

DUAL AUDIO OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

The NJM8080 is dual operational amplifier designed for audio applications. NJM8080 finely refines to every detail from Si-wafer to circuit layout, stick in a thorough improvement in sound quality. The NJM8080 features high resolution and crispy-clear high frequency sound, which can fully perform the digital sound source with loss-less.

NJM8080 features low noise, wide gain-bandwidth, low distortion and high output current, and various reliabilities and conveniences are improved. NJM8080 can widely be used as the standard audio operational amplifier.

■ PACKAGE OUTLINE



NJM8080G
(SOP8)



NJM8080RB1
(MSOP8 (TVSP8))

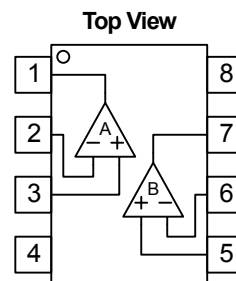


NJM8080V
(SSOP8)

■ FEATURES

- Operating Voltage $\pm 2V$ to $\pm 18V$
- Low Input Noise Voltage $5nV/\sqrt{Hz}$ typ. at $f=1kHz$
- Wide Gain Bandwidth Product $15MHz$ typ.
- Low Distortion 0.0005% typ.
- Slew Rate $5V/\mu s$ typ.
- Bipolar Technology
- Package Outline SOP8,
MSOP8 (TVSP8)*
*MEET JEDEC MO-187-DA / THIN TYPE
SSOP8
- Internal ESD protection
Human body model (HBM) $\pm 2000V$ typ.
- Wide temperature range $-40^{\circ}C$ to $+125^{\circ}C$

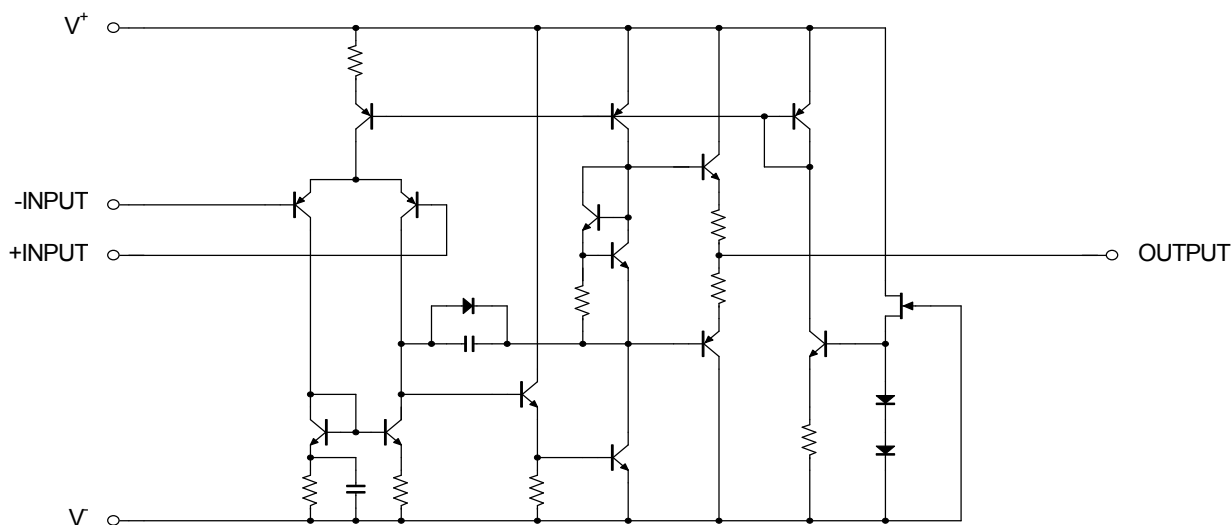
■ PIN CONFIGURATION



NJM8080G
NJM8080RB1
NJM8080V

- PIN FUNCTION**
- 1.A OUTPUT
 - 2.A -INPUT
 - 3.A +INPUT
 - 4.V⁻
 - 5.B +INPUT
 - 6.B -INPUT
 - 7.B OUTPUT
 - 8.V⁺

■ EQUIVALENT CIRCUIT (1/2 Shown)



■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C, unless otherwise noted.)

