

LOW-POWER J-FET INPUT OPERATIONAL AMPLIFIERS

■ GENERAL DESCRIPTION

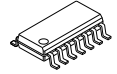
The NJM062C/064C is a J-FET input operational amplifier designed as low-power versions of the NJM072C/074C. It features high input impedance, high slew rate and low input offset and bias current.

The NJM062C/064C is suitable for audio amplifier applications and measurement applications. In addition, the realization of a wide operating temperature reaches by a new design.

■ PACKAGE OUTLINE



NJM062CG / NJM062CAG
Dual (SOP8)



NJM064CG / NJM064CAG
Quad (SOP14)

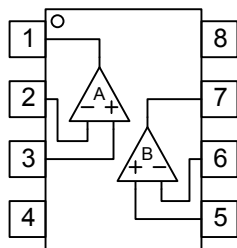
■ FEATURES

- Wide power supply range : ± 2 to ± 18 V
- High Input Resistance : $10^{12}\Omega$ typ.
- Low Operating Current : 200 μ A/amp typ.
- Internal ESD protection : Human body model (HBM) ± 2000 V typ.
- Bipolar Technology
- Slew Rate : 3.5V/ μ s typ.
- Wide temperature range : -40°C to $+105^\circ\text{C}$

■ Input Offset Voltage

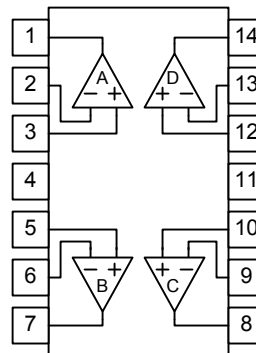
NJM062C / 064C	NJM062CA / 064CA
15mV max.	6mV max.

■ PIN CONFIGURATION (Top View)



NJM062CG / NJM062CAG

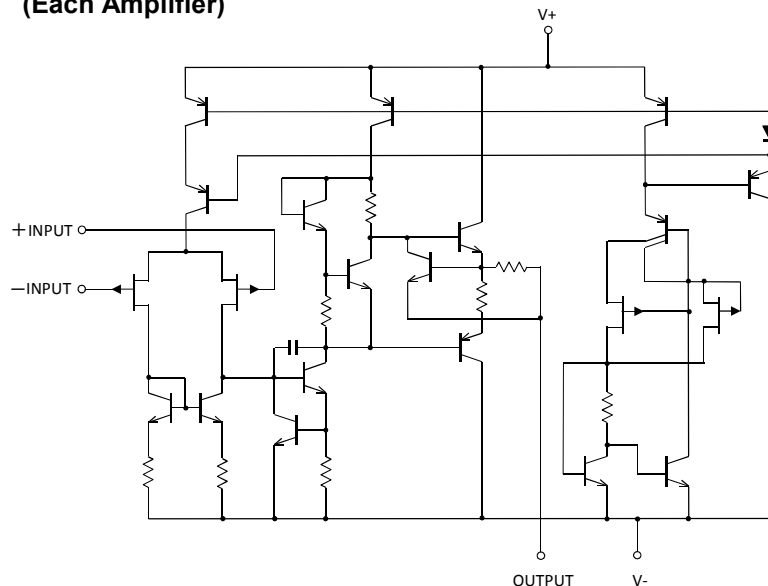
- PIN FUNCTION**
- 1. A OUTPUT
 - 2. A -INPUT
 - 3. A +INPUT
 - 4. V⁻
 - 5. B +INPUT
 - 6. B -INPUT
 - 7. B OUTPUT
 - 8. V⁺



NJM064CG / NJM064CAG

- PIN FUNCTION**
- 1. A OUTPUT
 - 2. A -INPUT
 - 3. A +INPUT
 - 4. V⁺
 - 5. B +INPUT
 - 6. B -INPUT
 - 7. B OUTPUT
 - 8. C OUTPUT
 - 9. C -INPUT
 - 10. C +INPUT
 - 11. V⁻
 - 12. D +INPUT
 - 13. D -INPUT
 - 14. D OUTPUT

■ EQUIVALENT CIRCUIT (Each Amplifier)



NJM062C/064C NJM062CA/064CA

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

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V ⁺ /V ⁻	±18	V
Differential Input Voltage ⁽¹⁾	V _{ID}	±36	V
Input Voltage ⁽²⁾	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	SOP8 : 690 ⁽³⁾ 1000 ⁽⁴⁾ SOP14 : 880 ⁽³⁾ 1200 ⁽⁴⁾	mW
Operating Temperature Range	T _{opr}	-40 to +105	°C
Storage Temperature Range	T _{stg}	-65 to +150	°C

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

(2) 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.

