SYSTÈME MOTORISE DE RÉCEPTION PAR SATELLITE

BEP des métiers de l'électronique

SESSION 2004

ÉPREUVE EP1
Première partie

DOCUMENTS RESSOURCE

ACADÉMIE D'ORLEANS-TOURS		
Temps alloué: 10 **heures**	Coefficient : 10	**BEP. Session 2004**
Épreuve : **EP1 Réalisation et expérimentation à partir d'un objet technique**		Spécialité: Métiers de l'électronique
Première partie : 3 heures	coefficient 3	**DOCUMENTS RESSOURCE**

CANAUX DE TELEVISION

Télécom 2B S-01

1	TF1	12690V / 5,80M	Français
2	France 2	12564V / 5,80M	Français
3	France 3	12732V / 5,80M	Français
5	Arte/La Cinquième	12606V / 5,80M	Français
6	M6	12522V / 5,80M	Français

Télécom 2A S-02

4	Canal+ sans décodeur*	12648V / 7,02S	Français
10	Canal+ avec décodeur*	12648V / 7,02S	Français

Astra S-03

20	Der Kinderkanal/Arte	10714H / 7,56M	All/Fra
21	Cartoon Network/TNT	11023H / 7,02S	Anglais
22	CNBC Europe	10729V / 7,02S	Anglais
23	CNN International	11627V / 7,02S	Anglais
24	Eurosport/Quantum	11259V / 7,02M	Anglais
25	MTV Allemagne	11612H / 7,02S	Ang/All
26	Sky News	11377V / 7,02S	Anglais
27	QVC	11038V / 7,02S	Anglais
28	Der Kinderkanal/Arte	10714H / 7,02S	Allemand
29	QVC Allemagne	10759V / 7,02S	Allemand
30	Phoenix	11009V / 7,02S	Allemand
31	H.O.T	10906V / 7,02S	Allemand
32	TM3 / Fashion TV	10936V / 7,02S	Allemand
33	ZDF	10964H / 7,02S	Allemand
34	WDR	11053H / 7,02S	Allemand
35	MDR	11112H / 7,02S	Allemand
36	BR3	11141H / 7,02S	Allemand
37	SW 3 Bade-Wurt.	11186V / 7,02S	Allemand
38	RTL2	11214H / 7,02S	Allemand
39	RTLTélévision	11229V / 7,02S	Allemand
40	Eurosport/Quantum	11259V / 7,20M	Allemand
41	Vox	11273H / 7,02S	Allemand
42	Sat 1	11288V / 7,02S	Allemand
43	Kabel 1	11332H / 7,02S	Allemand
44	3 Sat	11347V / 7,02S	Allemand
45	Super RTL	11391H / 7,02S	Allemand
46	Pro 7	11406V / 7,02S	Allemand
47	ARD	11494H / 7,02S	Allemand
48	DSF	11523H / 7,02S	Allemand
49	Nord 3	11582H / 7,02S	Allemand
50	N-TV	11641H / 7,02S	Allemand
51	SW3 Rhénanie-Palat	10891H / 7,02S	Allemand
52	Hessen Fernsehen	11068V / 7,02S	Allemand
53	BR Alpha	11686V / 7,02S	Allemand
54	ORB Fernsehen	11656V / 7,02S	Allemand
55	Bloomberg TV All.	10818V / 7,02S	Allemand
56	Disc. Home & Leisure*	11082H / 7,02S	Anglais
57	TV Shop/Sky Cin*/Sky Tra*	11127V / 7,02S	Anglais
58	Film Four*	10862H / 7,02S	Anglais
59	Racing Chan.*/Sky Box 2*	10877V / 7,02S	Anglais
60	Channel 5*	10921H / 7,02S	Anglais
61	UK Living* / Fant. Chan*	10979V / 7,02S	Anglais
62	Challenge TV*	10994H / 7,02S	Anglais
63	Zee TV*	10788V / 7,02S	Indien
64	TV Travel Shop	10994H / 7,02S	Anglais
65	Trouble*/Bravo*	11097V / 7,02S	Anglais
66	JSTV*/NHK	10773H / 7,02S	Chinois/Japon.
67	Nickelodeon*/Paramount*	11156V / 7,02S	Anglais
68	Sky Sports 2*	11171H / 7,02S	Anglais
69	Granada +*/Men & Motors*	11244H / 7,02S	Anglais
70	Fox Kids Net.*/Nat. Geogr.*	11303H / 7,02S	Anglais
71	Sky One*	11318V / 7,02S	Anglais
72	MTV UK*	11421H / 7,02S	Anglais
73	Sky Movie Max	11436V / 7,02S	Anglais
74	Sky Premier	11479V / 7,02S	Anglais
75	Sky Sports 1*	11509V / 7,02S	Anglais
76	VH1*	11538V / 7,02S	Anglais
77	UK Gold*	11553H / 7,02S	Anglais
78	Sky Soap*/Hist.*,Sci-Fi Ch.*	11568V / 7,02S	Anglais
79	Disney Ch.*/Sky Off. 1*	11597V / 7,02S	Anglais
80	Sky Sports 3*/Playboy Ch.*	11671H / 7,02S	Anglais
81	Premi_re*	11464H / 7,02S	Allemand
82	Teleclub*	10803H / 7,02S	Allemand
83	Sky Gra.*/Sky Box 4*	10847V / 7,02S	Anglais
84	Christian Channel	11568V / 7,02S	Anglais
85	Screen Shop*/UK horiz*	10832H / 7,02S	Anglais