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage	V^+ / V^-	$\pm 18V$	V
Differential Input Voltage (Note1)	V_{ID}	± 36	V
Input Voltage (Note2)	V_{IN}	$V - 0.3$ to $V + 36$	V
Output Terminal Input Voltage	V_O	$V - 0.3$ to $V^+ + 0.3$	V
Power Dissipation	P_D	SOP : 690 (Note3) 1000 (Note4) MSOP : 510 (Note3) 680 (Note4) SSOP : 430 (Note3) 540 (Note4)	mW
Operating Temperature Range	Topr	-40~+125	°C
Storage Temperature Range	Tstg	-65~+150	°C

(Note1) Differential voltage is the voltage difference between +INPUT and -INPUT.

(Note2) Input voltage is the voltage should be allowed to apply to the input terminal independent of the magnitude of V^+ .

The normal operation will establish when any input is within the Common Mode Input Voltage Range of electrical characteristics.

(Note3) EIA/JEDEC STANDARD Test board (76.2 x 114.3 x 1.6mm, 2layers, FR-4) mounting

(Note4) EIA/JEDEC STANDARD Test board (76.2 x 114.3 x 1.6mm, 4layers, FR-4) mounting

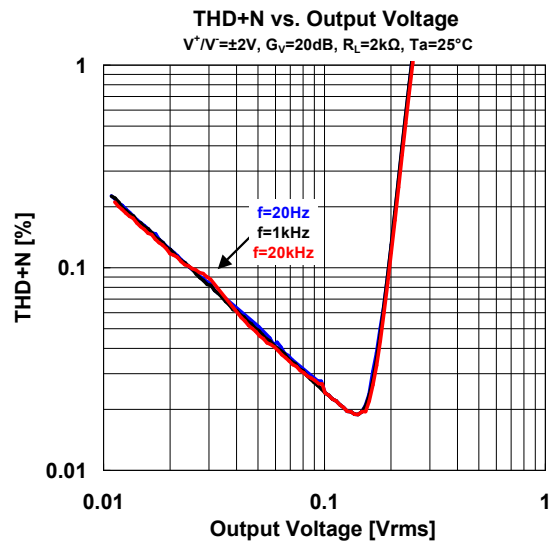
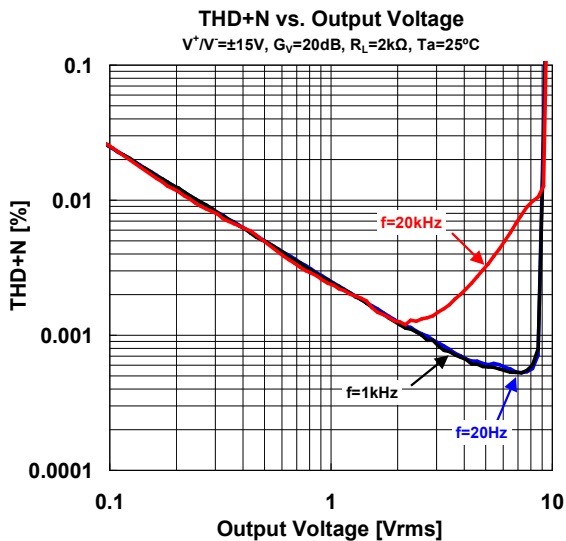
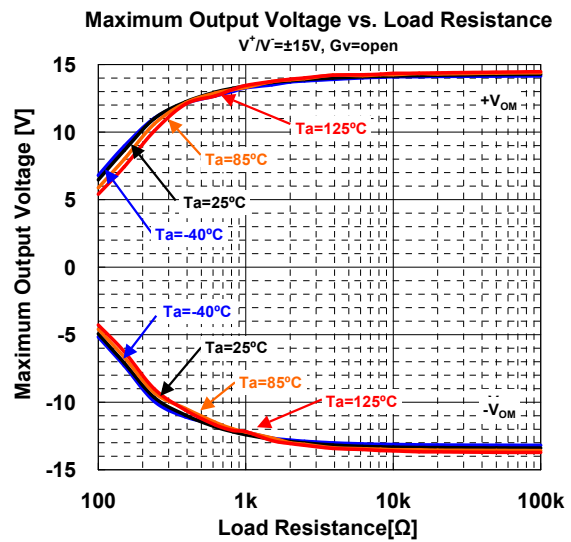
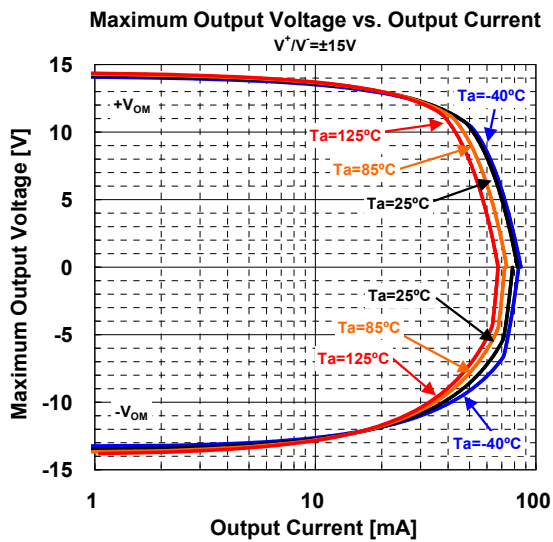
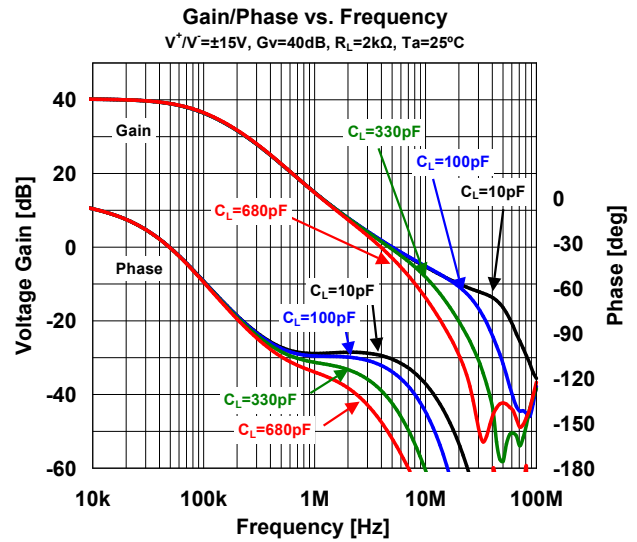
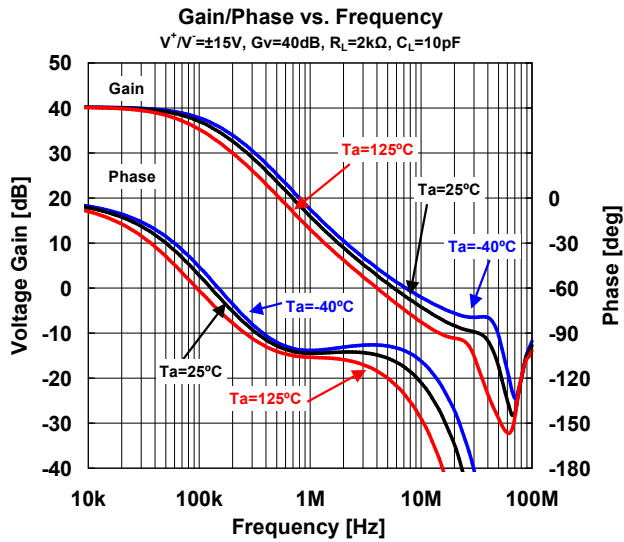
■ RECOMMENDED OPERATING CONDITIONS (Ta=25°C)