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

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

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V ⁺ /V ⁻	Ta=25°C	±2	-	±18	V

■ ELECTRICAL CHARACTERISTICS

V⁺/V⁻=±15V, Ta=25°C (unless otherwise noted)

PARAMETER	SYMBOL	CONDITION	NJM062C/NJM064C			NJM062CA/NJM064CA			UNIT
			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
Operating Current	I _{CC}	No signal , each amplifier	-	200	250	←	←	←	μA
Input Offset Voltage	V _{IO}	R _S =50Ω Ta=25°C 0°C< Ta < 70°C ⁽⁵⁾	-	3	15	-	3	6	mV
			-	-	20	-	-	7.5	
Input offset voltage drift	ΔV _{IO} /ΔT	R _S =50Ω 0°C< Ta < 70°C ⁽⁵⁾	-	10	-	←	←	←	μV/°C
Input Offset Current	I _{IO}	Ta=25°C 0°C< Ta < 70°C ⁽⁵⁾	-	5	200	-	5	100	pA
			-	-	5	-	-	3	nA
Input Bias Current	I _B	Ta=25°C 0°C< Ta < 70°C ⁽⁵⁾	-	30	400	-	30	200	pA
			-	-	10	-	-	7	nA
Input Common Mode Voltage Range	V _{ICM}	≥CMR MIN	± 13	-13.5 to 15	-	←	←	←	V
Maximum Output Voltage Swing	V _{OM}	R _L =10kΩ Ta=25°C 0°C< Ta < 70°C ⁽⁵⁾	± 10	± 13.5	-	←	←	←	V
			± 10	-	-				
Large Signal Voltage Gain	A _V	R _L ≥ 10kΩ, V _O =± 10V Ta=25°C 0°C< Ta < 70°C ⁽⁵⁾	3	20	-	8	20	-	V/mV
			3	-	-	8	-	-	
Unity Gain Frequency	f _T	R _L =10kΩ	-	1	-	←	←	←	MHz
Input Resistance	R _{IN}		-	10 ¹²	-	←	←	←	Ω
Common Mode Rejection Ratio	CMR	V _{IC} =V _{ICM} min, R _S ≤10kΩ	70	90	-	72	90	-	dB

NJM062C/064C NJM062CA/064CA

PARAMETER	SYMBOL	CONDITION	NJM062C/NJM064C			NJM062CA/NJM064CA			UNIT
			MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	
Supply Voltage Rejection Ratio	SVR	$V^+/V^- = \pm 9V$ to $\pm 15V$ $R_S \leq 50\Omega$	70	100	-	80	100	-	dB
Channel Separation	CS	$G_v = 40dB$	-	120	-	←	←	←	dB
Slew rate	SR	$V_{iN} = 10V_{pp}$, $R_L = 10k\Omega$ $C_L = 100pF$ Figure1	1.5	3.5	-	←	←	←	V/ μs
Rise time	t_r	$V_i = 20mV_{pp}$, $R_L = 10k\Omega$, $C_L = 100pF$ Figure1	-	0.2	-	←	←	←	μs
Overshoot factor	K_{OV}	$V_i = 20mV_{pp}$, $R_L = 10k\Omega$, $C_L = 100pF$ Figure1	-	10	-	←	←	←	%
Equivalent Input Noise Voltage	e_n	$R_S = 20\Omega$, $f = 1kHz$	-	35	-	←	←	←	nV/ \sqrt{Hz}

(5) This parameter is not 100% test.

■ MEASUREMENT CIRCUITS

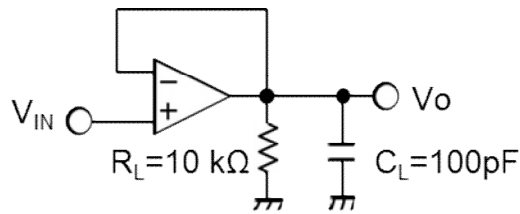


Figure1. Voltage Follower

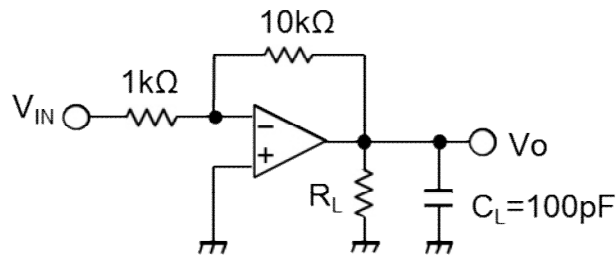


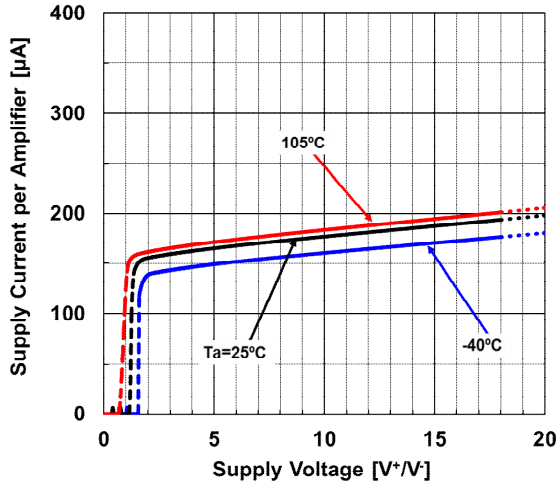
Figure2. 20dB Inverting Amplifier (*)

(*) 20dB Inverting Amplifier uses a Maximum Output Voltage vs. Frequency on page 5.

