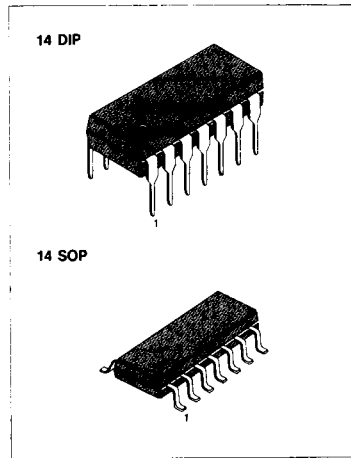


QUAD LINE RECEIVER

The MC1489 monolithic quad line receivers are designed to interface data terminal equipment with data communications equipment in conformance with the specifications of EIA Standard No. RS-232C.

FEATURES

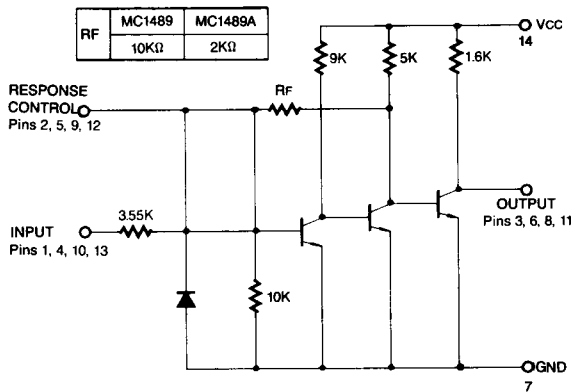
- Input Resistance: 3.0KΩ to 7.0KΩ
- Input Signal Range: ± 30 Volts
- Response Control
 - a) Logic Threshold Shifting
 - b) Input Noise Filtering
- Input Threshold Hysteresis Built in



2

SCHEMATIC DIAGRAM

(1/4 OF CIRCUIT SHOWN)



ORDERING INFORMATION

Device	Package	Operating Temperature
MC1489N	14 DIP	0 ~ +70°C
MC1489AN		
MC1489D	14 SOP	
MC1489AD		

ABSOLUTE MAXIMUM RATINGS (T_a = 25°C)

Characteristic	Symbol	Value	Unit
Power Supply Voltage	V _{CC}	10	V _{DC}
Input Voltage Range	V _{IR}	± 40	V _{DC}
Output Load Current	I _L	20	mA
Power Dissipation Derate Above T _a = +25°C	P _D 1/θ _{JA}	1000 6.7	mW mW/°C
Operating Temperature	T _a	0 to +70	°C
Storage Temperature	T _{stg}	-65 to +150	°C

ELECTRICAL CHARACTERISTICS

($V_{CC} = 5.0V \pm 10\%$, $T_a = 0 \sim 70^\circ C$ unless otherwise noted)

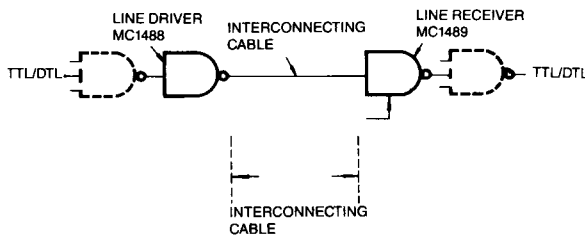
Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Positive Input Current	I_{IH}	$V_{IH} = 25V_{dC}$	3.6	5.5	8.3	mA
		$V_{IH} = 3.0V_{dC}$	0.43	0.53		
Negative Input Current	I_{IL}	$V_{IL} = -25V_{dC}$	-3.6	-5.5	-8.3	mA
		$V_{IL} = -3.0V_{dC}$	-0.43	-0.53		
Input Turn-On Threshold Voltage MC1489 MC1489A	V_{IH}	$T_a = 25^\circ C$, $V_{OL} \leq 0.45V$ $I_L = 10mA$	1.0	1.3	1.5	Vdc
			1.75	1.95	2.25	
Input Turn-Off Threshold Voltage	V_{IL}	$T_a = 25^\circ C$, $V_{OH} \geq 2.5V$, $I_L = -0.5mA$	0.75	1.0	1.25	Vdc
Output Voltage High	V_{OH}	$V_{IN} = 0.75V$, $I_L = -0.5mA$	2.6	4.0	5.0	Vdc
		Input Open, $I_L = -0.5mA$	2.6	4.0	5.0	
Output Voltage Low	V_{OL}	$V_{IN} = 3.0V$, $I_L = 10mA$		0.15	0.45	Vdc
Output Short Circuit Current	I_{OS}	$V_{IN} = 0.75V$		-2.6	-4.0	mA
Power Supply Current	I_{CC}	All gates "on", $I_{OUT} = 0mA$, $V_{IH} = 5.0V$		15	26	mA
Power Consumption	P_C	$V_{IH} = 5.0V$		80	130	mW

SWITCHING CHARACTERISTICS

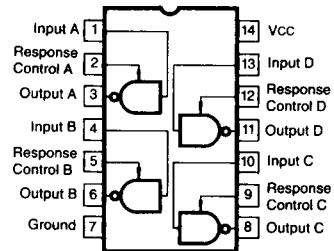
($V_{CC} = 5.0V \pm 1\%$, $T_a = 25^\circ C$, See Fig. 1)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Propagation Delay Time	t_{PLH}	$R_L = 3.9K\Omega$		25	85	nS
Rise Time	t_{TLH}	$R_L = 3.9K\Omega$		120	175	nS
Propagation Delay Time	t_{PHL}	$R_L = 390\Omega$		25	50	nS
Fall Time	t_{THL}	$R_L = 390\Omega$		10	20	nS

