

HIGH SPEED SINGLE SUPPLY OPERATIONAL AMPLIFIER

■ GENERAL DESCRIPTION

The **NJM2742** is a high speed single supply operational amplifier. The low V_{OL} enables to treat small output signal on a single supply.

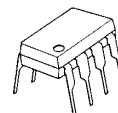
It has wide supply voltage range, +3 to +32 volt and high slew rate.

The **NJM2742** is suitable for power supply and motor driver units.

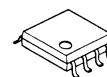
■ FEATURES

- Single Supply
- Operating Voltage (3 to 32V)
- Low Saturation Output Voltage ($V_{OL} = 0.2V$ typ. at $R_L = 2k\Omega, V^+ = 5V$)
- High Slew Rate ($10V/\mu s$ typ.)
- Bipolar Technology
- Package Outline DIP8, DMP8, SSOP8, TVSP8

■ PACKAGR OUTLINE



NJM2742D



NJM2742M

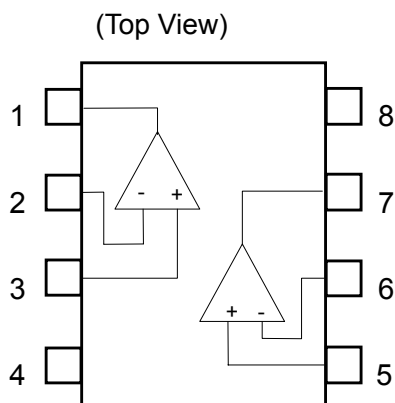


NJM2742V



NJM2742RB1

■ PIN CONFIGURATION



PIN FUNCTION

- 1.A OUTPUT
- 2.A -INPUT1
- 3.A +INPUT1
- 4.V⁻
- 5.B +INPUT2
- 6.B -INPUT2
- 7.B OUTPUT2
- 8.V⁺

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+	+36	V
Differential Input Voltage	V_{ID}	± 36	V
Common Mode Input Voltage	V_{IC}	-0.3 to +36	V
Power Dissipation	P_D	500 (DIP8) 300 (DMP8) 250 (SSOP8) 320 (TVSP8)	mW
Operating Temperature Range	Topr	-40 to +85	°C
Storage Temperature Range	Tstg	-40 to +150	°C

■ RECOMMENDED OPERATING CONDITION

(Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Operating Voltage Range	V^+		3.0	-	32	V

■ DC CHARACTERISTICS

($V^+/V^- = \pm 15V$, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Operating Current	I_{CC}	No Signal	-	4.3	5.5	mA
Input Offset Voltage	V_{IO}		-	1.0	12	mV
Input Bias Current	I_B		-	80	400	nA
Input Offset Current	I_{IO}		-	5	75	nA
Open Loop Voltage Gain	A_v	$R_L > 2k\Omega$	80	110	-	dB
Common Mode Rejection	CMR	$-15V < V_{IC} < 12.5V$	55	75	-	dB
Supply Voltage Rejection	SVR	$3V < V^+ < 32V$	70	90	-	dB
Maximum Output Voltage 1	V_{OM1}	$R_L > 10k\Omega$	+13.7 /-13.7	+14 /-14.8	-	V
Maximum Output Voltage 2	V_{OM2}	$R_L > 2k\Omega$	+13.5 /-13.5	-	-	V
Source Output Current	I_{SOURCE}	$V_{IN+} = 1V, V_{IN-} = 0V, V_O = 0V$	10	30	-	mA
Sink Output Current	I_{SINK}	$V_{IN+} = 0V, V_{IN-} = 1V, V_O = 0V$	10	30	-	mA
Input Common Mode Voltage Range	V_{ICM}	CMR > 55dB	-15	-	12.5	V

■ AC CHARACTERISTICS

($V^+/V^- = \pm 15V$, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Gain Bandwidth product	GB	$f = 10kHz$	-	2	-	MHz
Equivalent Input Noise Voltage	V_{NI}	$f = 1kHz$	-	40	-	nV/ $\sqrt{Hz}$
Capacitive Load Tolerance	CL		-	1000	-	pF

■ TRANSIENT CHARACTERISTICS

($V^+/V^- = \pm 15V$, Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Slew Rate	SR		-	10	-	V/ μs

■ DC CHARACTERISTICS

($V^+=+5V$, $T_a=25^\circ C$)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Operating Current	I_{CC}	No Signal	-	3.3	4.5	mA
Input Offset Voltage	V_{IO}		-	1.0	12	mV
Input Bias Current	I_B		-	80	400	nA
Input Offset Current	I_{IO}		-	5	75	nA
Open Loop Voltage Gain	A_v	$R_L > 2k\Omega$	80	110	-	dB
Common Mode Rejection	CMR	$0V < V_{IC} < 2.8V$	50	60	-	dB
Supply Voltage Rejection	SVR	$3V < V^+ < 32V$	70	90	-	dB
Maximum Output Voltage	V_{OH}	$R_L = 2k\Omega$	3.7	4.0	-	V
	V_{OL}	$R_L = 2k\Omega$	-	0.1	0.2	
Source Output Current	I_{SOURCE}	$V_{IN+}=1V, V_{IN-}=0V, V_O=2.5V$	10	30	-	mA
Sink Output Current	I_{SINK}	$V_{IN+}=0V, V_{IN-}=1V, V_O=2.5V$	10	30	-	mA
Input Common Mode Voltage Range	V_{ICM}	CMR > 50dB	0	-	2.8	V

