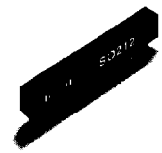
BURR-BROWN®



ISO212P

www.burr-brown.com/databook/ISO212.html

Low Cost, Two-Port Isolated, 1500Vrms ISOLATION AMPLIFIER

FEATURES

- 12-BIT ACCURACY
- 2.5mA (typ) QUIESCENT CURRENT
- LOW PROFILE (LESS THAN 0.5" HIGH)
- SMALL FOOTPRINT
- EXTERNAL POWER CAPABILITY (±8V at 5mA)
- "MASTER/SLAVES" SYNCHRONIZATION CAPABILITY
- INPUT OFFSET ADJUSTMENT
- LOW POWER (53mW)
- SINGLE 10V TO 15V SUPPLY OPERATION

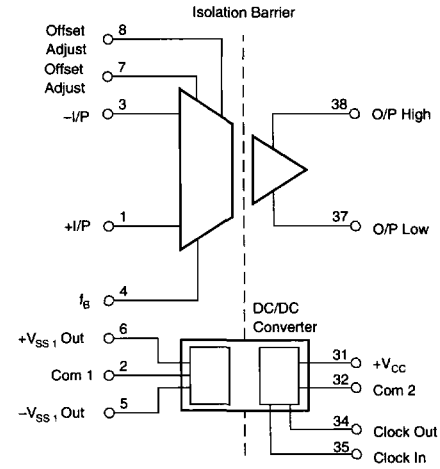
APPLICATIONS

- INDUSTRIAL PROCESS CONTROL: Transducer Channel Isolator for Thermocouples, RTDs, Pressure Bridges, Flow Meters
- 4mA TO 20mA LOOP ISOLATION
- MOTOR AND SCR CONTROL
- GROUND LOOP ELIMINATION
- ANALYTICAL MEASUREMENTS
- POWER PLANT MONITORING
- DATA ACQUISITION/TEST EQUIPMENT ISOLATION
- MULTIPLEXED SYSTEMS WITH CHANNEL TO CHANNEL ISOLATION

DESCRIPTION

The ISO212P signal isolation amplifier is a member of a series of low-cost isolation products from Burr-Brown. The low-profile SIL plastic package allows PCB spacings of 0.5" to be achieved, and the small footprint results in efficient use of board space.

To provide isolation, the design uses high-efficiency, miniature toroidal transformers in both the signal and power paths. An uncommitted input amplifier and an isolated external bipolar supply ensure the majority of input interfacing or conditioning needs can be met. The ISO212P accepts an input voltage range of ±5V for single 15V supply operation or ±3.0V for single 10V supply operation.



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Internet: http://www.burr-brown.com/ • FAXLine: (800) 548-6133 (US/Canada Only) • Cable: BBRCORP • Telex: 066-6491 • FAX: (520) 889-1510 • Immediate Product Info: (800) 548-6132

SPECIFICATIONS

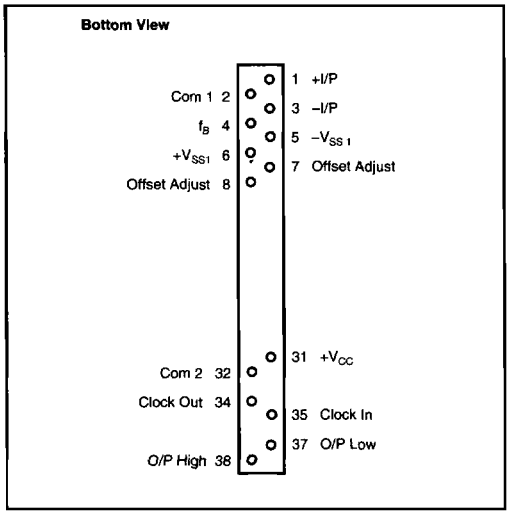
ELECTRICAL

At T_A = +25°C and V_{CC} = +15V, unless otherwise noted.