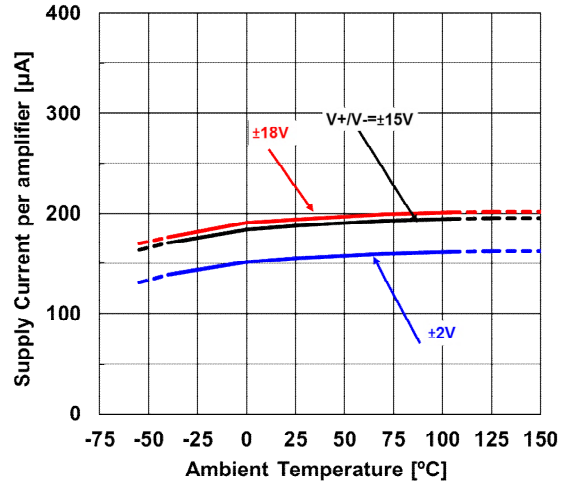
NJM062C/064C NJM062CA/064CA

■ TYPICAL CHARACTERISTICS

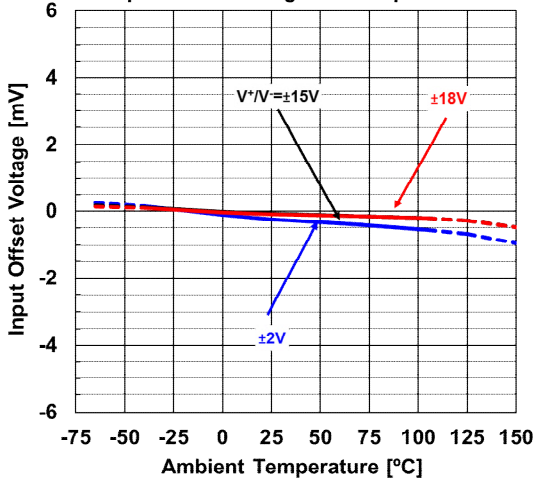
Supply Current per Amplifier vs. Supply Voltage



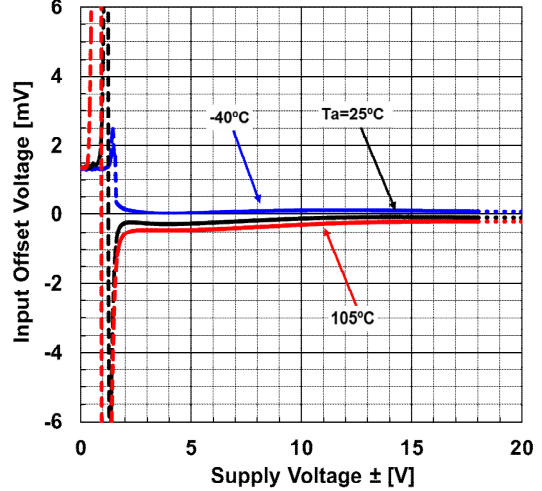
Supply Current per Amplifier vs. Temperature