■ AC CHARACTERISTICS

($V^+=+5V$, $T_a=25^\circ C$)

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Gain Bandwidth product	GB	$f=10kHz$	-	2	-	MHz
Equivalent Input Noise Voltage	V_{NI}	$f=1kHz$	-	40	-	nV/ $\sqrt{Hz}$
Capacitive Load Tolerance	CL		-	1000	-	pF

■ TRANSIENT CHARACTERISTICS

($V^+=+5V$, $T_a=25^\circ C$)

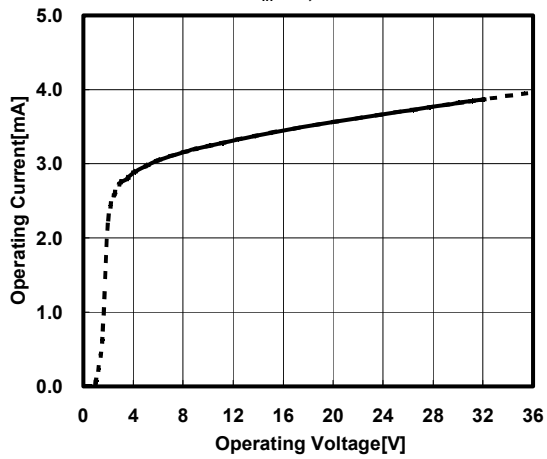
PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Slew Rate	SR		-	7	-	V/ μs

Note: The common mode input voltage range of NJM2742 is shifted toward the V- for single supply use.
At the low operating voltage, the center potential of the V+ and V- may be out of the common mode voltage range. In this case, shift the common mode input voltage toward the V-.

