BCT2232

High-Output-Drive, 10MHz, 10V/μs, Rail-to-Rail I/O Op Amps

General Description

The BCT2232 dual, high-output drive CMOS op amps feature 200mA of peak output current, rail-to-rail input, and output capability from a single 2.7V to 5.5V supply. These amplifiers exhibit a high slew rate of 10V/μs and a gain-bandwidth (GBW) of 10MHz. The BCT2232 can drive headset levels (32Ω), as well as bias an RF power amplifier (PA) in wireless handset applications.

The BCT2232 offers low offsets, wide bandwidth, and high-output drive in a space-saving SOP-8 package. These parts are offered over the industrial temperature range (-40°C to +85°C).

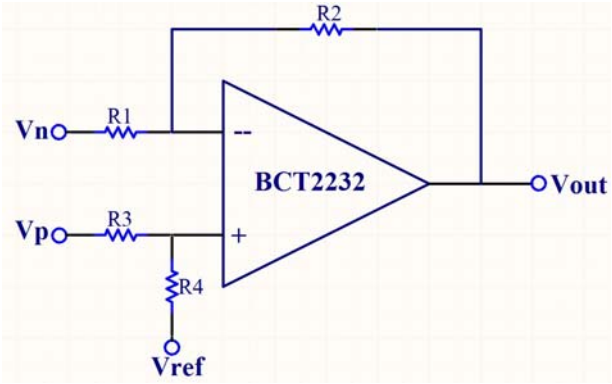
Features

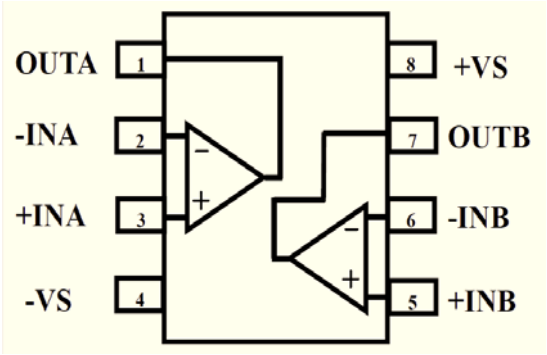
- 30mA Output Drive Capability
- Rail-to-Rail Input and Output
- 1.1mA Supply Current per Amplifier
- 2.7V to 5.5V Single-Supply Operation
- 10MHz Gain-Bandwidth Product
- High Slew Rate: 10V/μs
- 100dB Voltage Gain (RL = 100kΩ)
- 85dB Power-Supply Rejection Ratio
- No Phase Reversal for Overdriven Inputs
- Unity-Gain Stable for Capacitive Loads to 780pF
- Available in SOP-8 package

Applications

RF PA Biasing Controls in Handset Applications
Portable/Battery-Powered Audio Applications
Portable Headphone Speaker Drivers (32Ω)
Audio Hands-Free Car Phones (Kits)
Laptop/Notebook Computers/TFT Panels
Set-Top Boxes
Digital-to-Analog Converter Buffers
Transformer/Line Drivers
Motor Drivers

Application Circuit





Ordering Information

PART	PIN-PACKAGE	Temp-Range	Top Mark	Supplied as:
BCT2232ESA-TR	SOP-8	-40°C to +85°C	2232	3000units/Tape&Reel

Functional Pin Description

Pin	Name	Function
1	OUTA	Amplifier A Output
2	-INA	Inverting Input to Amplifier A
3	+INA	Non inverting Input to Amplifier A
4	-VS	Negative Supply Input. Connect to ground for single-supply operation.
5	+INB	Non inverting Input to Amplifier B
6	-INB	Inverting Input to Amplifier B
7	OUTB	Amplifier B Output
8	+VS	Positive Supply Input

