FAIRCHILD
A Schlumberger Company

MIL-STD-883
July 1986—Rev 2[5]

μA9615QB Dual Differential Line Receiver

Aerospace and Defense Data Sheet
Linear Products

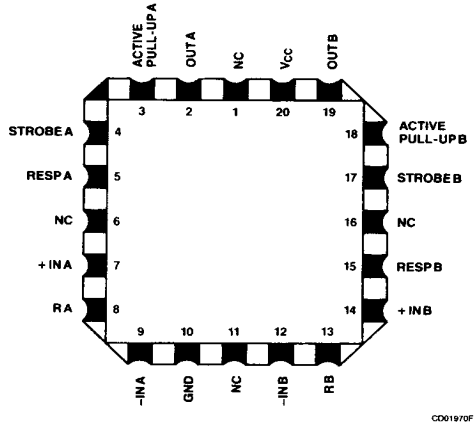
Description

The μA9615QB is a dual differential line receiver designed to receive differential digital data from transmission lines and operate using a single 5 V supply. It can receive differential data in the presence of high level (± 15 V) common mode voltages and deliver undisturbed TTL logic to the output.

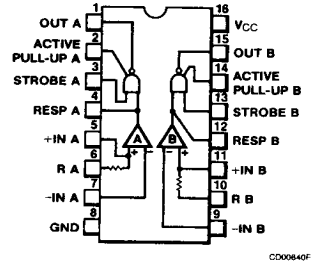
The response time can be controlled by use of an external capacitor. A strobe and a 130 Ω terminating resistor are provided at the inputs. The output has an uncommitted collector with an active pull-up available on an adjacent lead to allow either wired-OR or active pull-up TTL output configuration.[6]

- **TTL Compatible Output**
- **High Common Mode Voltage Range**
- **Choice Of An Uncommitted Collector Or Active Pull-Up**
- **Strobe**
- **Single 5 V Supply**
- **Frequency Response Control**
- **130 Ω Terminating Resistor**

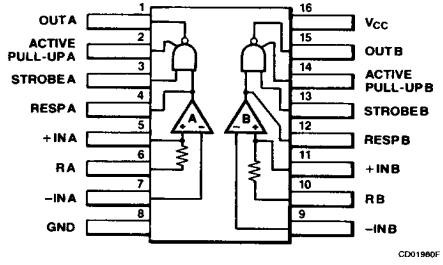
Connection Diagram 20-Terminal CCP (Top View)



Connection Diagram 16-Lead DIP (Top View)



Connection Diagram 16-Lead Flatpak (Top View)



Order Information

Part No.	Case/ Finish	Package Code Mil-M-38510, Appendix C
μA9615DMQB	EA	D-2 16-Lead DIP
μA9615FMQB	FA	F-5 16-Lead Flatpak
μA9615LMQB	2C	C-2 20-Terminal CCP
JAN Product Available		
10404	BEA	D-2 16-Lead DIP
10404	BEB	D-2 16-Lead DIP
10404	BFA	F-5 16-Lead Flatpak
10404	BFB	F-5 16-Lead Flatpak

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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[10]	
DIP, Flatpak, and CCP	400 mW
Supply Voltage Range	−0.5 V to +7.0 V
Input Voltage	
Data Inputs	±20 V
Strobe Inputs	−0.5 V to +5.5 V
Voltage Applied to Outputs for High output state without Active Pull-up	−0.5 V to +13.2 V

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. Connect Output A to Active Pull-up A and connect Output B to Active Pull-up B.
8. V_{DIFF} is a differential input voltage referred from +IN A to −IN A and from +IN B to −IN B.
9. V_{IR} is guaranteed by the V_{OL} and V_{OH} tests.
10. Rating applies to ambient temperatures up to 125°C. Above 125°C ambient, derate linearly at 120°C/W.

