FAIRCHILD

A Schlumberger Company

μA1488 RS-232C Quad Line Driver

Linear Division Interface Products

Description

The μA1488 is an EIA RS-232C specified quad line driver. This device is used to interface data terminals with data communications equipment. The μA1488 is a lead-for-lead replacement of the MC1488.

- **Current Limited Output — ± 10 mA Typical**
- **Power-Off Source Impedance 300 Ω Minimum**
- **Simple Slew Rate Control With External Capacitor**
- **Flexible Operating Supply Range**

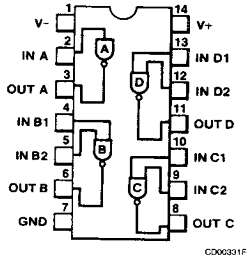
Absolute Maximum Ratings

Storage Temperature Range	
Ceramic DIP	−65°C to +175°C
Molded DIP and SO-14	−65°C to +150°C
Operating Temperature Range	0°C to +70°C
Lead Temperature	
Ceramic DIP (soldering, 60 s)	300°C
Molded DIP and SO-14 (soldering, 10 s)	265°C
Internal Power Dissipation[1, 2]	
14L-Ceramic DIP	1.36 W
14L-Molded DIP	1.04 W
SO-14	0.93 W
Supply Voltage	±15 V
Input Voltage Range	−15 V to +7.0 V
Output Signal Voltage	±15 V

Note

1. $T_{J\ Max}$ = 175°C for the Ceramic DIP, and 150°C for the Molded DIP and SO-14.
2. Ratings apply to ambient temperature at 25°C. Above this temperature, derate the 14L-Ceramic DIP at 9.1 mW/°C, the 14L-Molded DIP at 8.3 mW/°C, and the SO-14 at 7.5 mW/°C.

Connection Diagram 14-Lead DIP and SO-14 Package (Top View)



Order Information

Device Code	Package Code	Package Description
μA1488DC	6A	Ceramic DIP
μA1488PC	9A	Molded DIP
μA1488SC	KD	Molded Surface Mount

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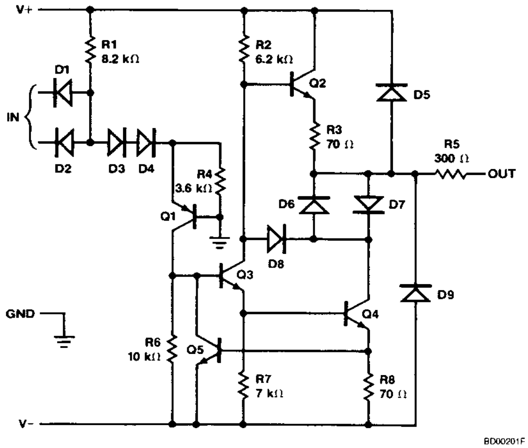
Equivalent Circuit (1/4 of Circuit)



μA1488
Electrical Characteristics

DC Characteristics $V_{CC} = \pm 9.0$ V ±1%, $T_A = 0°C$ to 70°C, unless otherwise specified.

Symbol	Characteristic	Condition	Figure	Min	Typ	Max	Unit
I_{IL}	Input Current LOW	$V_{IL} = 0$ V	1		1.0	1.6	mA
I_{IH}	Input Current HIGH	$V_{IH} = 5.0$ V	1			10	μA
V_{OH}	Output Voltage HIGH	$V_{IL} = 0.8$ V, $R_L = 3.0$ kΩ $V_{CC} = \pm 9.0$ V	2	6.0	7.0		V
		$V_{IL} = 0.8$ V, $R_L = 3.0$ kΩ $V_{CC} = \pm 13.2$ V		9.0	10.5		
V_{OL}	Output Voltage LOW	$V_{IH} = 1.9$ V, $R_L = 3.0$ kΩ $V_{CC} = \pm 9.0$ V	2	-6.0	-7.0		V
		$V_{IH} = 1.9$ V, $R_L = 3.0$ kΩ $V_{CC} = \pm 13.2$ V		-9.0	-10.5		
I_{OS+}	Positive Output Short Circuit Current[1]	$V_{IL} = 0.8$ V	3	-6.0	-10	-12	mA
I_{OS-}	Negative Output Short Circuit Current[1]	$V_{IH} = 1.9$ V	3	+6.0	+10	+12	mA
R_O	Output Resistance	$V_{CC} = 0$ V, $V_O = \pm 2.0$ V	4	300			Ω
I+	Positive Supply Current	$R_L = \infty$ $V_{IH} = 1.9$ V, V+ = 9.0 V	5		15	20	mA
		$V_{IL} = 0.8$ V, V+ = 9.0 V			4.5	6.0	
		$V_{IH} = 1.9$ V, V+ = 12 V			19	25	
		$V_{IL} = 0.8$ V, V+ = 12 V			5.5	7.0	
		$V_{IH} = 1.9$ V, V+ = 15 V				34	
		$V_{IL} = 0.8$ V, V+ = 15 V				12	
I–	Negative Supply Current	$R_L = \infty$ $V_{IH} = 1.9$ V, V– = –9.0 V	5		-13	-17	mA
		$V_{IL} = 0.8$ V, V– = –9.0 V				-15	μA
		$V_{IH} = 1.9$ V, V– = –12 V			-18	-23	mA
		$V_{IL} = 0.8$ V, V– = –12 V				-15	μA
		$V_{IH} = 1.9$ V, V– = –15 V				-34	mA
		$V_{IL} = 0.8$ V, V– = –15 V				-2.5	mA
P_C	Power Consumption	$V_{CC} = \pm 9.0$ V				333	mW
		$V_{CC} = \pm 12$ V				576	

