

SINGLE-SUPPLY DUAL COMPARATOR

■ FEATURES

- Operating Temperature $T_a = -40^{\circ}\text{C}$ to $+125^{\circ}\text{C}$
- Operating Voltage (+2V to +36V)
- Single Supply Operation
- Open Collector Output
- High Output Sink Current
- Bipolar Technology
- Package Outline
 - SSOP8
 - MSOP8 (VSP8) MEET JEDEC MO-187-DA
- AEC-Q100
 - This product meets the reliability level required by AEC-Q100.

■ PACKAGE OUTLINE

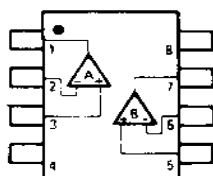


NJM2903V-T1
(SSOP8)



NJM2903R-T1
(MSOP8 (VSP8))

■ PIN CONFIGURATION

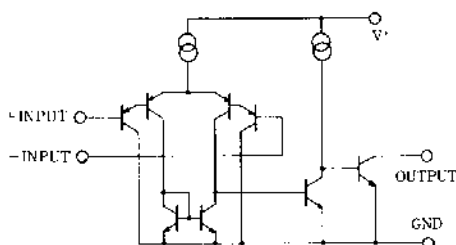


NJM2903V-T1
NJM2904R-T1

PIN FUNCTION

- 1.A OUTPUT
- 2.A -INPUT
- 3.A +INPUT
- 4.GND
- 5.B +INPUT
- 6.B -INPUT
- 7.B OUTPUT
- 8. V^+

■ EQUIVALENT CIRCUIT (1/2 Shown)



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■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS		UNIT
Supply Voltage	$V^+(V^-/V)$	36 (or ± 18)		V
Differential Input Voltage	V_{ID}	36		V
Input Voltage	V_{IN}	-0.3 to +36		V
Power Dissipation	P_D	SSOP8 VSP8	410 495	mW
Operating Temperature Range	T_{opr}	-40 to +125		°C
Storage Temperature Range	T_{stg}	-50 to +150		°C