HOT BIRD S-04

100	Arte / La Cinquième	11079V / 7,02S	Français
101	TV5	11322V / 6,60M	Français
102	Quantum 24	10930H / 7,38M	Français
103	Eurosport/Quantum TV	11390H / 7,02M	Anglais
104	BBC World	11114V / 7,02S	Anglais
105	Quantum 24	10930H / 7,02M	Anglais
106	Arte	11079V / 7,38S	Allemand
107	Eurosport/Quantum TV	11390H / 7,20M	Allemand
108	Deutsche Welle TV	11163V / 7,02S	Allemand
109	Viva II	11178H / 7,02S	Allemand
110	Viva	11148H / 7,02S	Allemand
111	Rai Uno	11363V / 7,02S	Italien
112	Rai Due	11446V / 7,02S	Italien
113	Rai Tre	11530V / 7,02S	Italien
114	MED TV	10853H / 6,60M	Kurde
115	TRT International	10974H / 6,65M	Turc
116	TVE International	11224H / 6,60M	Espagnol
117	TVE Canal 24 Horas	11785H / 6,60M	Espagnol
118	Polsat 2/Bryza TV*	11348H / 6,60M	Polonais
119	Polsat	11431H / 6,60M	Polonais
120	TV Polonia	11474H / 7,02S	Polonais
121	RTL 7	11488V / 7,02S	Polonais
122	TV bulgare	11096H / 7,02S	bulgare
123	MBC	11566H / 7,02S	Arabe
124	EDTV Dubaï	11747H / 6,65M	Arabe
125	ANN	10949V / 6,60M	Arabe
126	RTPI	11727V / 6,60M	Portugais
127	IRIB	12437H / 6,60M	Iranien
128	ERT	12284H / 6,60M	Grec
129	Duna TV	10815H / 6,50M	Hongrois
130	MTV 2	12130H / 6,50M	Hongrois
131	BVN	11280V / 7,02M	Néerlandais
132	Venus TV	11010H / 7,28M	Divers
133	LiveSat	11585V / 6,60M	Français
134	Canal+ Horizons*	11405V / 7,02S	Français
135	Canal+ Pologne*	11516H / 7,02M	Polonais