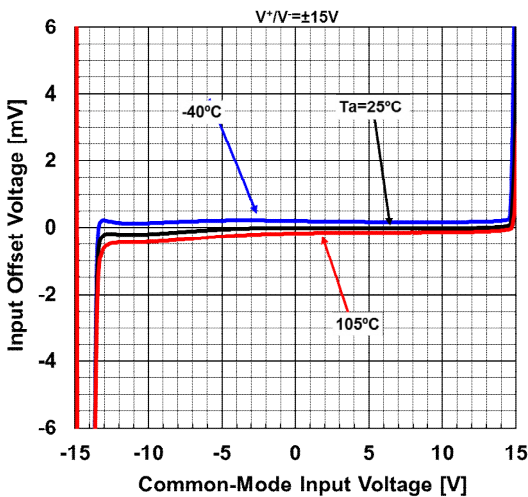
Input Offset Voltage vs. Temperature



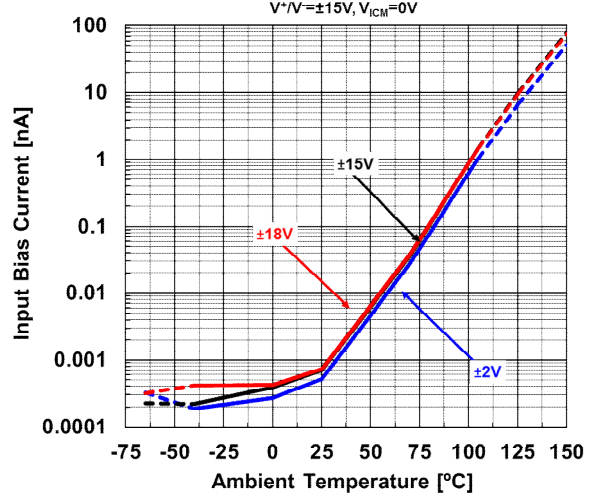
Input Offset Voltage vs. Supply Voltage



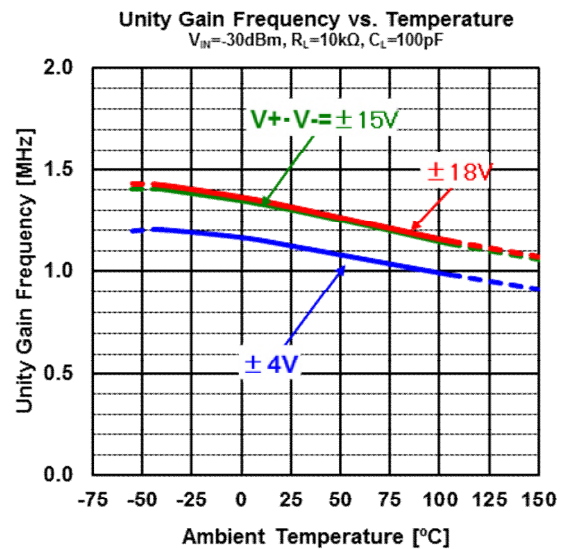
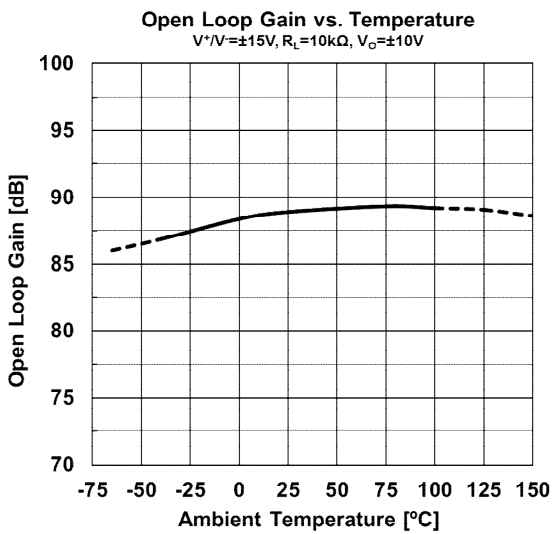
