1.1 Scope.

This specification covers the detail requirements for a monolithic, four-quadrant multiplier, whose transfer function is

$$W = \frac{XY}{1\,V^2} \times 4\,mA$$

where:
$X = (X_1 - X_2)$
$Y = (Y_1 - Y_2)$
W = Value of output current source; see Figure. 3.2.1.

1.2 Part Number.

The complete part number per Table 1 of this specification is as follows:

Device	Part Number
−1	AD834S(Q)/883B

1.2.3 Case Outline.

See Appendix 1 of General Specification ADI-M-1000: package outline: Q-8.

1.3 Absolute Maximum Ratings. (T_A = +25°C unless otherwise noted)

Supply Voltage	±9 V
Internal Power Dissipation	500 mW
Input Voltages (X1, X2, Y1, Y2)	$\pm V_S$
Operating Temperature Range	−55°C to +125°C
Storage Temperature Range	−65°C to +150°C
Lead Temperature (Soldering 60 sec)	+300°C

1.5 Thermal Characteristics.

Thermal Resistance θ_{JC} = 22°C/W
θ_{JA} = 110°C/W

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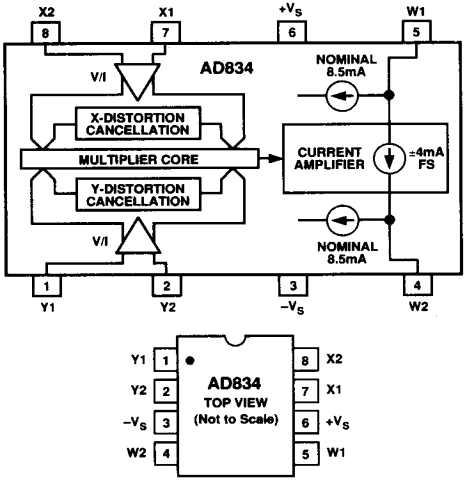
Table 1.

Test	Symbol	Device	Design Limit @ +25°C	Sub Group 1	Sub Group 2, 3	Sub Group 4	Test Condition[1]	Units
Total Error[2] vs. Supplies[3]	TE	−1	2	2	3		−1 V≤X, Y≤+1 V	±% FS
			0.3			0.3	$\pm V_S$ = ±4.5 V to ±6 V	±% FS/V
Linearity[4]	LE	−1	1	1		1		±% FS
Bandwidth	BW	−1	500					MHz
Feedthrough, X	FRR_X	−1	0.3	0.3			X = ±1 V; Y = Nulled	±% FS
Feedthrough, Y	FRR_Y	−1	0.2	0.2			X = Nulled,Y = ±1 V	±% FS
Input Offset Voltage vs. Supplies	V_{IO}	−1	3	3	4		X and Y Inputs	±mV
			300			300	±4 V to ±6 V	±μV/V
Input Clipping Level	V_{CL}	−1	1.1				Differential	±V
Nonlinearity, X	NL_X	−1	0.5			0.5	Y = 1 V; X = ±1 V	±% FS
Nonlinearity, Y	NL_Y	−1	0.3			0.3	X = 1 V; Y = ±1 V	±% FS
Output Offset Current	I_O	−1	60	60	60		Differential; X = Y = 0	±μA
Scaling Current Error	SI	−1	0.04	0.04			From Nominal of 4 mA; Differential	±mA
Supply Current	$+I_S$	−1	14	14	14			mA
	$-I_S$	−1	35	35	35			
Power Supply Operating Range	V_S	−1	4.0 9.0					±V min to max
Zero Signal Current	ZSC (or (ZSI)	−1	8.5				Each Output	mA

NOTES
[1]$\pm V_S$ = ±5 V, T_A = 25°C unless otherwise specified.
[2]Error is defined as the maximum deviation from the ideal output, and expressed as a percentage of the full-scale output.
[3]Both supplies taken simultaneously; sinusoidal input at f ≤ 10 kHz.
[4]Linearity is defined as residual error after compensating for input offset voltage, output offset current and scaling current errors.

3.2.1 Functional Block Diagram and Terminal Assignments.



3.2.4 Microcircuit Technology Group.

This microcircuit is covered by technology group (49).

4.2.1 Life Test/Burn-In Circuit.

Steady state life test is per MIL-STD-883 Method 1005. Burn-in is per MIL-STD-883 Method 1015 test condition (B).