Philips Components–Signetics

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Data Communication Products	

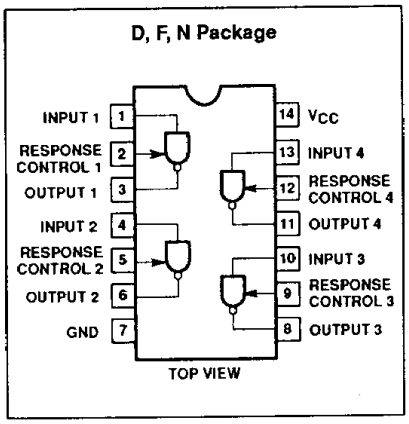
MC1489/MC1489A
Quad line receivers

DESCRIPTION
The MC1489/MC1489A are quad line receivers designed to interface data terminal equipment with data communications equipment. They are constructed on a single monolithic silicon chip. These devices satisfy the specifications of EIA standard No. RS-232C.

FEATURES
- Four totally separate receivers per package
- Programmable threshold
- Built-in input threshold hysteresis
- "Fail safe" operating mode
- Inputs withstand ±30V

APPLICATIONS
- Computer port inputs
- Modems
- Eliminating noise in digital circuitry
- MOS-to-TTL/DTL translation

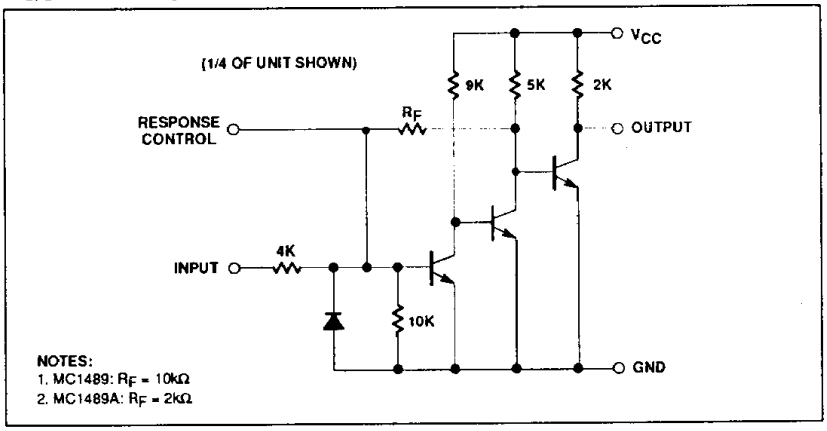
PIN CONFIGURATION



ORDERING INFORMATION

DESCRIPTION	TEMPERATURE RANGE	ORDER CODE
14-Pin Plastic DIP	0°C to +70°C	MC1489N
14-Pin Plastic DIP	0°C to +70°C	MC1489AN
14-Pin Cerdip	0°C to +70°C	MC1489F
14-Pin Cerdip	0°C to +70°C	MC1489AF
14-Pin Plastic SO	0°C to +70°C	MC1489D
14-Pin Plastic SO	0°C to +70°C	MC1489AD

EQUIVALENT SCHEMATIC

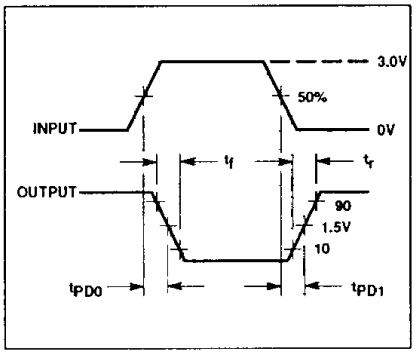


ABSOLUTE MAXIMUM RATINGS

SYMBOL	PARAMETER	RATING	UNIT
V_{CC}	Power supply voltage	10	V
V_{IN}	Input voltage range	±30	V
I_{OUT}	Output load current	20	mA
P_D	Maximum power dissipation, T_A = 25°C (still-air)[1] F package N package D package	 1190 1420 1040	 mW mW mW
T_A	Operating temperature range	0 to +75	°C
T_{STG}	Storage temperature range	–65 to +150	°C

NOTE:
1. Derate above 25°C, at the following rates:
   F package at 9.5mW/°C
   N package at 11.4mW/°C
   D package at 8.3mW/°C