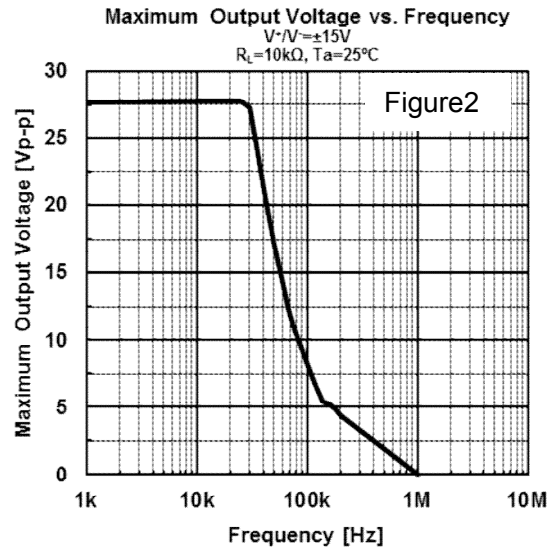
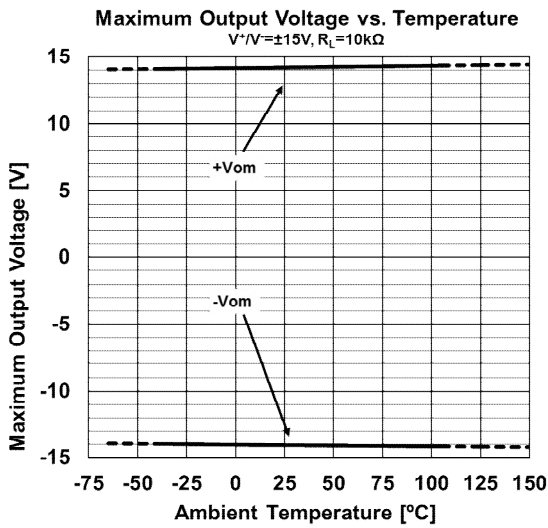
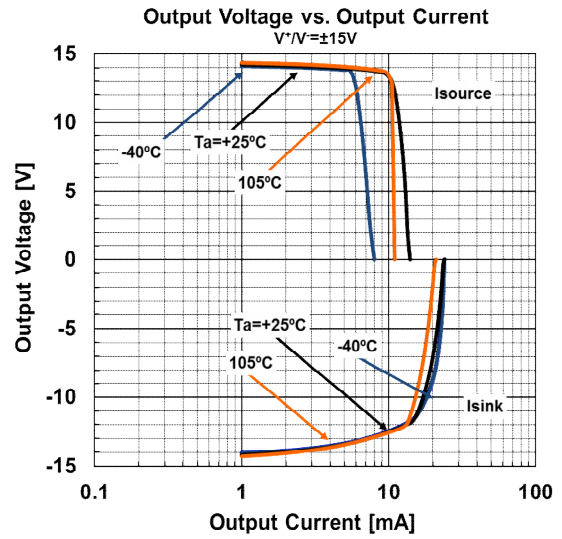
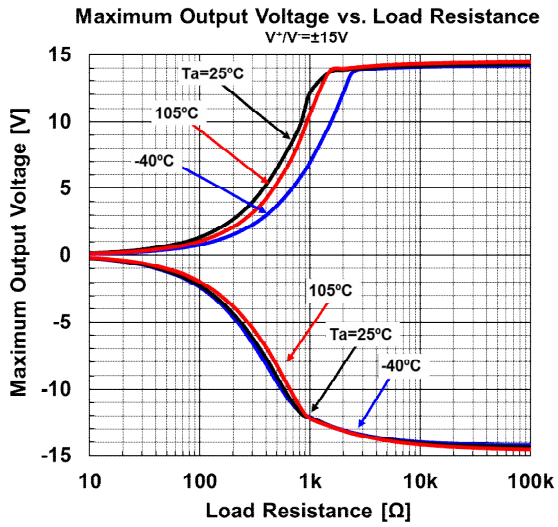
Input Offset Voltage vs. Common-Mode Input Voltage