PARAMETER	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V^+ / V^-		± 2	-	± 18	V

■ ELECTRICAL CHARACTERISTICS ($V^+ / V^- = \pm 15V$, Ta=25°C, unless otherwise noted.)

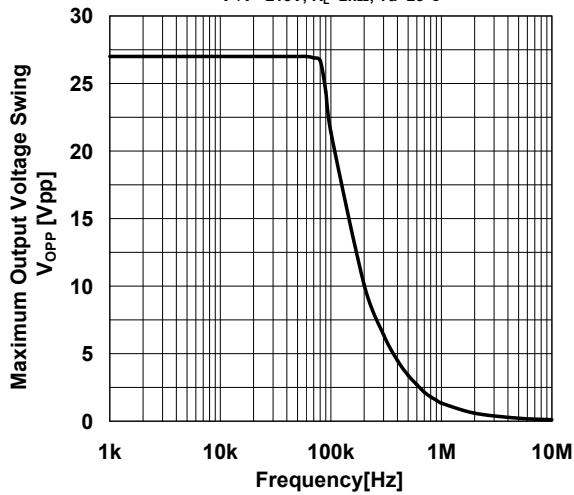
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}	$R_S \leq 10k\Omega$	-	0.3	3	mV
Input Offset Current	I_{IO}		-	5	200	nA
Input Bias Current	I_B		-	100	500	nA
Input Resistance	R_{IN}		-	0.5	-	MΩ
Large Signal Voltage Gain	A_V	$R_L \geq 2k\Omega$, $V_O = \pm 10V$	90	110	-	dB
Maximum Output Voltage	V_{OM}	$R_L \geq 2k\Omega$	± 12	± 13.5	-	V
Common Mode Input Voltage Range	V_{ICM}		± 12	± 13.5	-	V
Common Mode Rejection Ratio	CMR	$R_S \leq 10k\Omega$	80	110	-	dB
Supply Voltage Rejection Ratio	SVR	$R_S \leq 10k\Omega$	80	110	-	dB
Supply Current	I_{CC}		-	6	9	mA
Slew Rate	SR	$R_L \geq 2k\Omega$	-	5	-	V/μs
Gain Bandwidth Product	GBP	$f = 10kHz$	-	15	-	MHz
Total Harmonic Distortion	THD	$A_V = 20dB$, $V_O = 5V$, $R_L = 2k\Omega$, $f = 1kHz$	-	0.0005	-	%
Equivalent Input Noise Voltage1	e_n	$f = 1kHz$	-	5	-	nV/√Hz

■ TYPICAL CHARACTERISTICS

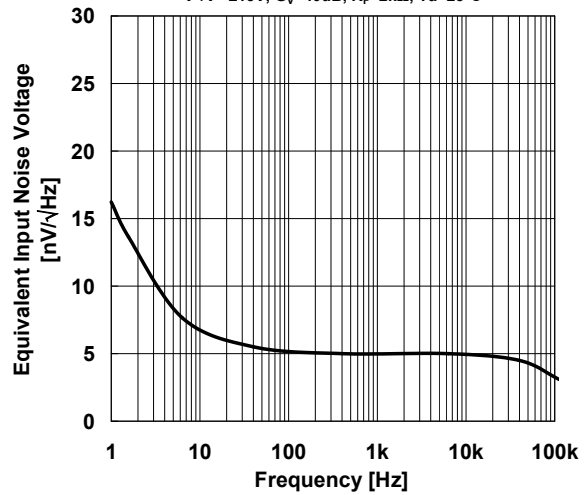


■ TYPICAL CHARACTERISTICS

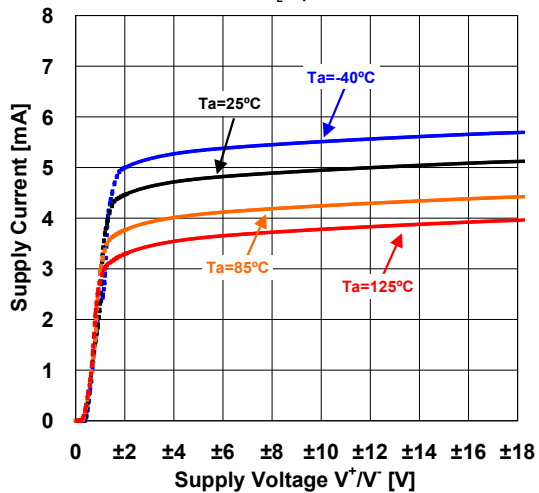
Maximum Output Voltage Swing vs. Frequency
 $V^+/V^- = \pm 15V$, $R_L = 2k\Omega$, $T_a = 25^\circ C$



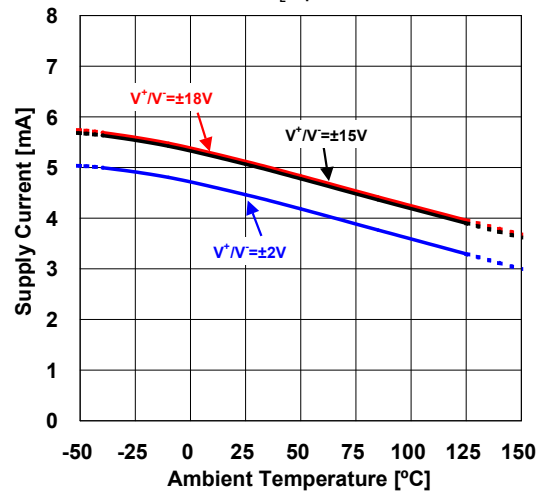
Voltage Noise vs. Frequency
 $V^+/V^- = \pm 15V$, $G_v = 40dB$, $R_F = 2k\Omega$, $T_a = 25^\circ C$



