

**Rail-to-Rail I/O, High-Slew-Rate OP Amp****Features**

- +3V to +5.5V Single-Supply Operation
- Input / Output Rail-to-Rail
- Low input current
- High output driving capacity
- Low Quiescent Current: 500 μ A @ 5V
- High Slew rate 6.5V/ μ s
- High Gain-Bandwidth Product 6.5MHz
- High Open Loop Gain 95dB
- High PSRR 70dB

Applications

- Headphone Driver
- Portable Equipment
- Battery-Powered Equipment
- Multimedia Audio
- ASIC Input or Output Amplifier
- Sensor Amplifier
- Low Power/Low Voltage Applications

General Description

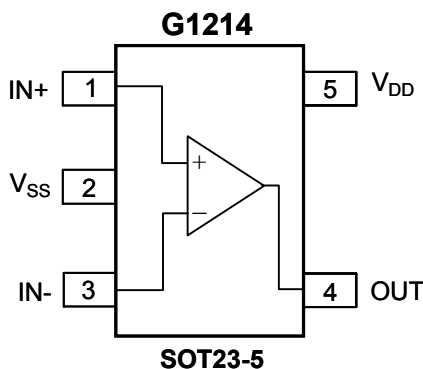
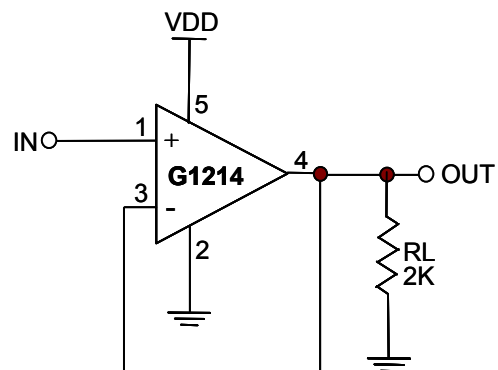
G1214 is a input/output rail-to-rail Operational Amplifier. It can be operated from +3V to +5.5V single supply or from ± 1.5 V to ± 2.75 V dual supply. G1214 can drive 66mA into resistor loads to within 10% power rail. AC performance is very excellent with 6.5MHz bandwidth, 6.5V/ μ s Slew Rate, 95dB open loop gain, 60 degree phase margin and low distortion.

Supply current of G1214 is only 500 μ A per Amplifier. It is very suitable for low current consumption applications to control high current loads. Applications include audio amplification for computers, sound ports, sound cards and set-top boxes.

G1214 is housed in a 5-pins small SOT23-5 package.

Ordering Information

PART	MARKING	TEMP. RANGE	PIN-PACKAGE
G1214	14xx	0°C to 85°C	SOT 23-5

Pin Configuration**Typical Application Circuit**

**Absolute Maximum Ratings**

Supply Voltage (V_{DD} to V_{SS}).....6.5V
 All Other Pins.....($V_{SS}-0.3V$) to ($V_{DD}+0.3V$)
 Continuous Power Dissipation ($T_A=25^\circ C$)
 SOT23-5.....520mW
 θ_{JA}240°C/Watt

Junction Temperature.....150°C
 Operating Temperature Range.....0C to 85°C
 Storage Temperature Range.....-65°C to 160°C
 Lead Temperature (soldering, 10sec)..... 300°C

Electrical Characteristics

$V_{DD} = 5V$; $V_{SS} = 0V$; $T_{amb} = 25^\circ C$; $C_L=10pF$, $R_L=1k\Omega$ to $V_{DD}/2$; unless otherwise specified.

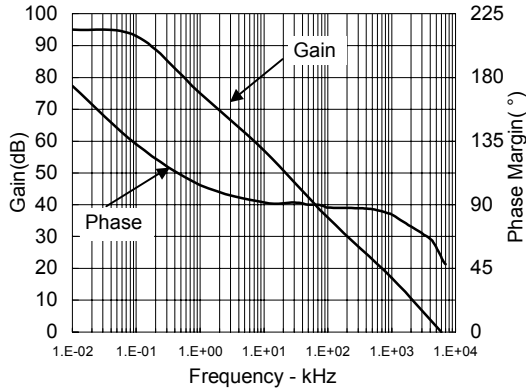
PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Supplies						
Supply Voltage Range	V_{DD}	Note1	3		5.5	V
Supply Current	I_{DD}	No load	-	0.5	0.7	mA
Total Power Dissipation	P_{tot}	No load	-	0.25	0.35	mW
DC Characteristics						
Input Offset Voltage	$V_{I(OS)}$			± 5	± 15	mV
Common Mode Voltage	V_{CM}	Inferred from CMRR test	0	-	5	V
Input Bias Current	I_B			± 1.5	5	nA
Input Bias Current Offset	I_{OS}			± 1.5	5	nA
Input Resistance	R_{IN}			1000	-	M Ω
Open Loop Gain	A_V		85	95	-	dB
Maximum Output Current	I_O	$V_{OUT} = \pm V_{IN} \times 90\%$	55	± 66	-	mA
Output Voltage Swing High	V_{OH}	$R_L = 2k\Omega$	4.96	4.99		V
Output Voltage Swing Low	V_{OL}	$R_L = 2k\Omega$		0.012	0.04	V
Power Supply Rejection Ratio	PSRR	$3V \leq V_{DD} \leq 5.5V$	50	70	-	dB
Common-Mode Rejection Ratio	CMRR	$V_{SS} \leq V_{CM} \leq V_{DD}$	50	65	-	dB
AC Characteristics						
Gain-Bandwidth Product	GBWP	Open-loop; No Load	-	6.5	-	MHz
Slew-Rate	SR	Measured from 10% to 90% of 4V _{P-P} step, $R_L = 1k\Omega$, $C_L = 10pF$		6.5		V/ μs
Phase Margin	PM		-	60	-	deg
Maximum Output Current with THD	I_O	THD<0.1%, $R_L = 16\Omega$		100		mA