Eutelsat W2 16°E S-05

149	Syria Satellite Channel	11575H / 6,60M	Arabe
150	RTM 1	10972V / 6,60M	Arabe
151	JSC/ALJazeera	11449H / 6,60M	Arabe
152	TV Algérienne	11095V / 6,60M	Arabe
153	ESC	11516V / 6,60M	Arabe
154	Jamahirya Sat Ch.	11554V / 6,60M	Arabe
155	RTTTV 7	11599V / 6,60M	Arabe
156	Nile TV	11474V / 6,65M	Anglais
157	BHT	11163H / 6,60M	Bosniaque
158	TVRI	11178V / 6,65M	Roumain
159	TVSH	11178V / 6,50M	Albanais

Eutelsat 10°E S-06

162	NTV	10987H / 6,65M	Turc
163	TGRT	11095V / 6,65M	Turc
164	Interstar	11178V / 6,65M	Turc
165	RTS Sat/Pink TV	11596H / 6,60M	Serbe

Turksat 42°E S-07

170	A-TV	10965V / 6,65M	Turc
171	Ciné 5*/Playboy TV*	11006V / 6,65M	Turc
172	Show TV	11048V / 6,60M	Turc
173	TRT international	11093V / 6,65M	Turc
174	Kanal 7	11142V / 6,65M	Turc
175	BRT	11516V / 6,65M	Turc
176	Euro D	11564V / 6,65M	Turc
177	Super Sport* / Maxi TV	11683V / 6,65M	Turc

Sirius II 4,8°E S-09

180	Cyprus SAT	12265H / 6,60M	Chypriote

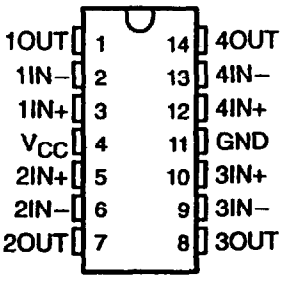
Canaux pour Terminal numérique
Kanalen voor numerieke Terminal

199 Numérique Astra
200 Numérique Hot Bird

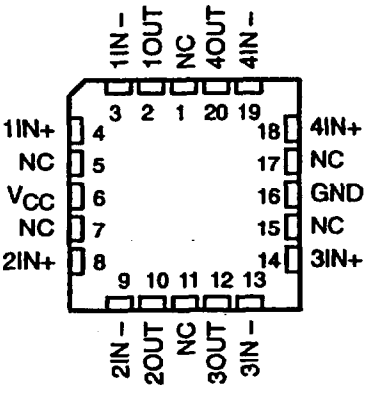
* Chaînes cryptées.

- Wide Range of Supply Voltages:
  Single Supply . . . 3 V to 30 V
  (LM2902 and LM2902Q
  3 V to 26 V), or Dual Supplies
- Low Supply Current Drain Independent of Supply Voltage . . . 0.8 mA Typ
- Common-Mode Input Voltage Range Includes Ground Allowing Direct Sensing Near Ground
- Low Input Bias and Offset Parameters:
  Input Offset Voltage . . . 3 mV Typ
  A Versions . . . 2 mV Typ
  Input Offset Current . . . 2 nA Typ
  Input Bias Current . . . 20 nA Typ
  A Versions . . . 15 nA Typ
- Differential Input Voltage Range Equal to Maximum-Rated Supply Voltage . . . 32 V
  (26 V for LM2902 and LM2902Q)
- Open-Loop Differential Voltage Amplification . . . 100 V/mV Typ
- Internal Frequency Compensation

LM124, LM124A . . . J OR W PACKAGE
ALL OTHERS . . . D, DB, N OR PW PACKAGE
(TOP VIEW)



LM124, LM124A . . . FK PACKAGE
(TOP VIEW)

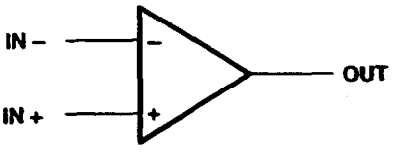


NC – No internal connection

description

These devices consist of four independent high-gain frequency-compensated operational amplifiers that are designed specifically to operate from a single supply over a wide range of voltages. Operation from split supplies is also possible when the difference between the two supplies is 3 V to 30 V (for the LM2902 and LM2902Q, 3 V to 26 V) and V_{CC} is at least 1.5 V more positive than the input common-mode voltage. The low supply current drain is independent of the magnitude of the supply voltage.

symbol (each amplifier)



Applications include transducer amplifiers, dc amplification blocks, and all the conventional operational amplifier circuits that now can be more easily implemented in single-supply-voltage systems. For example, the LM124 can be operated directly from the standard 5-V supply that is used in digital systems and easily provides the required interface electronics without requiring additional ±15-V supplies.