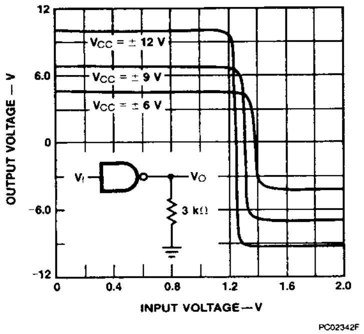
AC Characteristics $V_{CC} = \pm 9.0$ V ±1%, $T_A = 25°C$

Symbol	Characteristic	Condition	Figure	Min	Typ	Max	Unit
t_{PLH}	Propagation Delay Time	$R_L = 3.0$ kΩ, $C_L = 15$ pF	6		220	350	ns
t_{PHL}					70	175	ns
t_f	Fall Time	$R_L = 3.0$ kΩ, $C_L = 15$ pF	6		70	75	ns
t_r	Rise Time				55	100	ns

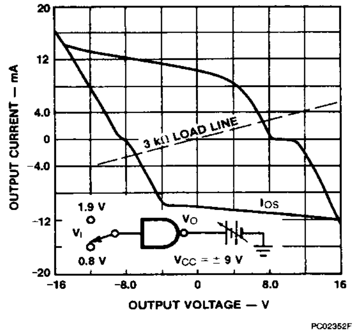
Note
1. Maximum package power dissipation may be exceeded if all outputs are shorted simultaneously.

Typical Performance Curves

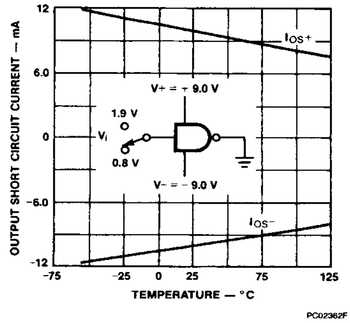
Transfer Characteristics vs Supply Voltage



Output Voltage and Current Limiting Characteristics



Short Circuit Output Current vs Temperature



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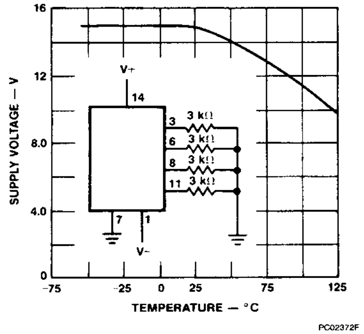
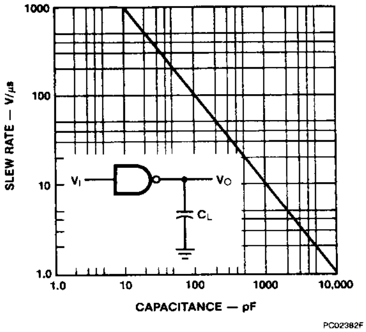
Supply Voltage vs Maximum Operating Temperature



Output Slew Rate vs Load Capacitance



DC Test Circuits

Figure 1 Input Current

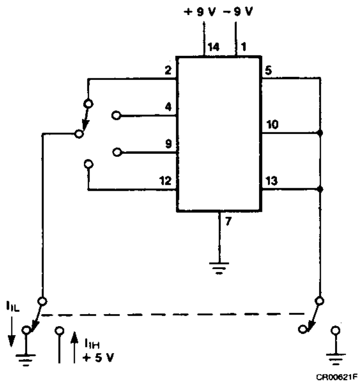


Figure 2 Output Voltage

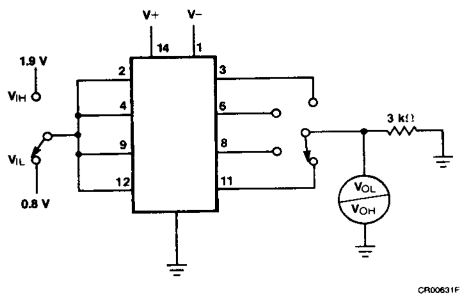


Figure 3 Output Short Circuit Current

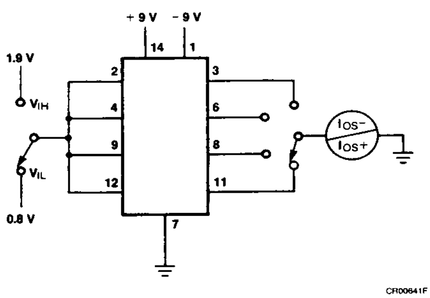


Figure 4 Output Resistance (Power-off)

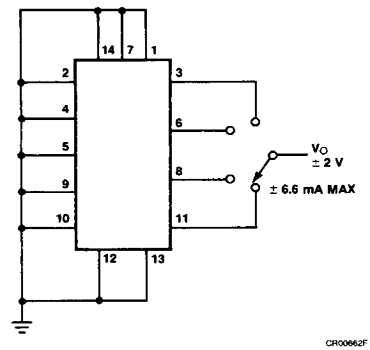


Figure 5 Supply Currents

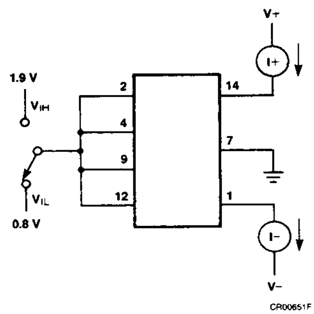
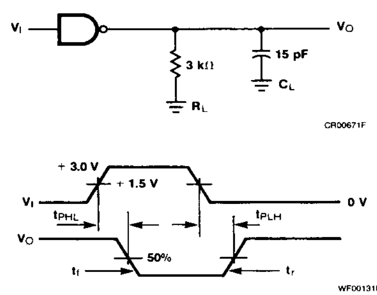


Figure 6 AC Test Circuit and Voltage Waveforms



t_r and t_f are measured 10% to 90%