

# μA9616HQB Triple Line Driver

MIL-STD-883  
July 1986—Rev 2<sup>5</sup>

Aerospace and Defense Data Sheet  
Linear Products

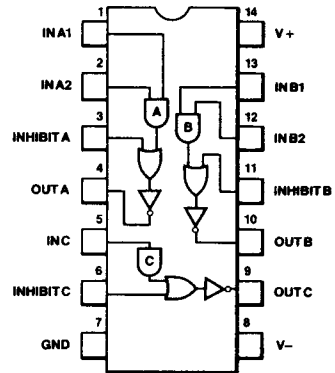
**Description**

The μA9616HQB is a triple line driver which meets the electrical interface specifications of EIA RS-232-C and CCITT V.24 and/or MIL-STD-188C. Each driver converts TTL/DTL logic levels to EIA/CCITT and/or MIL-STD-188C logic levels for transmission between data terminal equipment and data communications equipment. The output slew rate is internally limited and can be lowered by an external capacitor; all output currents are short circuit limited. The outputs are protected against RS-232-C fault conditions. A logic HIGH on the inhibit terminal interrupts signal transfer and forces the output to a  $V_{OL}$  (EIA/CCITT MARK) state.

For the complementary function, see the μA9627QB Dual EIA RS-232-C and MIL-STD-188C Line Receiver.<sup>6</sup>

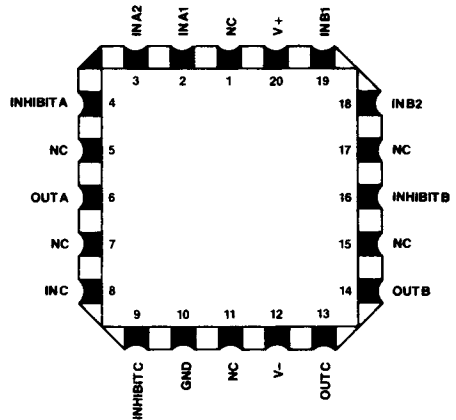
- Internal Slew Rate Limiting
- Meets EIA RS-232-C And CCITT V.24 And/Or MIL-STD-188C
- Logic True Inhibit Function
- Output Short Circuit Current-Limiting
- Output Voltage Levels Independent Of Supply Voltages

**Connection Diagram  
14-Lead DIP  
(Top View)**



DD01950F

**Connection Diagram  
20-Terminal CCP  
(Top View)**



DD01960F

**Order Information**

Part No.	Case/ Finish	Package Code Mil-M-38510, Appendix C
μA9616HDMQB	CA	D-1 14-Lead DIP
μA9616HLMQB	2C	C-2 20-Terminal CCP

**Absolute Maximum Ratings**

Storage Temperature Range	-65°C to +175°C
Operating Temperature Range	-55°C to +125°C
Lead Temperature (soldering, 60 s)	300°C
Internal Power Dissipation <sup>10</sup>	
DIP and CCP	400 mW
Supply Voltage	± 15 V
Input or Inhibit Voltage	-1.5 V to +6.0 V
Output Signal Voltage	± 15 V

**Processing:** MIL-STD-883, Method 5004

**Burn-In:** Method 1015, Condition A, PDA calculated using Method 5005, Subgroup 1

**Quality Conformance Inspection:** MIL-STD-883, Method 5005

**Group A Electrical Tests Subgroups:**

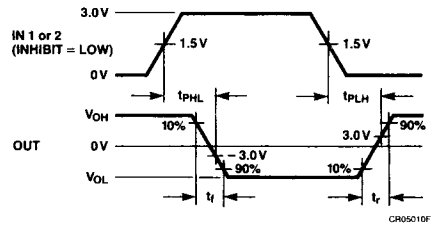
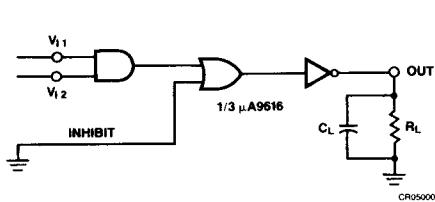
1. Static tests at 25°C
2. Static tests at 125°C
3. Static tests at -55°C
9. AC tests at 25°C
10. AC tests at 125°C
11. AC tests at -55°C

**Group C and D Endpoints: Group A, Subgroup 1**

**Notes**

1. 100% Test and Group A
2. Group A
3. Periodic tests, Group C
4. Guaranteed but not tested
5. When changes occur, FSC will make data sheet revisions available. Contact local sales representative for the latest revision.
6. For more information on device function, refer to the Fairchild Linear Data Book Commercial Section.
7.  $V_{IH}$  and  $V_{IL}$  are guaranteed by the  $V_{OH}$  and  $V_{OL}$  tests.
8. All input and supply leads are grounded.
9. An external capacitor may be needed to meet signal wave shaping requirements of MIL-STD-188C at the applicable modulation rate. No external capacitor is needed to meet RS-232-C.
10. Rating applies to ambient temperatures up to 125°C. Above 125°C ambient, derate linearly at 120°C/W.

