

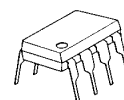
Input/Output Full-Swing High Output Current Dual C-MOS Operational Amplifier

■GENERAL DESCRIPTION

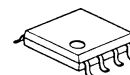
The NJU7043 is a dual C-MOS operational amplifier permitting a full-swing input and output in under high load.

Based on C-MOS technology, there are excellent features such as high output current, low current consumption, and low operating voltage.

■PACKAGE OUTLINE



NJU7043D



NJU7043M



NJU7043V



NJU7043RB1

■FEATURES

- Operating Voltage
- Input/Output Full-Swing
- High Output Current
- Input Offset Voltage
- Wide Input Common Mode Voltage Range
- Operating Current
- High Input Impedance
- Low Input Bias Current
- Ground Sensing
- Package

$V_{DD}=1.8$ to $5.0V$

$I_{source}>40mA$ typ.

$I_{sink}<-40mA$ typ.

$V_{IO}=10mV$ max.

V_{SS} to V_{DD}

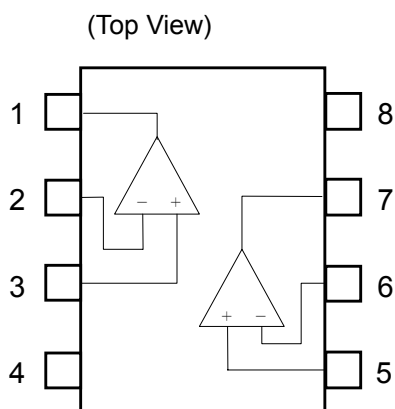
$I_{DD}=300\mu A$ typ. (per Amplifier)

$1T\Omega$ typ.

$I_B=1pA$ typ.

DIP8, DMP8, SSOP8, TVSP8

■PIN CONFIGURATION



PIN FUNCTION

- 1.OUTPUT1
- 2.-INPUT1
- 3.+INPUT1
4. V_{SS}
- 5.+INPUT2
- 6.-INPUT2
- 7.OUTPUT2
8. V_{DD}

■ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage	V _{DD}	5.5	V
Power Dissipation	P _D	500 (DIP8) 250 (SSOP8) 300 (DMP8) 320 (TVSP8)	mW
Operating Temperature Range	Topr	-40 ~ +85	°C
Storage Temperature Range	Tstg	-55 ~ +125	°C

(note1) When supply voltage is less than 5.5.V, the absolute maximum input voltage is equal to the voltage.

(note2) Decoupling capacitor should be connected between V_{DD} and V_{SS} due to the stabilized operation for the circuit.

■RECOMMENDED OPERATION CONDITION

(Ta=25°C)

PARAMETER	SYMBOL	RATING	UNIT
Supply Voltage	V _{DD}	1.8 ~ 5.0	V

■ELECTRICAL CHARACTERISTICS

● DC CHARACTERISTICS

(V_{DD}=3.0V, Ta=25°C)

PARAMETER	SYMBOL	RATING	MIN	TYP	MAX	UNIT
Operating Current	I _{DD}	No Signal, Dual Circuits	-	600	1,000	μA
Input Offset Voltage	V _{IO}		-	-	10	mV
Input Bias Current	I _B		-	1	-	pA
Input Offset Current	I _{IO}		-	1	-	pA
Voltage Gain	A _V	R _L =10kΩ	70	90	-	dB
Common Mode Rejection Ratio	CMR	0 ≤ V _{CM} ≤ 1.5V, 1.5 ≤ V _{CM} ≤ 3.0V (note3)	42	60	-	dB
Supply Voltage Rejection Ratio	SVR	2.0V ≤ V _{DD} ≤ 5.0V, V _{CM} =V _{DD} /2	61	80	-	dB
H Level Output Voltage 1	V _{OH1}	R _L =10kΩ	2.95	-	-	V
L Level Output Voltage 1	V _{OL1}	R _L =10kΩ	-	-	0.05	V
H Level Output Voltage 2	V _{OH2}	R _L =600Ω	2.90	-	-	V
L Level Output Voltage 2	V _{OL2}	R _L =600Ω	-	-	0.10	V
Input Common Mode Voltage Range	V _{ICM}	CMR>45dB	0	-	3	V

(note3) CMR is represented by either CMR+ or CMR- which has lower value.

CMR+ is measured with 1.5V ≤ V_{CM} ≤ 3V and CMR- is measured with 0V ≤ V_{CM} ≤ 1.5V.

