

DUAL OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

NJM4580C is the dual operational amplifier, specially designed for improving the tone control, which is suitable for the audio application.

Featuring noiseless, higher gain bandwidth, high output current and low distortion ratio, and it is most suitable not only for acoustic electronic parts of audio pre-amp and active filter, but also for the industrial measurement tools. It is also suitable for the head phone amp at higher output current, and further more, it can be applied for the handy type set operational amplifier of general purpose in application of low voltage single supply type which is properly biased of the low voltage source.

■ FEATURES

- Operating Voltage $\pm 2V$ to $\pm 18V$
- Low Input Noise Voltage $5nV/\sqrt{Hz}$ typ. at $f=1kHz$
- Gain Bandwidth Product $15MHz$ typ.
- Low Distortion 0.0005% typ.
- Slew Rate $5V/\mu s$ typ.
- Bipolar Technology
- Package Outline SOP8, SSOP8
- Internal ESD protection
Human body model (HBM) $\pm 2000V$ typ.

■ PACKAGE OUTLINE

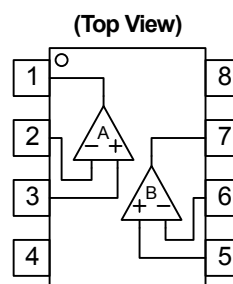


NJM4580CG
(SOP8)



NJM4580CV
(SSOP8)

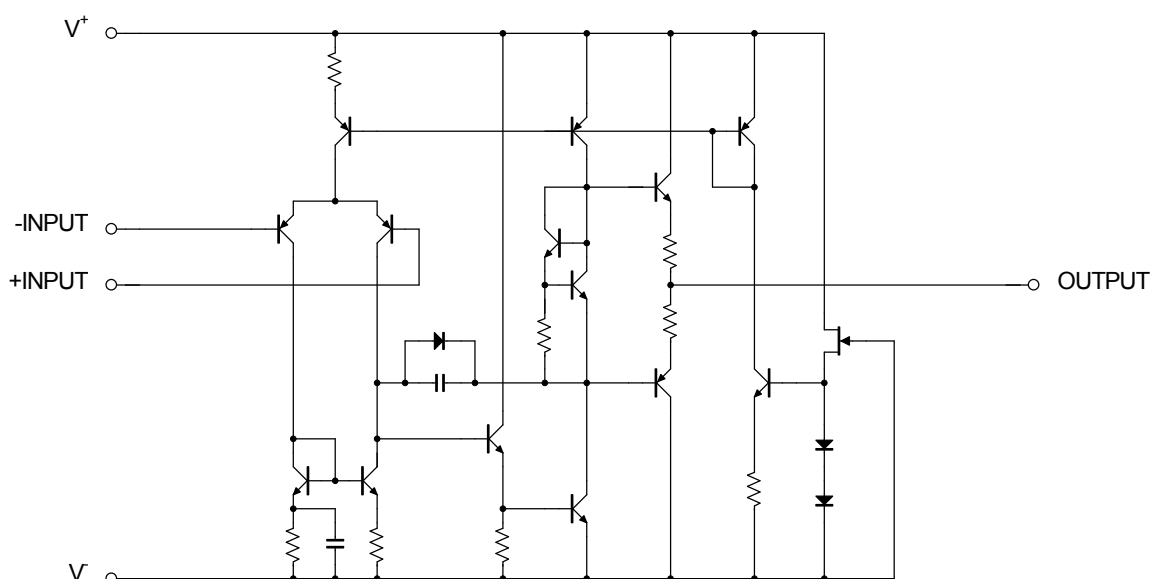
■ PIN CONFIGURATION



NJM4580CG
NJM4580CV

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)



NJM4580C

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

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage	V^+V^-	± 18	V
Differential Input Voltage (Note1) (Note2)	V_{ID}	± 36	V
Input Voltage (Note2)	V_{IC}	± 18	V
Power Dissipation	P_D	SOP : 550 (Note3) 820 (Note4) SSOP : 350 (Note3) 440 (Note4)	mW
Operating Temperature Range	T_{opr}	-40~+85	°C
Storage Temperature Range	T_{stg}	-65~+125	°C

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

(Note2) For supply voltage less than $\pm 15V$, the absolute maximum rating is equal to the supply voltage.