Processing: MIL-STD-883, Method 5004

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

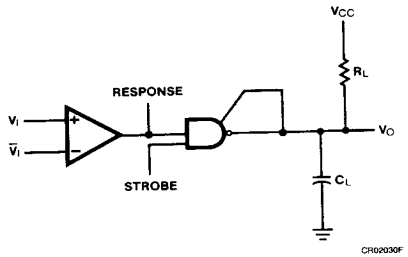
Quality Conformance Inspection: MIL-STD-883, Method 5005

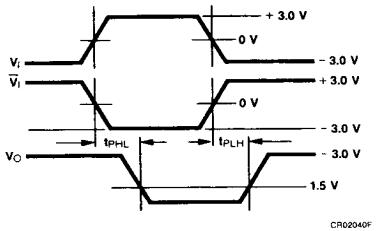
Group A Electrical Tests Subgroups:

1. Static test 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

Figure 1 Switching Time Test Circuit and Waveforms





Use V_I or $\overline{V}_I$, ground other input.

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μA9615QB
Electrical Characteristics

Symbol	Characteristic	Condition	Min	Max	Unit	Note	Subgrp
V_{OL}	Output Voltage LOW[7,8]	V_{CC} = 4.5 V, I_{OL} = 15 mA, V_{DIFF} = 0.5 V		0.40	V	1	1,2,3
V_{OH}	Output Voltage HIGH[7,8]	V_{CC} = 4.5 V, I_{OH} = −5.0 mA, V_{DIFF} = −0.5 V	2.4		V	1	1,2
			2.2		V	1	3
I_{CEX}	Output Leakage Current[8]	V_{CC} = 4.5 V, V_{CEX} = 12 V, V_{DIFF} = 4.5 V		100	μA	1	1
				200	μA	1	2,3
I_{OS}	Output Short Circuit Current[7,8]	V_{CC} = 5.5 V, V_O = 0 V, V_{DIFF} = −0.5 V	−80	−15	mA	1	1,2,3
I_{IL1}	Low Level Input Current (Data Input)	V_{CC} = 5.5 V, V_I = 0.4 V, Other Input = 5.5 V	−0.7		mA	1	1,2
			−0.9		mA	1	3
I_{IL2}	Low Level Input Current[8] (Strobe)	V_{CC} = 5.5 V, V_I = 0.4 V, V_{DIFF} = 0.5 V	−2.4		mA	1	1
			−2.4		mA	4	2,3
I_{IL3}	Low Level Input Current[8] (Response Control)	V_{CC} = 5.5 V, V_{DIFF} = 0.5 V		−1.2	mA	1	1
				−1.2	mA	4	2,3
V_{IR}	Input Voltage Range[9]	V_{CC} = 5.0 V, V_{DIFF} = 1.0 V	−15	15	V	1	1,2,3
I_{IH}	High Level Input Current[8] (Strobe)	V_{CC} = 4.5 V, V_{DIFF} = −0.5 V, V_R = 4.5 V		2.0	μA	1	1
				5.0	μA	1	2,3
R_I	Input Resistor	V_{CC} = 5.0 V, V_I(R) = 1.0 V, +Input = GND	77	167	Ω	1	1
V_{TH}	Differential Input Threshold Voltage	V_{CC} = 4.5 V, V_{CM} = 0 V	−500	500	mV	1	1,2,3
		V_{CC} = 5.0 V, V_{CM} = ±15 V	−1.0	1.0	V	1	1,2,3
I_{CC}	Supply Current	V_{CC} = 5.5 V, −Inputs = 0 V, +Inputs = 0.5 V		50	mA	1	1,2,3
V_{IC}	Input Clamp Voltage (Strobe)	V_{CC} = 4.5 V, I_{IC} = −12 mA	−1.5		V	3	1
B_{VI}	High Level Input Breakdown Voltage (Strobe)	V_{CC} = 5.5 V, I_I = 1.0 mA	5.5		V	4	1,2,3
t_{PLH1}	Propagation Delay to High Level (Inputs A and B to Output)	V_{CC} = 5.0 V, C_L = 30 pF, R_L = 3.9 kΩ *(See Fig. 1)*		50	ns	2	9
				75	ns	3	10, 11
t_{PHL1}	Propagation Delay to Low Level (Inputs A and B to Output)	V_{CC} = 5.0 V, C_L = 30 pF, R_L = 390 Ω *(See Fig. 1)*		50	ns	2	9
				75	ns	3	10, 11
t_{PHL2}	Propagation Delay to Low Level (Strobe to Output)	V_{CC} = 5.0 V, C_L = 30 pF, R_L = 390 Ω		15	ns	4	9
				22	ns	3	10, 11
t_{PLH2}	Propagation Delay to High Level (Strobe to Output)	V_{CC} = 5.0 V, C_L = 30 pF, R_L = 3.9 kΩ		15	ns	4	9
				25	ns	3	10, 11