● AC CHARACTERISTICS

(V_{DD}=3.0V, Ta=25°C)

PARAMETER	SYMBOL	RATING	MIN	TYP	MAX	UNIT
Unity Gain Bandwidth	GB	R _L =10kΩ	-	0.8	-	MHz
Total Harmonic Distortion	THD	f=1kHz, V _{in} =1V _{pp} , A _v =0dB	-	0.05	-	%
Equivalent Input Noise Voltage	e _n	f=1kHz	-	40	-	nV/ √Hz

● TRANSIENT CHARACTERISTICS

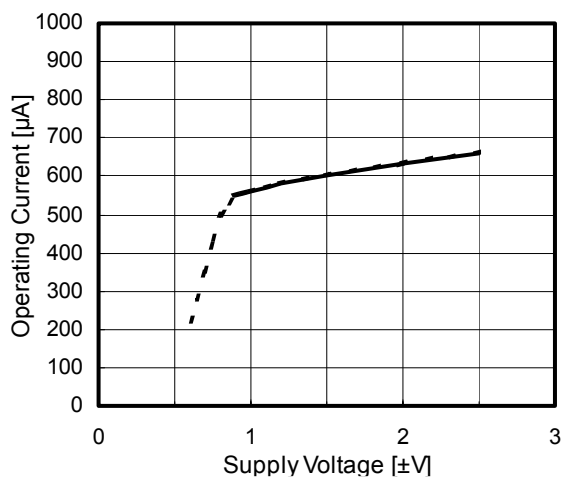
(V_{DD}=3.0V, Ta=25°C)

PARAMETER	SYMBOL	RATING	MIN	TYP	MAX	UNIT
Slew Rate	SR	R _L =10kΩ	-	0.7	-	V/μs

TYPICAL CHARACTERISTICS

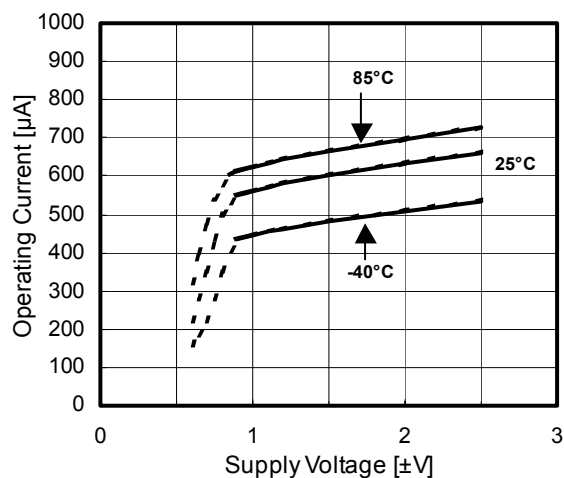
Operating Current vs. Supply Voltage

$G_v=0\text{dB}$, $T_a=25^\circ\text{C}$



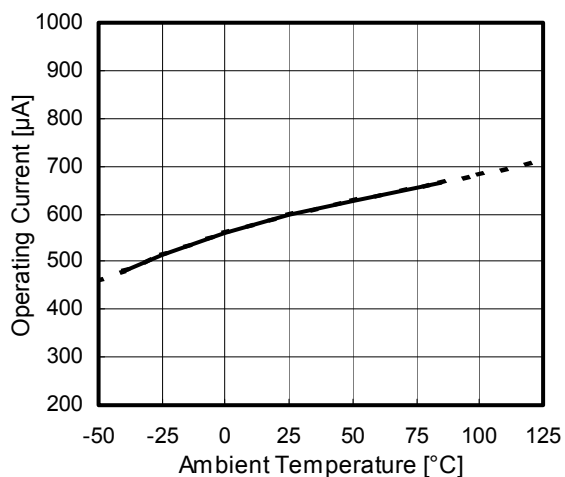
Operating Current vs. Supply Voltage (TEMP.)