The LM2902Q is manufactured to demanding automotive requirements.

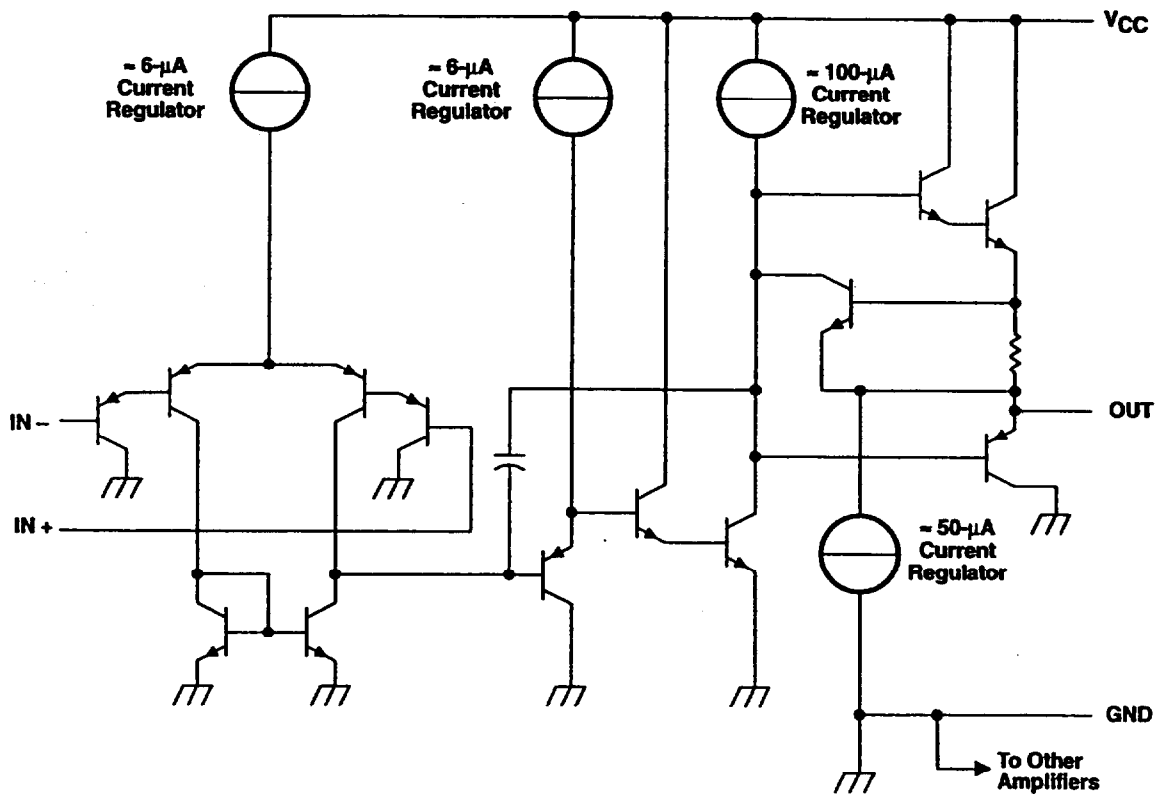
The LM124 and LM124A are characterized for operation over the full military temperature range of –55°C to 125°C. The LM224 and LM224A are characterized for operation from –25°C to 85°C. The LM324 and LM324A are characterized for operation from 0°C to 70°C. The LM2902 and LM2902Q are characterized for operation from –40°C to 125°C.

