Features

- Low offset voltage: 80 μV (typ)
- Low supply current: 750 μA/Amplifier
- Single-supply operation: 2.7 V to 5.5 V
- Wide bandwidth: 8 MHz
- Slew rate: 5 V/μs
- Unity gain stable
- Low input currents

Application

- Barcode scanners
- Multipole filters
- Battery-powered instrumentation
- Current sensing
- Sensors
- PA controls
- Audio

Description

The CBM8601, CBM8602 are single, dual rail-to-rail, input and output, single-supply amplifiers featuring very low offset voltage and wide signal bandwidth. All are fully specified to operate on a 3 V to 5 V single supply.

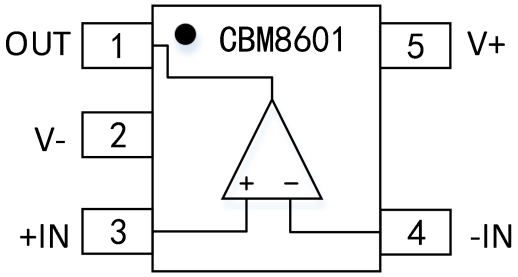
The combination of low offsets, very low input bias currents, and high speed make these amplifiers useful in a wide variety of applications. Filters, integrators, diode amplifiers, shunt current sensors, and high impedance sensors all benefit from the combination of performance features. Audio and other ac applications benefit from the wide bandwidth and low distortion. For the most cost-sensitive applications, the D grades offer this ac performance with lower dc precision at a lower price point.

Applications for these amplifiers include audio amplification for portable devices, portable phone headsets, bar code scanners, portable instruments, cellular PA controls, and multipole filters.

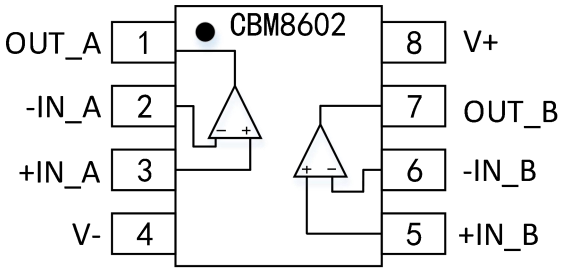
The ability to swing rail-to-rail at both the input and output enables designers to buffer CMOS ADCs, DACs, ASICs, and other wide output swing devices in single-supply systems.

Catalog

Pin Configurations



SOT23 Pin Configuration



MSOP/SOP Pin Configuration

Pin Description

PIN N°	SYMBOL(CBM8601)	NAME AND FUNCTION
1	OUT	Output
2	V-	Negative power supply
3	+IN	None inverting input
4	-IN	inverting input
5	V+	Positive power supply
PIN N°	**SYMBOL(CBM8602)**	**NAME AND FUNCTION**
1	OUT_A	Output A
2	-IN_A	inverting input A
3	+IN_A	None inverting input A
4	V-	Negative power supply
5	+IN_B	V+/None inverting input B
6	-IN_B	inverting input B
7	OUT_B	Output B
8	V+	Positive power supply

Absolute Maximum Ratings (1)

- Supply Voltage : 6V
- Input Voltage : GND to VS
- Differential Input Voltage : ±6V
- Storage Temperature Range : −65°C to +150°C
- Operating Temperature Range : −40°C to +125°C
- Junction Temperature Range : −65°C to +150°C
- Lead Temperature (Soldering, 60s) : 300℃
- ESD(CBM8601) : 5kV (HBM)
- ESD(CBM8602) : 4.5kV (HBM)

Electrical Characteristics

(V_S = 5 V, V_{CM} = V_S/2, T_A = 25°C, unless otherwise noted.)

Table1.

