

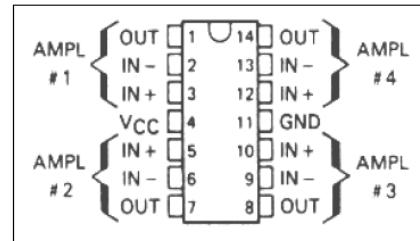
**DESCRIPTION**

The 324M2K 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.

**FEATURES**

- Wide range of supply voltages
- Low supply current drain independent of supply voltage
- 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 100 V/ mV Typ
- Internally frequency compensation

**PACKAGE INFORMATION****ELECTRICAL CHARACTERISTICS**

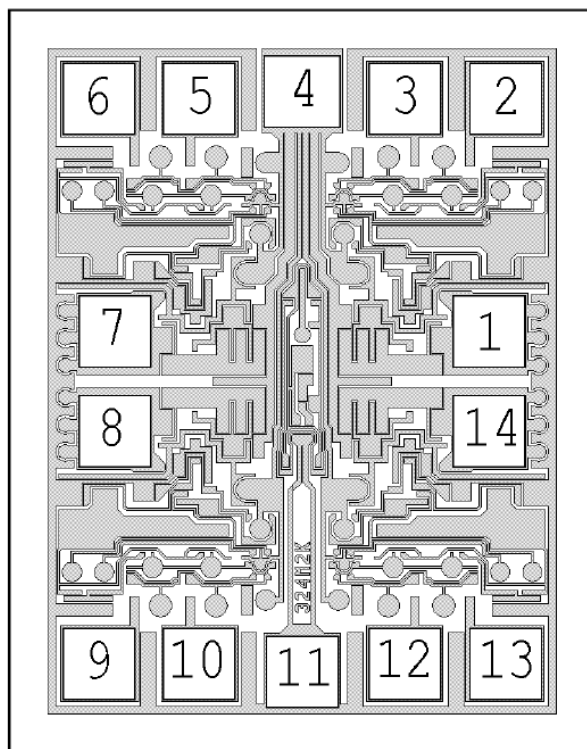
at specified free-air temperature,  $V_{CC} = 5V$  (unless otherwise noted)

PARAMETER	TEST CONDITIONS*	25 °C	324M2K			UNIT
			MIN	TYP	MAX	
$V_{io}$ Input offset voltage	$V_{CC} = 5V$ to MAX, $V_{io} = V_{ICR}$ min, $V_o = 1.4V$	25 °C		3	7	mV
		Full temperature range			9	
$\alpha V_{io}$ Average temperature coefficient of input offset voltage		Full temperature range		7		$\mu V/^\circ C$
$I_{io}$ Input offset current	$V_o = 1.4V$	25 °C		2	50	nA
		Full temperature range			150	
$\alpha I_{io}$ Average temperature coefficient of input offset current		Full temperature range		10		$\mu A/^\circ C$
$I_{ib}$ Input bias current	$V_o = 1.4V$	25 °C		-20	-250	nA
		Full temperature range			-500	
$V_{ICR}$ Common-mode input voltage range	$V_{CC} = 5V$ to MAX	25 °C	0 to $V_{CC} - 1.5$			V
		Full temperature range	0 to $V_{CC} - 2$			
$V_{OH}$ High-level output voltage	$R_L = 2\text{ k}\Omega$ $V_{CC} = \text{MAX}$ , $R_L = 2\text{ k}\Omega$	25 °C	$V_{CC} - 1.5$			V
	$V_{CC} = \text{MAX}$ , $R_L = 10\text{ k}\Omega$	Full temperature range	26			
		Full temperature range	27	28		
$V_{OL}$ Low-level output voltage	$R_L = 10\text{ k}\Omega$	Full temperature range		5	20	mV
$A_{VD}$ Large-signal differential voltage amplification	$V_{CC} = 15V$ , $V_o = 1V$ to $11V$ , $R_L \geq 2\text{ k}\Omega$	25 °C	25	100		V/mV
		Full temperature range	15			
CMRR Common-mode rejection ratio	$V_{CC} = 5V$ to MAX, $V_{ic} = V_{ICR}$ min	25 °C	65	80		dB
$k_{SVR}$ Supply voltage rejection ratio ( $\Delta V_{CC}/\Delta V_{io}$ )	$V_{CC} = 5V$ to MAX	25 °C	65	100		dB
$V_o1/V_o2$ Crosstalk attenuation	$f = 1\text{ kHz}$ to $20\text{ kHz}$	25 °C		120		dB
$I_o$ Output current	$V_{CC} = 15V$ , $V_{io} = 1V$ , $V_o = 0$	25 °C	-20	-30		mA
		Full temperature range	-10			
	$V_{CC} = 15V$ , $V_{io} = -1V$ , $V_o = 15V$	25 °C	10	20		
		Full temperature range	5			
	$V_{io} = -1V$ , $V_o = 200\text{ mV}$	25 °C	12	30		$\mu A$
$I_{os}$ Short-circuit output current	$V_{CC}$ at $5V$ , GND at $-5V$ , $V_o = 0$	25 °C		$\pm 40$	$\pm 60$	mA
$I_{CC}$ Supply current (four amplifiers)	$V_o = 2.5V$ , No load	Full temperature range		1.5	2.4	mA
	$V_{CC} = \text{MAX}$ , $V_o = 0.5V_{CC}$ , No load	Full temperature range		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. Operating temperature  $-40 + 85^\circ C$ , MAX Junction temperature  $+125^\circ C$ .