Note1: Guaranteed by the Power-Supply Rejection Ratio (PSRR) test

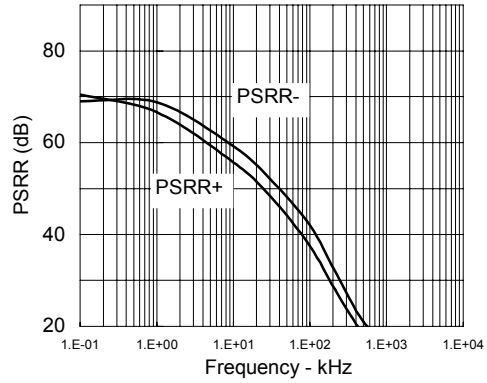
Typical Performance Characteristics

$V_{DD} = 5V$; $V_{SS} = 0V$; $T_{amb} = 25^{\circ}C$; $C_L = 10pF$, $R_L = 1k\Omega$ to $V_{DD}/2$; unless otherwise specified.

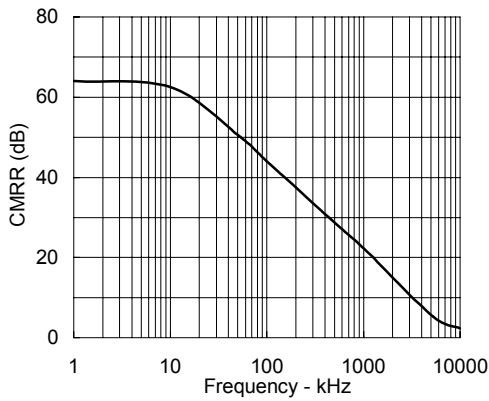
Open Loop Gain & Phase Margin vs. Frequency



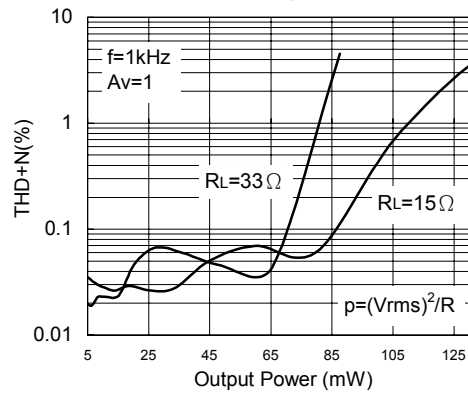
PSRR vs. Frequency



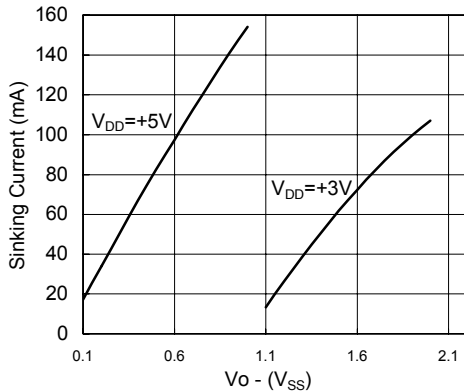
CMRR vs. Frequency



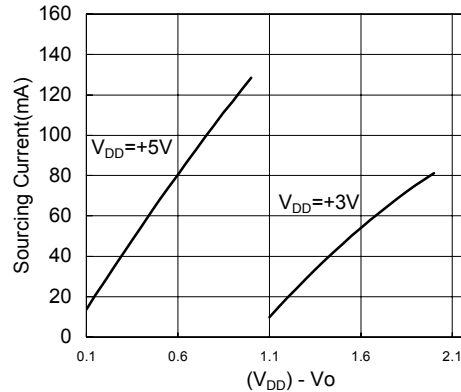
Total Harmonic Distortion Plus Noise vs. Output Power