PARAMETER	CONDITION	CBM8601,CBM8602			
		MIN	TYP	MAX	UNIT
INPUT CHARACTERISTICS					
Input Offset Voltage (V_{OS})	V_{CM} = 0V~5V		80	500	μV
Offset Voltage Drift (ΔVos/ΔT)			2		μV/℃
Input Bias Current (I_B)			0.2	60	pA
Input Offset Current (I_{os})			0.1	30	pA
Common-Mode Rejection Ratio (CMRR)	VCM=0V~5V	74	89		dB
Open-Loop Voltage Gain (A_{OL})	V_O=0.5V to 4.5V,R_L=2KΩ,,V_{CM}=0V	30	80		V/mV
OUTPUT CHARACTERISTICS					
Output Voltage High (V_{OH})	I_L = 1 mA	4.925	4.978		V
	I_L = 10mA	4.7	4.78		V
Output Voltage Low (V_{OL})	I_L = 1 mA		14	30	mV
	I_L = 10mA		135	175	mV
Output Current (I_{OUT})			±50		mA
NOISE PERFORMANCE					
Voltage Noise Density (e_n)	f = 1 kHz		33		$nV/\sqrt{Hz}$
	f=10KHz		18		$nV/\sqrt{Hz}$
Current Noise Density (i_n)	f=1kHz		0.05		$pA/\sqrt{Hz}$
POWER SUPPLY					
Power Supply Rejection Ratio (PSRR)	V_s=2.7V~5.5V	67	85		dB
Supply Current/Amplifier (I_{SY})	V_O = 0V		550	1200	μA
DYNAMIC PERFORMANCE					
Slew Rate (SR)	R_L = 2 kΩ		5.5		V/μs
Gain-Bandwidth Product (GBW)			8.4		MHz
Settling Time	To 0.01%		<1		μs

(V_S = 3V, V_{CM} = V_S/2, T_A = 25°C, unless otherwise noted.)

Table 2.

PARAMETER	CONDITION	CBM8601,CBM8602			
		MIN	TYP	MAX	UNIT
INPUT CHARACTERISTICS					
Input Offset Voltage (V_{OS})	V_{CM} = 0V~1.3V		80	500	μV
Offset Voltage Drift (ΔVos/ΔT)			2		μV/℃
Input Bias Current (I_B)			0.2	60	pA
Input Offset Current (I_{os})			0.1	30	pA
Common-Mode Rejection Ratio (CMRR)	V_{CM}=0V~3V	68	83		dB
Open-Loop Voltage Gain (A_{OL})	V_O=0.5V to 2.5V,R_L=2KΩ,,V_{CM}=0V	30	100		V/mV
OUTPUT CHARACTERISTICS					
Output Voltage High (V_{OH})	I_L = 1 mA	2.92	2.95		V
Output Voltage Low (V_{OL})	I_L = 1 mA		20	35	mV
Output Current (I_{OUT})			±30		mA
NOISE PERFORMANCE					
Voltage Noise Density (e_n)	f = 1 kHz		33		$nV/\sqrt{Hz}$
	f=10KHz		18		$nV/\sqrt{Hz}$
Current Noise Density (i_n)			0.05		$pA/\sqrt{Hz}$
POWER SUPPLY					
Power Supply Rejection Ratio (PSRR)	V_s=2.7V~5.5V	67	80		dB
Supply Current/Amplifier (I_{SY})	V_O = 0V		450	1000	μA
DYNAMIC PERFORMANCE					
Slew Rate (SR)	R_L = 2 kΩ		5.5		V/μs
Gain-Bandwidth Product (GBW)			8.4		MHz
Settling Time	To 0.01%		<1		μs