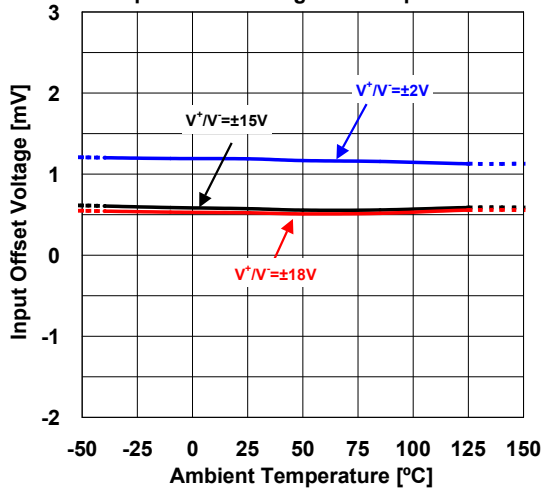
Supply Current vs. Supply Voltage
 $R_L = open$



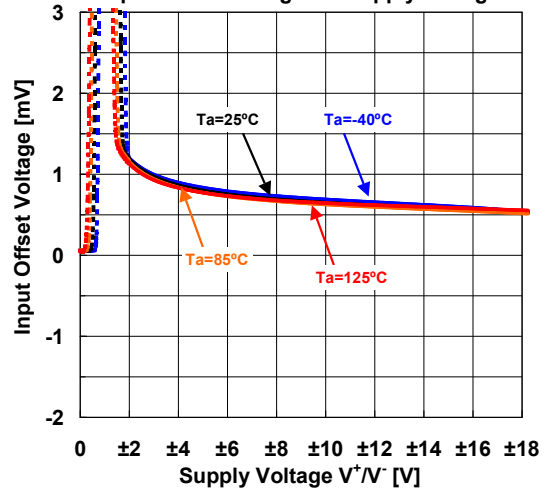
Supply Current vs. Temperature
 $R_L = open$