■ TYPICAL CHARACTERISTICS

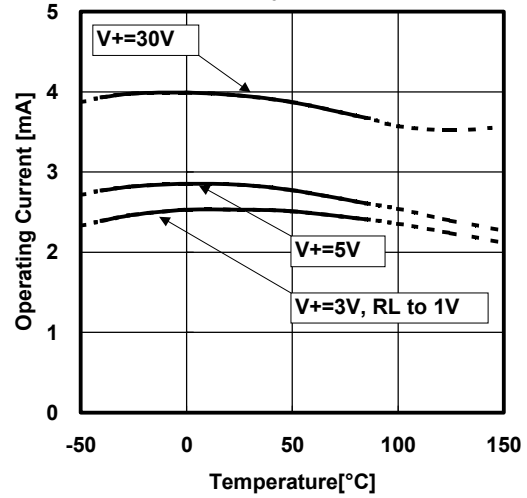
Operating Current vs. Operating Voltage

$V_{in}=0V, T_a=25^{\circ}C$



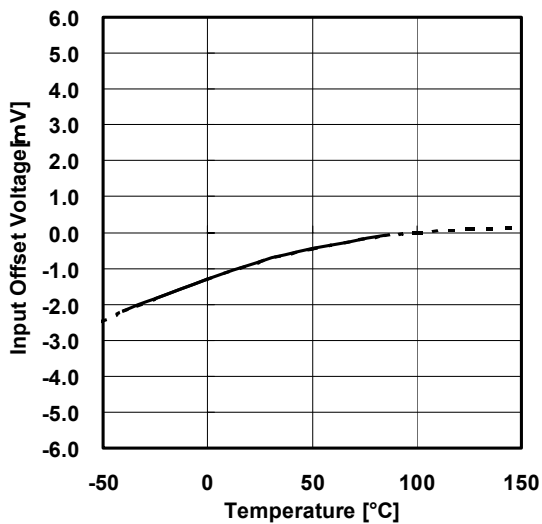
Operating Current vs. Temperature

$V_{in}=0V$



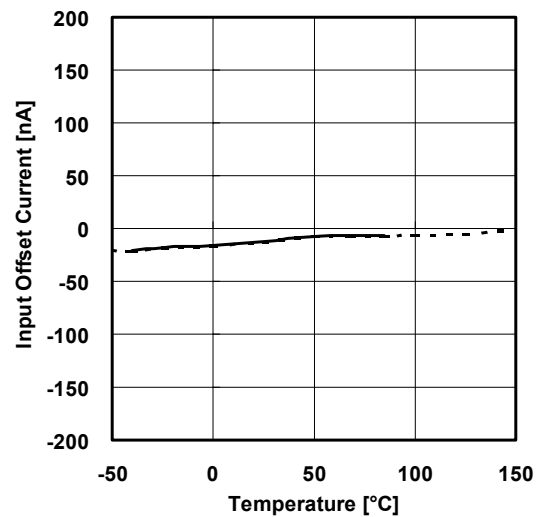
Input Offset Voltage vs. Temperature

$V+=5V$



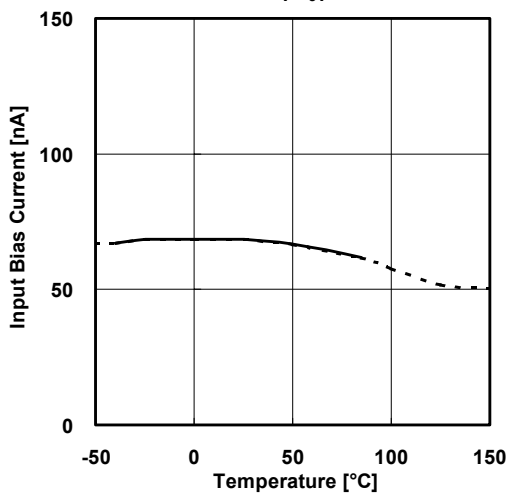
Input Offset Current vs. Temperature

$V+=5V$



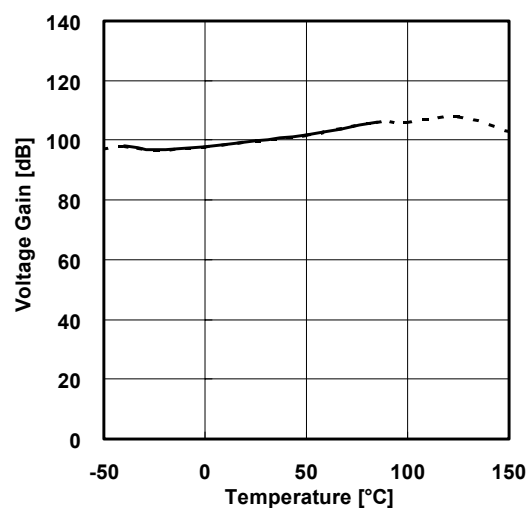
Input Bias Current vs. Temperature

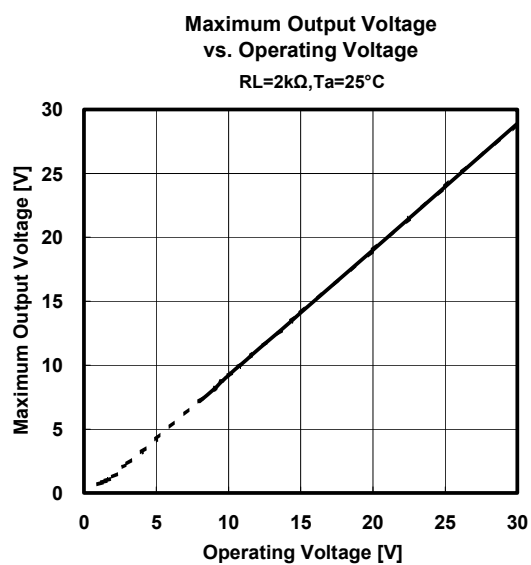
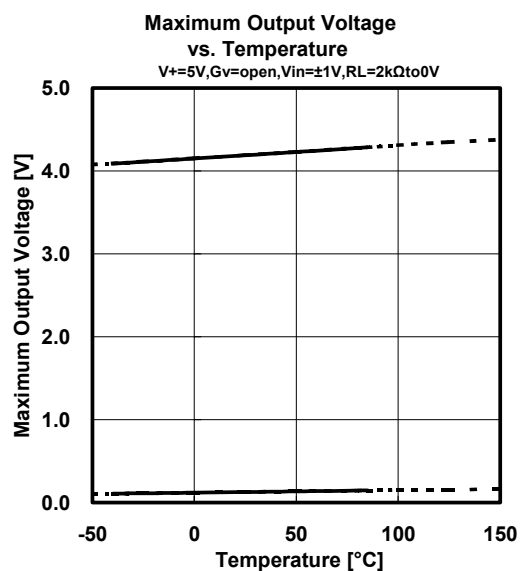
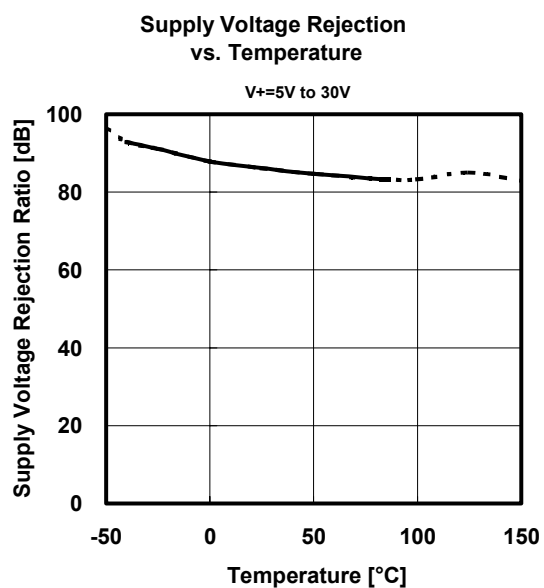
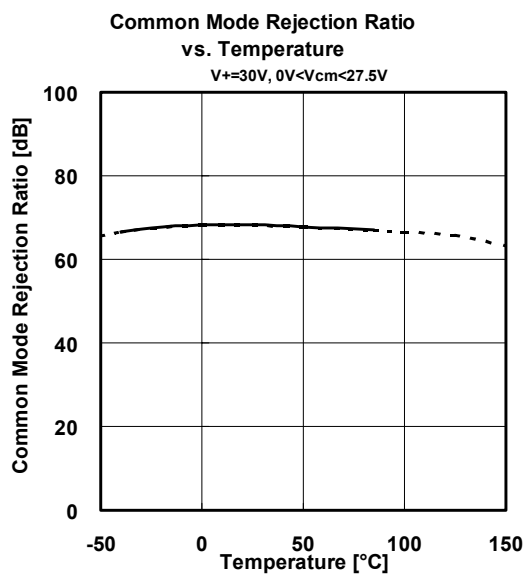
$V+=5V$