VOLTAGE WAVEFORMS



DC ELECTRICAL CHARACTERISTICS V_{CC} = 5.0V ±1%, 0°C ≤ T_A ≤ +75°C, unless otherwise specified.[1,2]

SYMBOL	PARAMETER	TEST CONDITIONS	MC1489			MC1489A			UNIT
			Min	Typ	Max	Min	Typ	Max	
V_{IH}	Input high threshold voltage	T_A = 25°C, V_{OUT} ≤ 0.45V, I_{OUT} = 10mA	1.0		1.5	1.75		2.25	V
V_{IL}	Input low threshold voltage	T_A = 25°C, V_{OUT} ≥ 2.5V, I_{OUT} = –0.5mA	0.75		1.25	0.75		1.25	V
I_{IN}	Input current	V_{IN} = +25V V_{IN} = –25V V_{IN} = +3V V_{IN} = –3V	+3.6 –3.6 +0.43 –0.43	+5.6 –5.6 +0.53 –0.53	+8.3 –8.3	+3.6 –3.6 +0.43 –0.43	+5.6 –5.6 +0.53 –0.53	+8.3 –8.3	mA
V_{OH}	Output high voltage	V_{IN} = 0.75V, I_{OUT} = –0.5mA Input = Open, I_{OUT} = –0.5mA	2.6 2.6	3.8 3.8	5.0 5.0	2.6 2.6	3.8 3.8	5.0 5.0	V V
V_{OL}	Output low voltage	V_{IN} = 3.0V, I_{OUT} = 10mA		0.33	0.45		0.33	0.45	V
I_{SC}	Output short-circuit current	V_{IN} = 0.75V		3.0			3.0		mA
I_{CC}	Supply current	V_{IN} = 5.0V		20	26		20	26	mA
P_D	Power dissipation	V_{IN} = 5.0V		100	130		100	130	mW

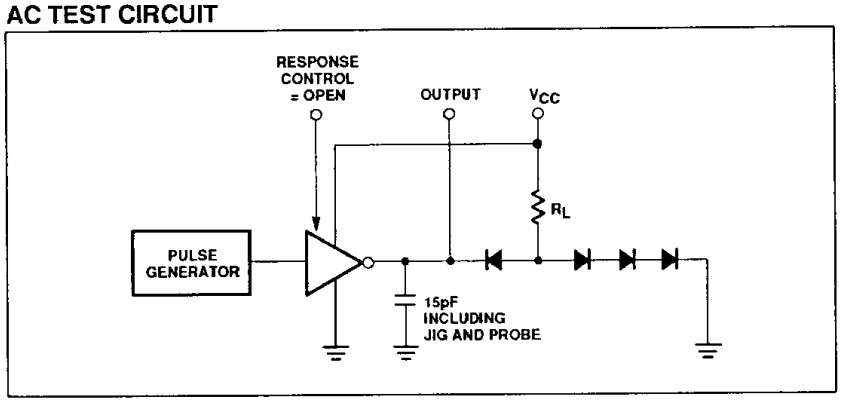
NOTES:
1. Voltage values shown are with respect to network ground terminal. Positive current is defined as current into the referenced pin.
2. These specifications apply for response control pin = open.

AC ELECTRICAL CHARACTERISTICS V_{CC} = 5.0V ±1%, T_A = 25°C, unless otherwise specified.[1,2]

SYMBOL	PARAMETER	TEST CONDITIONS	MC1489			MC1489A			UNIT
			Min	Typ	Max	Min	Typ	Max	
t_{PD1}	Input to output "high" Propagation delay	R_L = 3.9kΩ (AC test circuit)		25	85		25	85	ns
t_{PD0}	Input to output "low" Propagation delay	R_L = 390Ω (AC test circuit)		20	50		20	50	ns
t_R	Output rise time	R_L = 3.9kΩ (AC test circuit)		110	175		110	175	ns
t_F	Output fall time	R_L = 390Ω (AC test circuit)		9	20		9	20	ns

NOTES:
1. Voltage values shown are with respect to network ground terminal. Positive current is defined as current into the referenced pin.
2. These specifications apply for response control pin = open.

AC TEST CIRCUIT



TYPICAL APPLICATIONS