AVAILABLE OPTIONS

T_A	V_{IO}max AT 25°C	PACKAGED DEVICES							CHIP FORM (Y)
		SMALL OUTLINE (D)†	VERY SMALL OUTLINE (DB)‡	CHIP CARRIER (FK)	CERAMIC DIP (J)	PLASTIC DIP (N)	TSSOP (PW)‡	FLAT PACK (W)	
0°C to 70°C	7 mV	LM324D	LM324DBLE	—	—	LM324N	LM324PWLE	—	LM324Y
	3 mV	LM324AD	—	—	—	LM324AN	LM324APWLE	—	
–25°C to 85°C	5 mV	LM224D	—	—	—	LM224N	—	—	—
	3 mV	LM224AD	—	—	—	LM224AN	—	—	
–40°C to 125°C	7 mV	LM2902D	LM2902DBLE	—	—	LM2902N	LM2902PWLE	—	—
		LM2902QD		—	—	LM2902QN		—	
–55°C to 125°C	5 mV	—	—	LM124FK	LM124J	—	—	LM124W	—
	2 mV	—	—	LM124AFK	LM124AJ	—	—		

† The D package is available taped and reeled. Add the suffix R to the device type (e.g., LM324DR).
‡ The DB and PW packages are only available left-end taped and reeled.

schematic (each amplifier)

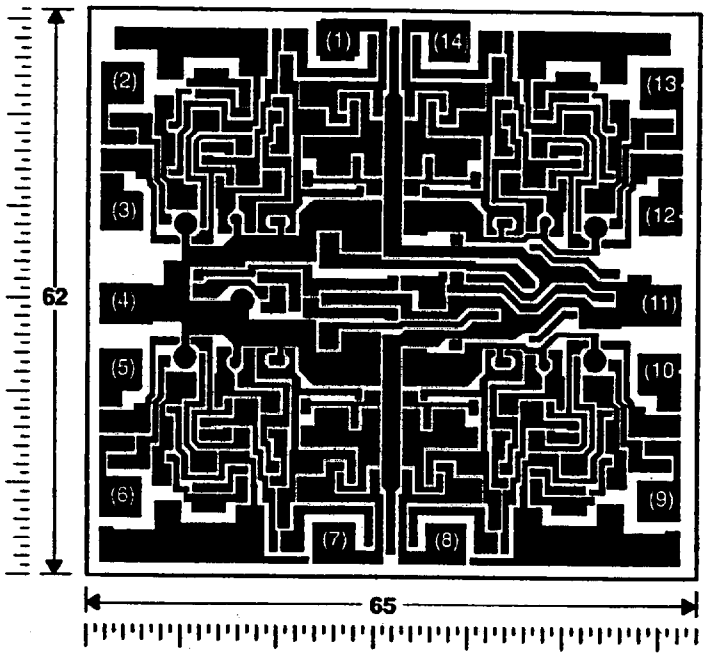


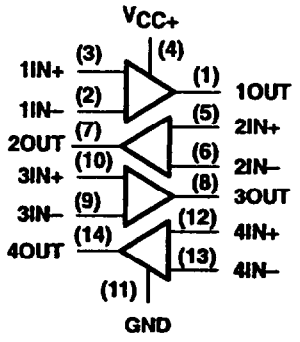
COMPONENT COUNT (total device)	
Epi-FET	1
Transistors	95
Diodes	4
Resistors	11
Capacitors	4

LM324Y chip information

This chip, when properly assembled, displays characteristics similar to the LM324. Thermal compression or ultrasonic bonding may be used on the doped-aluminum bonding pads. Chips may be mounted with conductive epoxy or a gold-silicon preform.

BONDING PAD ASSIGNMENTS





CHIP THICKNESS: 15 TYPICAL

BONDING PADS: 4 × 4 MINIMUM

$T_J$max = 150°C

TOLERANCES ARE ± 10%.

ALL DIMENSIONS ARE IN MILS.

