FAIRCHILD
A Schlumberger Company

MIL-STD-883
July 1986—Rev 2[5]

μA733QB Differential Video Amplifier

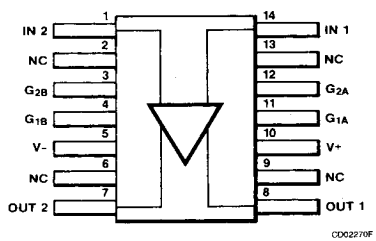
Aerospace and Defense Data Sheet
Linear Products

Description

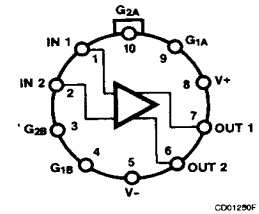
The μA733QB is a monolithic two-stage differential input, differential output video amplifier constructed using the Fairchild Planar Epitaxial process. Internal series shunt feedback is used to obtain wide bandwidth, low phase distortion, and excellent gain stability. Emitter follower outputs enable the device to drive capacitive loads and all stages are current source biased to obtain high power supply and common mode rejection ratios. It offers fixed gains of 10, 100 or 400 without external components, and adjustable gains from 10 to 400 by the use of a single external resistor. No external frequency compensation components are required for any gain option. The device is particularly useful in magnetic tape or disc file systems using phase or NRZ encoding and in high speed thin film or plated wire memories. Other applications include general purpose video and pulse amplifiers where wide bandwidth, low phase shift, and excellent gain stability are required.[6]

- **Wide Bandwidth**
- **High Input Resistance**
- **Selectable Gains Of 10, 100, And 400**
- **No Frequency Compensation Required**

Connection Diagram 14-Lead Flatpak (Top View)

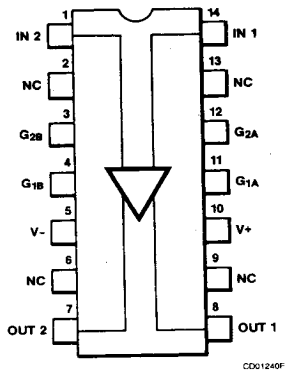


Connection Diagram 10-Lead Can (Top View)



Lead 5 connected to case.

Connection Diagram 14-Lead DIP (Top View)



Order Information

Part No.	Case/ Finish	Package Code Mil-M-38510, Appendix C
μA733DMQB	CA	D-1 14-Lead DIP
μA733HMQB	IC	A-2 10-Lead Can
μA733FMQB	AA	F-1 14-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[9]	
Can and Flatpak	330 mW
DIP	400 W
Supply Voltage	±8 V
Differential Input Voltage	±5 V
Input Voltage	±6 V
Output Current	10 mA

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. VIR is guaranteed by the CMR test.
8. Gain Select leads G1A and G1B are connected together for Gain 1, Gain Select leads G2A and G2B are connected together for Gain 2, and all Gain Select leads are left open for Gain 3.
9. Rating applies to ambient temperatures up to 125°C. Above 125°C ambient, derate linearly at 140°C/W for the Can, 150°C/W for the Flatpak, 120°C/W for the DIP.

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
4. Dynamic tests at 25°C
5. Dynamic tests at 125°C
6. Dynamic tests at −55°C
9. AC tests at 25°C

Group C and D Endpoints: Group A, Subgroup 1

Electrical Characteristics $V_{CC} = \pm 6.0$ V, unless otherwise specified.

Symbol	Characteristic	Condition	Min	Max	Unit	Note	Subgrp
I_{IO}	Input Offset Current			3.0	μA	1	1
				5.0	μA	1	2,3
I_{IB}	Input Bias Current			20	μA	1	1
				40	μA	1	2,3
Z_I	Input Impedance	Gain 2	20		kΩ	1	1
			8.0		kΩ	1	2,3
I_{CC}	Supply Current			24	mA	1	1
				27	mA	1	2,3
CMR	Common Mode Rejection	$V_{CM} = \pm 1.0$ V, Gain 2	60		dB	1	1
			50		dB	1	2,3
V_{IR}	Input Voltage Range[7]		±1.0		V	1	1,2,3
PSRR	Power Supply Rejection Ratio	5.5 V ≤ V+ ≤ 6.5 V, V− = −6.0 V, Gain 2	50		dB	1	1,2,3
V_{OS}	Output Offset Voltage	Gain 1		1.5	V	1	1,2,3
		Gain 2, 3		1.0	V	1	1
				1.2	V	1	2,3
V_{CMO}	Output Common Mode Voltage		2.4	3.4	V	1	1
I_{O-}	Output Sink Current		2.5		mA	1	1
			2.2		mA	1	2,3
A	Differential Voltage Gain[8]	Gain 1	300	500	V/V	1	4
			200	600	V/V	1	5,6
		Gain 2	90	110	V/V	1	4
			80	120	V/V	1	5,6
		Gain 3	9.0	11	V/V	1	4
			8.0	12	V/V	1	5,6
V_{OP}	Output Voltage Swing		3.0		V_{p-p}	1	4
			2.5		V_{p-p}	1	5,6
t_R	Risetime	$R_S = 50\ \Omega$, $V_O = 1\ V_{p-p}$, Gain 2		10	ns	2	9
t_{PD}	Propagation Delay	$R_S = 50\ \Omega$, $V_O = 1\ V_{p-p}$, Gain 2		10	ns	2	9

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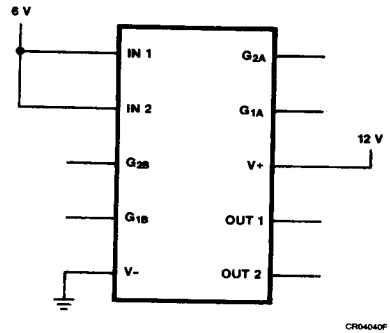
Primary Burn-In Circuit



Equivalent Circuit