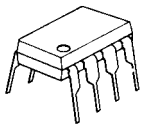
HIGH SPEED DIFFERENTIAL COMPARATOR

■ GENERAL DESCRIPTION

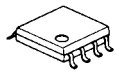
The NJM360 is a very high speed differential input,complementary TTL output voltage comparator.The device has been optimized for greater speed,input impedance and fan-out and lower input offset voltage.

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

■ PACKAGE OUTLINE



NJM360D



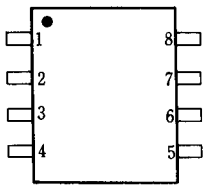
NJM360M

NJM360E

■ FEATURES

- Operating Voltage (±4.5V~±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,EMP8

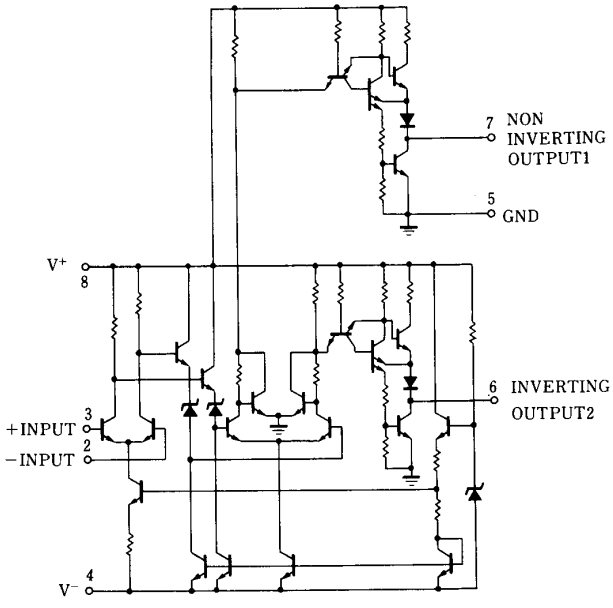
■ PIN CONFIGURATION



NJM360D
NJM360M
NJM360E

PIN FUNCTION
1.NC
2.–INPUT
3.+INPUT
4.V^-
5.GND
6.OUT2
7.OUT1
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 (note1)	V
Power Dissipation	P_D	(DIP8) 500 (DMP8) 300 (EMP8) 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	$\Delta V_{IO}/\Delta T$	R_S=50Ω	-	8	-	μV/˚C
Average Temperature Coefficient of Input Offset Current	$\Delta I_{IO}/\Delta T$		-	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_{P-P} 10MHz sinusoidal input to the 50% point of the output.

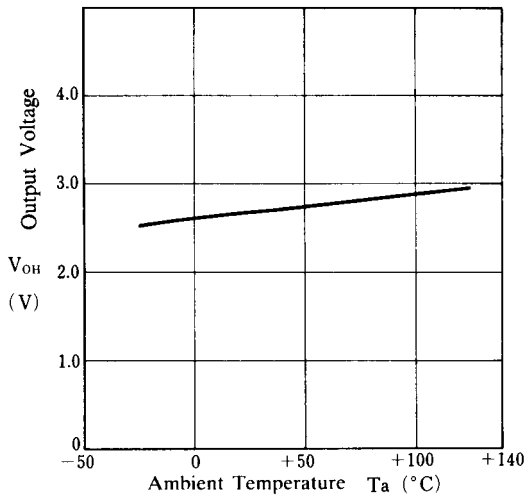
(note2) Response time measured from the 50% point of a 2V_{P-P} 10MHz sinusoidal input to the 50% point of the output.

(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

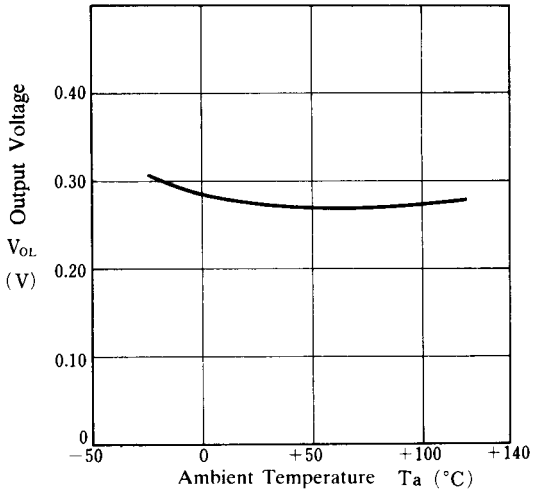
Output Voltage (High) vs. Temperature

($V^+/V^-=\pm4.5V$, $I_{OUT}=-320\mu A$)