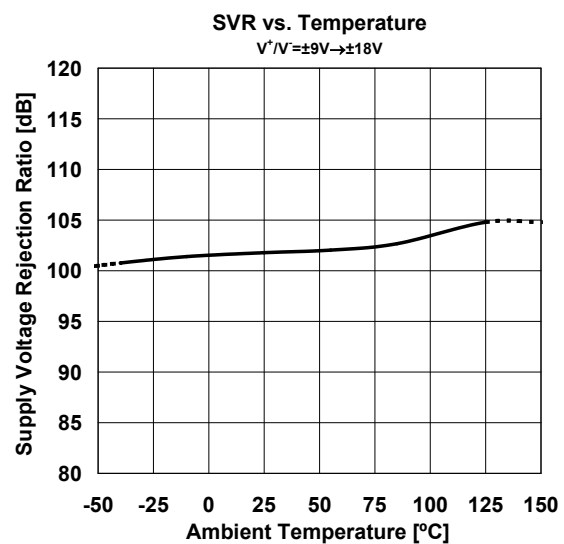
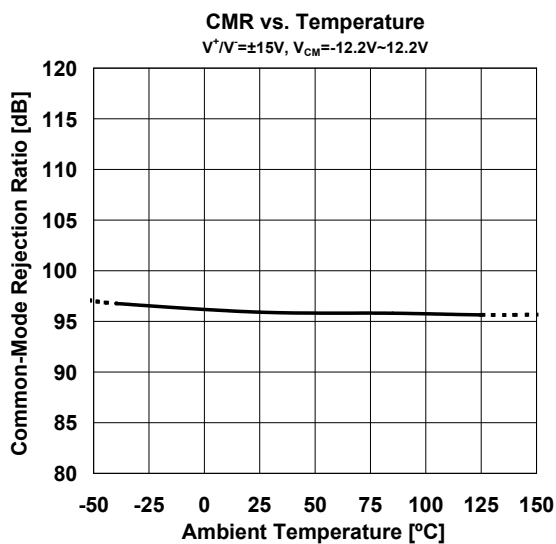
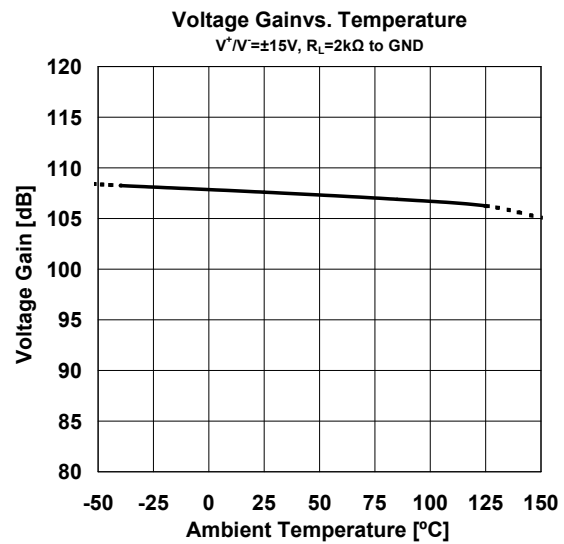
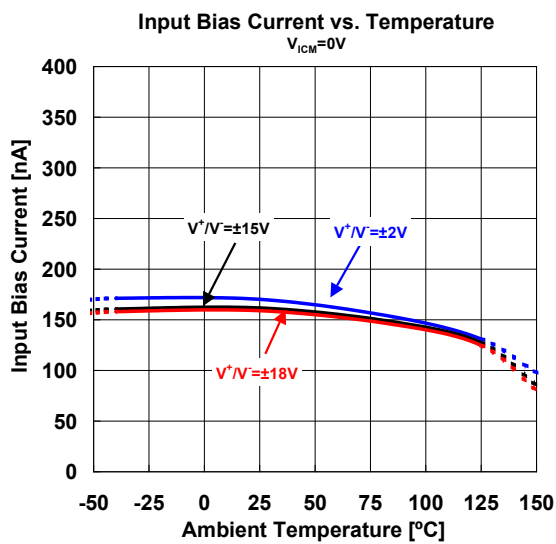
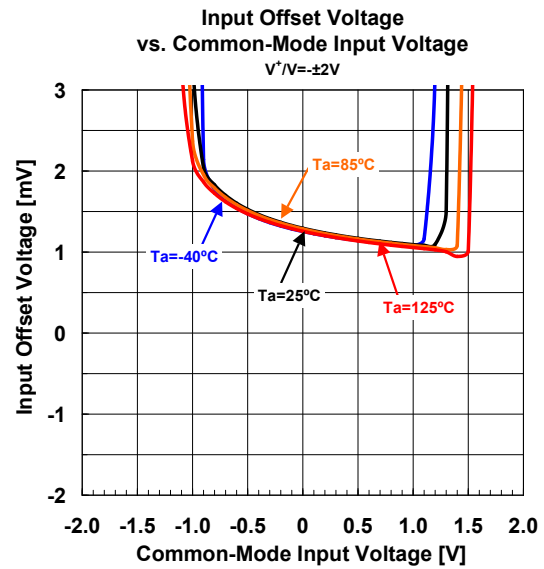
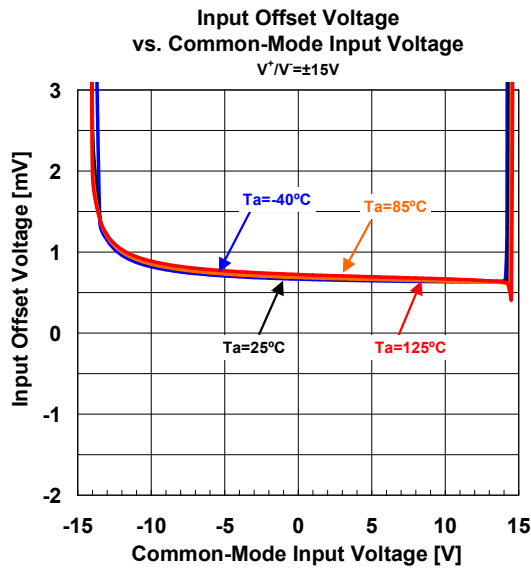
Input Offset Voltage vs. Temperature



