnecting cable, and (4) short-circuited interconnecting cable. If one of these four fault conditions occurs at the inputs of a receiver, then the output of that receiver is driven to a known logic level. The receiver is programmed by connecting the failsafe input to Vcc or ground. A connection to Vcc provides a logic "1" output

### EIA232E/V.28 / EIA423A/V.10 DATA TRANSMISSION

under fault conditions, while a connection to ground provides a logic "0". There are two failsafe pins (Fs1 and Fs2) on the UC5180C where each provides common failsafe control for four receivers.

### Input Filtering (UC5180C)

The UC5180C has input filtering for additional noise rejection. This filtering is a function of both signal level and frequency. For the specified input (5.5 MHz at  $\pm$ 500 mV) the input stage filter attenuates the signal such that the output stage threshold levels are not exceeded and no change of state occurs at the output.



EIA422A/V.11 DATA TRANSMISSION



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