**Figure 1 Switching Time Test Circuit and Waveforms**



Omit  $V_{I2}$  for channel 'C'.  
 Input: PRR = 50 kHz  
 Pulse Width = 20 μs  
 $t_r = t_f = 10 \pm 5.0$  ns

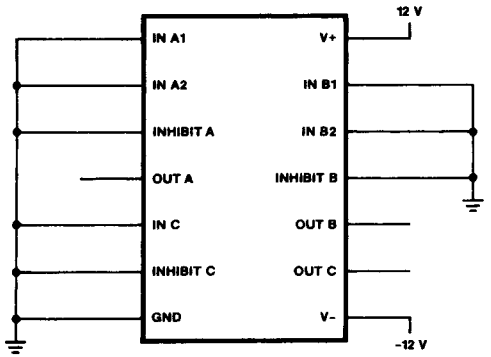
# μA9616HQB

## μA9616HQB

**Electrical Characteristics**  $\pm 10.8 \text{ V} \leq V_{CC} \leq \pm 13.2 \text{ V}$ ,  $R_L = 3.0 \text{ k}\Omega$ , unless otherwise specified.

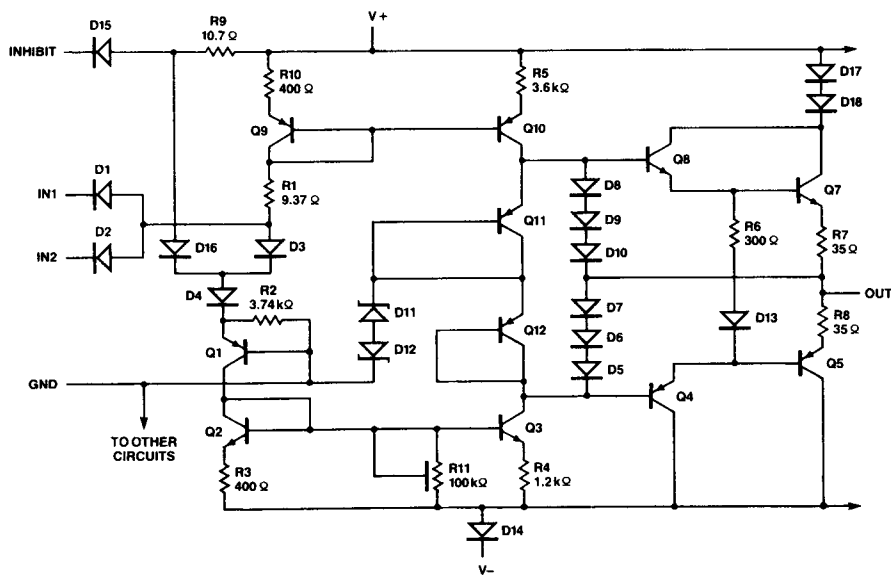
Symbol	Characteristic	Condition	Min	Max	Unit	Note	Subgrp
$V_{OH}$	Output Voltage HIGH	$V_{I1}$ and/or $V_{I2} = V_{INHIBIT} = 0.8 \text{ V}$	5.0	7.0	V	1	1,2,3
$V_{OL}$	Output Voltage LOW	$V_{I1} = V_{I2} = V_{INHIBIT} = 2.0 \text{ V}$	-7.0	-5.0	V	1	1,2,3
$V_{OH}$ to $V_{OL}$	Output Voltage HIGH to Output Voltage LOW Magnitude Matching Error			$\pm 10$	%	1	1,2,3
$I_{OS+}$	Positive Output Short Circuit Current	$R_L = 0 \text{ }\Omega$ , $V_{I1}$ and/or $V_{I2} = V_{INHIBIT} = 0.8 \text{ V}$	-45	-12	mA	1	1,2,3
$I_{OS-}$	Negative Output Short Circuit Current	$R_L = 0 \text{ }\Omega$ , $V_{I1} = V_{I2} = V_{INHIBIT} = 2.0 \text{ V}$	12	60	mA	1	1,2,3
$V_{IH}$	Input Voltage HIGH <sup>7</sup>		2.0		V	1	1,2,3
$V_{IL}$	Input Voltage LOW <sup>7</sup>			0.8	V	1	1,2,3
$I_{IH}$	Input Current HIGH	$V_{I1} = V_{I2} = 2.4 \text{ V}$		40	$\mu\text{A}$	1	1,2,3
		$V_{I1} = V_{I2} = 5.5 \text{ V}$		1.0	mA	1	1,2,3
$I_{IL}$	Input Current LOW	$V_{I1} = V_{I2} = 0.4 \text{ V}$	-1.6		mA	1	1,2,3
I+	Positive Supply Current	$V_{I1} = V_{I2} = V_{INHIBIT} = 0.8 \text{ V}$		25	mA	1	1,2,3
		$V_{I1} = V_{I2} = V_{INHIBIT} = 2.0 \text{ V}$		15	mA	1	1,2,3
I-	Negative Supply Current	$V_{I1} = V_{I2} = V_{INHIBIT} = 0.8 \text{ V}$	-1.0		mA	1	1,2,3
		$V_{I1} = V_{I2} = V_{INHIBIT} = 2.0 \text{ V}$	-25		mA	1	1,2,3
$R_O$	Output Resistance, Power Off <sup>8</sup>	$-2.0 \text{ V} \leq V_O \leq 0.5 \text{ V}$	300		$\Omega$	1	1,2,3
SR+	Positive Slew Rate <sup>9</sup>	$C_L = 2500 \text{ pF}$ , $R_L = 3.0 \text{ k}\Omega$ (See Fig. 1)	4.0	30	V/ $\mu\text{s}$	1	9
			4.0	30	V/ $\mu\text{s}$	2	10,11
SR-	Negative Slew Rate <sup>9</sup>	$C_L = 2500 \text{ pF}$ , $R_L = 3.0 \text{ k}\Omega$ (See Fig. 1)	-30	-4.0	V/ $\mu\text{s}$	1	9
			-30	-4.0	V/ $\mu\text{s}$	2	10,11

Primary Burn-In Circuit



CR04100F

Equivalent Circuit (1/3 of circuit)



EQ00840F