DATA SHEET

33502A 2-Channel 50 Vpp Isolated Amplifier



KEYSIGHT TECHNOLOGIES

Introduction

The Keysight Technologies, Inc. 33502A is a dual-channel, high voltage output amplifier. It has an isolated analog front end with up to 50 Vpp (± 25 V) output voltage range. It is also a very low-distortion amplifier with < 0.01% @ 10 kHz and 40 Vpp. The 33502A is designed to work as a companion for function generators to offer low-distortion, higher voltage outputs.

The 33502A has a fully isolated front end, which offers superior 5X voltage amplification to other amplifiers.
You can independently configure input coupling (AC|DC) and input impedance (50 Ω|1 MΩ) to match you circuit. The input path can also be switched from amplified to direct (unamplified) without removing or
connecting cables.

The 33502A, in a 2 unit, half-rack mechanical form factor, fits well on both your bench and in your test system. It also is configured with LAN (LXI Class-C compliant) and USB interfaces to meet your computer IO needs.

The 33502A provides both a programmable interface and a softkey-driven front panel for flexibility in configuring.

The 33502A is compatible with existing Keysight function/arbitrary waveform generators including the 33120A, 33210A, 33220A, and 33250A. It can also be used to amplify signals from non-Keysight function and arbitrary waveform generators.

Features

- Full-power BW 100 kHz @ 50 Vpp
- Small-signal BW > 300 kHz
- Slew Rate 20 V/µs min.
- THD+N < 0.01% @ 10 kHz, 40 Vpp.
- Output drive 200 mA max.
- Isolation floats ±42 Vpk to earth

Table 1.

Feature	Characteristic
General	
Number of channels	2
Channel to channel ground connection	Not connected in BYPASS ON. Connected with both channels OFF or in Gain of 5x
Floating Voltage	±42 Vpk to earth
Input configuration & specification	
Input coupling	
AC coupling	Programmable
DC coupling	Default, programmable
Input Impedance	
1 MΩ	Default, programmable
50 Ω	Programmable
Input voltage range	
Maximum voltage range	±5 Vpk for gain of 5x, ±30 Vpk for bypass
Damage level	±10 Vpk for 50 Ω input ±35 Vpk for 1 MΩ input
Input path	Programmable gain of 5x, bypass (1x), or off state
Input gain 5X	5X, Fixed, Non-inverting
Gain accuracy[2]	±0.1% @ 1 KHz
Flatness DC coupling[1]	0.1% : dc - 10 KHz 1% : dc - 40 KHz 5% : dc - 100 KHz
Flatness AC coupling[1]	0.1% : 30 Hz - 10 KHz 1% : 10 Hz - 40 KHz 5% : 3 Hz - 100 KHz
Small signal bandwidth[1]	> 300 KHz (–3 db)
Full power bandwidth[1]	100 KHz @ 50 Vpp output
Input bypass	
Bandwidth for 50 Ω system	> 300 MHz (–3 db)
Maximum current	0.2 Apk
Noise	
Input referred noise	< 40 nV/ rt-Hz @ 1 kHz
Output configuration & specification	
Output current	200 mA. (150 mA for continuous output from -8 V to +8 V)
DC output resistance	< 2 Ω
Max output level [1]	±25 Vpk
Output DC offset	<1 0 mV
Output slew rate [1]	> 20 V/us
THD + N [1]	< 0.01% @ 10kHz, 40 Vpp
Aberrations [1]	<5% for waveforms with <3V input step or non slewing output
Transition time [1] (Final value ±1% of step size)	2.5uSec+ 50nSec/volt of output step
Channel to channel isolation for gains of 5x	> 75dB
Capacitive Load for no oscillation	< 1 nF
Output protection	Continuous short circuit protection Thermal overload shutdown. Over temperature status flag.

1. For all loads > 250 ohms and < 400 pF of capacitance
2. Measured with ≥ 1 Mohm load and 1 Mohm input selection.

Table 2.

General characteristics	
Power supply	100 V/120 V/220 V/240 V ±10%
Power line frequency	50–60 Hz ±10%, 400 Hz ±10%.
Power consumption	100 VA peak (typical value depends on configuration and load)
Operating environment	Full accuracy for 0 to 55 °C Full accuracy to 80% R.H. at 40 °C Non–condensing
Storage temperature	–40 to 70 °C
Operating altitude	Up to 3000 m
Bench Dimensions (W x H x D)	261.2 mm x 103.8 mm x 303.2 mm
Weight	3.1 kg (6.8 lbs)
Safety	Complies with European Low Voltage Directive and carries the CE-marking Conforms to UL 61010-1, CSA C22.2 61010-1, and IEC 61010-1:2001
EMC	Complies with European EMC Directive for test and measurement products. - IEC/EN 61326-1 - CISPR Pub 11 Group 1, class A - AS/NZS CISPR 11 - ICES/NMB-001 Complies with Australian standard and carries C-Tick mark This ISM device complies with Canadian ICES-001. Cet appareil ISM est conforme á la norme NMB-001 du Canada
Acoustic noise	Normal operating mode: SPL 35db(A)
Display	4.3" Color TFT WQVGA (480x272), LED backlight
Remote interfaces	10/100Mbit LAN USB 2.0 Standard
Language	SCPI – 1994.0, IEEE–488.2
LXI compliance	LXI Class C, Version 1.0
Number of channels	2
Channel to channel ground connection	Not connected in BYPASS ON. Connected with both channels OFF or in Gain of 5x
Floating Voltage	±42 Vpk to earth

Accessories

Accessories available	
1CM124A	Rackmount kit
1CM107A	2U dual flange kit
34194A	Dual lock link kit

Learn more at: www.keysight.com

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