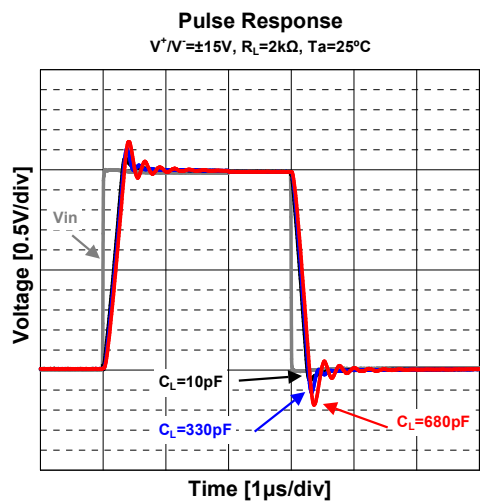
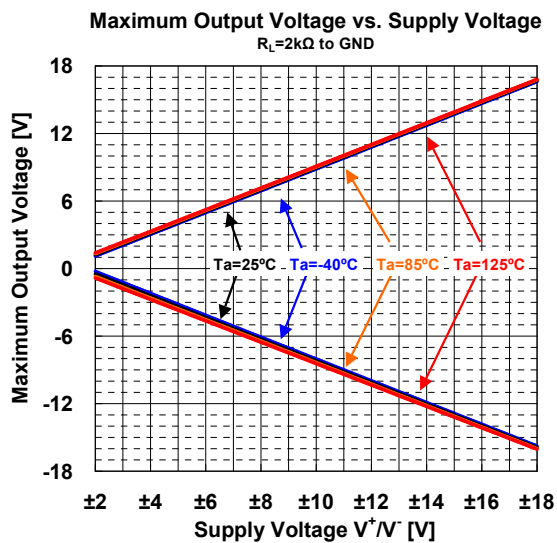
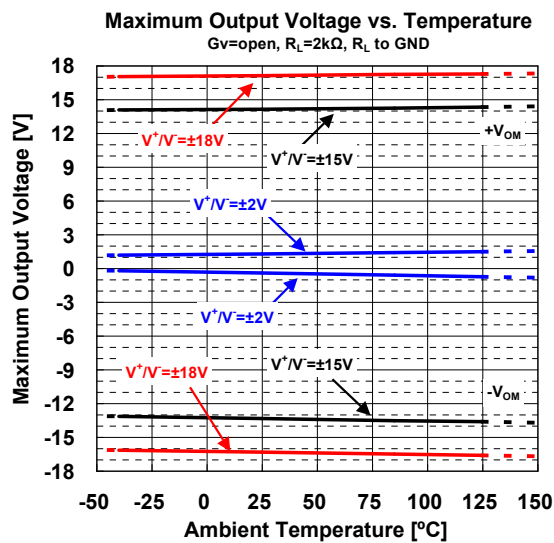
Input Offset Voltage vs. Supply Voltage