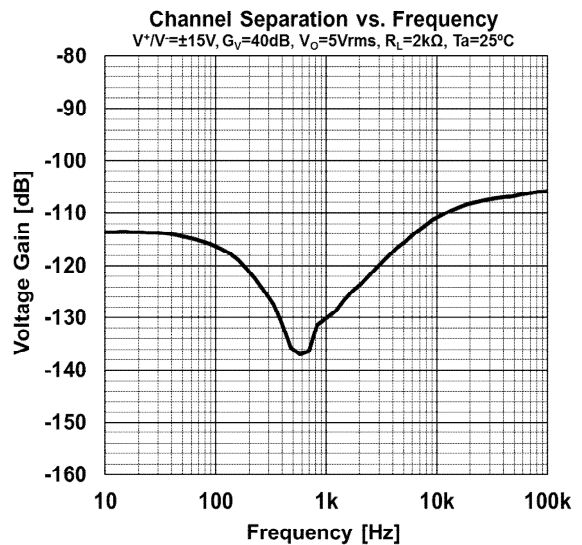
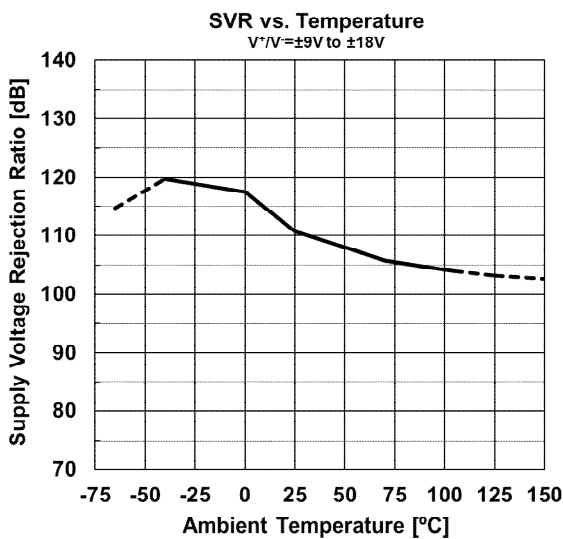
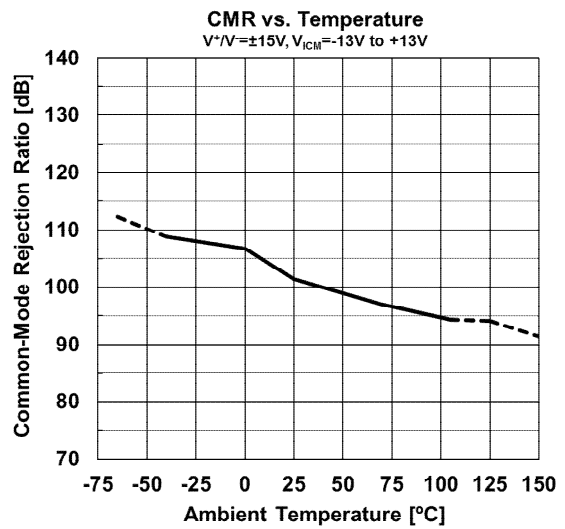
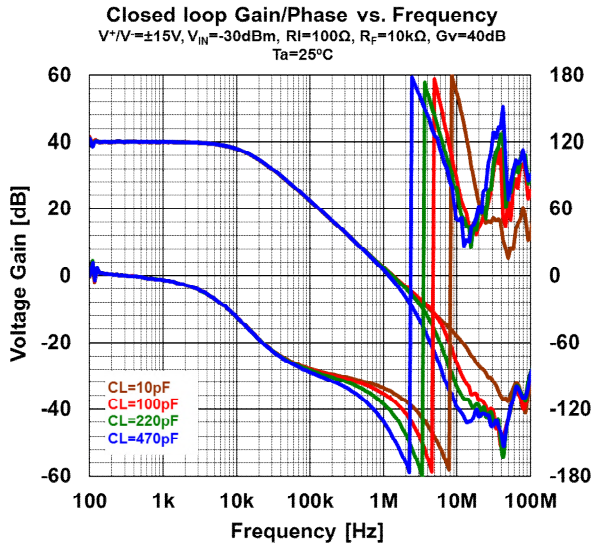
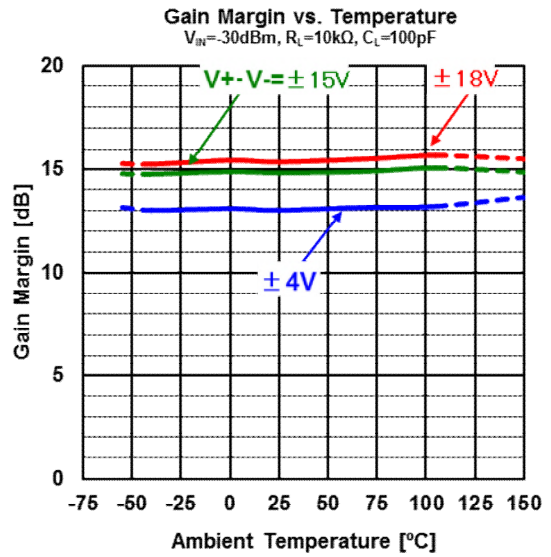
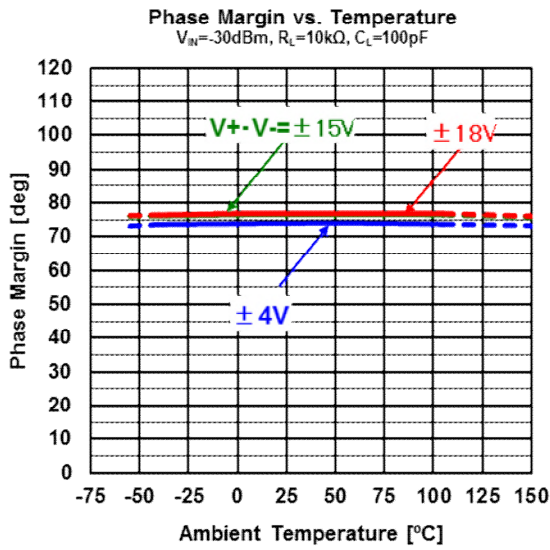
Input Bias Current vs. Temperature