ABSOLUTE MAXIMUM RATINGS

Supply Voltage (VDD to VSS) 6V
All Other Pins .....(VSS - 0.3V) + (VDD + 0.3V)
Output Short-Circuit Duration to VDD or VSS 1s
Continuous Power Dissipation (TA = +70°C)
8-Pin SOP (derate 8.9mW/°C above +70°C) 714mW
Operating Temperature Range .....-40°C to +125°C
Junction Temperature.....+150°C
Storage Temperature Range .....-65°C to +150°C
Lead Temperature (soldering, 10s) .....+300°C

Note 1:
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

DC ELECTRICAL CHARACTERISTICS

(VDD = 2.7V, VSS = 0V, VCM = VDD/2, VOUT = (VDD/2), RL = connected to (VDD/2), TA = +25°C)

PARAMETER	SYMBOL	CONDITIONS		MIN	TYP	MAX	UNITS
Operating Supply Voltage Range	VDD	Inferred from PSRR test		2.7		5.5	V
Input Offset Voltage	VOS				0.85	±6	mV
Input Bias Current	IB	VCM = VSS to VDD			50		pA
Input Offset Current	IOS	VCM = VSS to VDD			50		pA
Input Resistance	RIN				1000		MΩ
Common-Mode Input Voltage Range	VCM	Inferred from CMRR test		VSS		VDD	V
Common-Mode Rejection Ratio	CMRR	VSS < VCM < VDD		52	70		dB
Power-Supply Rejection Ratio	PSRR	VDD = 2.7V to 5.5V		73	85		dB
Large-Signal Voltage Gain	AVOL	VSS + 0.20 < VOUT < VDD - 0.20V	RL= 100kΩ		100		dB
			RL = 2kΩ	85	98		
			RL = 200Ω	74	80		

DC ELECTRICAL CHARACTERISTICS (continued)

(VDD = 2.7V, VSS = 0V, VCM = VDD/2, VOUT = (VDD/2), RL = connected to (VDD/2), TA = +25°C)

PARAMETER	SYMBOL	CONDITIONS			MIN	TYP	MAX	UNITS
Output Voltage Swing	VOUT	RL = 32Ω		VDD - VOH		400	500	mV
				VOL - VSS		360	500	
		RL = 200Ω		VDD - VOH		80	120	
				VOL - VSS		70	120	
		RL = 2kΩ		VDD - VOH		8	14	
				VOL - VSS		7	14	
Output Source/ Sink Current		VOUT = 0.15V to (VDD - 0.15V)			7	10		mA
Output Voltage with Current Load		IL = 10mA	VDD = 2.7V	VDD - VOH		128	200	mV
				VOL - VSS		112	175	
		IL = 30mA	VDD = 5V	VDD - VOH		240	320	
				VOL - VSS		224	300	
Quiescent Supply Current (per Amplifier)	IDD	VDD = 5.5V, VCM = VDD / 2				1.2	2.3	mA
		VDD = 2.7V, VCM = VDD / 2				1.1	2.0	

AC ELECTRICAL CHARACTERISTICS

(VDD = 2.7V, VSS = 0V, VCM = VDD/2, VOUT = (VDD/2), RL = connected to (VDD/2), TA = +25°C)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Gain-Bandwidth Product	GBWP	VCM = VDD/2		10		MHz
Full-Power Bandwidth	FPBW	VOUT = 2VP-P, VDD = 5V		0.8		MHz
Slew Rate	SR			10		V/μs
Phase Margin	PM			70		Degrees
Gain Margin	GM			15		dB
Total Harmonic Distortion Plus Noise	THD+N	f = 10kHz, VOUT = 2VP-P, AVCL = 1V/V		0.0005		%
Input Capacitance	CIN			8		pF
Voltage Noise Density	en	f = 1kHz		15		nV/√Hz
		f = 10kHz		12		
Channel-to-Channel Isolation		f = 1kHz, RL = 100kΩ		125		dB
Capacitive-Load Stability		AVCL = 1V/V, no sustained oscillations		780		pF
Power-Up Time	tON			5		μs

Package Information

WE (SOIC-8)