μA1489 • μA1489A

QUAD LINE RECEIVERS

FAIRCHILD LINEAR INTEGRATED CIRCUITS

GENERAL DESCRIPTION – The μA1489 and the μA1489A are EIA RS-232C specified Quad Line Receivers. These devices are used to interface data terminals with data communications equipment. The μA1489 and μA1489A are pin-for-pin replacements of the MC1489 and MC1489A respectively.

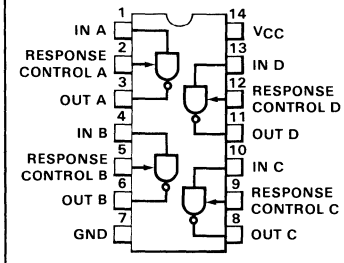
- **INPUT RESISTANCE – 3.0 kΩ TO 7.0 kΩ**
- **INPUT SIGNAL RANGE – ±30 V**
- **INPUT THRESHOLD HYSTERESIS BUILT IN**
- **RESPONSE CONTROL**
  - **a) LOGIC THRESHOLD SHIFTING**
  - **b) INPUT NOISE FILTERING**

ABSOLUTE MAXIMUM RATINGS

Power Supply Voltage	+10 Vdc
Input Voltage Range	±30 Vdc
Output Load Current	20 mA
Continuous Total Power Dissipation (Note 1)	800 mW
Operating Temperature	0°C to 70°C
Storage Temperature	−65°C to +175°C
Pin Temperature	
Hermetic DIP (Soldering, 60 s)	300°C
Molded DIP (Soldering, 10 s)	260°C

Note 1: Above 60°C ambient temperature, derate linearly at 8.3 mW/°C.

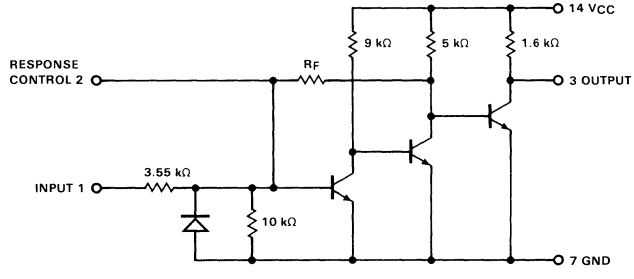
CONNECTION DIAGRAM
14-PIN DIP
(TOP VIEW)
PACKAGE OUTLINES 6A 9A
PACKAGE CODES D P



ORDER INFORMATION

TYP	PART NO.
μA1489	μA1489DC
μA1489	μA1489PC
μA1489A	μA1489ADC
μA1489A	μA1489APC

CIRCUIT SCHEMATIC (1/4 OF CIRCUIT SHOWN)



	μA1489	μA1489A
RF	10 kΩ	2 kΩ

ELECTRICAL CHARACTERISTICS: V_{CC} = 5.0 V ±1%, Response control pin is open, T_A = 0°C to 70°C unless otherwise noted.

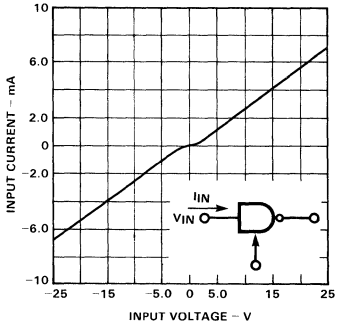
SYMBOL	CHARACTERISTICS	CONDITIONS		FIG	MIN	TYP	MAX	UNITS
I_{IH}	Positive Input Current	V_{IH} = 25 V V_{IH} = 3.0 V		1	3.6 0.43		8.3	mA
I_{IL}	Negative Input Current	V_{IL} = −25 V V_{IL} = −3.0 V		1	−3.6 −0.43		−8.3	mA
V_{IHL}	Input Turn-on Threshold Voltage	T_A = 25°C, $V_{OL} \leq$ 0.45 V	μA1489	2	1.0		1.5	V
			μA1489A		1.75	1.95	2.25	
V_{ILH}	Input Turn-off Threshold Voltage	T_A = 25°C, $V_{OH} \geq$ 2.5 V, I_L = −0.5 mA	μA1489	2	0.75		1.25	V
			μA1489A		0.75	0.8	1.25	
V_{OH}	Output HIGH Voltage	V_{IH} = 0.75 V, I_L = −0.5 mA Input open circuit, I_L = −0.5 mA		2	2.6	4.0	5.0	V
V_{OL}	Output LOW Voltage	V_{IL} = 3.0 V, I_L = 10 mA		2		0.2	0.45	V
I_{OS}	Output Short-circuit Current			3		3.0		mA
I_{CC}	Power Supply Current	V_{IH} = 5.0 V		4		20	26	mA
P_C	Power Consumption	V_{IH} = 5.0 V		4		100	130	mW

AC CHARACTERISTICS: V_{CC} = 5.0 V ±1%, T_A = 25°C

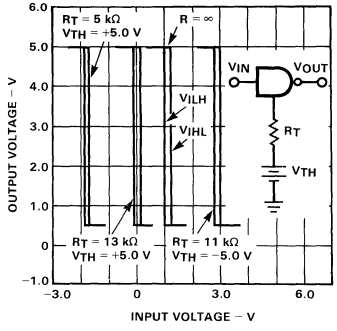
SYMBOL	CHARACTERISTICS	CONDITIONS	FIG.	MIN	TYP	MAX	UNITS
t_{PLH} t_{PHL}	Propagation Delay Time	R_L = 3.9 kΩ R = 390 Ω	5		25 25	85 50	ns
t_r	Rise Time	R_L = 3.9 kΩ	5		120	175	ns
t_f	Fall Time	R_L = 390 Ω			10	20	

