

LM711/LM711C Dual Comparator

General Description

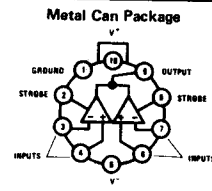
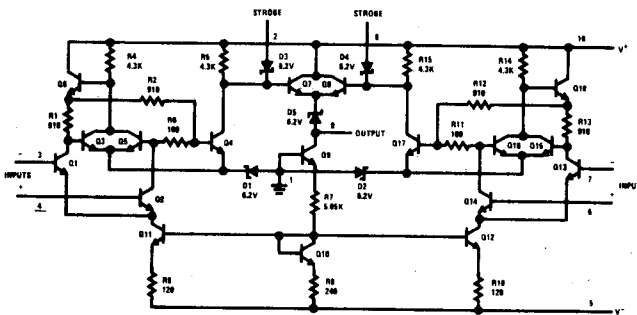
The LM711 series contains two voltage comparators with separate differential inputs, a common output and provision for strobing each side independently. Similar to the LM710, the device features low offset and thermal drift, a large input voltage range, low power consumption, fast recovery from large overloads and compatibility with most integrated logic circuits.

With the addition of an external resistor network, the LM711 series can be used as a sense amplifier for core memories. The input thresholding, combined with the high gain of the comparator, eliminates many of the inaccuracies encountered

with conventional sense amplifier designs. Further, it has the speed and accuracy needed for reliably detecting the outputs of cores as small as 20 mils.

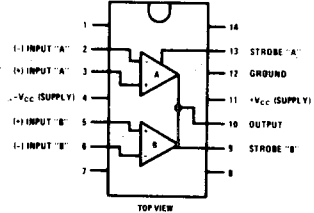
The LM711 series are also useful in other applications where a dual comparator with OR'ed outputs is required, such as a double-ended limit detector. By using common circuitry for both halves, the device can provide high speed with lower power dissipation than two single comparators. The LM711C is the commercial/industrial version of the LM711. With operation specified over a 0°C to +70°C temperature range.

Schematic ** and Connection Diagrams



Note: Pin 5 connected to case.
Order Number LM711H or LM711CH
See NS Package H10C

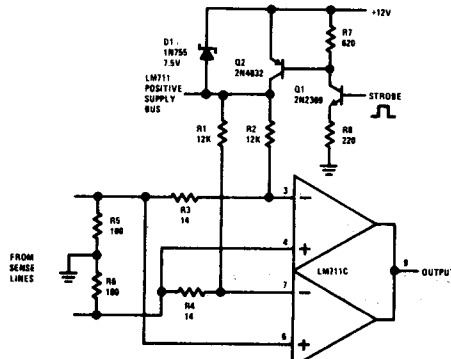
Dual-In-Line Package



Order Number LM711CN
See NS Package N14A

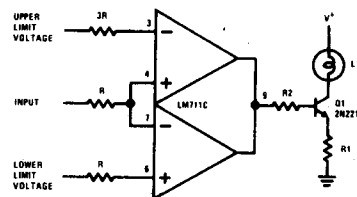
Typical Applications**

Sense Amplifier With Supply Strobing for Reduced Power Consumption*



*Standby dissipation is about 40 mW.

Double-Ended Limit Detector With Lamp Driver



**Pin connections shown are for metal can.

Absolute Maximum Ratings

Positive Supply Voltage	+14V	Operating Temperature Range	T_{MIN}	T_{MAX}
Negative Supply Voltage	-7V	LM711	-55°C	to +125°C
Peak Output Current	25 mA	LM711C	0°C	to +70°C
Differential Input Voltage	±5V	Storage Temperature Range	-65°C	to +150°C
Input Voltage	±7V	Lead Temperature (Soldering, 10 seconds)	300°C	
Strobe Voltage	0 to +6V			
Internal Power Dissipation (Note 1)	300 mW			

Electrical Characteristics (These specifications apply for $T_A = 25^\circ\text{C}$, $V^+ = 12\text{V}$, $V^- = -6\text{V}$)

PARAMETER	CONDITIONS (Note 2)	LM711			LM711C			UNITS
		MIN	TYP	MAX	MIN	TYP	MAX	
Input Offset Voltage	$R_S \leq 200\Omega$, $V_{CM} = 0$		1.0	3.5	1.0	5.0	mV	
	$R_S \leq 200\Omega$, $-5\text{V} \leq V_{CM} \leq +5\text{V}$		1.0	5.0	1.0	7.5	mV	
Input Offset Current			0.5	10.0	0.5	15	μA	
Input Bias Current			25	75	25	100	μA	
Voltage Gain		750	1500		700	1500		
Response Time (Note 3)			40		40		ns	
Strobe Release Time			12		12		ns	
Input Voltage Range	$V^- = 7\text{V}$	±5.0			±5.0		V	
Differential Input Voltage Range		±5.0			±5.0		V	
Output Resistance			200		200		Ω	
Positive Output Level	$V_{IN} \geq 10\text{ mV}$		4.5	5.0	4.5	5.0	V	
Loaded Positive Output Level	$V_{IN} \geq 10\text{ mV}$, $I_{OUT} = -5\text{ mA}$	2.5	3.5		2.5	3.5	V	
Negative Output Level	$V_{IN} \leq -10\text{ mV}$	-1.0		0	-1.0	-0.5	0	V
Strobed Output Level	$V_{STROBE} \leq 0.3\text{V}$	-1.0		0	-1.0		0	V
Output Sink Current	$V_{IN} \leq -10\text{ mV}$, $V_{OUT} \geq 0$	0.5	0.8		0.5	0.8	mA	
Strobe Current	$V_{STROBE} = 100\text{ mV}$		1.2	2.5	1.2	2.5	mA	
Positive Supply Current	$V_{IN} \leq -10\text{ mV}$		8.6		8.6		mA	
Negative Supply Current			3.9		3.9		mA	
Power Consumption			130	200	130	230	mW	

The following specifications apply for $T_{MIN} \leq T_A \leq T_{MAX}$:

Input Offset Voltage	$R_S \leq 200\Omega$, $V_{CM} = 0$		4.5		6.0	mV
	$R_S \leq 200\Omega$		6.0		10	mV
Input Offset Current			20		25	μA
Input Bias Current			150		150	μA
Average Temperature Coefficient of Input Offset Voltage			5.0		5.0	$\mu\text{V}/^\circ\text{C}$
Voltage Gain		500			500	

Note 1: Rating applies for case temperatures to 125°C; derate linearly at 5.6 mW/°C for ambient temperatures above 105°C.

Note 2: The input offset voltage and input offset current (see definitions) are specified for a logic threshold voltage of 1.8V at -55°C, 1.4V at 25°C, and 1V at 125°C.

Note 3: The response time specified is for a 100 mV input step with 5 mV overdrive (see definitions).

Typical Performance Characteristics