## PAD LOCATION 324M2K

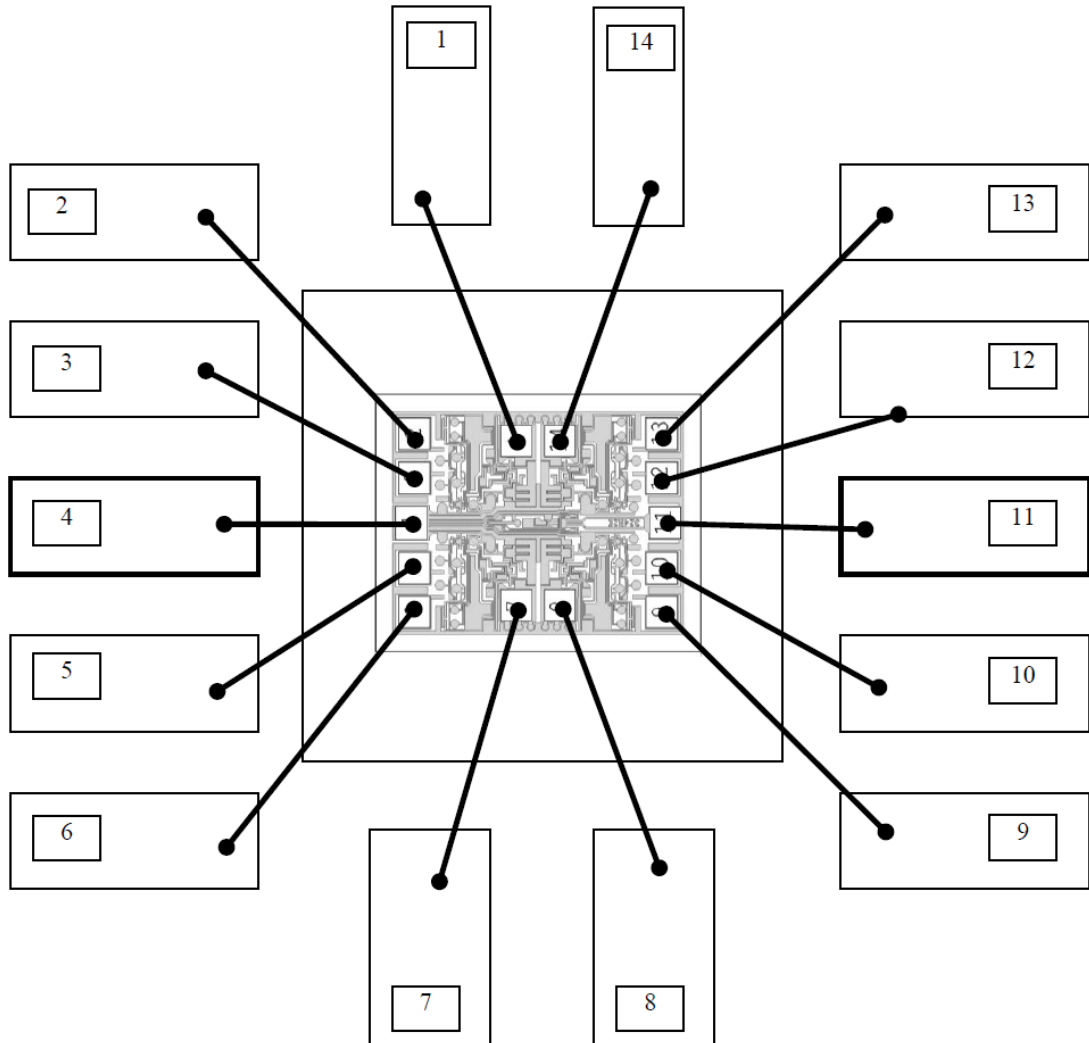


Chip Size: 0.73 x 0.93 mm

## PAD LOCATION COORDINATES

PAD N	Pad Name	Coordinates, $\mu\text{m}$		Pad Size, $\mu\text{m}$	
		X	Y	X	Y
1	# 1 OUT	597	527	90	90
2	#1 IN-	617	817	90	90
3	#1 IN+	492	817	90	90
4	VCC	365	826	90	90
5	#2 IN+	237	817	90	90
6	#2 IN-	112	817	90	90
7	#2 OUT	132	527	90	90
8	# 3 OUT	132	402	90	90
9	#3 IN-	112	112	90	90
10	#3 IN+	237	112	90	90
11	GND	365	102	90	90
12	#4 IN+	492	112	90	90
13	#4 IN-	617	112	90	90
14	#4 OUT	597	402	90	90

Bonding Diagram



The appearance complies with the requirements of the company standards.