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

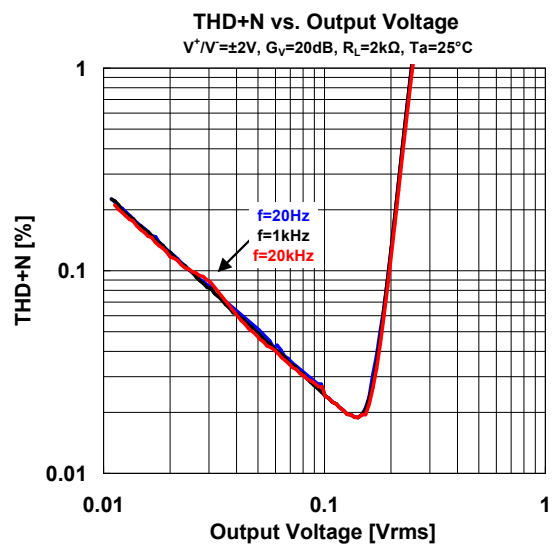
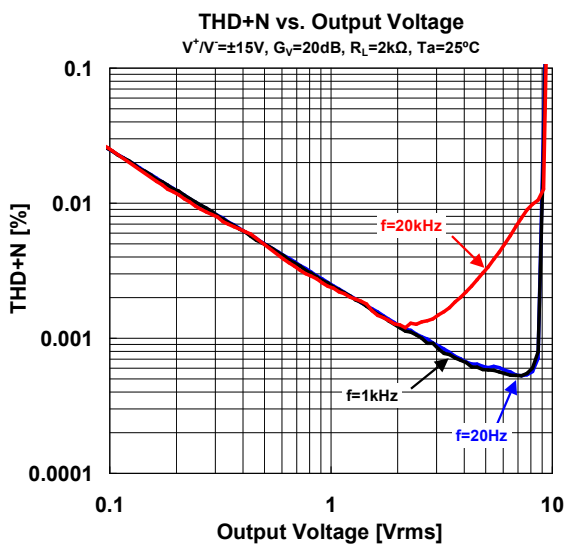
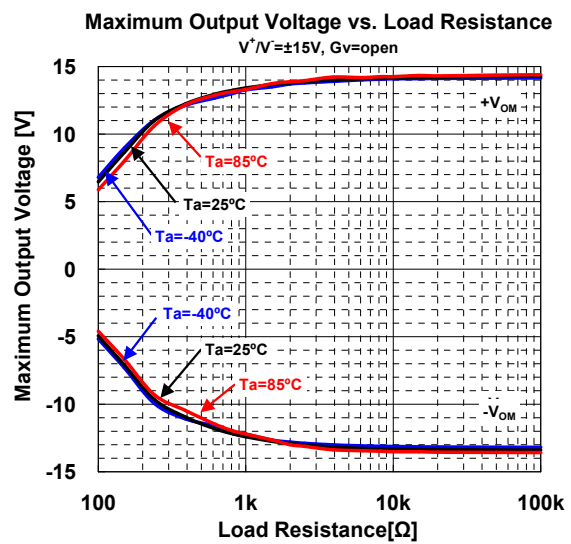
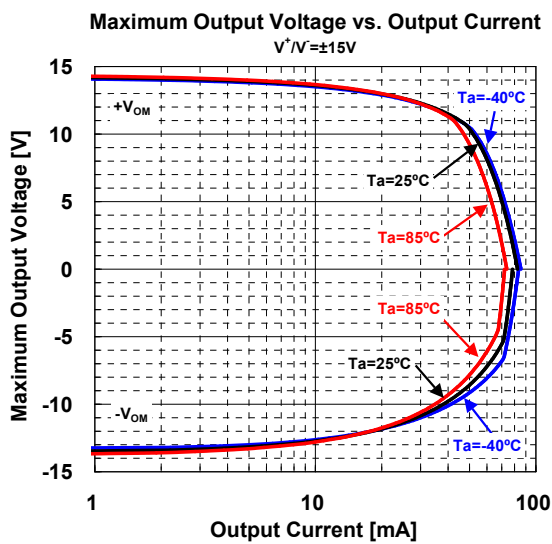
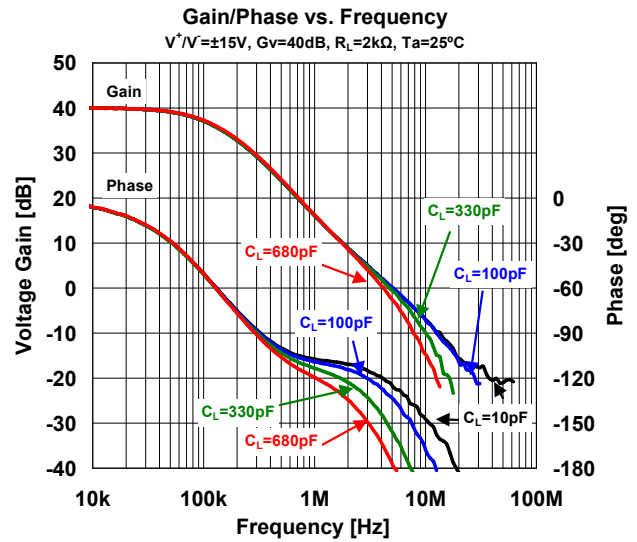
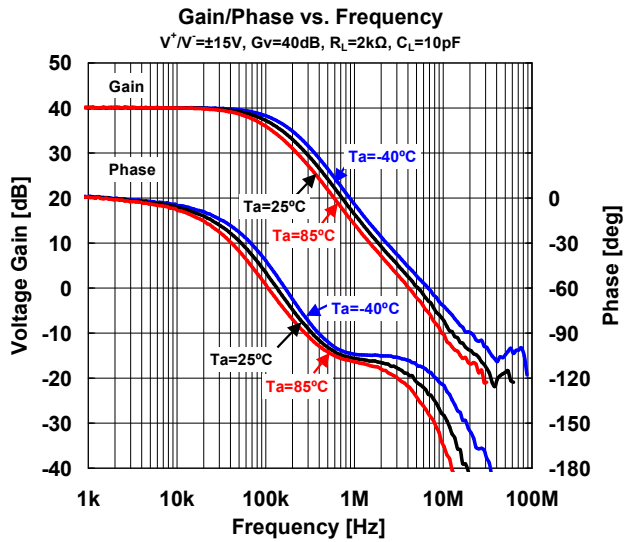
■ RECOMMENDED OPERATING CONDITIONS (Ta=25°C)