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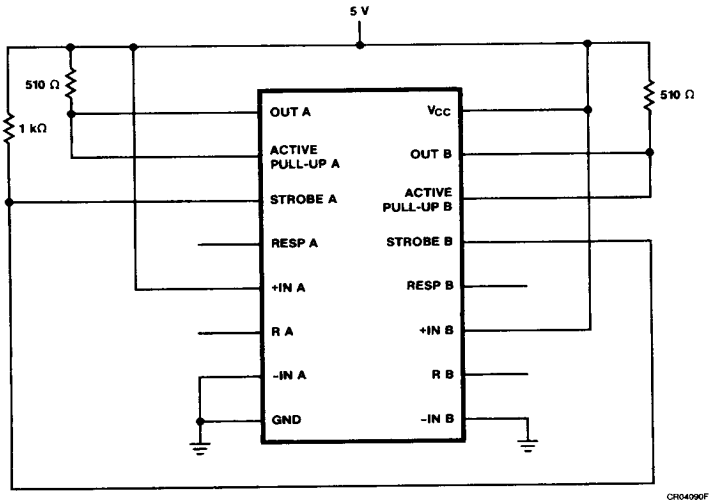
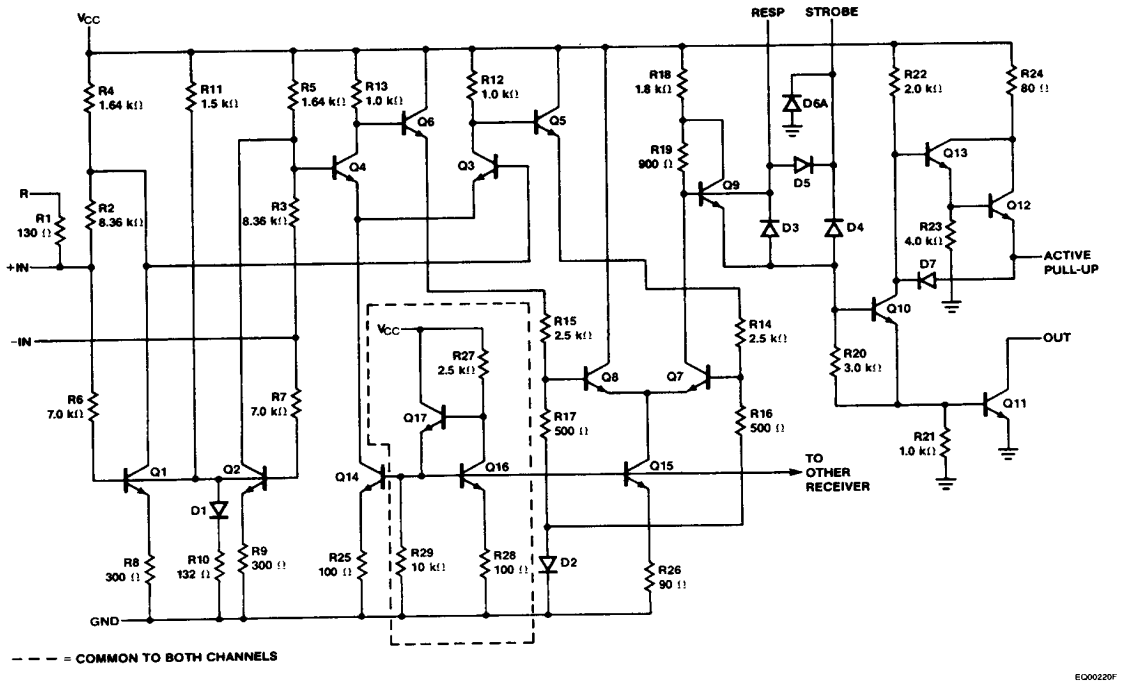
Primary Burn-In Circuit
(38510/10404 may be used by FSC as an alternate)



Equivalent Circuit (1/2 of circuit)



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