$G_v = 0\text{dB}$



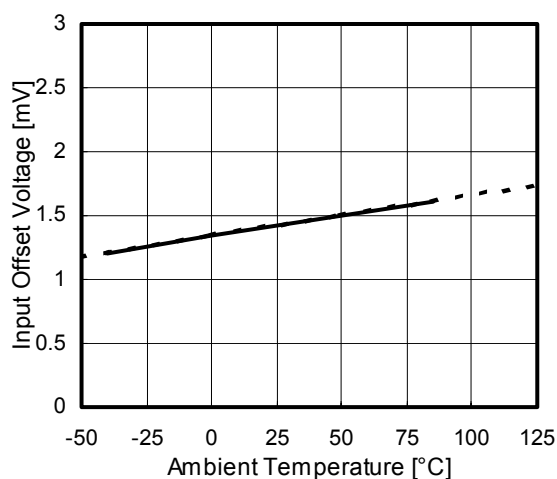
Operating Current vs. Temperature

$V_+/V_-=\pm 1.5\text{V}$, $G_v = 0\text{dB}$



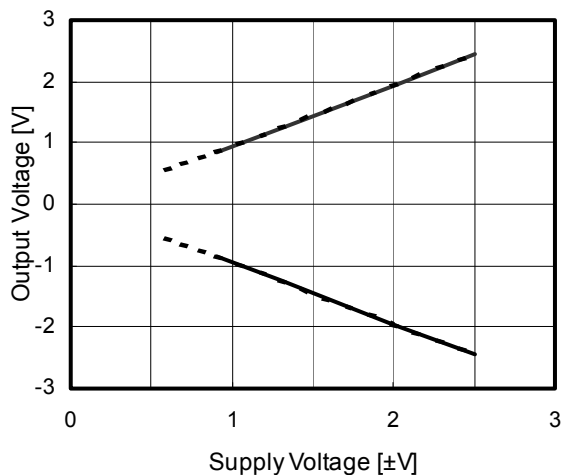
Input Offset Voltage vs. Temperature

$V_+/V_-=\pm 1.5\text{V}$



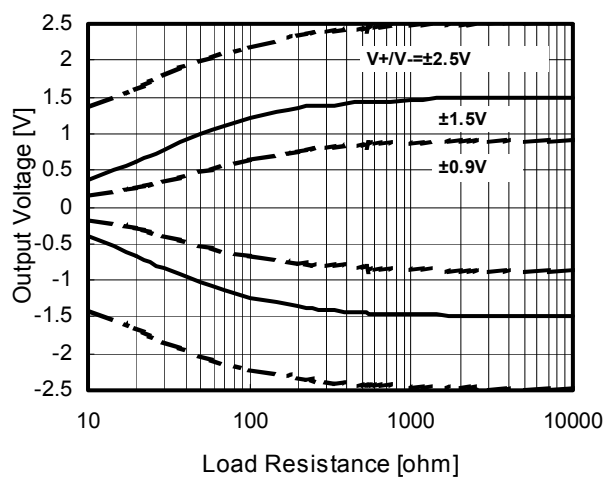
Output Voltage vs. Supply Voltage

$R_L=600\Omega$, $T_a=25^\circ\text{C}$



Output Voltage vs. Load Resistance

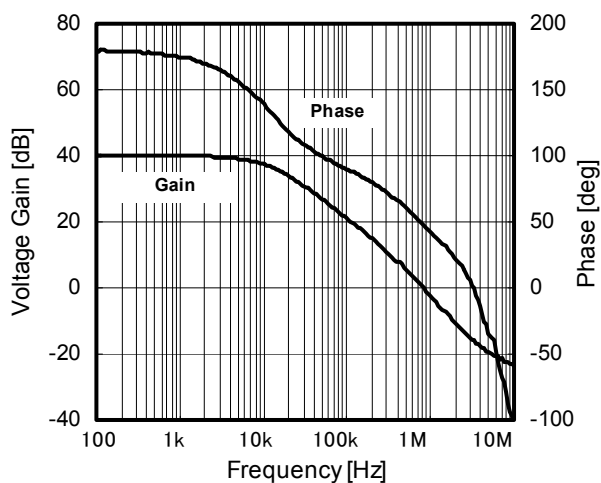
$T_a=25^\circ\text{C}$



■ TYPICAL CHARACTERISTICS

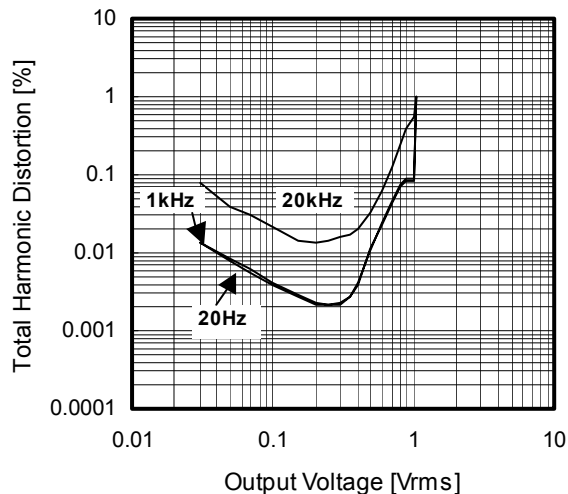
