

## LINEAR INTEGRATED CIRCUITS

### DESCRIPTION

The  $\mu A711$  High Speed Dual Voltage Comparator features low offset voltage, high sensitivity and a wide input voltage range. It is ideal for use as a bi-directional limit detector in automatic test equipment.

Due to fast response and strobe control capabilities the  $\mu A711$  performs well as a sense amplifier in core memory systems.

The  $\mu A711$  is specified over the military temperature range of  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$ . The  $\mu A711$  is specified over the commercial/industrial temperature range of  $0^{\circ}\text{C}$  to  $+75^{\circ}\text{C}$ .

### FEATURES

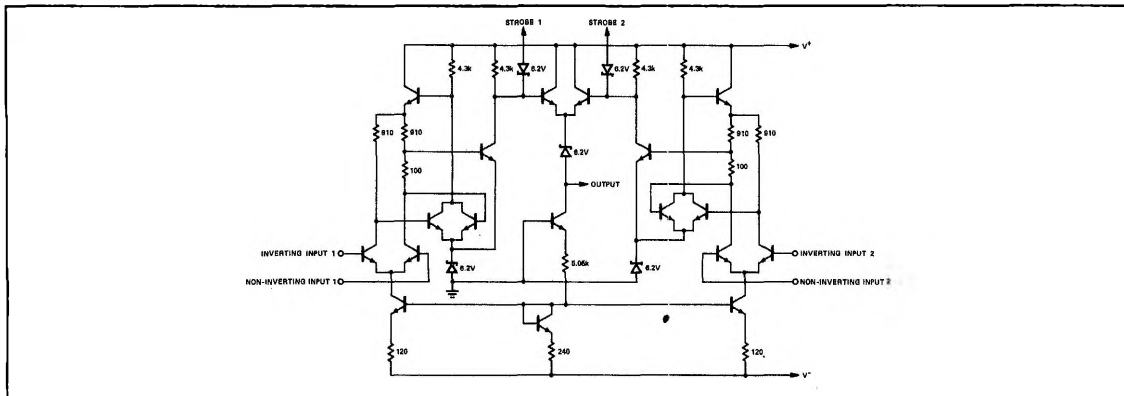
- **FAST RESPONSE** – 40ns
- **HIGH SENSITIVITY** – 1.5V/mV
- **LOW OFFSET VOLTAGE TEMPERATURE COEFFICIENT** –  $5\mu\text{V}/^{\circ}\text{C}$
- **HIGH INPUT VOLTAGE RANGE** –  $\pm 5.0\text{V}$

### ABSOLUTE MAXIMUM RATINGS

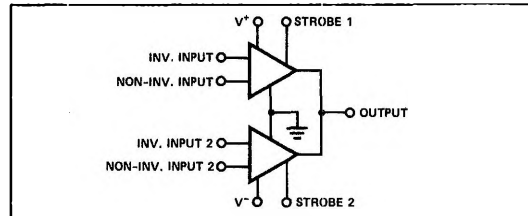
Positive Supply Voltage	+14.0V
Negative Supply Voltage	-7.0V
Peak Output Current	50mA
Differential Input Voltage	$\pm 5.0\text{V}$
Input Voltage	$\pm 7.0\text{V}$
Internal Power Dissipation (Note 4)	
TO-99	300mW
Operating Temperature Range	
$\mu A711$	$-55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$
$\mu A711\text{C}$	$0^{\circ}\text{C}$ to $+75^{\circ}\text{C}$
Storage Temperature Range	$-65^{\circ}\text{C}$ to $+150^{\circ}\text{C}$
Lead Temperature (Soldering, 60 sec)	$300^{\circ}\text{C}$

Maximum ratings are limiting values above which serviceability may be impaired.

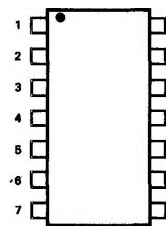
### BASIC CIRCUIT SCHEMATIC



### PIN CONFIGURATION



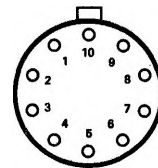
### A PACKAGE (Top View)



ORDER PART NOS.  
 $\mu A711\text{A}/\mu A711\text{CA}$

1. NC
2. Inverting Input 1
3. Non-Inverting Input 1
4.  $V^-$
5. Non-Inverting Input 2
6. Inverting Input 2
7. NC
8. NC
9. Strobe 2
10. Output
11.  $V^+$
12. Ground
13. Strobe 1
14. NC