TYPICAL PERFORMANCE CURVES

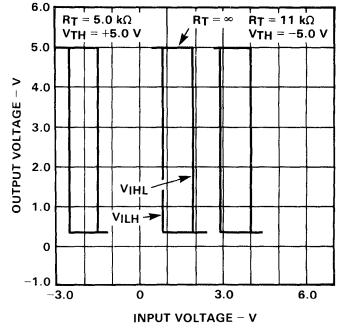
INPUT CURRENT AS A FUNCTION OF INPUT VOLTAGE



μA1489 INPUT THRESHOLD VOLTAGE ADJUSTMENT



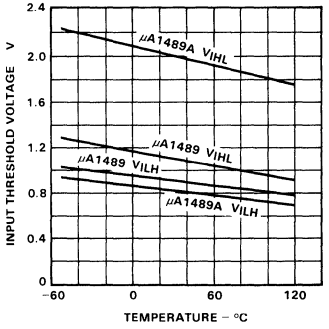
μA1489A INPUT THRESHOLD VOLTAGE ADJUSTMENT



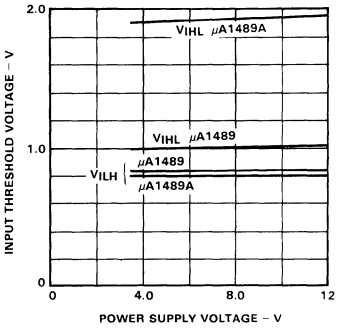
TEST CIRCUIT SAME AS μA1489

TYPICAL PERFORMANCE CURVES (Cont'd)

INPUT THRESHOLD VOLTAGE AS A FUNCTION OF TEMPERATURE



INPUT THRESHOLD VOLTAGE AS A FUNCTION OF POWER SUPPLY VOLTAGE



DC TEST CIRCUITS

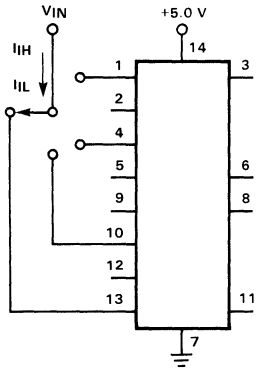


Fig. 1. Input Current

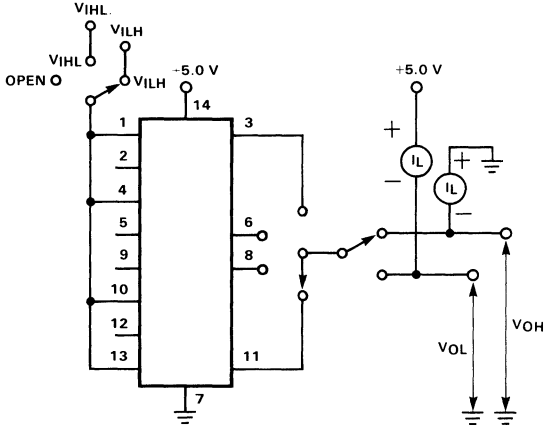


Fig. 2. Output Voltage and Input Threshold Voltage

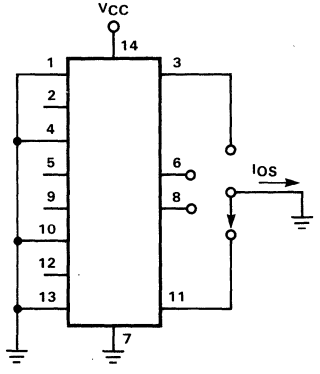


Fig. 3. Output Short-Circuit Current

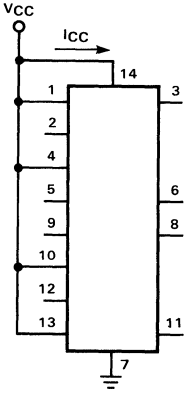
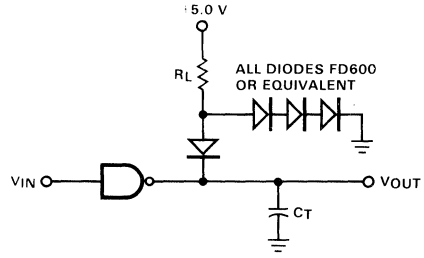
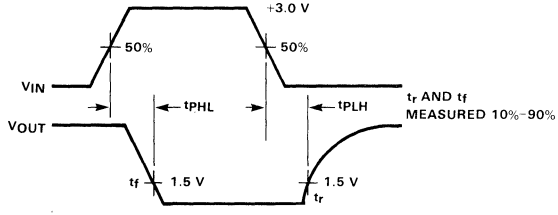


Fig. 4. Power Supply Current

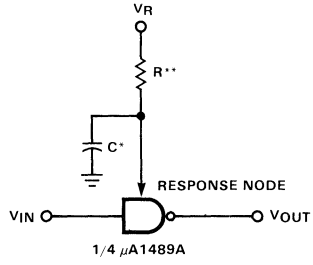
DC TEST CIRCUITS (Cont'd)





C_T = 15 pF = Total parasitic capacitance, which includes probe and jig capacitance.

Fig. 5. AC Test Circuit and Voltage Waveforms



*Capacitor is for noise filtering
**Resistor is for threshold shifting

Fig. 6. Response Control Node