



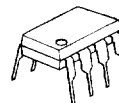
HIGH SPEED DIFFERENTIAL COMPARATOR

■ GENERAL DESCRIPTION

The NJM360 is a very high speed differential input, complementarily TTL output voltage comparator. The device has been optimized for greater speed, input impedance and fan-out and lower input offset voltage.

Applications involve high speed analog to digital convertors and zero-crossing detectors in disc file systems.

■ PACKAGE OUTLINE



NJM360D

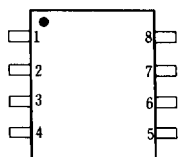


NJM360M

■ FEATURES

- Operating Voltage ($\pm 4.5V \sim \pm 6.5V$)
- High Speed Guarantee (20ns max.)
- Both output delay time has been precisely adjusted
- Complimentally TTL Output
- High Input Impedance
- Stabilized Speed for Over Driving Change
- Bipolar Technology
- Fan-out is 4
- Low Input Offset voltage
- Package Outline DIP8, DMP8, (SSOP8)

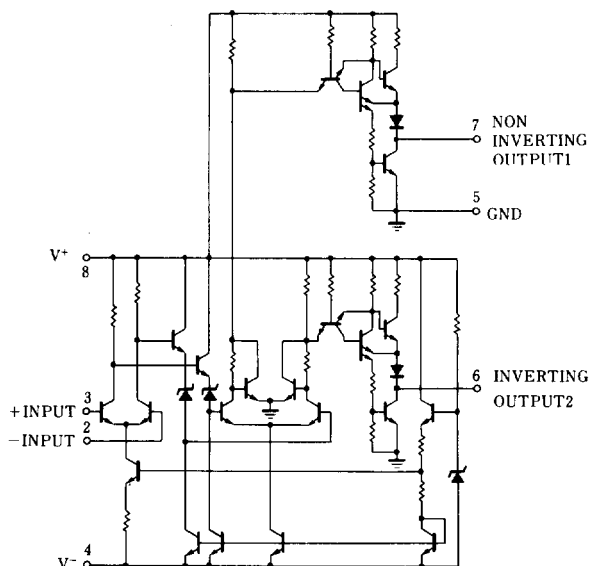
■ PIN CONFIGURATION

NJM330D
NJM360M

PIN FUNCTION

1. NC
2. -INPUT
3. +INPUT
4. V^-
5. GND
6. OUT 2
7. OUT 1
8. V^+

■ EQUIVALENT CIRCUIT





■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V ⁺ /V ⁻	±8	V
Differential Input Voltage	V _{ID}	±5	V
Input Voltage	V _I	±8(note 1)	V
Power Dissipation	P _D	(DIP8) 500	mW
		(DMP8) 300	mW
Maximum Output Current	I _O	±20	mA
Operating Temperature Range	T _{opr}	-20~+75	°C
Storage Temperature Range	T _{stg}	-40~+125	°C

(note 1) For supply voltage less than ±8V, the absolute input voltage is equal to the supply voltage.

■ ELECTRICAL CHARACTERISTICS

(Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Operating Supply Voltage	V ⁺		4.5	5	6.5	V
Operating Supply Voltage	V ⁻		-4.5	-5	-6.5	V
Input Offset Voltage	V _{IO}	R _S ≤200Ω	—	2	5	mV
Input Offset Current	I _{IO}		—	0.5	3	μA
Input Bias Current	I _B		—	5	20	μA
Output Resistance	R _O	V _{OUT} =V _{OM}	—	100	—	Ω
Response Time 1	t _{R 1}	V ⁺ /V ⁻ =±5V(note 1)	—	13	25	ns
Response Time 2	t _{R 2}	V ⁺ /V ⁻ =±5V(note 2)	—	12	20	ns
Response Time 3	t _{R 3}	V ⁺ /V ⁻ =±5V(note 3)	—	14	—	ns
Response Time Difference Between Outputs (t _{pd} of + V _{IN1}) - (t _{pd} of - V _{IN2}) (t _{pd} of + V _{IN2}) - (t _{pd} of - V _{IN1}) (t _{pd} of + V _{IN1}) - (t _{pd} of + V _{IN2}) (t _{pd} of - V _{IN1}) - (t _{pd} of - V _{IN2})		(note 1)	—	2	—	ns
		(note 1)	—	2	—	ns
		(note 1)	—	2	—	ns
		(note 1)	—	2	—	ns
		(note 1)	—	2	—	ns
Input Resistance	R _{IN}	f=1MHz	—	17	—	kΩ
Input Capacitance	C _{IN}	f=1MHz	—	3	—	pF
Average Temperature Coefficient of Input Offset Voltage	ΔV _{IO} /ΔT	R _S =50Ω	—	8	—	μV/°C
Average Temperature Coefficient of Input Offset Current	ΔI _{IO} /ΔT		—	7	—	nA/°C
Common Mode Input Voltage Range	V _{ICM}	V ⁺ /V ⁻ =±6.5V	±4	±4.5	—	V
Differential Input Voltage Range	V _{ID}		±5	—	—	V
Output High Voltage (High)	V _{OH}	I _{OUT} =-320μA, V ⁺ /V ⁻ =±4.5V	2.4	3	—	V
Output Low Voltage (Low)	V _{OL}	I _{SINK} =6.4mA, V ⁺ /V ⁻ =±4.5V	—	0.25	0.4	V
Positive Supply Current	I ⁺	V ⁺ /V ⁻ =±6.5V	—	18	32	mA
Negative Supply Current	I ⁻	V ⁺ /V ⁻ =±6.5V	—	-9	-16	mA

Note 1: Response time measured from the 50% point of a 30mV_{p-p} 10MHz sinusoidal input to the 50% point of the output.