■ TYPICAL CHARACTERISTICS

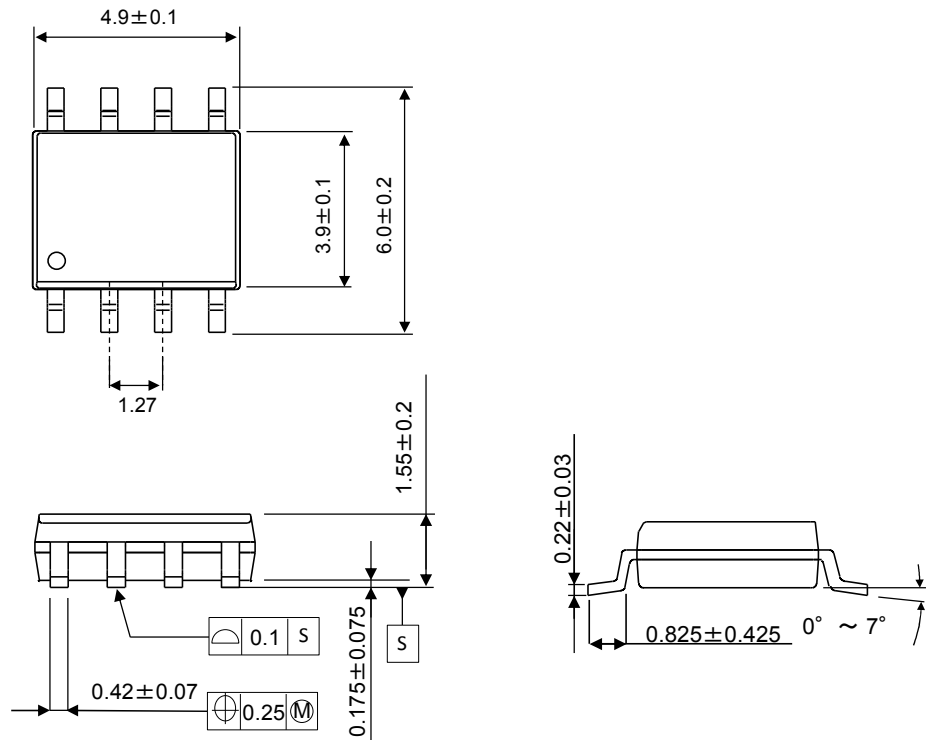


■ TYPICAL CHARACTERISTICS



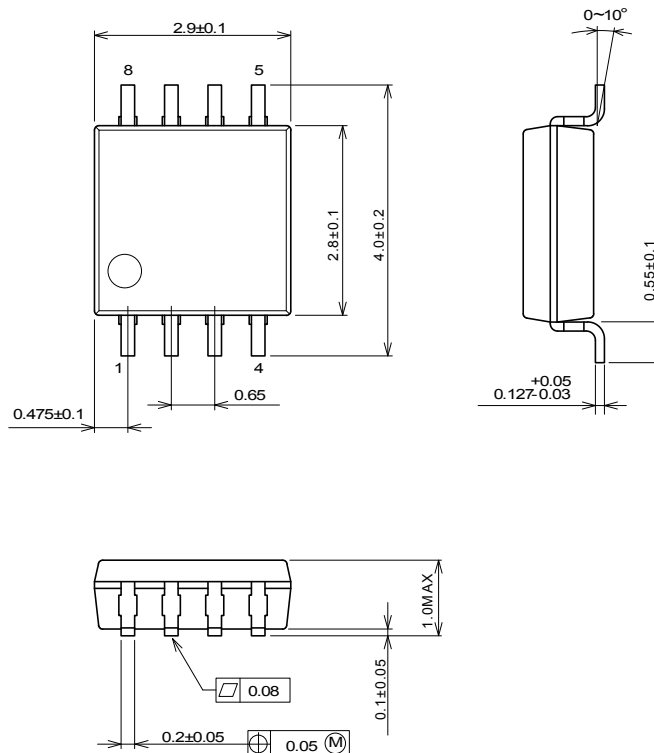
■PACKAGE OUTLINE UNIT : mm

SOP8



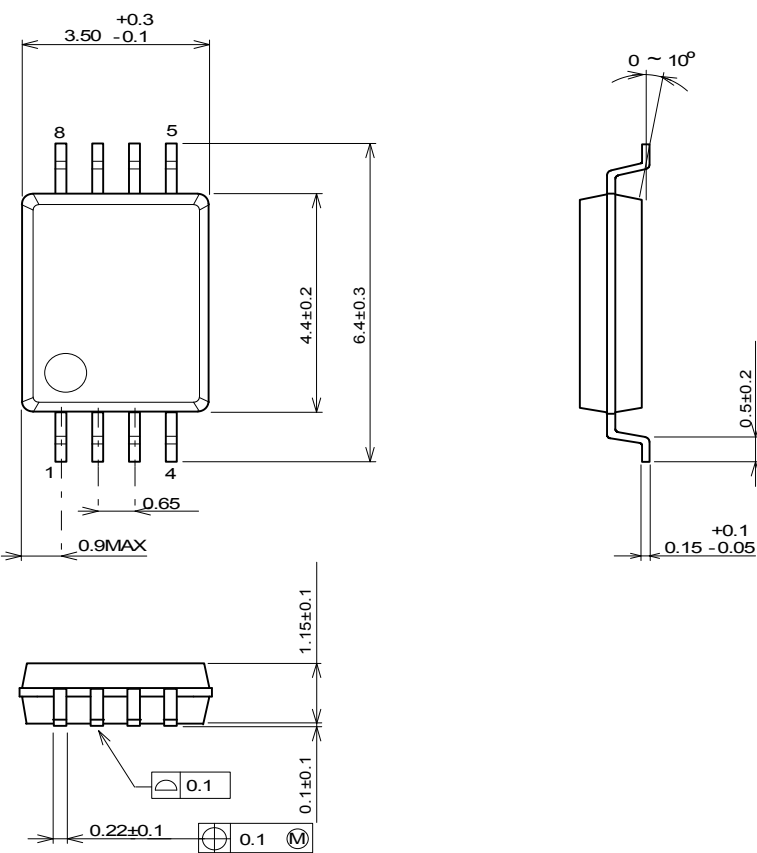
MSOP8 (TVSP8)*

*MEET JEDEC MO-187-DA/ THIN TYPE



NJM8080

SSOP8



[CAUTION]

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