### K PACKAGE



ORDER PART NOS.  
 $\mu A711\text{K}/\mu A711\text{CK}$

1. Ground
2. Strobe 1
3. Inverting Input 1
4. Non-Inverting Input 1
5.  $V^-$
6. Non-Inverting Input 2
7. Inverting Input 2
8. Strobe 2
9. Output
10.  $V^+$

# LINEAR INTEGRATED CIRCUITS ■ $\mu$ A711

## ELECTRICAL CHARACTERISTICS (Note 1)

(Standard Conditions:  $T_A = +25^\circ\text{C}$ ,  $V^+ = 12.0\text{V}$ ,  $V^- = -6.0\text{V}$  unless otherwise specified)

PARAMETERS	TEST CONDITIONS	MIN		TYP		MAX		UNITS
		$\mu$ A711	711C	$\mu$ A711	711C	$\mu$ A711	711C	
Input Offset Voltage	$V_{out} = +1.4\text{V}$ , $R_S \leq 200\Omega$ , $V_{cm} = 0$			1.0	1.0	3.5	5.0	mV
	$V_{out} = +1.4\text{V}$ , $R_S \leq 200\Omega$			1.0	1.0	5.0	7.5	mV
Input Offset Current	$V_{out} = +1.4\text{V}$			0.5	0.5	10.0	15.0	$\mu\text{A}$
Input Bias Current				25	25	75	100	$\mu\text{A}$
Voltage Gain		750	700	1500	1500			
Response Time	Note 2			40	40			ns
Strobe Release Time				12	12			ns
Input Common Mode Voltage Range	$V^- = -7.0\text{V}$	$\pm 5.0$	$\pm 5.0$					V
Differential Input Voltage Range		$\pm 5.0$	$\pm 5.0$					V
Output Resistance				200	200			$\Omega$
Positive Output Level	$V_{in} \geq 10\text{mV}$			4.5	4.5	5.0	5.0	V
Loaded Positive Output Level	$V_{in} \geq 10\text{mV}$ , $I_o = 5\text{mA}$	2.5	2.5	3.5	3.5			V
Negative Output Level	$V_{in} \geq 10\text{mV}$	-1.0	-1.0	-0.5	-0.5	0	0	V
Strobed Output Level	$V_{strobe} < 0.3\text{V}$	-1.0	-1.0			0	0	V
Output Sink Current	$V_{in} \geq 10\text{mV}$ , $V_{out} \geq 0$	0.5	0.5	0.8	0.8			mA
Strobe Current	$V_{strobe} = 100\text{mV}$			1.2	1.2	2.5	2.5	mA
Positive Supply Current	$V_{out} \leq 0$			8.6	8.6			mA
Negative Supply Current				3.9	3.9			mA
Power Consumption				130	130	200	200	mW

The following specifications apply over the temperature ranges of:  $-55^\circ\text{C} \leq T_A \leq +125^\circ\text{C}$  for the  $\mu$ A711  
 $0^\circ\text{C} \leq T_A \leq +75^\circ\text{C}$  for the  $\mu$ A711C

Input Offset Voltage	$R_S \leq 200\Omega$ , $V_{cm} = 0$ , $R_S \leq 200\Omega$	Note 3				4.5	6.0	mV
Input Offset Current		Note 3				6.0	10.0	mV
Input Bias Current						20	25	$\mu\text{A}$
Temperature Coefficient of Input Offset Voltage				5.0	5.0	150	150	$\mu\text{A}/^\circ\text{C}$
Voltage Gain			500	500				

Recommended Operating Supply Voltages:  $V^+ = 12\text{V}$ ,  $V^- = -6\text{V}$

### NOTES:

- All voltages are referenced to pin 1.
- The response time specified is for a 100mV input step, with a 5mV overdrive.
- The Input Offset Voltage and Input Offset Current are specified for a logic threshold voltage of: 1.8V at  $0^\circ\text{C}$ .
 

$\mu$ A711	$\mu$ A711C
1.8V at $0^\circ\text{C}$	1.5V at $0^\circ\text{C}$
1.4V at $+25^\circ\text{C}$	1.4V at $+25^\circ\text{C}$
1.0V at $+125^\circ\text{C}$	1.2V at $+75^\circ\text{C}$
- Rating applies for temperatures up to:  $\mu$ A711 -  $+125^\circ\text{C}$   
 $\mu$ A711C -  $+75^\circ\text{C}$