DATA SHEET
MARCH 2003

No. 00005
REV 1-03

REPLACEMENT
of **LM324**

MIK324

LOW POWER QUAD OPERATIONAL AMPLIFIERS

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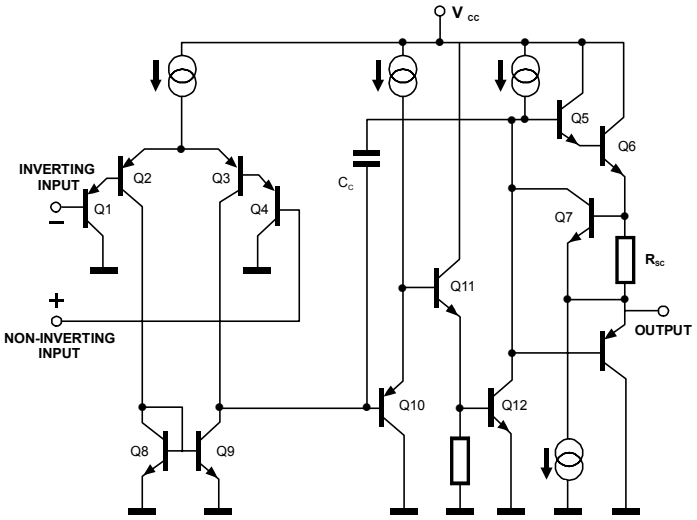
GENERAL DESCRIPTION

The MIK324 consists of four independent, high gain, internally frequency compensated operational amplifiers which were designed specifically to operate from a single power supply over a wide range of voltages. Operation from split power supplies is also possible and the low power supply current drain is independent of the magnitude of the power supply voltage.
Application areas include transducer amplifiers, DC gain blocks and all the conventional op amp circuits which now can be more easily implemented in single power supply systems.
For example, the MIK324 can be directly operated off of the standard +5V power supply voltage which is used in digital systems and will easily provide the required interface electronics without requiring the additional ±15V power supplies.

FEATURES

- Wide range of supply voltages 3V to 30V
- Low supply current drain independent of supply voltage 1.5mA TYP.
- Low input biasing current
- Low input offset voltage and offset current
- Input common-mode voltage range includes ground
- Differential input voltage range equal to the power supply voltage
- DC voltage gain 100V/mV TYP.
- Internally frequency compensation

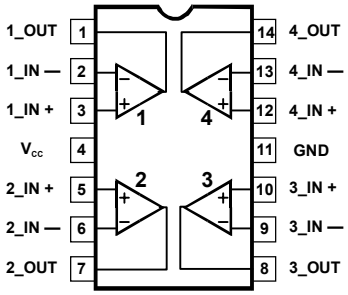
SCHEMATIC DIAGRAM (¼ MIK324)



SOP-14  **MIK324M**

DIP-14  **MIK324N**

PIN CONNECTIONS
(top view)



ABSOLUTE MAXIMUM RATINGS

SYMBOL	PARAMETER	VALUE	UNIT
POWER SUPPLY VOLTAGE			
V_{CC}	Single supply	32	V
V_{CC}, V_{EE}	Split supply	±16	V
V_{IDR}	Input differential voltage range	±32	V
I_{OS}	Output short-circuit to GND	Continuous	
T_J	Junction temperature	150	ºC
Tstg	Storage Temperature	-65 to +150	ºC
T_A	Operating ambient temperature range	0 to +70	ºC

ELECTRICAL CHARACTERISTICS

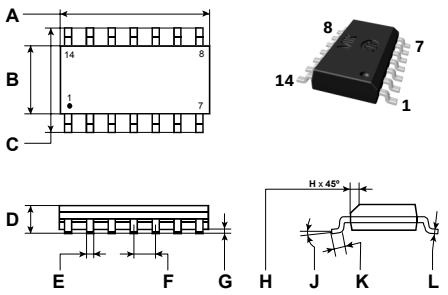
at specified free-air temperature, Vcc = 5 V (unless otherwise noted)