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.)

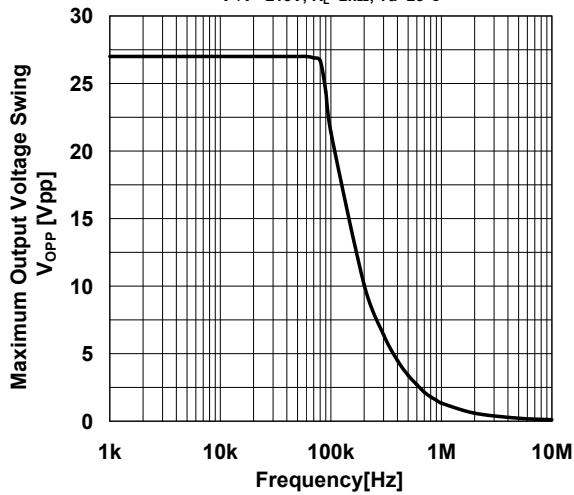
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Input Offset Voltage	V_{IO}	$R_S \leq 10k\Omega$	-	0.3	3	mV
Input Offset Current	I_{IO}		-	5	200	nA
Input Bias Current	I_B		-	100	500	nA
Input Resistance	R_{IN}		-	0.5	-	M Ω
Large Signal Voltage Gain	A_V	$R_L \geq 2k\Omega$, $V_O = \pm 10V$	90	110	-	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/ μ s
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	V_{NI}	RIAA, $R_S = 2.2k\Omega$, 30kHz LPF	-	0.8	-	μ Vrms
Equivalent Input Noise Voltage2	e_n	$f = 1kHz$	-	5	-	nV/ $\sqrt{Hz}$