Voltage Gain vs. Temperature

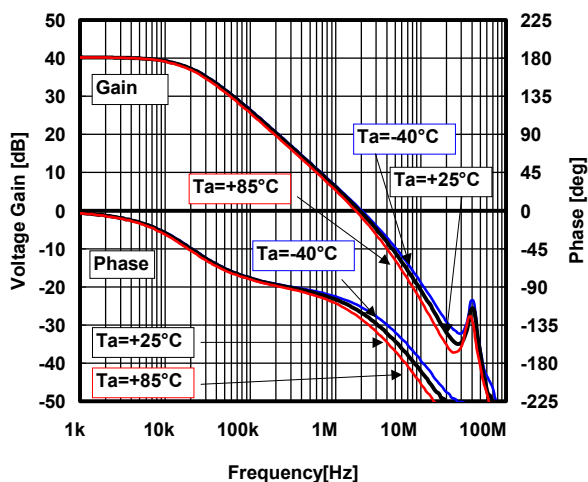
$V+=5V$





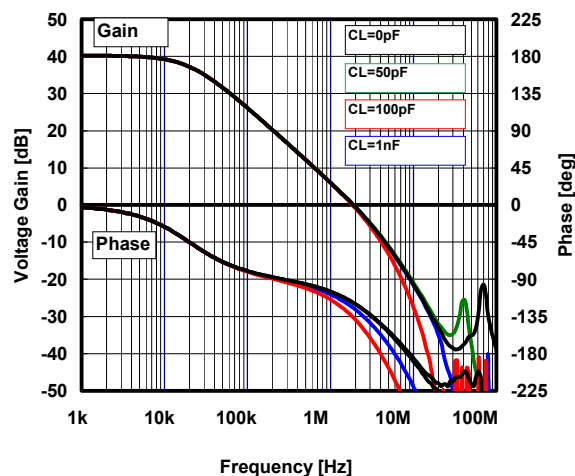
Voltage Gain & Phase vs. Frequency

V+=5V, VIN=0.02Vpp, GV=40dB, RT=50Ω, RF=1.98kΩ, RG=20Ω, CF=0, RL=2kΩ, CL=50pF



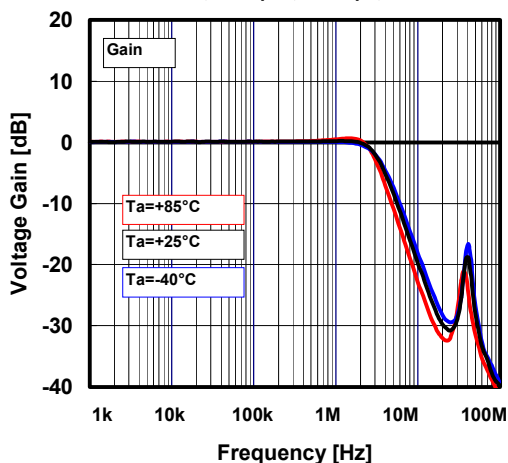
Voltage Gain & Phase vs. Frequency

V+=5V, VIN=0.01Vpp, GV=40dB, RT=50Ω, RF=1.98kΩ, RG=20Ω, RL=10kΩ, Ta=+25°C



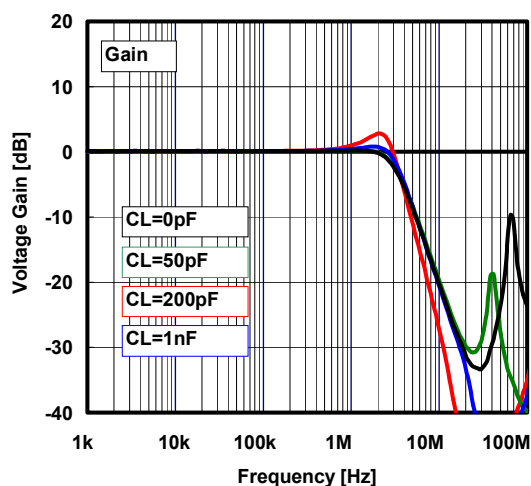
Peak Gain of Voltage Follower

V+=5V, VIN=0.02Vpp, GV=0dB, RT=50Ω, RF=0Ω, RG=open, CL=50pF, RL=1kΩ



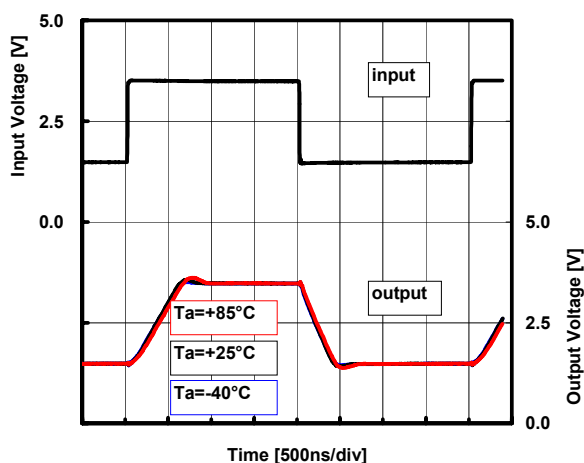
Peak Gain of Voltage Follower