PIN (11) IS INTERNALLY CONNECTED TO BACKSIDE OF CHIP.

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absolute maximum ratings over operating free-air temperature range (unless otherwise noted)†

		LM124, LM124A LM224, LM224A LM324, LM324A	LM2902, LM2902Q	UNIT
Supply voltage, V_{CC} (see Note 1)		32	26	V
Differential input voltage, V_{ID} (see Note 2)		±32	±26	V
Input voltage, V_I (either input)		−0.3 to 32	−0.3 to 26	V
Duration of output short circuit (one amplifier) to ground at (or below) T_A = 25°C, V_{CC} ≤ 15 V (see Note 3)		unlimited	unlimited	
Continuous total dissipation		See Dissipation Rating Table		
Operating free-air temperature range, T_A	LM124, LM124A	−55 to 125		°C
	LM224, LM224A	−25 to 85		
	LM324, LM324A	0 to 70		
	LM2902, LM2902Q		−40 to 125	
Storage temperature range		−65 to 150	−65 to 150	°C
Case temperature for 60 seconds	FK package	260		°C
Lead temperature 1,6 mm (1/16 inch) from case for 60 seconds	J or W package	300	300	°C
Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds	D, DB, N, or PW package	260	260	°C

† Stresses beyond those listed under "absolute maximum ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

NOTES: 1. All voltage values (except differential voltages and V_{CC} specified for the measurement of I_{OS}) are with respect to the network GND.
2. Differential voltages are at IN + with respect to IN −.
3. Short circuits from outputs to V_{CC} can cause excessive heating and eventual destruction.

DISSIPATION RATING TABLE

PACKAGE	T_A ≤ 25°C POWER RATING	DERATING FACTOR	DERATE ABOVE T_A	T_A = 70°C POWER RATING	T_A = 85°C POWER RATING	T_A = 125°C POWER RATING
D	900 mW	7.6 mW/°C	32°C	611 mW	497 mW	N/A
DB	775 mW	6.2 mW/°C	25°C	496 mW	403 mW	N/A
FK	900 mW	11.0 mW/°C	68°C	878 mW	713 mW	273 mW
J (LM124_)	900 mW	11.0 mW/°C	68°C	878 mW	713 mW	273 mW
J (all others)	900 mW	8.2 mW/°C	40°C	654 mW	531 mW	N/A
N	900 mW	9.2 mW/°C	52°C	734 mW	596 mW	N/A
PW	700 mW	5.6 mW/°C	25°C	448 mW	364 mW	N/A
W	900 mW	8.0 mW/°C	37°C	636 mW	516 mW	196 mW

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electrical characteristics at specified free-air temperature, V_{CC} = 5 V (unless otherwise noted)