■ TYPICAL CHARACTERISTICS

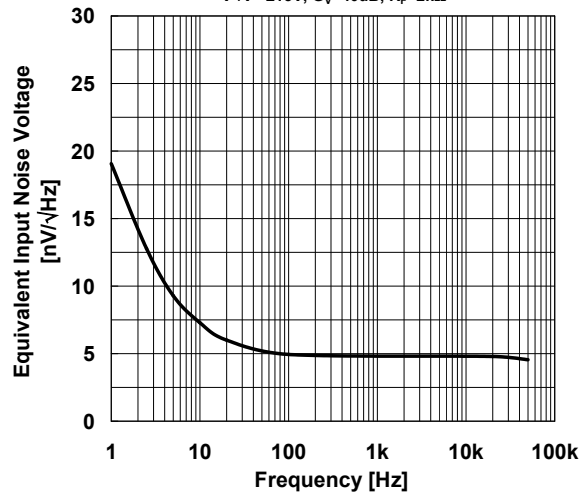


■ TYPICAL CHARACTERISTICS

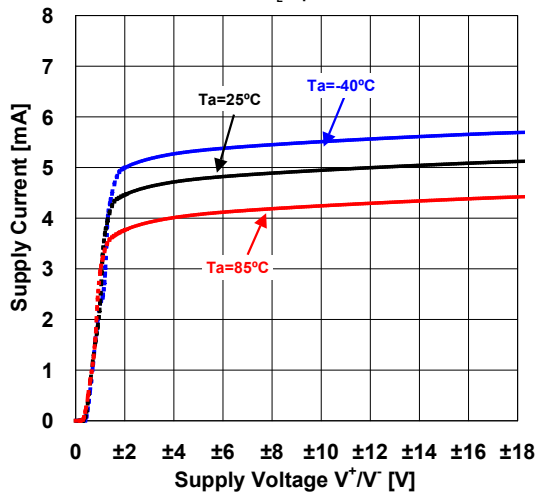
Maximum Output Voltage Swing vs. Frequency
 $V^+/V^- = \pm 15V$, $R_L = 2k\Omega$, $T_a = 25^\circ C$



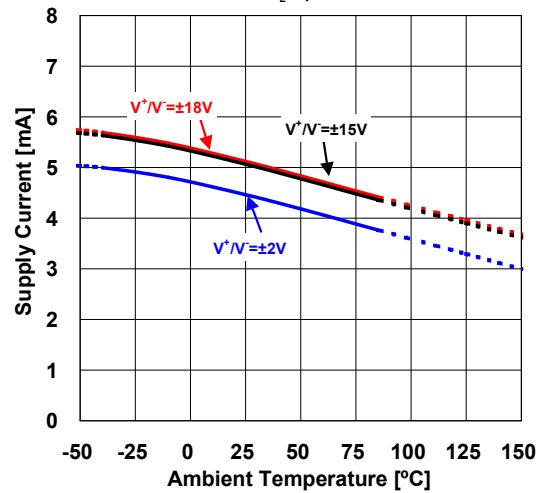
Voltage Noise vs. Frequency
 $V^+/V^- = \pm 15V$, $G_V = 40dB$, $R_F = 2k\Omega$