V+=5V, VIN=0.02Vpp, GV=0dB, RT=50Ω, RF=0Ω, RG=open, RL=1kΩ, Ta=+25°C



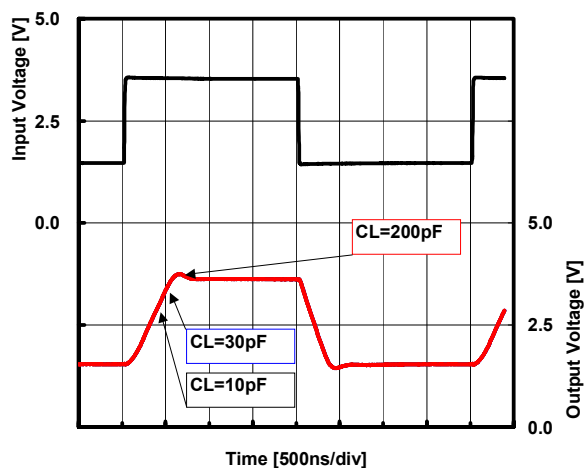
Pulse Response

V+=5V, f=250kHz, VO=4VPP, GV=0dB, RT=50Ω, RF=0Ω, CL=10pF, RG=open, RL=10kΩ, Ta=25°C

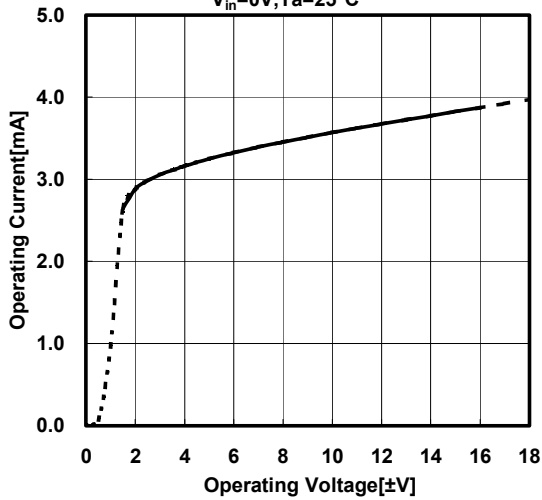


Pulse Response

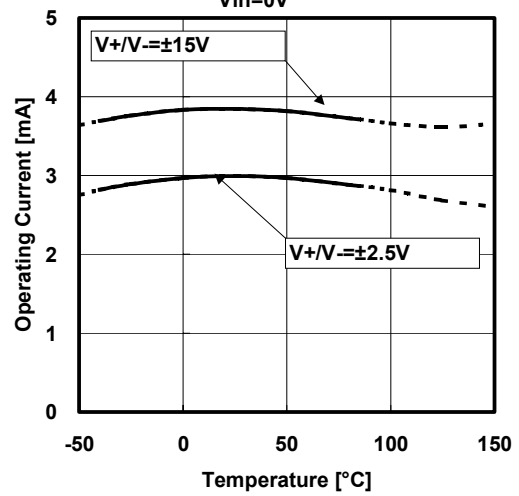
V+=5V, f=250kHz, VO=4VPP, GV=0dB, RT=50Ω, RF=0Ω, CF=0, RG=open, RL=2kΩ, Ta=25°C



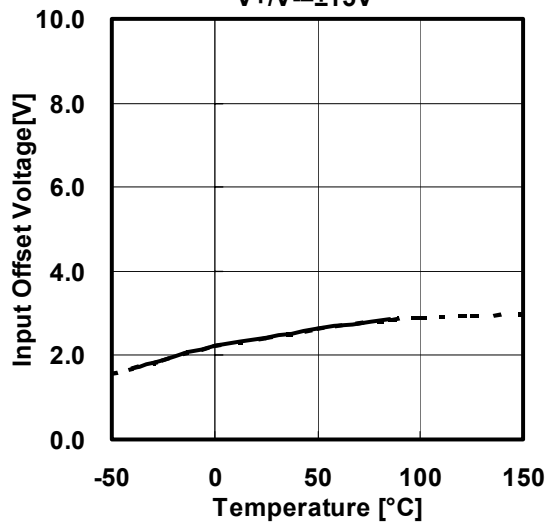
Operating Current vs. Operating Voltage
 $V_{in}=0V, T_a=25^{\circ}C$



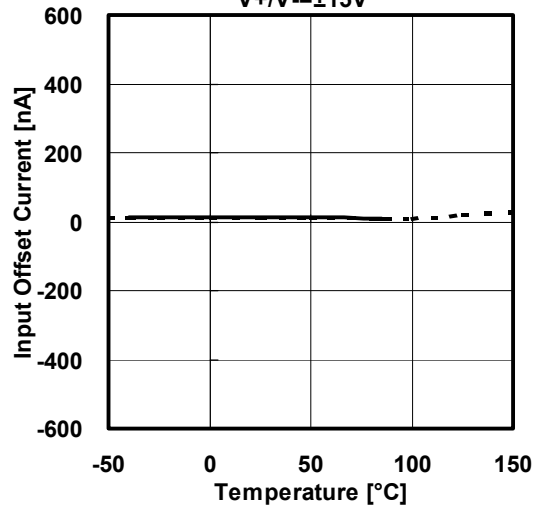
Operating Current vs. Temperature
 $V_{in}=0V$