SYMBOL	PARAMETER	TEST CONDITIONS*		MIN	TYP	MAX	UNIT
V_{IO}	Input offset voltage	Vcc = 5 V to MAX, $V_{IC} = V_{ICR}$ min, Vo=1.4 V	25 °C		3	7	mV
			Full range			9	
αV_{IO}	Average temperature coefficient of input offset voltage		Full range		7		µV/°C
I_{IO}	Input offset current	Vo=1.4 V	25 °C		2	50	nA
			Full range			150	
αI_{IO}	Average temperature coefficient of input offset current		Full range		10		pA/°C
I_{IB}	Input bias current	Vo=1.4 V	25 °C		-20	-250	nA
			Full range			-500	
V_{ICR}	Common-mode input voltage range	Vcc = 5 V to MAX	25° C	0 to Vcc-1.5			V
			Full range	0 to Vcc–2.0			
V_{OH}	High-level output voltage	R_L =2 kΩ	25 °C	Vcc-1.5			V
		Vcc = MAX, R_L=2 kΩ	Full range	26			
		Vcc = MAX, R_L = 10 kΩ	Full range	27	28		
V_{OL}	Low-level output voltage	R_L = 10 kΩ	Full range		5	20	mV
A_{VD}	Large-signal differential voltage amplification	Vcc = 15 V, Vo=1V to 11 V, $R_L \geq 2$ kΩ	25 °C	25	100		V/mV
			Full range	15			
CMRR	Common-mode rejection ratio	Vcc = 5 V to MAX, $V_{IC} = V_{ICR}$ min	25 °C	65	80		dB
k_{SVR}	Supply voltage rejection ratio ($\Delta Vcc/\Delta V_{IO}$)	Vcc = 5 V to MAX	25 °C	65	100		dB
$^{Vo1}/_{Vo2}$	Crosstalk attenuation	f=1 kHz to 20 kHz	25 °C		120		dB
Io	Output current	Vcc = 15V, V_{ID} =1V, V_O= 0	25 °C	-20	-30		mA
			Full range	-10			
		Vcc = 15 V, V_{ID} = - 1 V, Vo = 15V	25 °C	10	20		
			Full range	5			
		V_{ID} = - 1 V, Vo =200 mV	25 °C	12	30		µA
I_{OS}	Short-circuit output current	Vcc at 5 V, GND at -5 V, Vo=0	25 °C		±40	±60	mA
I_{CC}	Supply current (two amplifiers)	Vo - 2.5 V, No load	Full range		1.5	2.4	mA
		Vcc = MAX, Vo = 0.5Vcc, No load	Full range		1.1	3	

* All characteristics are measured under open-loop conditions with zero common-mode input voltage unless otherwise specified. “MAX” Vcc for testing purposes is 30 V. Full range is 0 °C to 70 °C.

PHYSICAL DIMENSIONS AND MARKING DIAGRAMS

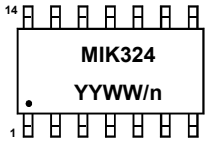
SOP-14 PACKAGE



DIM	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	8.55	8.75	0.337	0.344
B	3.80	4.00	0.150	0.157
C	5.80	6.20	0.228	0.244
D	1.35	1.75	0.054	0.068
E	0.35	0.49	0.014	0.019
F	1.27 BSC		0.050 BSC	
G	0.10	0.25	0.004	0.009
H	0.25	0.50	0.010	0.019
J	0°	7°	0°	7°
K	0.40	1.25	0.016	0.049
L	0.19	0.25	0.008	0.009

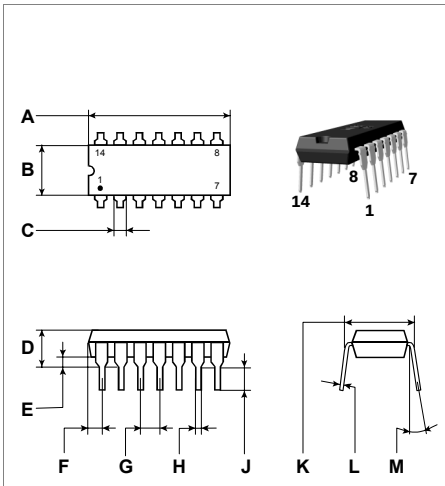
SOP-14

MARKING DIAGRAM



YY	Year
WW	Work Week
n	Assembly Location

DIP-14 PACKAGE



DIM	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	18.16	18.80	0.715	0.770
B	6.10	6.60	0.240	0.260
C	1.02	1.78	0.040	0.070
D	3.69	4.69	0.145	0.185
E	0.38	1.01	0.015	0.039
F	1.32	2.41	0.052	0.095
G	2.54 BSC		0.100 BSC	
H	0.38	0.53	0.015	0.021
J	2.92	3.43	0.115	0.135
K	7.37	7.87	0.290	0.310
L	0.20	0.38	0.008	0.015
M	—	10°	—	10°

DIP-14

MARKING DIAGRAM

YY	Year
WW	Work Week
n	Assembly Location

ORDERING INFORMATION

ORDERING NUMBER	PACKAGE	OPERATING TEMPERATURE RANGE	SHIPPING
MIK324**M**	SOP-14	0 to +70ºC	Tube/Rail and Tape/Reel
MIK324**N**	DIP-14		Tube/Rail and Tape/Reel

NOTE: THE FORM OF PACKING IS STIPULATED IN THE CONTRACT

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