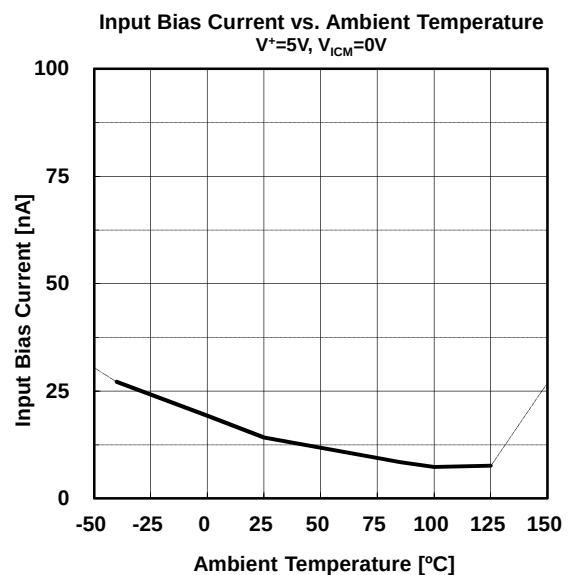
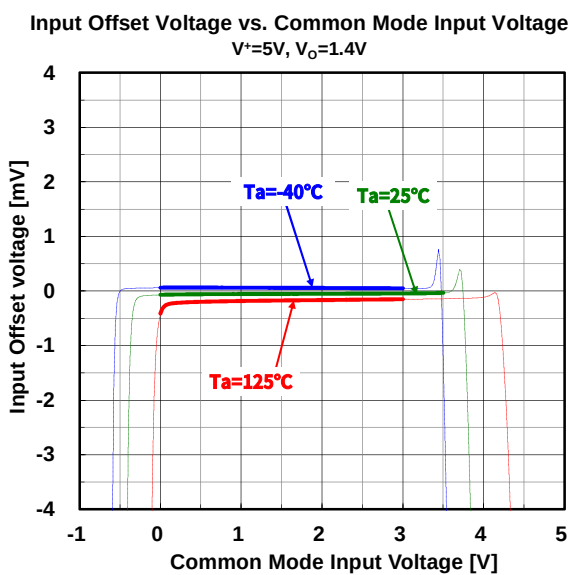
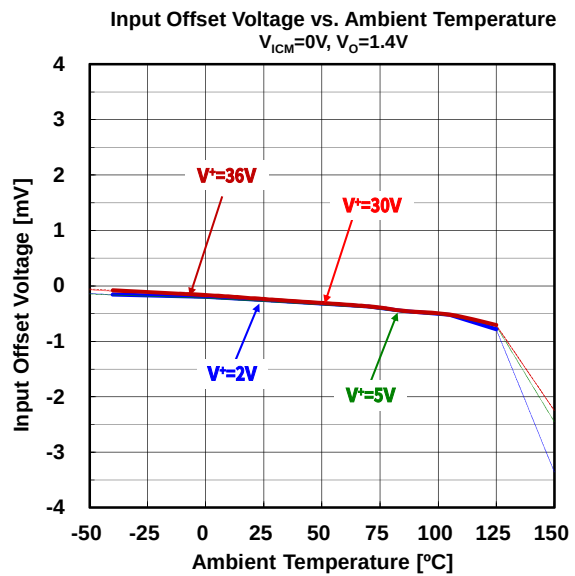
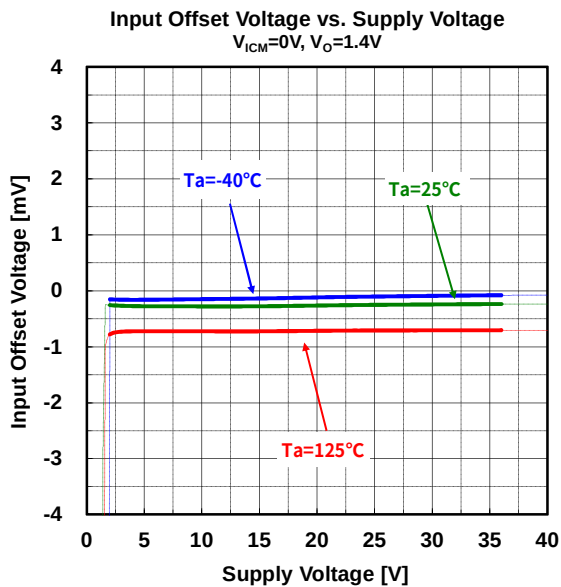
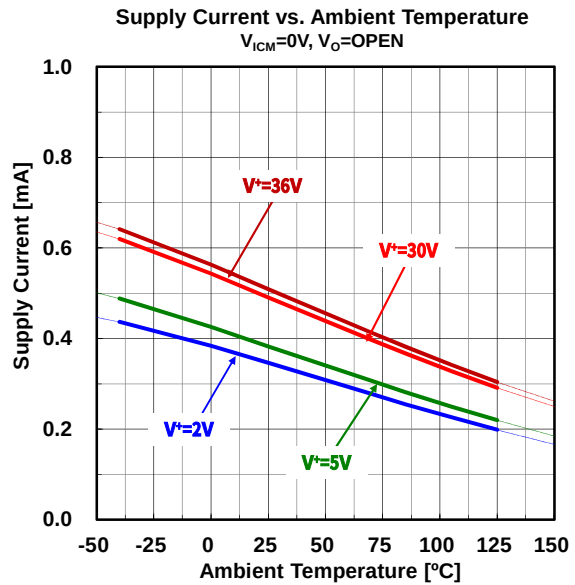
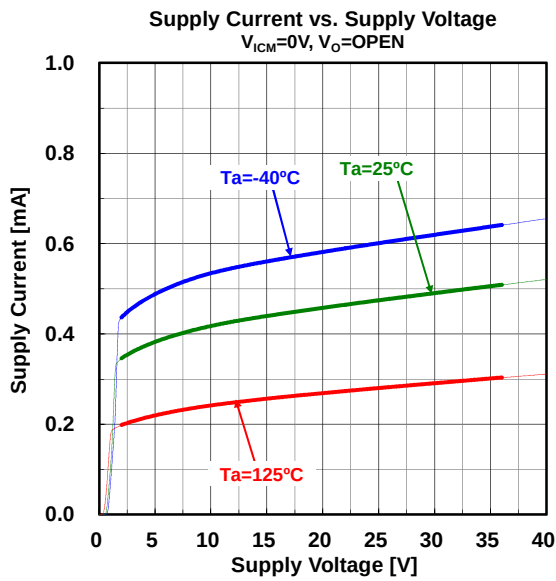
P_D : EIA/JEDEC STANDARD Test board (76.2 x 114.3 x 1.6mm, 2layers, FR-4) mounting