Voltage Gain, Phase vs. Frequency

$V_{+}/V_{-}=\pm 1.5V$, $G_v=40dB$, $R_f=100k$, $R_g=1k$, $C_L=0$



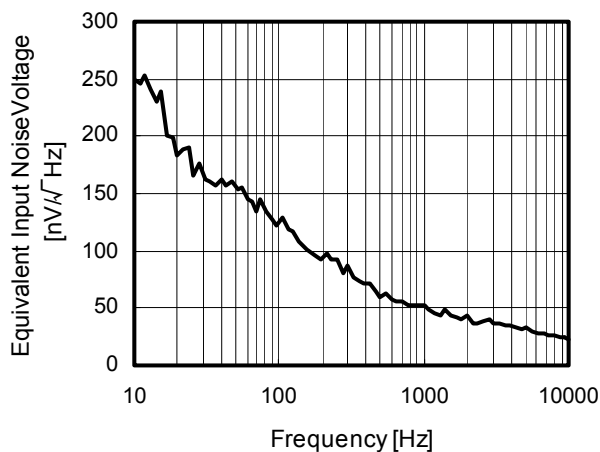
THD vs. Output Voltage

$V_{+}/V_{-}=\pm 1.5V$, $G_v=0dB$, $R_f=10k$, $T_a=25^{\circ}C$



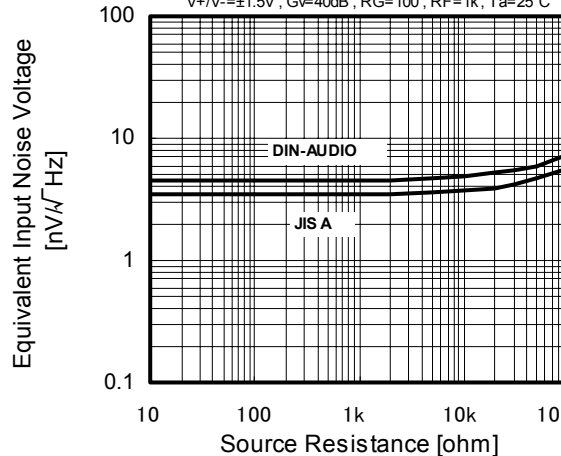
Equivalent Input Noise Voltage vs. Frequency

$V_{+}/V_{-}=\pm 1.5V$, $G_v=40dB$, $R_s=600$, $R_G=100$, $R_F=10k$, $T_a=25^{\circ}C$



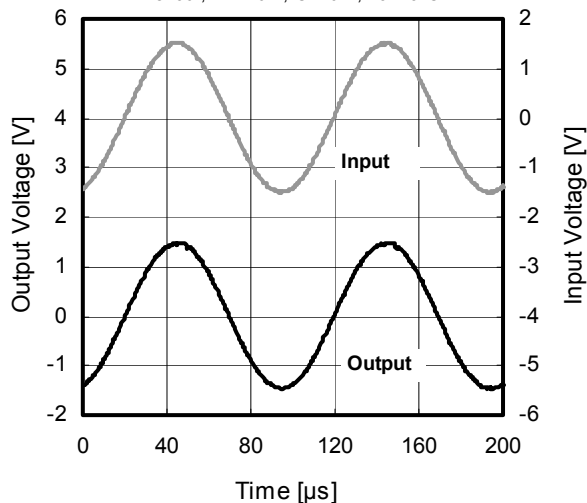
Equivalent Input Noise Voltage vs. Source Resistance