Typical Characteristics

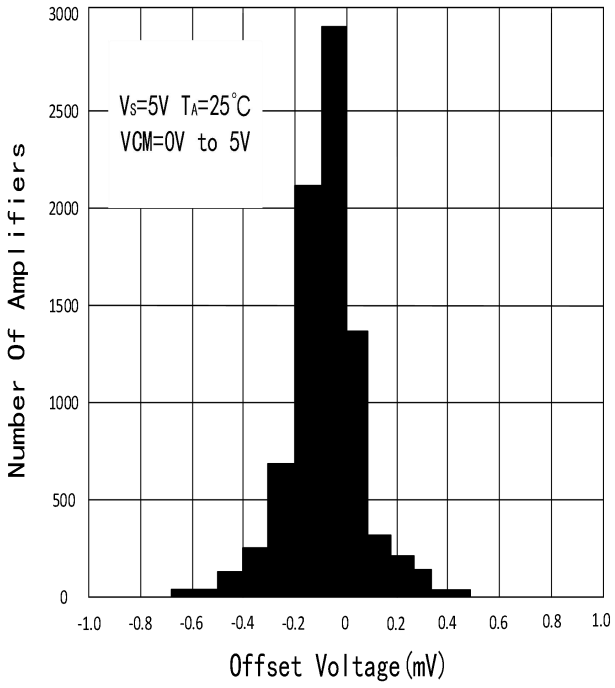


Figure1.Input Offset Voltage Distribution

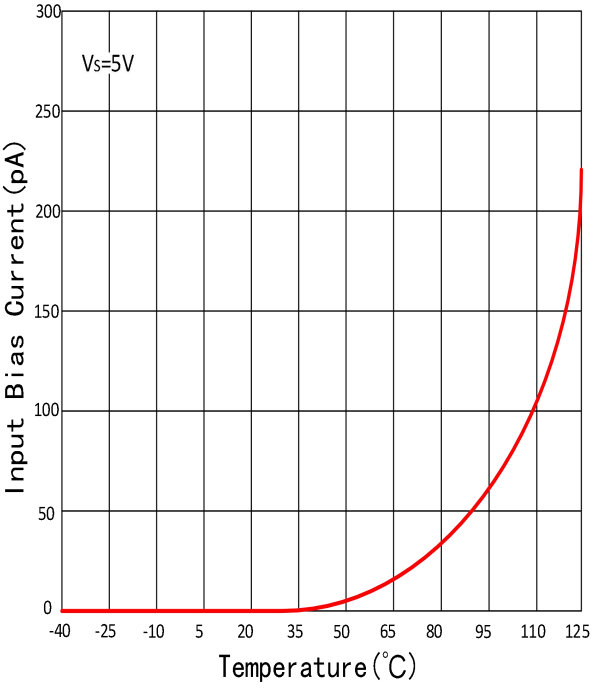


Figure2.Input Bias Current vs. Temperature