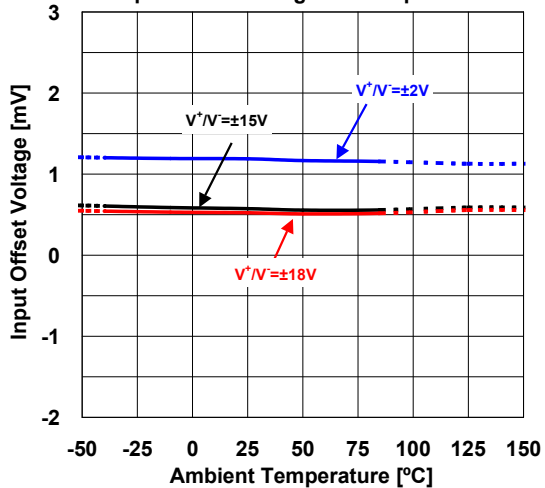
Supply Current vs. Supply Voltage
 $R_L = open$



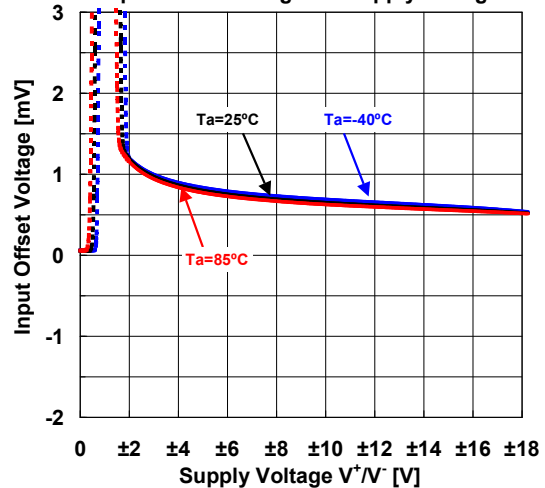
Supply Current vs. Temperature
 $R_L = open$