$V_{+}/V_{-}=\pm 1.5V$, $G_v=40dB$, $R_G=100$, $R_F=1k$, $T_a=25^{\circ}C$



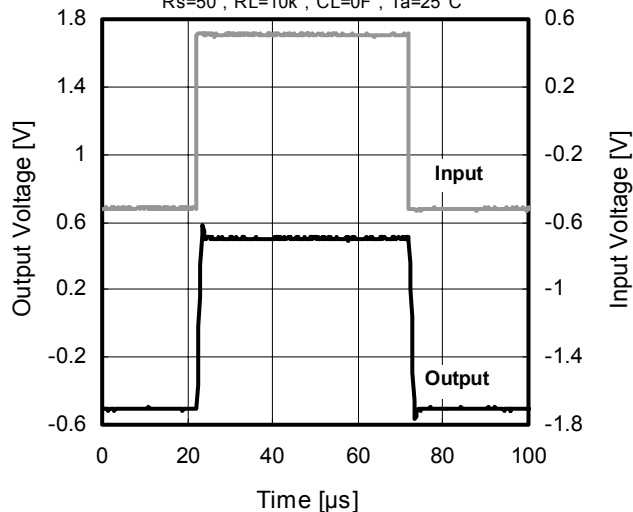
Sin Wave Response

$V_{+}/V_{-}=\pm 1.5V$, $V_{in}=3Vp-p$, $f=10kHz$, $G_v=0dB$
 $R_s=50$, $R_L=10k$, $C_L=0F$, $T_a=25^{\circ}C$



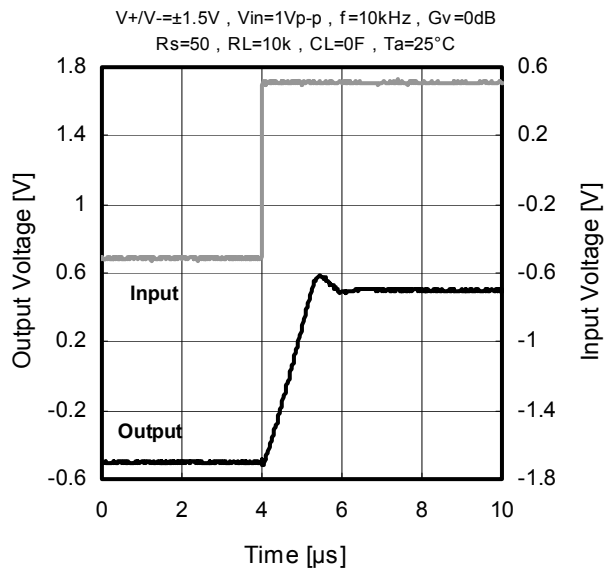
Pulse Response

$V_{+}/V_{-}=\pm 1.5V$, $V_{in}=1Vp-p$, $f=10kHz$, $G_v=0dB$
 $R_s=50$, $R_L=10k$, $C_L=0F$, $T_a=25^{\circ}C$

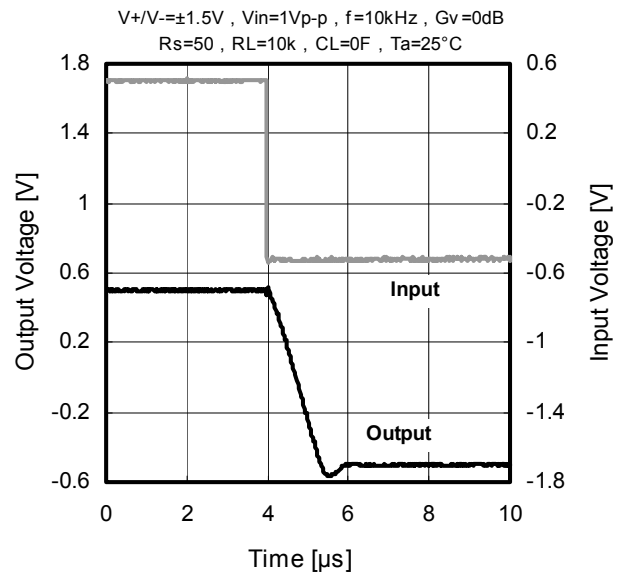


TYPICAL CHARACTERISTICS

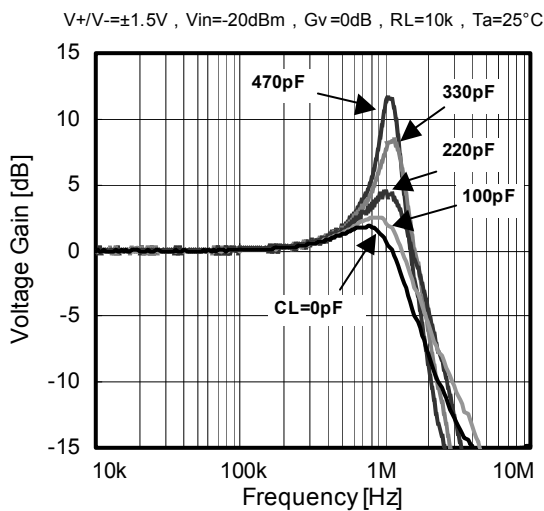
Pulse Response(Rise)