■ ELECTRICAL CHARACTERISTICS

($V^+=5V$, Ta=25 °C, unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}	$R_S=0\Omega, V_O=1.4V$	-	-	7	mV
		$R_S=0\Omega, V_O=1.4V$, Ta=-40°C to +125°C	-	-	14	
Input Offset Current	I_{IO}	Ta=-40°C to +125°C	-	-	50	nA
		Ta=-40°C to +125°C	-	-	50	
Input Bias Current	I_B	Ta=-40°C to +125°C	-	30	250	nA
		Ta=-40°C to +125°C	-	-	275	
Common Mode Input Voltage Range	V_{ICM}		0	-	3.5	V
		Ta=-40°C to +125°C	0	-	3.0	
Open-Loop Voltage Gain	A_V	$R_L=15k\Omega$	-	106	-	dB
Response Time	t_R	$R_L=5.1k\Omega$	-	1.5	-	μs
Output Sink Current	I_{SINK}	$V_{IN}^-=1V, V_{IN}^+=0V, V_O=1.5V$	6	-	-	mA
		$V_{IN}^-=1V, V_{IN}^+=0V, V_O=1.5V$, Ta=-40°C to +125°C	3	-	-	
Low-level Output Voltage	V_{OL}	$V_{IN}^-=1V, V_{IN}^+=0V, I_{SINK}=3mA$	-	200	400	mV
		$V_{IN}^-=1V, V_{IN}^+=0V, I_{SINK}=3mA$, Ta=-40°C to +125°C	-	-	800	
Output Leakage Current	I_{LEAK}	$V_{IN}^-=0V, V_{IN}^+=1V, V_O=5V$	-	-	1.0	μA
		$V_{IN}^-=0V, V_{IN}^+=1V, V_O=5V$, Ta=-40°C to +125°C	-	-	10.0	
Supply Current (all comparators)	I_{SUPPLY}		-	0.4	1.0	mA
		Ta=-40°C to +125°C	-	-	2.0	

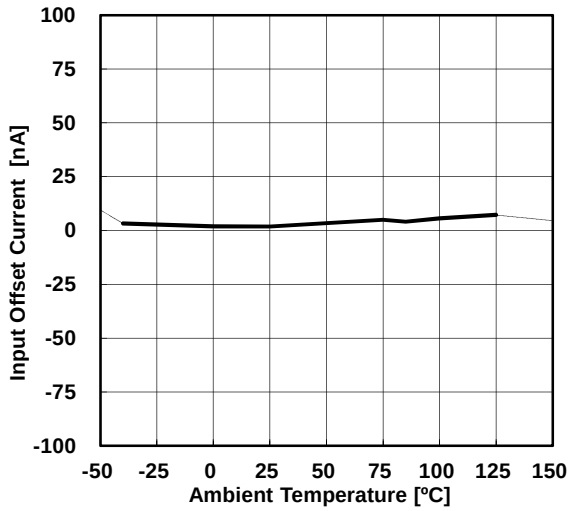
■ TYPICAL CHARACTERISTICS



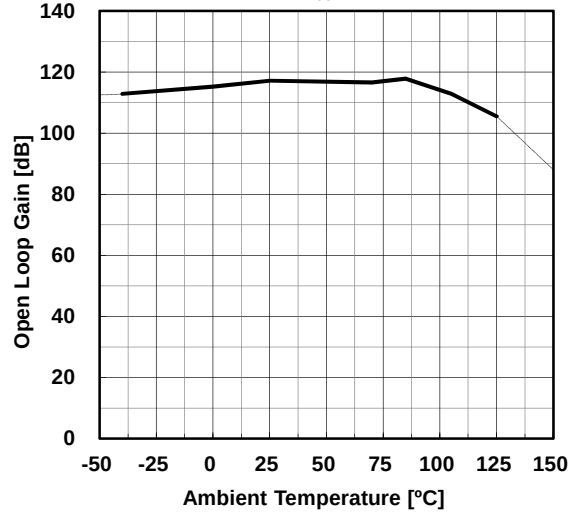
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■ TYPICAL CHARACTERISTICS