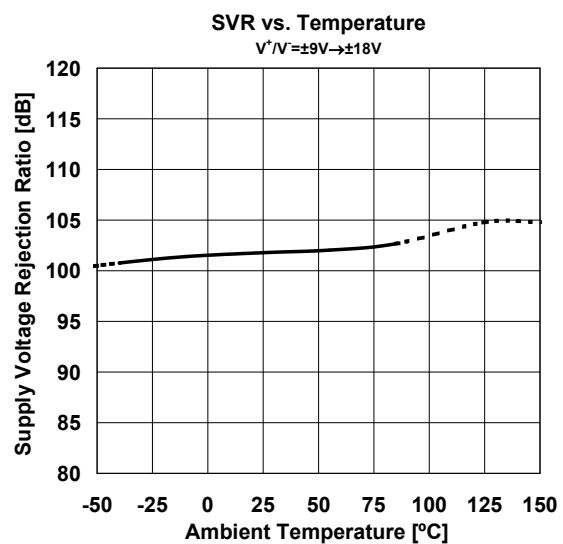
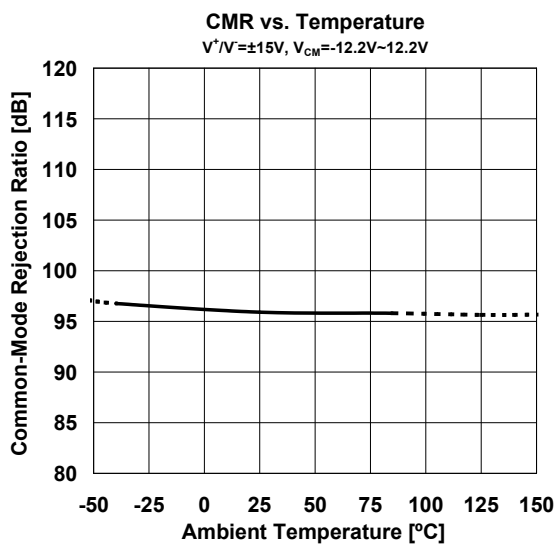
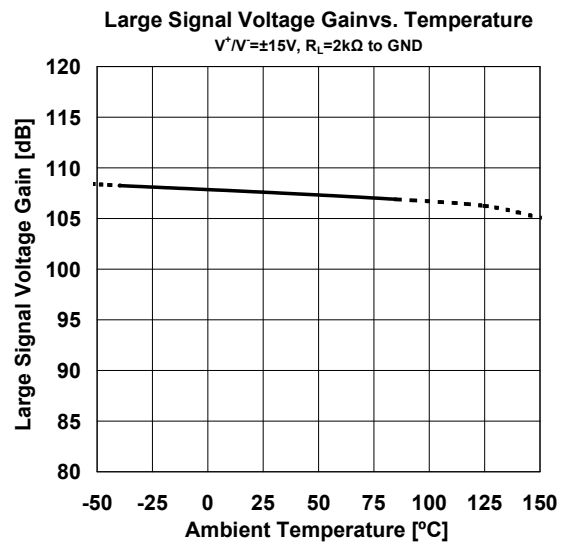
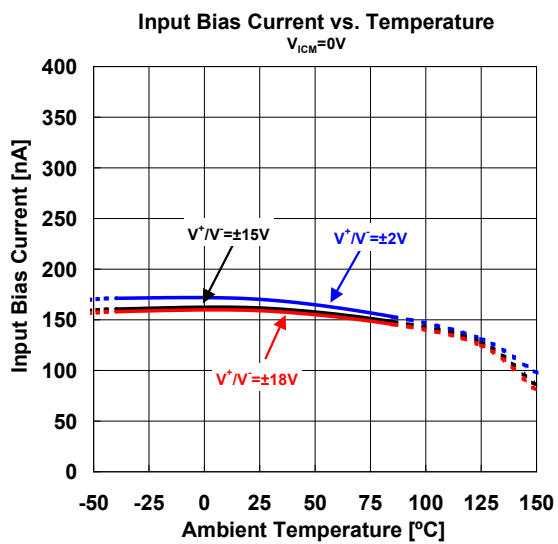
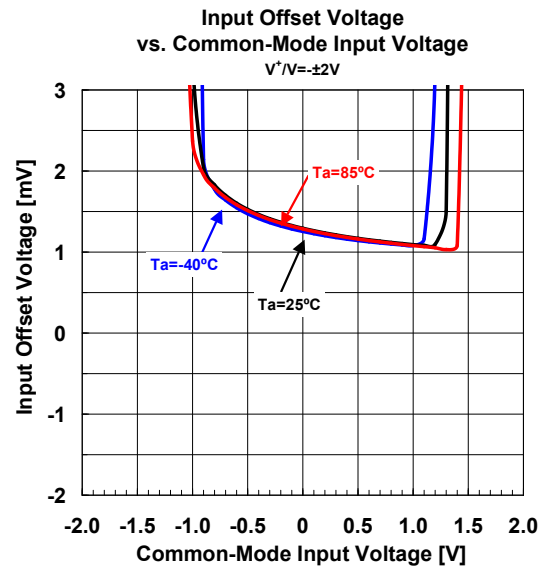
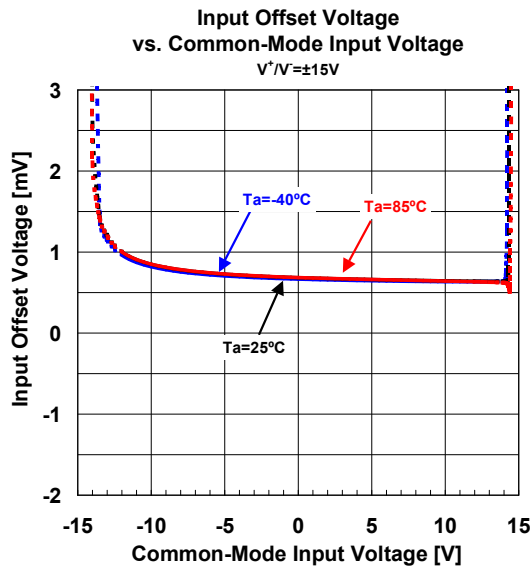
Input Offset Voltage vs. Temperature