TYPICAL APPLICATION

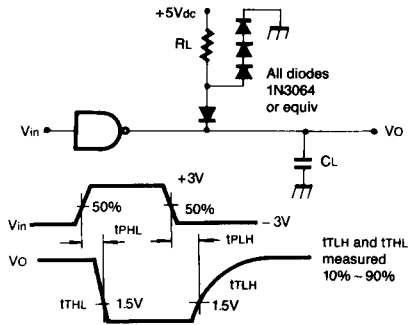


PIN CONNECTIONS



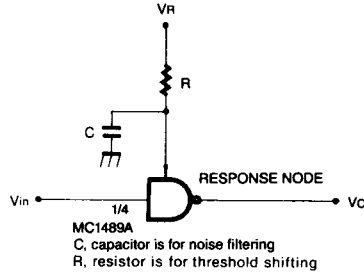
TEST CIRCUIT

Fig 1 — SWITCHING RESPONSE



$C_L = 15\text{pF}$ = total parasitic capacitance, which includes probe and wiring capacitances

Fig 2 — RESPONSE CONTROL NODE



2

TYPICAL PERFORMANCE CHARACTERISTICS

($V_{CC} = 5.0\text{ V}_{dc}$, $T_a = +25^\circ\text{C}$ unless otherwise noted)

Fig. 3 — TYPICAL TURN-ON THRESHOLD V_{th} CAPACITANCE FROM RESPONSE CONTROL PIN TO GND

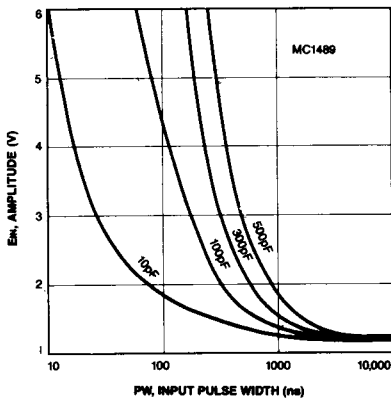


Fig. 4 — TYPICAL TURN-ON THRESHOLD V_{th} CAPACITANCE FROM RESPONSE CONTROL PIN TO GND

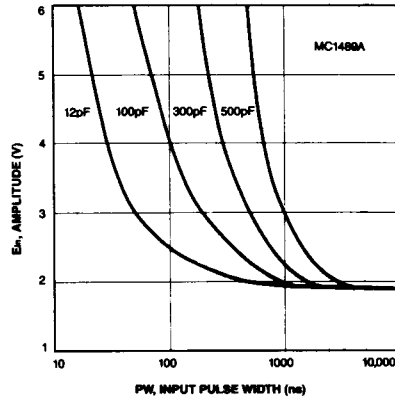


Fig. 5 — INPUT CURRENT

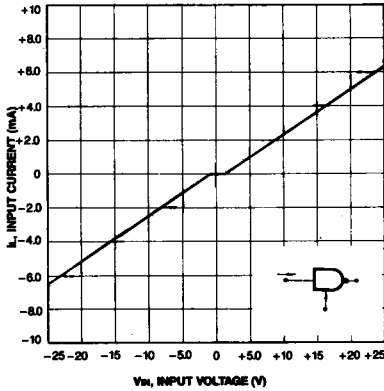


Fig. 6 — MC1489 INPUT THRESHOLD VOLTAGE ADJUSTMENT

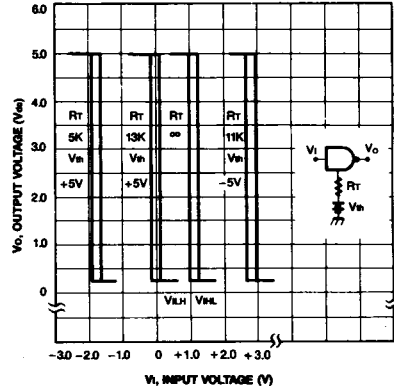


Fig. 7 — MC1489A INPUT THRESHOLD VOLTAGE ADJUSTMENT

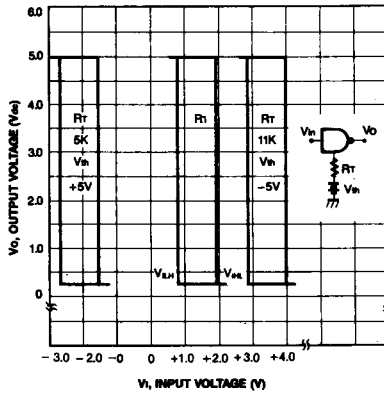


Fig. 8 — INPUT THRESHOLD VOLTAGE V_{th} vs. TEMPERATURE

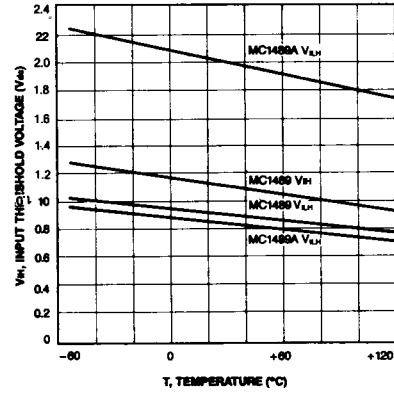


Fig. 9 — INPUT THRESHOLD V_{th} vs. POWER SUPPLY VOLTAGE