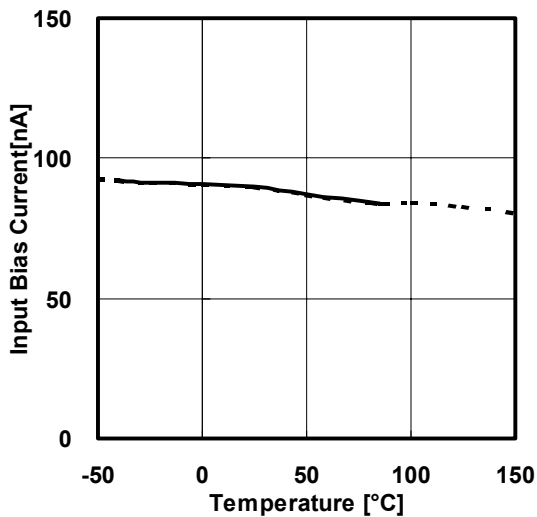
Input Offset Voltage vs. Temperature
 $V+/V-=\pm 15V$



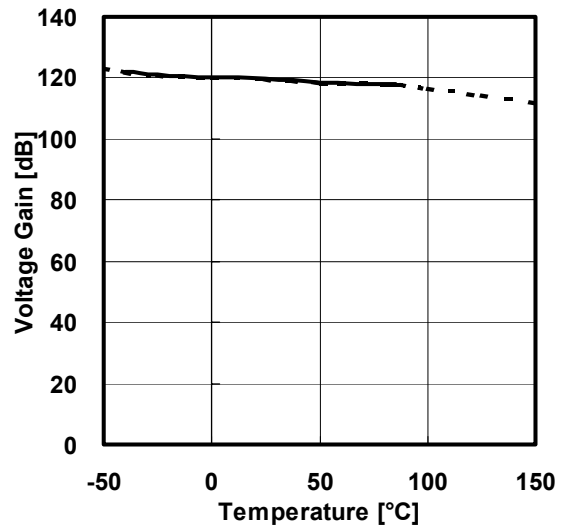
Input Offset Current vs. Temperature
 $V+/V-=\pm 15V$



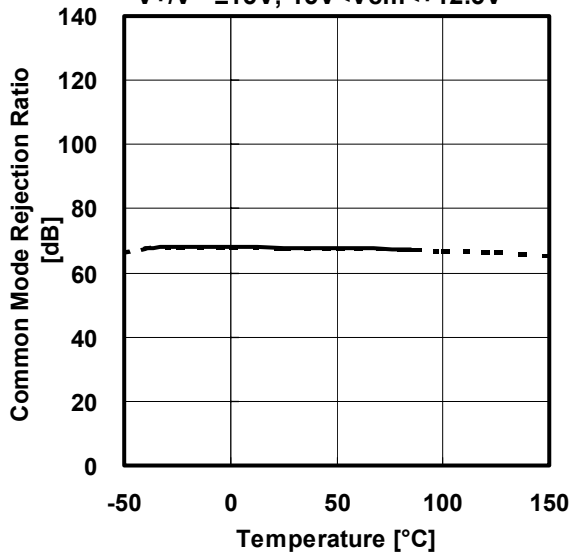
Input Bias Current vs. Temperature
 $V+/V-=\pm 15V$



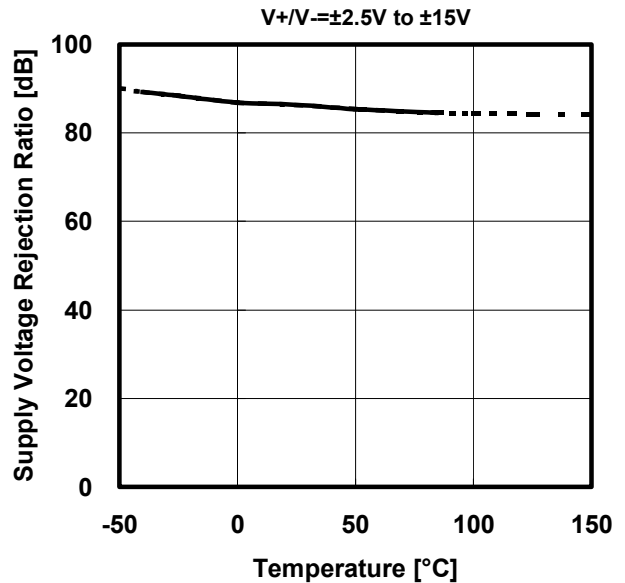
Voltage Gain vs. Temperature
 $V+/V-=\pm 15V, R_L=2k\Omega$



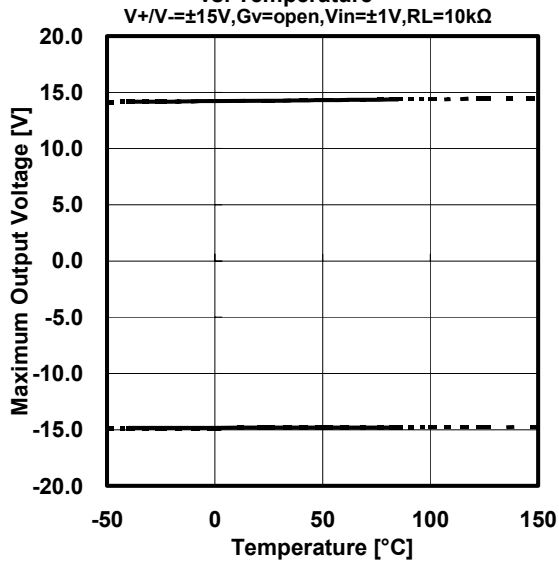
Common Mode Rejection Ratio
vs. Temperature
 $V_+/V_- = \pm 15V, -15V < V_{cm} < +12.5V$