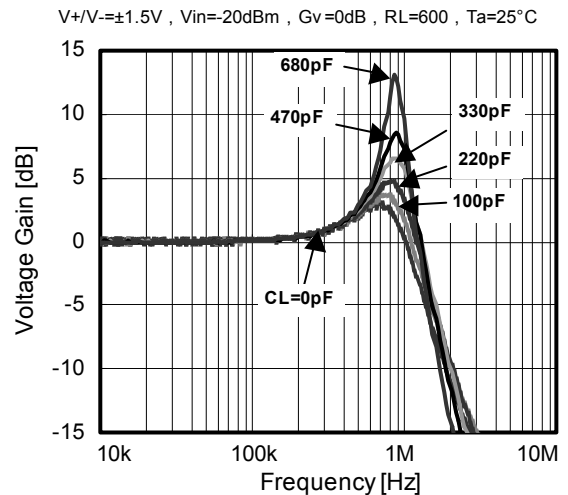
Pulse Response(Fall)



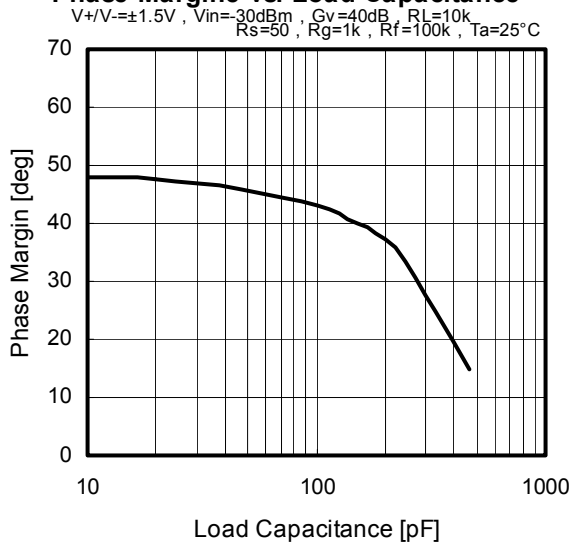
Voltage Gain vs. Frequency(Load C.)



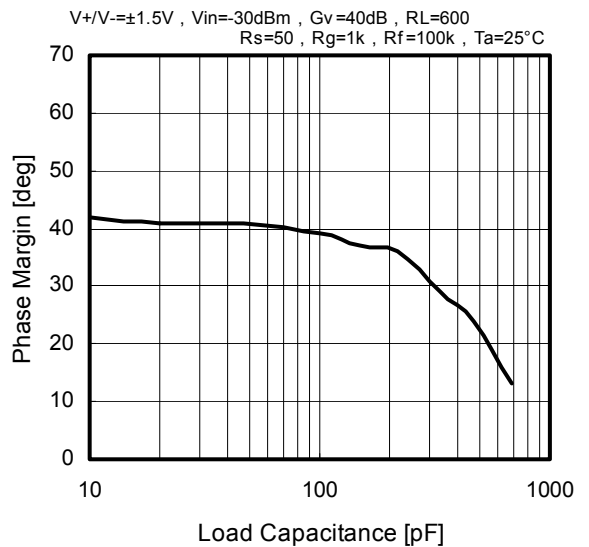
Voltage Gain vs. Frequency(Load C.)