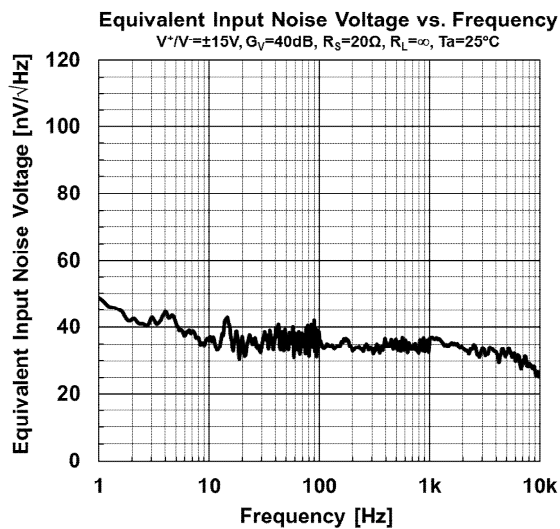
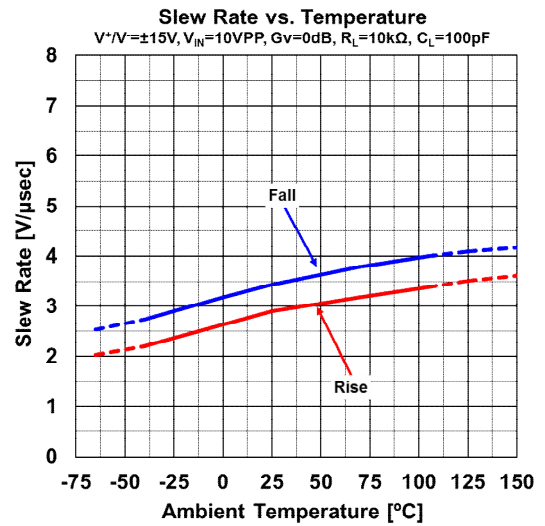
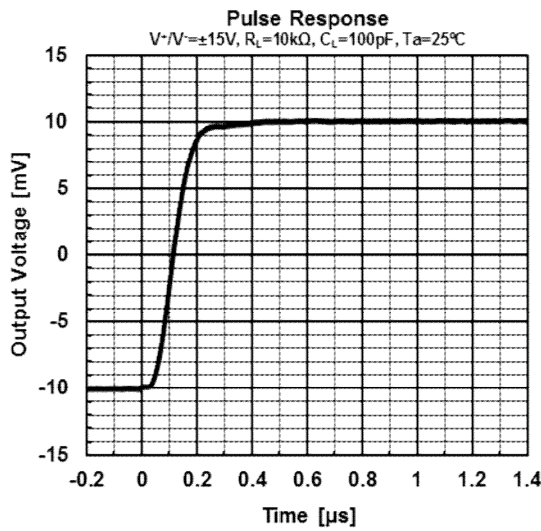
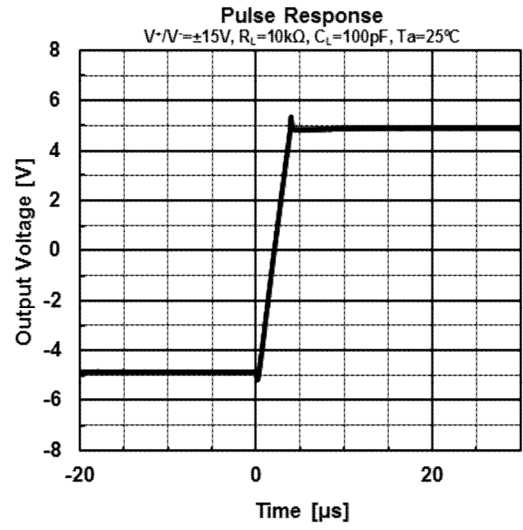
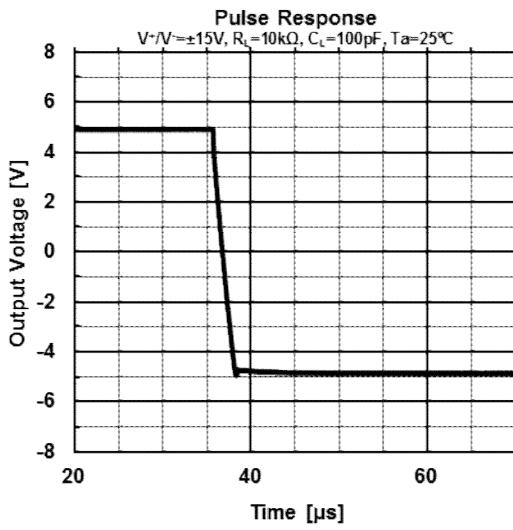
■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS