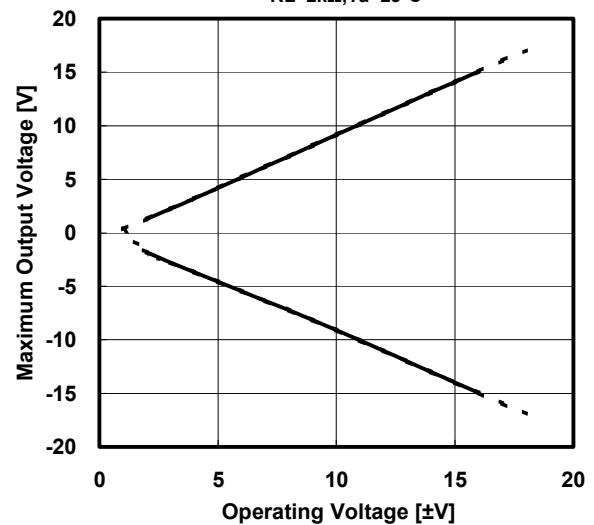
Supply Voltage Rejection Ratio
vs. Temperature



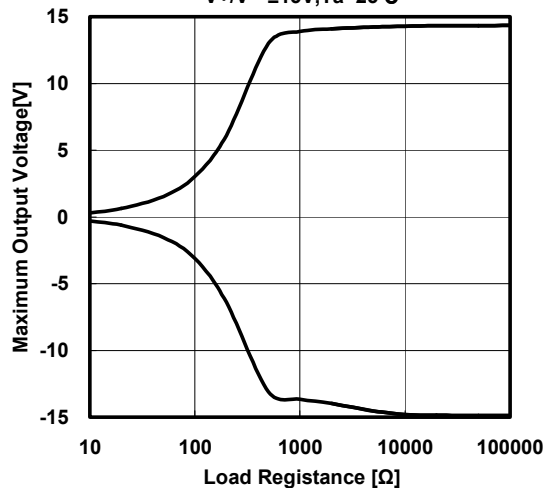
Maximum Output Voltage
vs. Temperature



Maximum Output Voltage vs. Operating Voltage
 $R_L = 2k\Omega, T_a = 25^\circ C$

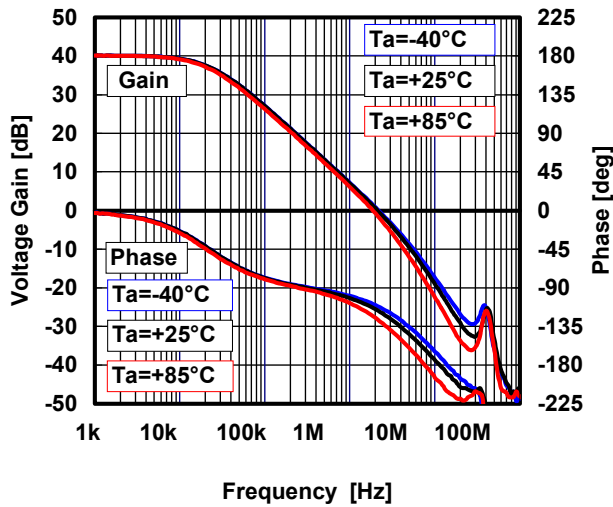


Maximum Output Voltage vs. Operating Current
 $V_+/V_- = \pm 15V, T_a = 25^\circ C$



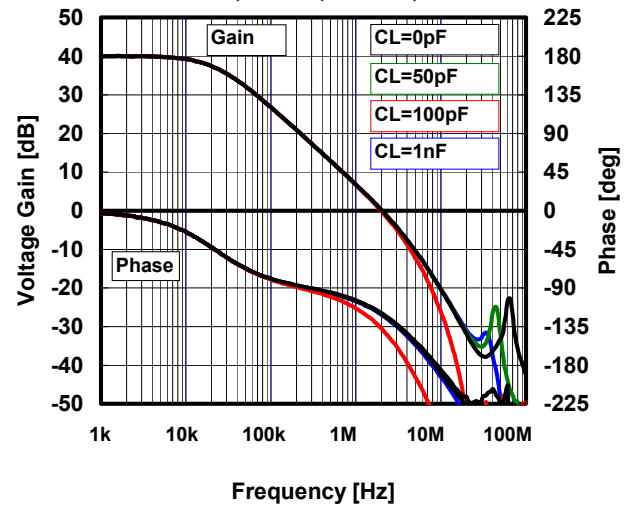
Voltage Gain & Phase vs. Frequency

V+/V- = ±15V, VIN = 0.02Vpp, GV = 40dB, RT = 50Ω,
RF = 1.98kΩ, RG = 20Ω, CF = 0, RL = 2kΩ, CL = 50pF



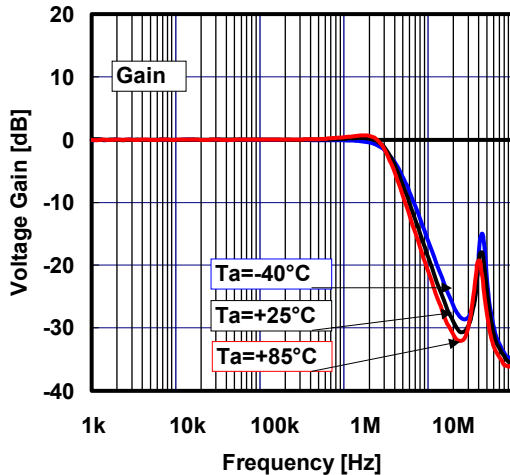
Voltage Gain & Phase vs. Frequency

V+/V- = ±15V, VIN = 0.01Vpp, GV = 40dB, RT = 50Ω,
RF = 1.98kΩ, RG = 20Ω, RL = 10kΩ, Ta = +25°C