Sinking Current vs. $V_o - (V_{SS})$



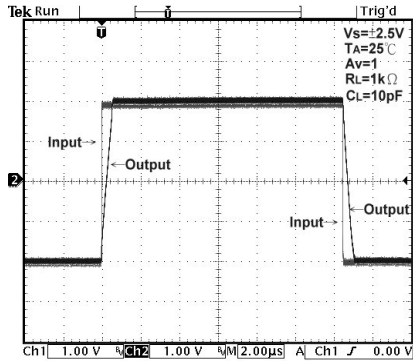
Sourcing Current vs. $(V_{DD}) - V_o$



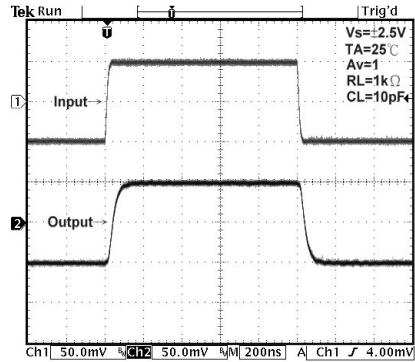


Typical Performance Characteristics (Continued)

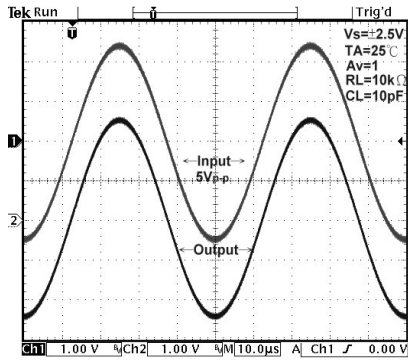
Large Signal Transient Response



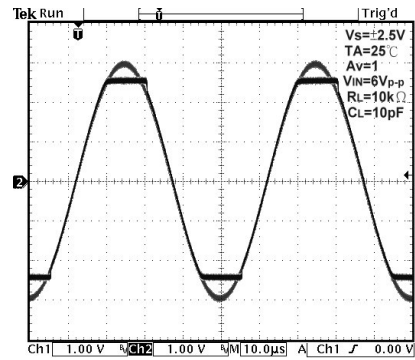
Small Signal Transient Response



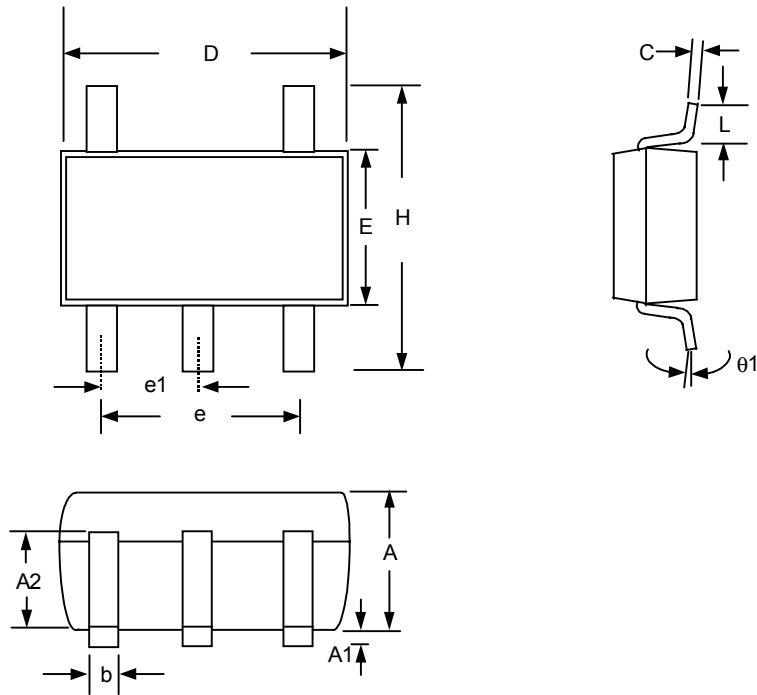
Operation with Rail-to-Rail Input and Output



Operation with Beyond-the Rail Input



Package Information

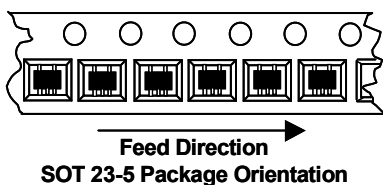


Note:

1. Package body sizes exclude mold flash protrusions or gate burrs
2. Tolerance ± 0.1000 mm (4mil) unless otherwise specified
3. Coplanarity: 0.1000mm
4. Dimension L is measured in gage plane

SYMBOL	DIMENSIONS IN MILLIMETERS		
	MIN	NOM	MAX
A	1.00	1.10	1.30
A1	0.00	-----	0.10
A2	0.70	0.80	0.90
b	0.35	0.40	0.50
C	0.10	0.15	0.25
D	2.70	2.90	3.10
E	1.40	1.60	1.80
e	-----	1.90(TYP)	-----
e1	-----	0.95	-----
H	2.60	2.80	3.00
L	0.37	-----	-----
$\theta 1$	1°	5°	9°

Taping Specification (Unit: mm)



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