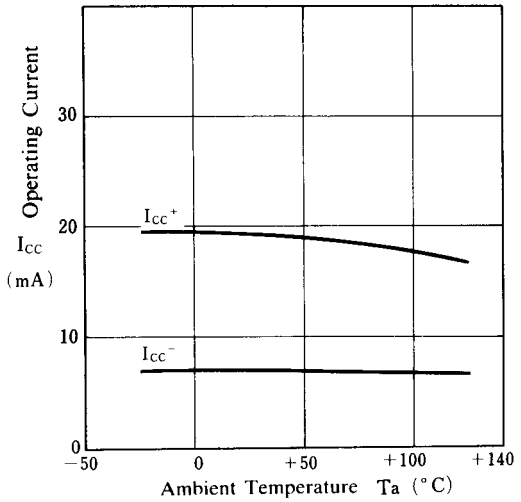
Output Voltage (Low) vs. Temperature

($V^+/V^-=\pm4.5V$, $I_{SINK}=6.4mA$)



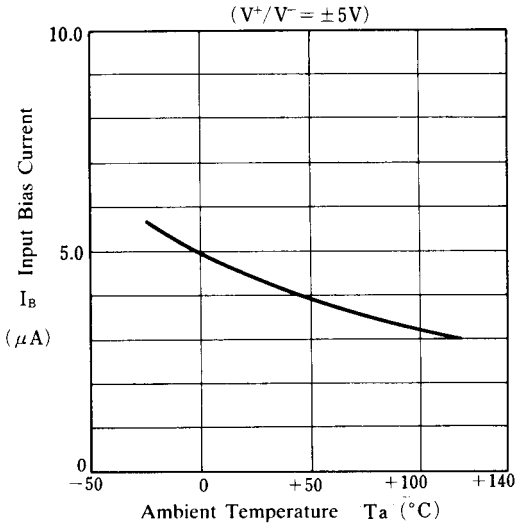
Operating Current vs. Temperature

($V^+/V^-=\pm6.5V$)



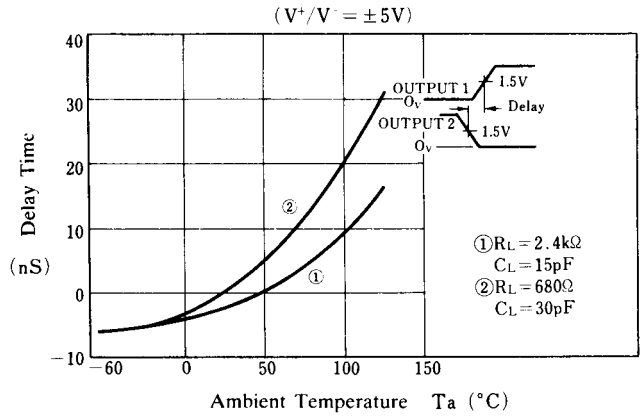
Input Bias Current vs. Temperature

($V^+/V^-=\pm5V$)



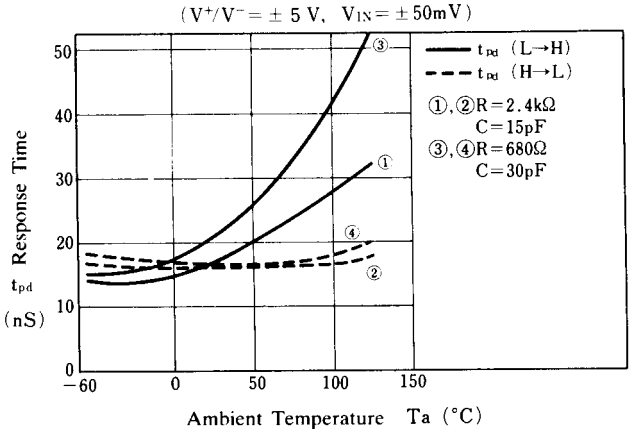
OUTPUT1 and OUTPUT2 Delay Time vs. Temperature

($V^+/V^-=\pm5V$)



Response Time vs. Temperature

($V^+/V^-=\pm5V$, $V_{IN}=\pm50mV$)



■ AC TEST CIRCUIT