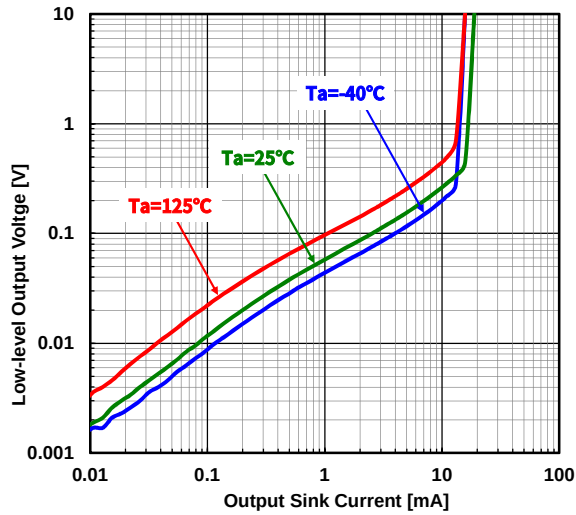
Input Offset Current vs. Ambient Temperature
 $V^+=5V, V_{ICM}=0V$



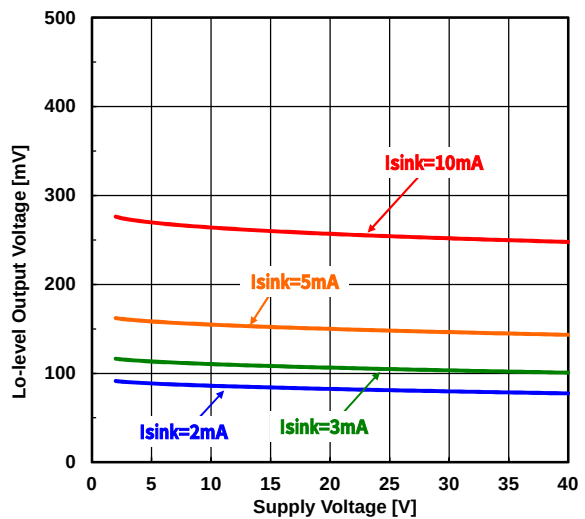
Open Loop Gain vs. Ambient Temperature
 $V^+=15V, V_{OUT}=+1V \text{ to } +11V$



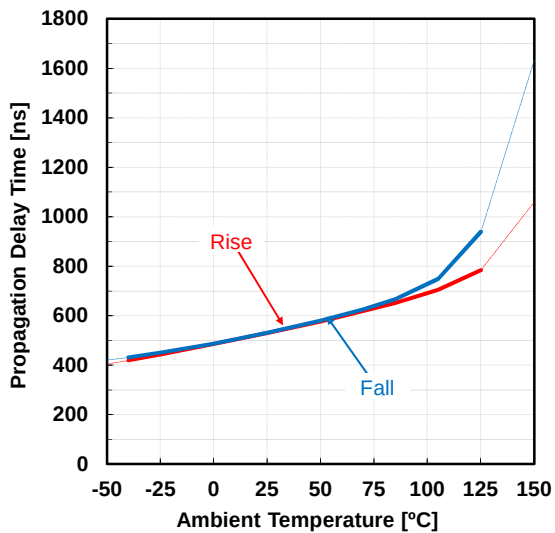
Low-level Output Voltage vs. Output Sink Current
 $V^+=5V, V_{IN+}=0V, V_{IN-}=1V$



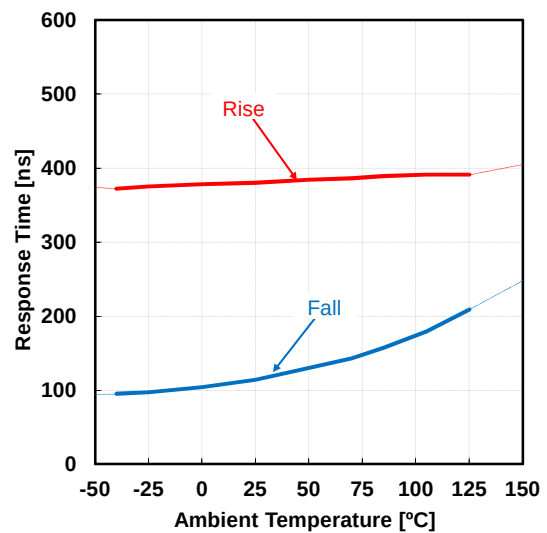
Low-level Output Voltage vs. Supply Voltage
 $T_a=25^\circ\text{C}$