Note 2: Response time measured from the 50% point of a 2V_{p-p} 10MHz sinusoidal input to the 50% point of the output.

Note 3: Response time measured from the start of a 100mV input step with 5mV overdrive to the time when the output crosses the logic threshold.

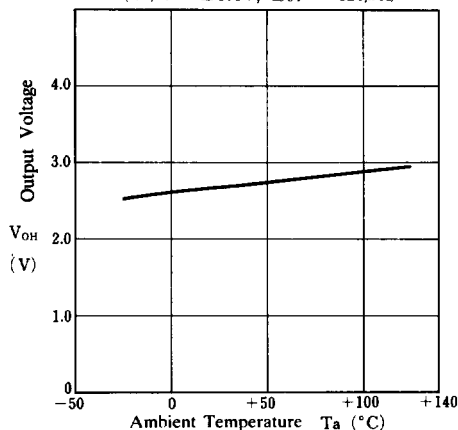
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■ TYPICAL CHARACTERISTICS

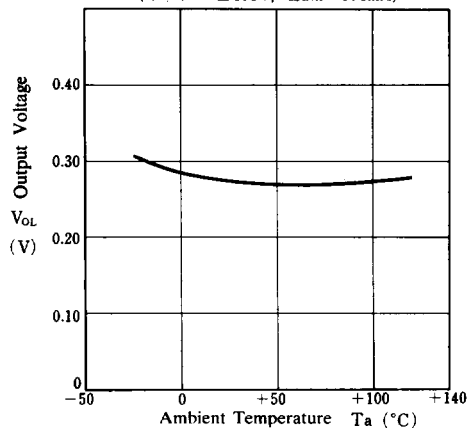
Output Voltage (High) vs. Temperature

($V^+/V^- = \pm 4.5V$, $I_{OUT} = -320\mu A$)



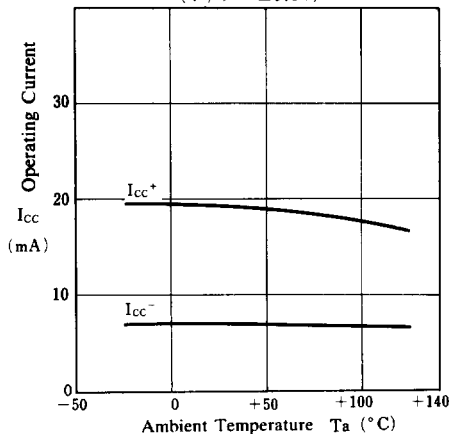
Output Voltage (Low) vs. Temperature

($V^+/V^- = \pm 4.5V$, $I_{SINK} = 6.4mA$)



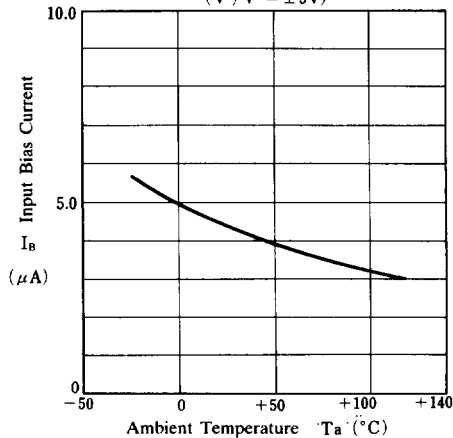
Operating Current vs. Temperature

($V^+/V^- = \pm 6.5V$)



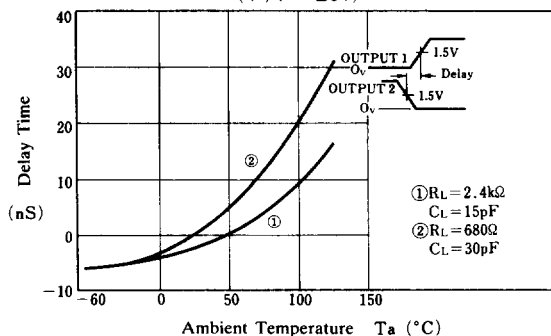
Input Bias Current vs. Temperature

($V^+/V^- = \pm 5V$)



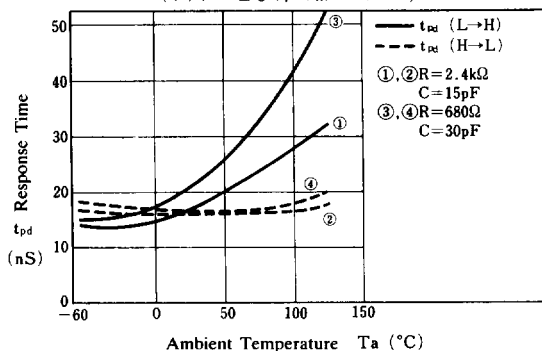
OUTPUT1 and OUTPUT2 Delay Time vs. Temperature

($V^+/V^- = \pm 5V$)



Response Time vs. Temperature

($V^+/V^- = \pm 5V$, $V_{IN} = \pm 50mV$)





■ AC TEST CIRCUIT