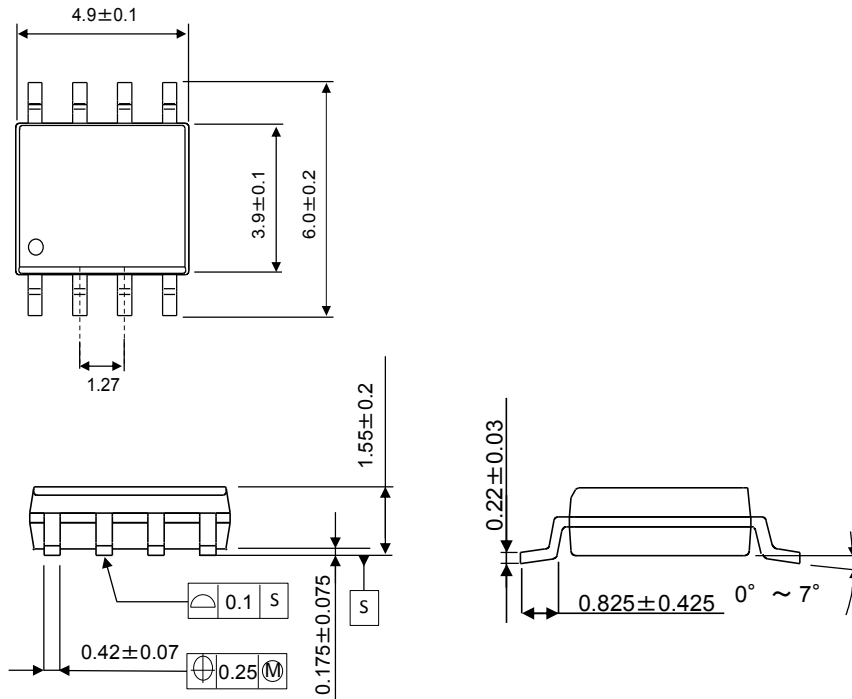


■ TYPICAL CHARACTERISTICS

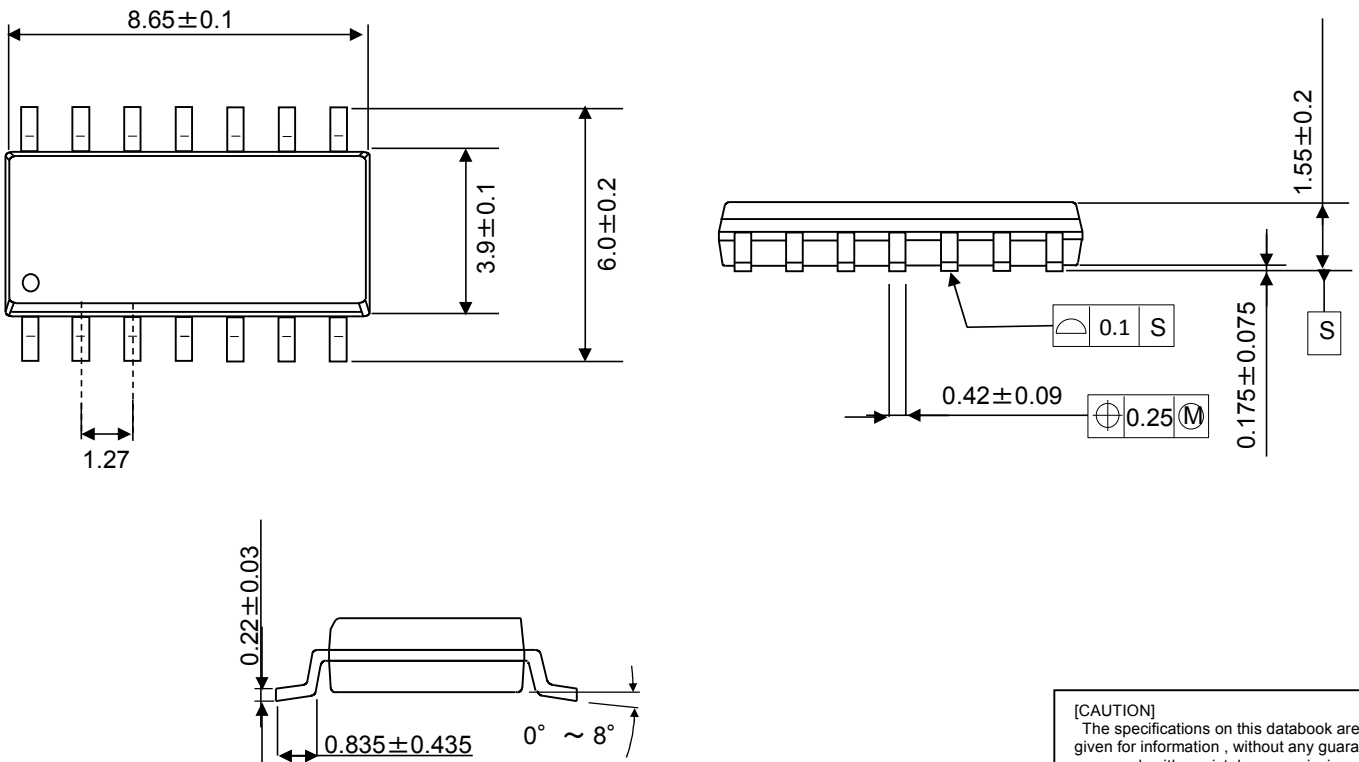


■ PACKAGE OUTLINE UNIT : mm

SOP8



SOP14



[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.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[NJR:](#)

[NJM062CG-TE2](#) [NJM064CAG-TE2](#) [NJM064CG-TE2](#) [NJM062CAG-TE2](#)

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru

moschip.ru_4

moschip.ru_6

moschip.ru_9