

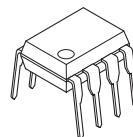
HIGH SPEED DIFFERENTIAL COMPARATOR

■ GENERAL DESCRIPTION

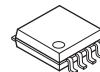
The NJM360 is a very high speed differential input, complementary TTL output voltage comparator. The device has been optimized for greater speed, input impedance and fan-out and lower input offset voltage.

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

■ PACKAGE OUTLINE



NJM360D
(DIP8)



NJM360M
(DMP8)

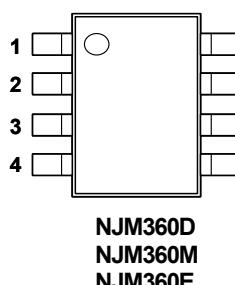


NJM360E
(SOP8)

■ FEATURES

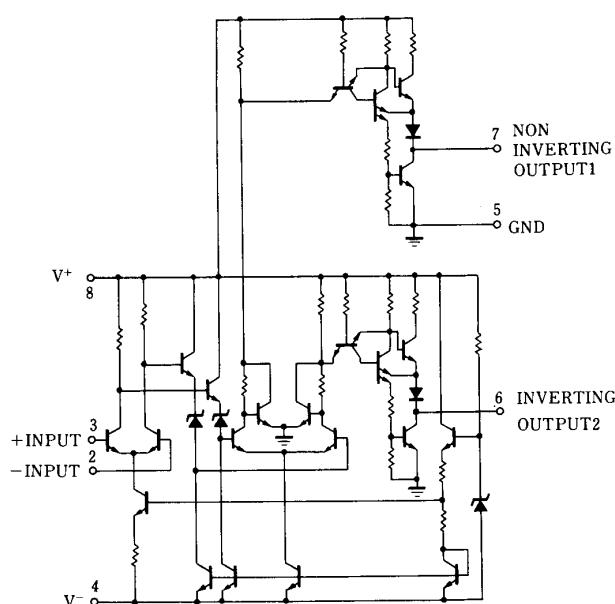
- Operating Voltage ($\pm 4.5V \sim \pm 6.5V$)
- High Speed Guarantee (20ns max.)
- Both output delay time has been precisely adjusted
- Complementary TTL Output
- High Input Impedance
- Stabilized Speed for Over Driving Change
- Bipolar Technology
- Fan-out is 4
- Low Input Offset Voltage
- Package Outline DIP8, DMP8, SOP8 JEDEC 150mil

■ PIN CONFIGURATION



PIN FUNCTION
1.NC
2.-INPUT
3.+INPUT
4.V
5.GND
6.OUT2
7.OUT1
8.V ⁺

■ EQUIVALENT CIRCUIT



NJM360

■ 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 (note1)	V
Power Dissipation	P _D	(DIP8) 500 (DMP8) 300 (SOP8) 300	mW
Maximum Output Current	I _O	± 20	mA
Operating Temperature Range	T _{opr}	-40~+85	°C
Storage Temperature Range	T _{stg}	-40~+125	°C

(note1) 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 _{R1}	V ⁺ /V ⁻ =± 5V (note1)	-	13	25	ns
Response Time 2	t _{R2}	V ⁺ /V ⁻ =± 5V (note2)	-	12	20	ns
Response Time 3	t _{R3}	V ⁺ /V ⁻ =± 5V (note3)	-	14	-	ns
Response Time Difference Between Outputs (t _{pd} of +V _{IN1}) - (t _{pd} of -V _{IN2})		(note1)	-	2	-	ns
(t _{pd} of +V _{IN2}) - (t _{pd} of -V _{IN1})		(note1)	-	2	-	ns
(t _{pd} of +V _{IN1}) - (t _{pd} of +V _{IN2})		(note1)	-	2	-	ns
(t _{pd} of -V _{IN1}) - (t _{pd} of -V _{IN2})		(note1)	-	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}	V ⁺ /V ⁻ =± 4.5V, I _{OUT} =320μA	2.4	3	-	V
Output Low Voltage (Low)	V _{OL}	V ⁺ /V ⁻ =± 4.5V, I _{SINK} =6.4mA	-	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

(note1) Response time measured from the 50% point of a 30mV_{PP} 10MHz sinusoidal input to the 50% point of the output.

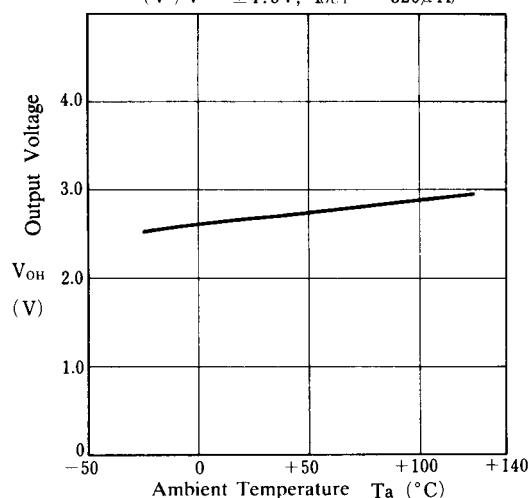
(note2) Response time measured from the 50% point of a 2V_{PP} 10MHz sinusoidal input to the 50% point of the output.

(note3) Response time measured from the start of a 100mV input step with 5mV overdrive to the time when the output crosses the logic threshold.