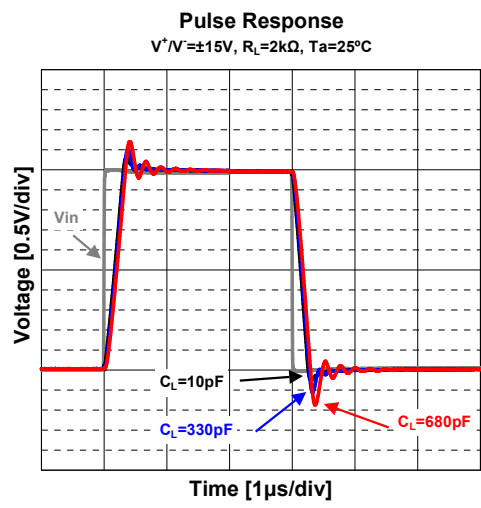
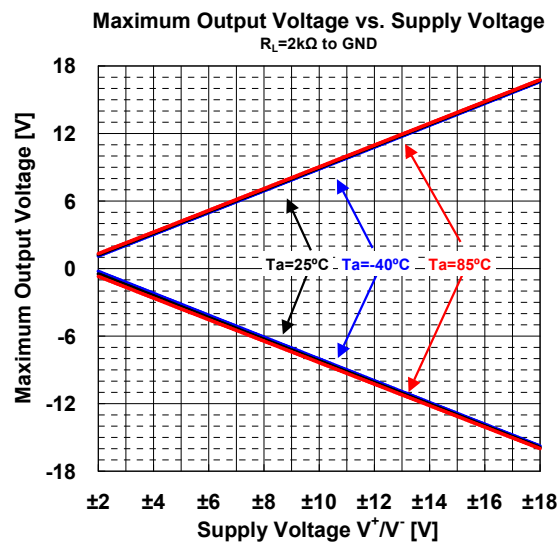
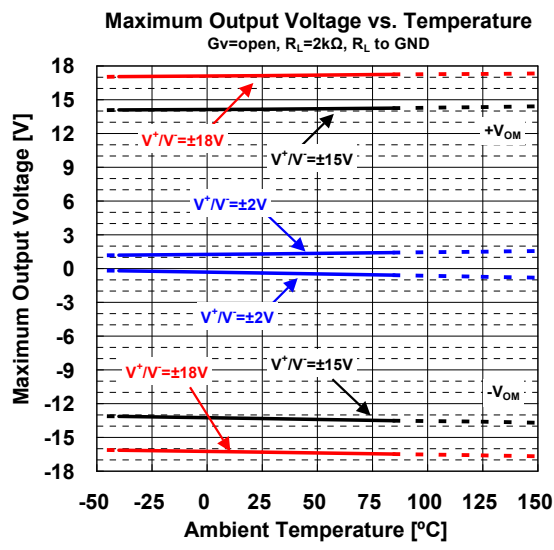
Input Offset Voltage vs. Supply Voltage