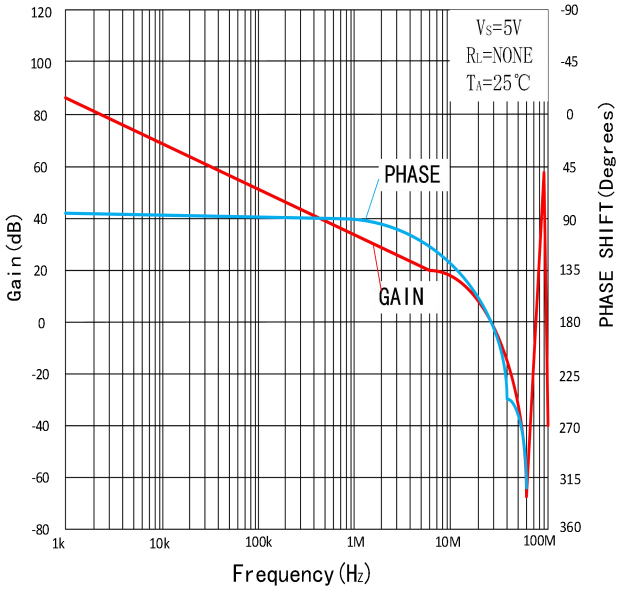


Figure3.Open-Loop Gain and Phase vs. Frequency

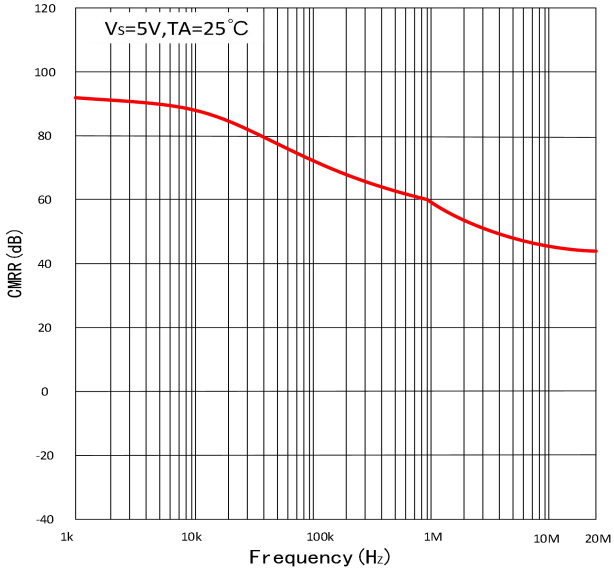
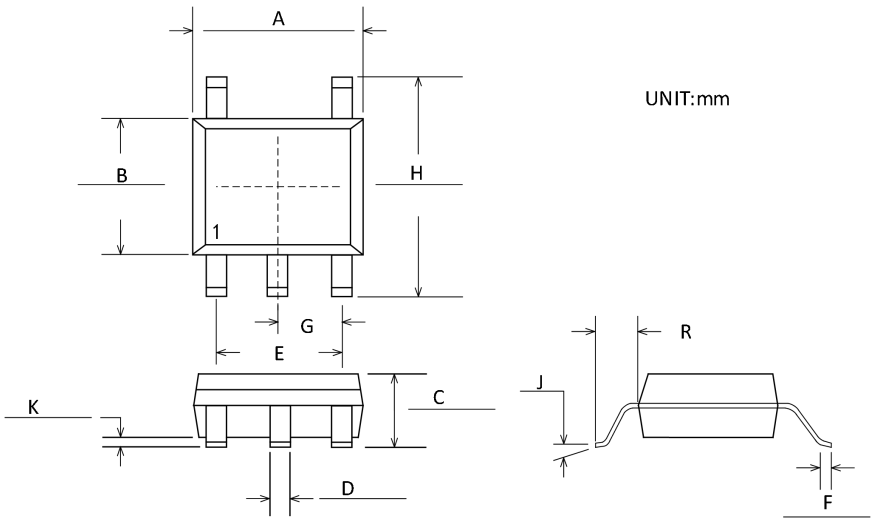