PARAMETER		TEST CONDITIONS†	T_A‡	LM124, LM224			LM324			LM2902, LM2902Q			UNIT
				MIN	TYP§	MAX	MIN	TYP§	MAX	MIN	TYP§	MAX	
V_{IO}	Input offset voltage	V_{CC} = 5 V to MAX, $V_{IC} = V_{ICR}$min, V_O = 1.4 V	25°C		3	5		3	7		3	7	mV
			Full range			7			9			10	
I_{IO}	Input offset current	V_O = 1.4 V	25°C		2	30		2	50		2	50	nA
			Full range			100			150			300	
I_{IB}	Input bias current	V_O = 1.4 V	25°C		−20	−150		−20	−250		−20	−250	nA
			Full range			−300			−500			−500	
V_{ICR}	Common-mode input voltage range	V_{CC} = 5 V to MAX	25°C	0 to V_{CC} − 1.5			0 to V_{CC} − 1.5			0 to V_{CC} − 1.5			V
			Full range	0 to V_{CC} − 2			0 to V_{CC} − 2			0 to V_{CC} − 2			
V_{OH}	High-level output voltage	R_L = 2 kΩ	25°C	V_{CC} − 1.5			V_{CC} − 1.5						V
		R_L = 10 kΩ	25°C							V_{CC} − 1.5			
		V_{CC} = MAX, R_L = 2 kΩ	Full range	26			26			22			
		V_{CC} = MAX, R_L ≥ 10 kΩ	Full range	27	28		27	28		23	24		
V_{OL}	Low-level output voltage	R_L ≤ 10 kΩ	Full range		5	20		5	20		5	20	mV
A_{VD}	Large-signal differential voltage amplification	V_{CC} = 15 V, V_O = 1 V to 11 V, R_L = ≥ 2 kΩ	25°C	50	100		25	100			100		V/mV
			Full range	25			15			15			
CMRR	Common-mode rejection ratio	$V_{IC} = V_{ICR}$min	25°C	70	80		65	80		50	80		dB
k_{SVR}	Supply-voltage rejection ratio ($\Delta V_{CC}/\Delta V_{IO}$)		25°C	65	100		65	100		50	100		dB
V_{O1}/V_{O2}	Crosstalk attenuation	f = 1 kHz to 20 kHz	25°C		120			120			120		dB
I_O	Output current	V_{CC} = 15 V, V_{ID} = 1 V, V_O = 0	25°C	−20	−30	−60	−20	−30	−60	−20	−30	−60	mA
			Full range	−10			−10			−10			
		V_{CC} = 15 V, V_{ID} = −1 V, V_O = 15 V	25°C	10	20		10	20		10	20		
			Full range	5			5			5			
		V_{ID} = −1 V, V_O = 200 mV	25°C	12	30		12	30			30		µA
I_{OS}	Short-circuit output current	V_{CC} at 5 V, GND at −5 V, V_O = 0	25°C		±40	±60		±40	±60		±40	±60	mA
I_{CC}	Supply current (four amplifiers)	V_O = 2.5 V, No load	Full range		0.7	1.2		0.7	1.2		0.7	1.2	mA
		V_{CC} = MAX, V_O = 0.5 V_{CC}, No load	Full range		1.4	3		1.4	3		1.4	3	

† All characteristics are measured under open-loop conditions with zero common-mode input voltage unless otherwise specified. MAX V_{CC} for testing purposes is 26 V for LM2902 and LM2902Q, 30 V for the others.

‡ Full range is −55°C to 125°C for LM124, −25°C to 85°C for LM224, 0°C to 70°C for LM324, and −40°C to 125°C for LM2902 and LM2902Q.

§ All typical values are at T_A = 25°C.

electrical characteristics at specified free-air temperature, V_{CC} = 5 V (unless otherwise noted)