■ TYPICAL CHARACTERISTICS

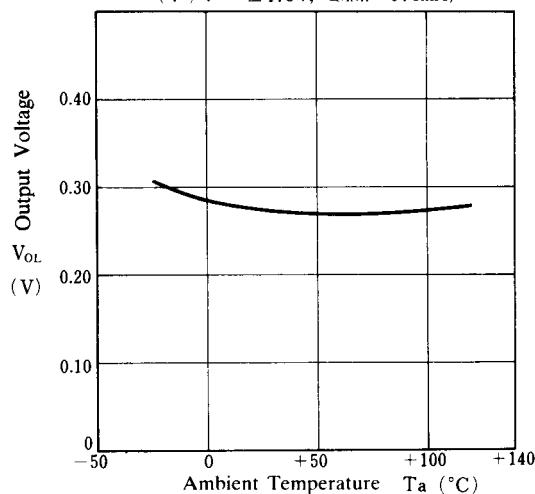
Output Voltage (High) vs. Temperature

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



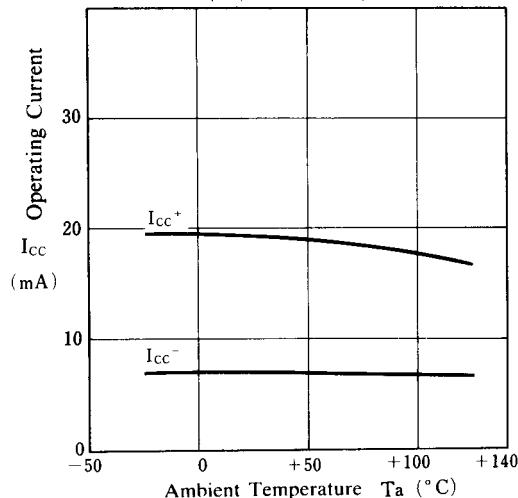
Output Voltage (Low) vs. Temperature

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



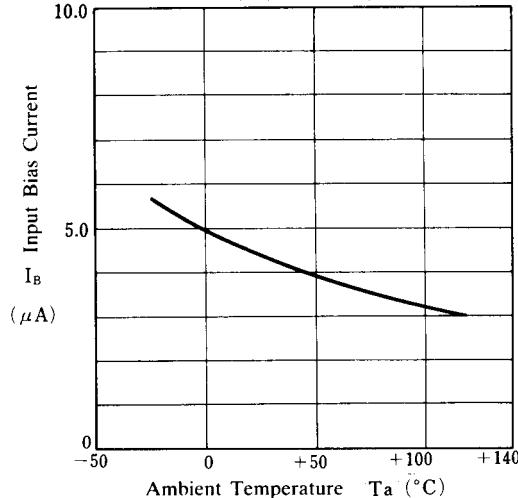
Operating Current vs. Temperature

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



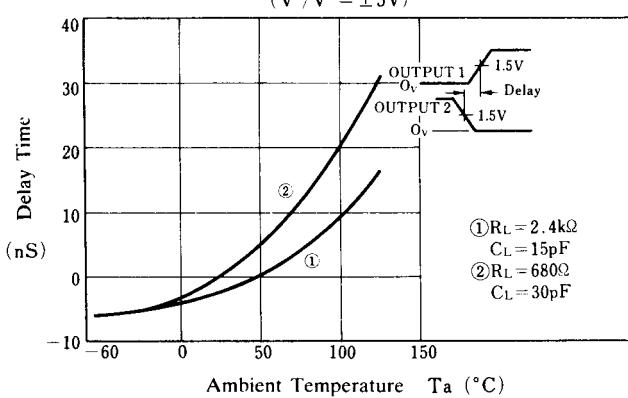
Input Bias Current vs. Temperature

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



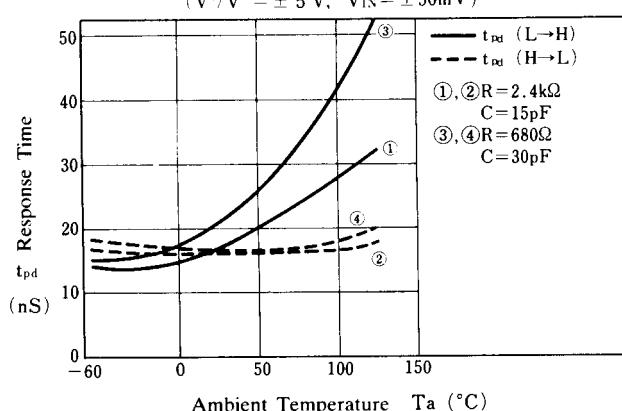
OUTPUT1 and OUTPUT2 Delay Time vs. Temperature

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



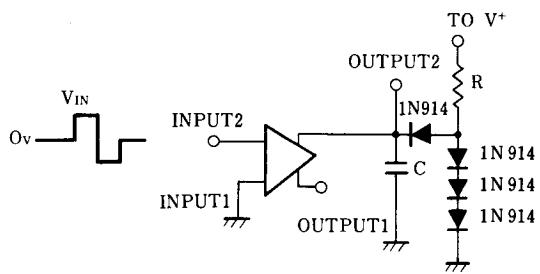
Response Time vs. Temperature

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



NJM360

■ AC TEST CIRCUIT



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