■ TYPICAL CHARACTERISTICS

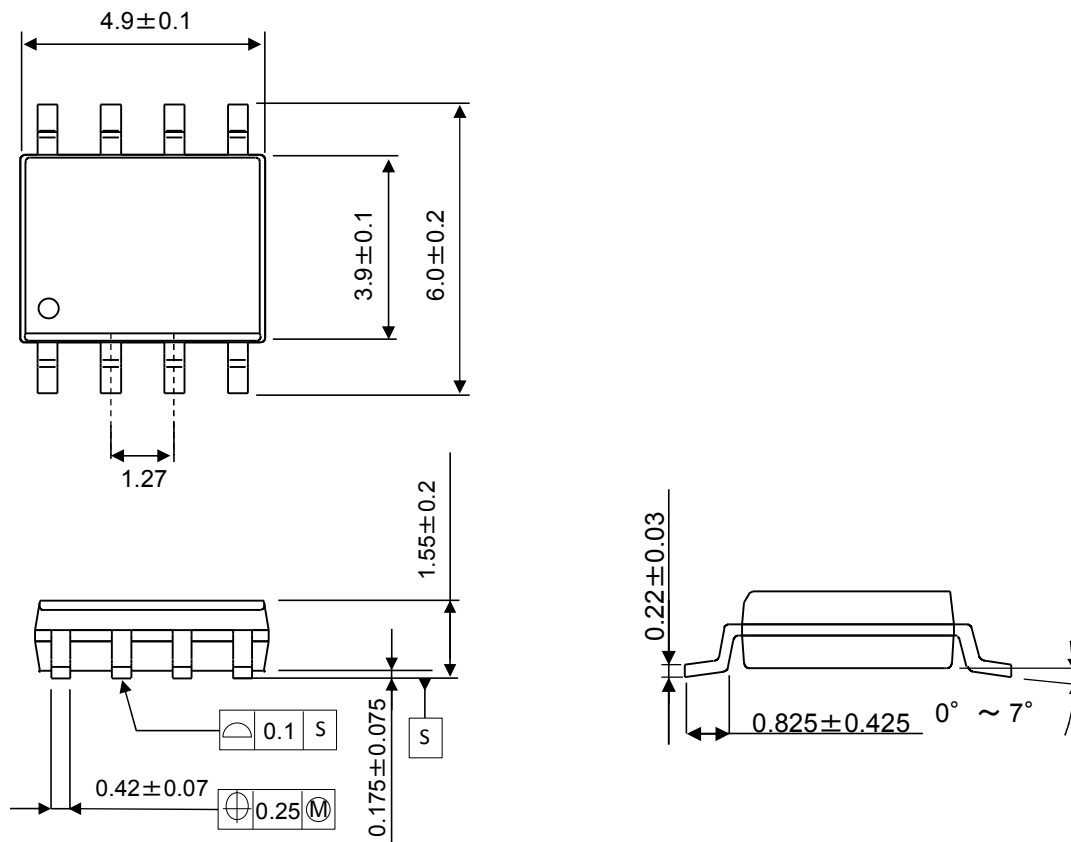


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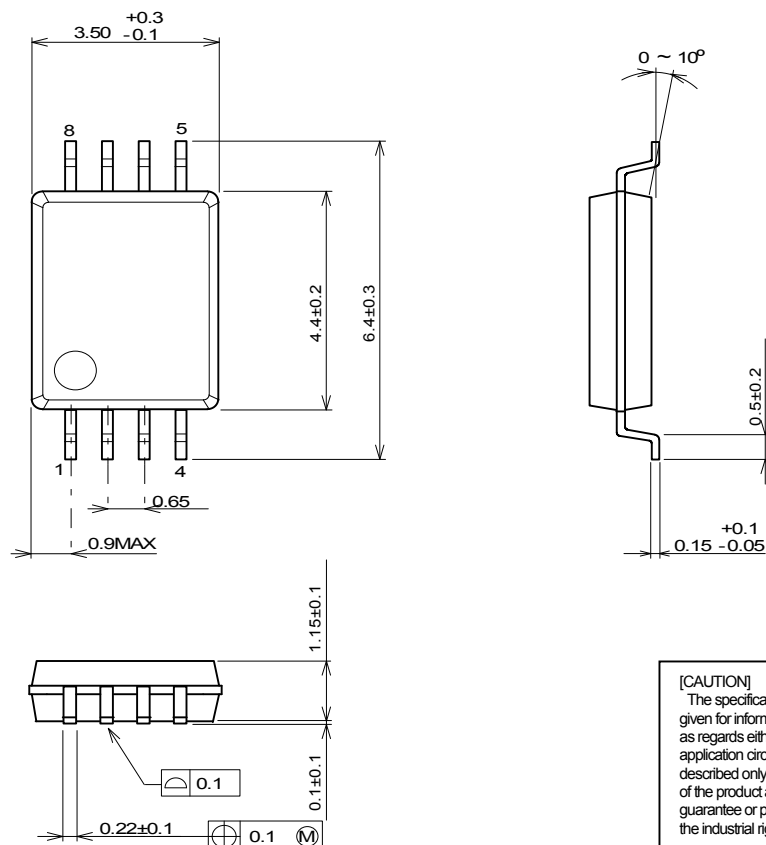


■PACKAGE OUTLINE UNIT : mm

SOP8



SSOP8



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