PARAMETER		TEST CONDITIONS†		T_A‡	LM124A			LM224A			LM324A			UNIT
					MIN	TYP§	MAX	MIN	TYP§	MAX	MIN	TYP§	MAX	
V_{IO}	Input offset voltage	V_{CC} = 5 V to 30 V, $V_{IC} = V_{ICR}$min, V_O = 1.4 V		25°C			2		2	3		2	3	mV
				Full range			4			4			5	
I_{IO}	Input offset current	V_O = 1.4 V		25°C			10			2	15	2	30	nA
				Full range			30			30			75	
I_{IB}	Input bias current	V_O = 1.4 V		25°C			−50		−15	−80		−15	−100	nA
				Full range			−100			−100			−200	
V_{ICR}	Common-mode input voltage range	V_{CC} = 30 V		25°C	0 to V_{CC}−1.5			0 to V_{CC}−1.5			0 to V_{CC}−1.5			V
				Full range	0 to V_{CC}−2			0 to V_{CC}−2			0 to V_{CC}−2			
V_{OH}	High-level output voltage	R_L = 2 kΩ		25°C	V_{CC}−1.5			V_{CC}−1.5			V_{CC}−1.5			V
		V_{CC} = 30 V,	R_L = 2 kΩ	Full range	26			26			26			
		V_{CC} = 30 V,	R_L ≥ 10 kΩ	Full range	27			27	28		27	28		
V_{OL}	Low-level output voltage	R_L ≤ 10 kΩ		Full range			20		5	20		5	20	mV
A_{VD}	Large-signal differential voltage amplification	V_{CC} = 15 V, V_O = 1 V to 11 V, R_L = ≥ 2 kΩ		Full range	25			25			15			V/mV
CMRR	Common-mode rejection ratio	$V_{IC} = V_{ICR}$min		25°C	70			70	80		65	80		dB
k_{SVR}	Supply-voltage rejection ratio ($\Delta V_{CC}/\Delta V_{IO}$)			25°C	65			65	100		65	100		dB
V_{O1}/V_{O2}	Crosstalk attenuation	f = 1 kHz to 20 kHz		25°C		120			120			120		dB
I_O	Output current	V_{CC} = 15 V, V_O = 0	V_{ID} = 1 V,	25°C	−20			−20	−30	−60	−20	−30	−60	mA
				Full range	−10			−10			−10			
		V_{CC} = 15 V, V_O = 15 V	V_{ID} = −1 V,	25°C	10			10	20		10	20		
				Full range	5			5			5			
		V_{ID} = −1 V,	V_O = 200 mV	25°C	12			12	30		12	30		µA
I_{OS}	Short-circuit output current	V_{CC} at 5 V, V_O = 0	GND at −5 V,	25°C		±40	±60		±40	±60		±40	±60	mA
I_{CC}	Supply current (four amplifiers)	V_O = 2.5 V, No load		Full range		0.7	1.2		0.7	1.2		0.7	1.2	mA
		V_{CC} = 30 V, No load	V_O = 15 V,	Full range		1.4	3		1.4	3		1.4	3	

† All characteristics are measured under open-loop conditions with zero common-mode input voltage unless otherwise specified.
‡ Full range is −55°C to 125°C for LM124A, −25°C to 85°C for LM224A, and 0°C to 70°C for LM324A.
§ All typical values are at T_A = 25°C.

electrical characteristics, V_{CC} = 5 V, T_A = 25°C (unless otherwise noted)

PARAMETER		TEST CONDITIONS†			LM324Y			UNIT
					MIN	TYP	MAX	
V_{IO}	Input offset voltage	V_{CC} = 5 V to MAX,	$V_{IC} = V_{ICR}$min,	V_O = 1.4 V		3	7	mV
I_{IO}	Input offset current					2	50	nA
I_{IB}	Input bias current					−20	−250	nA
V_{ICR}	Common-mode input voltage range	V_{CC} = 5 V to MAX			0 to V_{CC}−1.5			V
V_{OH}	High-level output voltage	R_L = 10 kΩ			V_{CC}−1.5			V
V_{OL}	Low-level output voltage	$R_L \le$ 10 kΩ				5	20	mV
A_{VD}	Large-signal differential voltage amplification	V_{CC} = 15 V,	V_O = 1 V to 11 V,	$R_L \ge$ 2 kΩ	15	100		V/mV
CMRR	Common-mode rejection ratio	$V_{IC} = V_{ICR}$min			65	80		dB
k_{SVR}	Supply-voltage rejection ratio ($\Delta V_{CC\pm}/\Delta V_{IO}$)				65	100		dB
I_O	Output current	V_{CC} = 15 V,	V_{ID} = 1 V,	V_O = 0	−20	−30	−60	mA
		V_{CC} = 15 V,	V_{ID} = −1 V,	V_O = 15 V	10	20		
		V_{ID} = 1 V,	V_O = 200 mV		12	30		
I_{OS}	Short-circuit output current	V_{CC} at 5 V,	GND at −5 V,	V_O = 0		±40	±60	mA
I_{CC}	Supply current (four amplifiers)	V_O = 2.5 V_{CC},	No load			0.7	1.2	mA
		V_{CC} = MAX,	V_O = 0.5 V_{CC},	No load		1.1	3	

† All characteristics are measured under open-loop conditions with zero common-mode input voltage unless otherwise specified. MAX V_{CC} for testing purposes is 30 V.

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