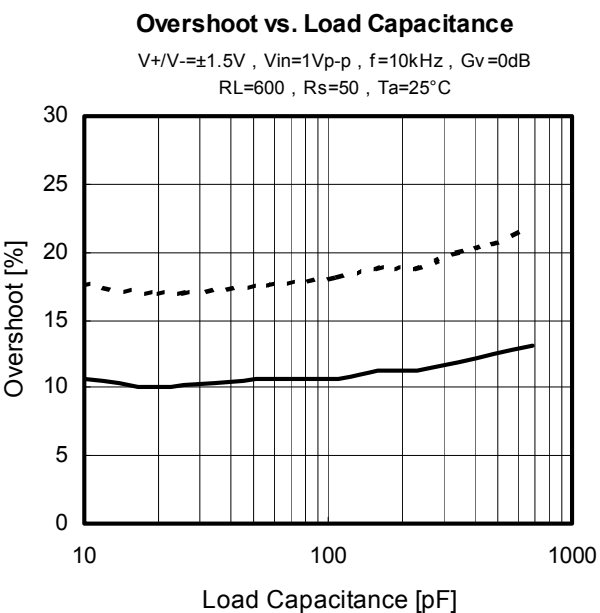
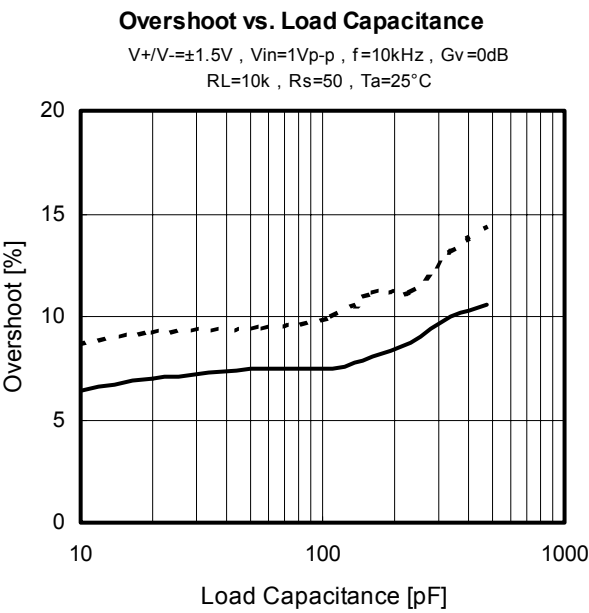
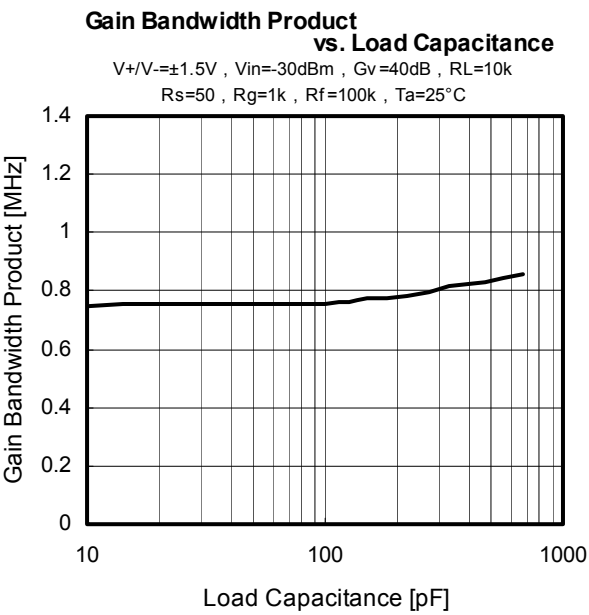
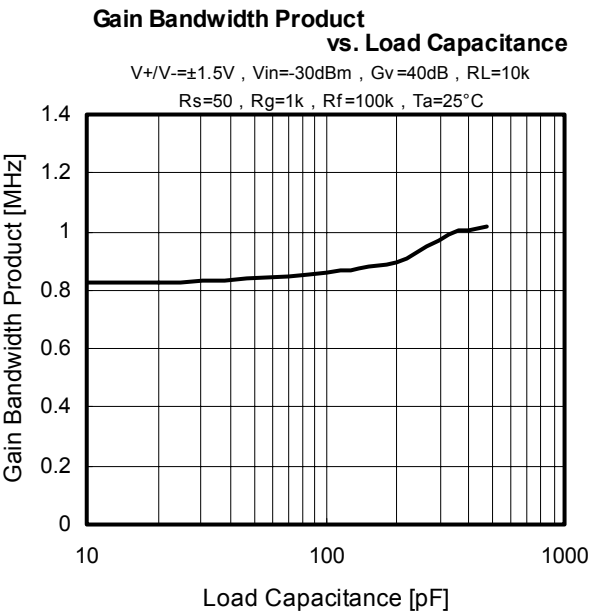
Phase Margin vs. Load Capacitance



Phase Margin vs. Load Capacitance



■TYPICAL CHARACTERISTICS



[CAUTION]
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