Propagation Delay Time vs. Ambient Temperature
 $V^+=5V, V_{IN+}=GND, V_{IN-}=200mV_{PP}, ov=100mV, R_L=5.1k\Omega$



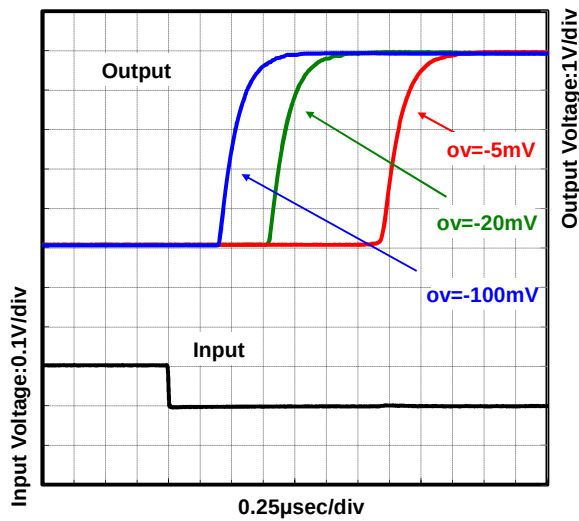
Response Time vs. Ambient Temperature
 $V^+=5V, V_{IN+}=GND, V_{IN-}=200mV_{PP}, ov=100mV, R_L=5.1k\Omega$



■ TYPICAL CHARACTERISTICS

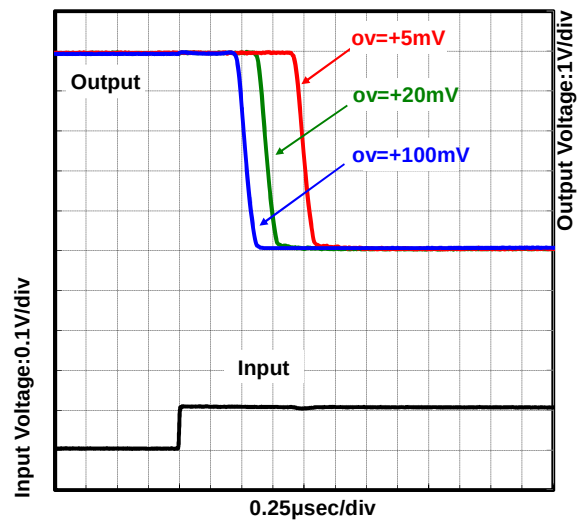
Propagation Delay Time

$V^+=5V$, $R_L=5.1k\Omega$, $V_{REF}=GND$, $C_L=0pF$, $T_a=25^\circ C$



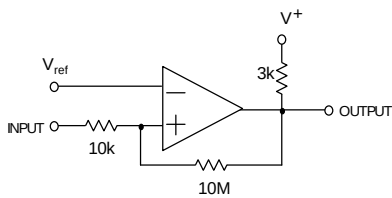
Propagation Delay Time

$V^+=5V$, $R_L=5.1k\Omega$, $V_{REF}=GND$, $C_L=0pF$, $T_a=25^\circ C$

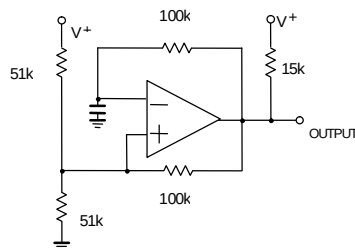


■ TYPICAL APPLICATIONS

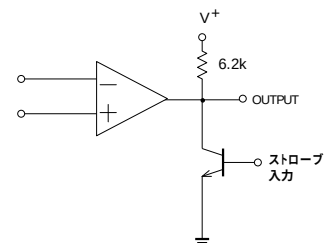
Comparator With Hysteresis



Pulse Generator



Output Strobing Circuit



[CAUTION]

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