Figure4.Common-Mode Rejection Ratio (CMRR) vs. Frequency

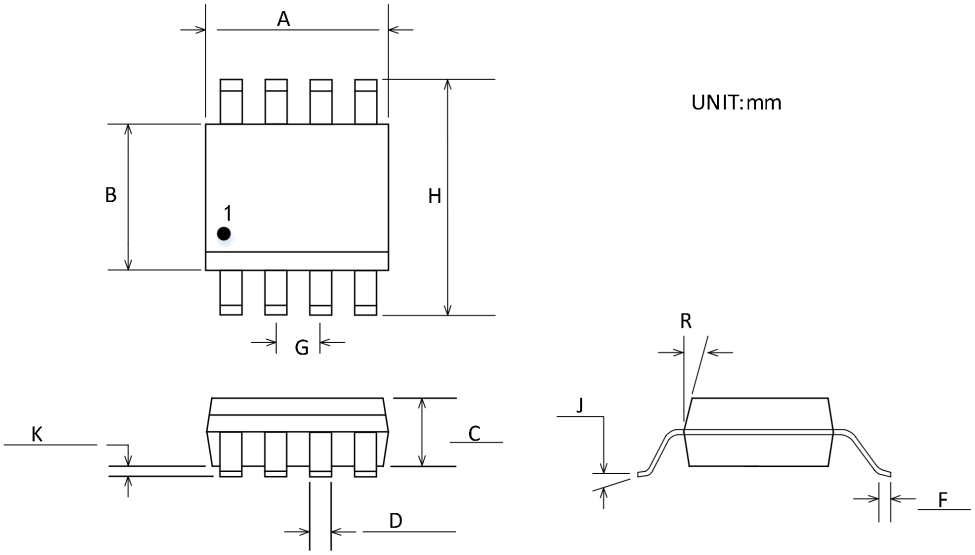
Package Outline Dimensions

SOT23-5



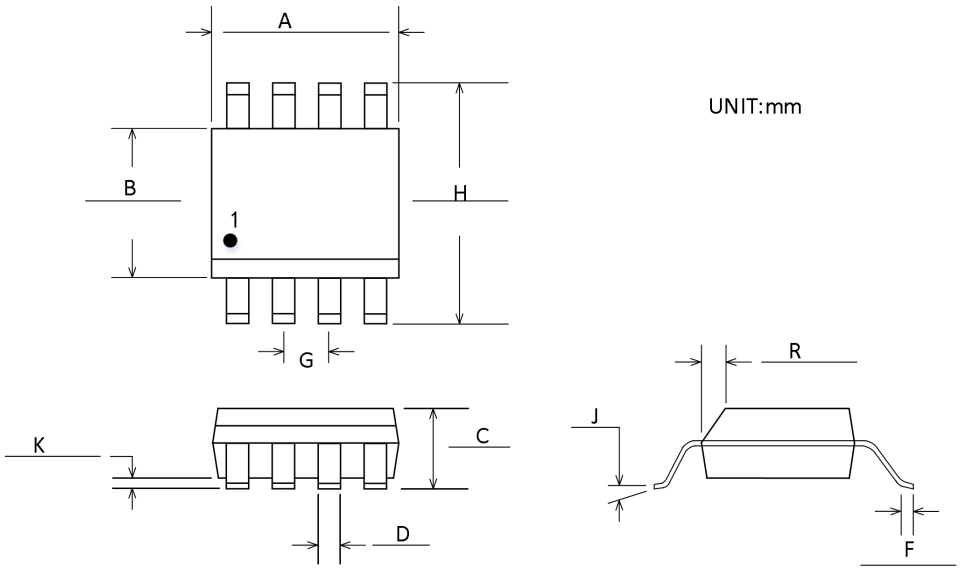
Symbol	Dimensions In Millimeters	
	Min	Max
A	2.80	3.00
B	1.50	1.70
C	0.95	1.45
D	0.35	0.50
E	1.90BSC	
F	0.35	0.55
G	0.95BSC	
H	2.60	3.00
J	0°	10°
K	0.05	0.15
R	0.60BSC	

MSOP-8



Symbol	Dimensions In Millimeters	
	Min	Max
A	2.80	3.20
B	2.80	3.20
C	1.10MAX	
D	0.25	0.40
F	0.40	0.80
G	0.650 BSC	
H	4.65	5.15
J	0°	6°
K	0.05	0.15
R	15°MAX	

SOP-8



UNIT:mm

Symbol	Dimensions In Millimeters	
	Min	Max
A	4.80	5.00
B	3.80	4.00
C	1.35	1.75
D	0.31	0.51
F	0.40	1.27
G	1.27BSC	
H	5.80	6.20
J	0°	8°
K	0.10	0.25
R	0.25	0.50

Package/Ordering Information

MODEL	CHANNEL	ORDERING NUMBER	PACKAGE DESCRIPTION	PAKEAGE OPTION	MAKING INFORMATION
CBM8601			SOT23-5		
CBM8602			MSOP-8		
			SOP-8		