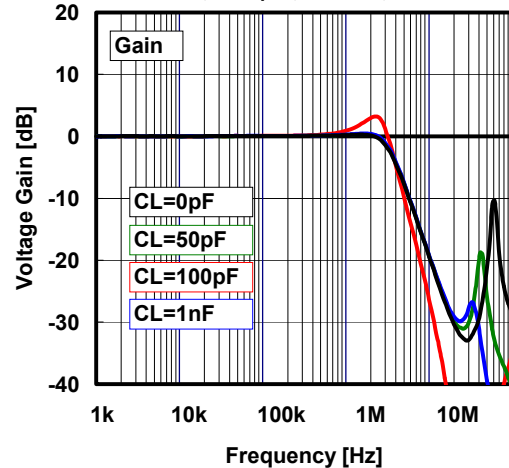
Peak Gain of Voltage Follower

V+/V- = ±15V, VIN = 0.02Vpp, GV = 0dB, RT = 50Ω, RF = 0Ω,
RG = open, CF = 0, RL = 2kΩ, CL = 50pF



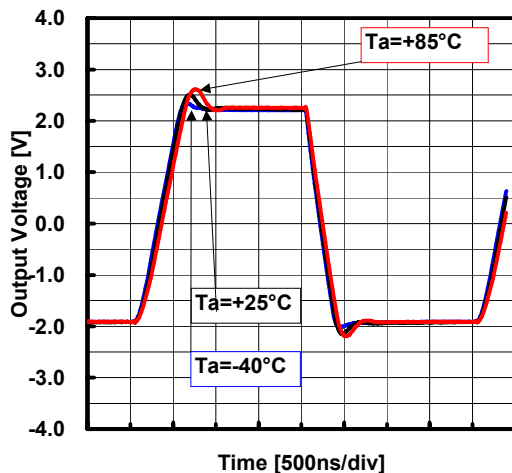
Peak Gain of Voltage Follower

V+/V- = ±15V, VIN = 0.02Vpp, GV = 0dB, RT = 50Ω,
RF = 0Ω, RG = open, RL = 10kΩ, Ta = +25°C



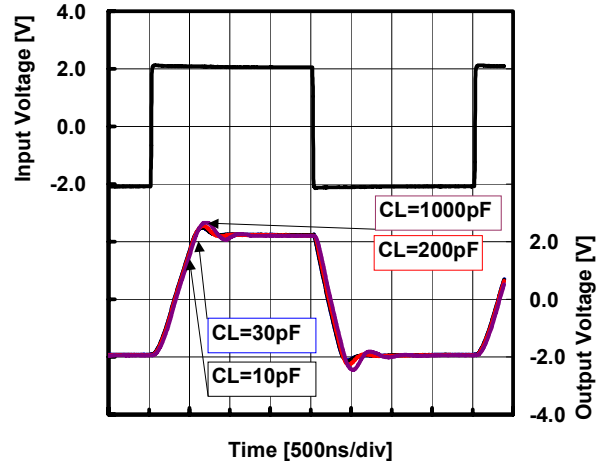
Pulse Response

V+/V- = ±15V, f = 250kHz, VO = 4VPP, GV = 0dB,
RT = 50Ω, RF = 0Ω, CF = 0, RG = open, CL = 50pF, RL = 10kΩ



Pulse Response

V+/V- = ±15V, f = 250kHz, VO = 4VPP, GV = 0dB,
RT = 50Ω, RF = 0Ω, CF = 0, RG = open, RL = 10kΩ, Ta = 25°C



[CAUTION]
The specifications on this databook are only given for information , without any guarantee as regards either mistakes or omissions. The application circuits in this databook are described only to show representative usages of the product and not intended for the guarantee or permission of any right including the industrial rights.



**Стандарт
Электрон
Связь**

Мы молодая и активно развивающаяся компания в области поставок электронных компонентов. Мы поставляем электронные компоненты отечественного и импортного производства напрямую от производителей и с крупнейших складов мира.

Благодаря сотрудничеству с мировыми поставщиками мы осуществляем комплексные и плановые поставки широчайшего спектра электронных компонентов.

Собственная эффективная логистика и склад в обеспечивает надежную поставку продукции в точно указанные сроки по всей России.

Мы осуществляем техническую поддержку нашим клиентам и предпродажную проверку качества продукции. На все поставляемые продукты мы предоставляем гарантию .

Осуществляем поставки продукции под контролем ВП МО РФ на предприятия военно-промышленного комплекса России , а также работаем в рамках 275 ФЗ с открытием отдельных счетов в уполномоченном банке. Система менеджмента качества компании соответствует требованиям ГОСТ ISO 9001.

Минимальные сроки поставки, гибкие цены, неограниченный ассортимент и индивидуальный подход к клиентам являются основой для выстраивания долгосрочного и эффективного сотрудничества с предприятиями радиоэлектронной промышленности, предприятиями ВПК и научно-исследовательскими институтами России.

С нами вы становитесь еще успешнее!

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