PARAMETER	CONDITIONS	ISO212JP			ISO212KP, JP-15			UNITS
		MIN	TYP	MAX	MIN	TYP	MAX	
ISOLATION								
Voltage								
Rated Continuous								
AC, 50Hz		750			1500			Vrms
DC		1060			2120			VDC
100% Test (AC, 50Hz)	Partial Discharge							
	1s : <5pC	1200			2400			Vrms
Isolation-Mode Rejection[1]	V_{ISO} = Rated Continuous 60Hz							
AC			115			*[9]		dB
DC			160			*		dB
Barrier Resistance			10^{10}			*		Ω
Barrier Capacitance			12			*		pF
Leakage Current[8]	V_{ISO} = 240Vrms, 60Hz		1	2		*	*	µArms
	V_{ISO} = 240Vrms, 50Hz			1.6			*	µArms
GAIN								
Initial Error			±1	±2		*	*	% FSR[2]
Gain vs Temperature			20	50		*	*	ppm of FSR/°C
Nonlinearity[3]: KP	V_O = –5V to +5V		0.04	0.05		0.015	0.025	%FSR
JP-15						0.04	0.05	%FSR
INPUT OFFSET VOLTAGE								
Offset Voltage RTI: KP				±10 ±10/G			±7.5 ±7.5/G	mV
JP-15							±10 ±10/G	mV
vs Temperature			30 ±30/G			*		µV/°C
vs Power Supply[4]	V_{CC} = 14V to 16V		±1.5			*		mV/V
Adjustment Range		±20			*			mV
INPUT CURRENT								
Bias				50			*	nA
Offset				4			*	nA
INPUT								
Voltage Range[5]	G = 1	±5			*			V
Resistance			10^{12}			*		Ω
OUTPUT								
Output Impedance			3			*		kΩ
Voltage Range	Out Hi to Out Lo	±5			*			V
	Min Load = 1MΩ							
Ripple Voltage[6]	f = 0 to 100kHz		8			*		mVp-p
	f = 0 to 5kHz		0.4			*		mVrms
Ouput Compliance	Out Hi or Out Lo		7.5					V
FREQUENCY RESPONSE								
Small Signal Bandwidth	I/P = 1Vp-p, –3dB G = 1		1			*		kHz
Full Signal Bandwidth	I/P = 10Vp-p, G = 1		200			*		Hz
	G = 10 (–3dB)		1.8					kHz
ISOLATED POWER OUTPUTS								
Voltage Outputs ($\pm V_{SS\ 1}$)[7]	No Load	±7.5	±8		*	*		VDC
vs Temperature			–8			*		mV/°C
vs Load			90			*		mV/mA
Current Output [7]								
(Both Loaded)				5			*	mA
(One Loaded)				8			*	mA
POWER SUPPLIES								
Rated Voltage	Rated Performance		15			*		V
Voltage Range[5]			11.4 to 16		*		*	V
Quiescent Current	No Load		2.5	3.5		*	*	mA
TEMPERATURE RANGE								
Specification		0		+70	*		*	°C
Operating		–25		+85	*		*	°C

NOTES: (1) Isolation-mode rejection is the ratio of the change in output voltage to a change in isolation barrier voltage. It is a function of frequency. (2) FSR = Full Scale Range = 10V. (3) Nonlinearity is the peak deviation of the output voltage from the best-fit straight line. It is expressed as the ratio of deviation to FSR. (4) Power Supply Rejection is the change in V_{OS}/Supply Change. (5) At V_{CC} = +10.0V, input voltage range = ±3.0V min. (6) Ripple is the residual component of the barrier carrier frequency generated internally. (7) Derated at V_{CC} < +15V. (8) Tested at 2400Vrms, 50Hz limit 16µA. (9) Asterisk (*) same as ISO212JP.

PIN CONFIGURATION



ABSOLUTE MAXIMUM RATINGS

Supply Voltage Without Damage	18V
Continuous Isolation Voltage Across Barrier: JP	750Vrms
KP, JP-15	1500Vrms
Storage Temperature Range	–25°C to 100°C
Lead Temperature (soldering, 10s)	+300°C
Amplifier Output Short-Circuit Duration	Continuous to Common
Output Voltage Hi or Lo to Com 2	$\pm V_{CC}/2$

PACKAGE/ORDERING INFORMATION

PRODUCT	PACKAGE	PACKAGE DRAWING NUMBER(1)	TEMPERATURE RANGE
ISO212JP	38-Pin Plastic SIP	326	–25°C to +85°C
ISO212JP-15	38-Pin Plastic SIP	326	–25°C to +85°C
ISO212KP	38-Pin Plastic SIP	326	–25°C to +85°C

NOTE: (1) For detailed drawing and dimension table, please see end of data sheet, or Appendix C of Burr-Brown IC Data Book.

ELECTROSTATIC DISCHARGE SENSITIVITY

This integrated circuit can be damaged by ESD. Burr-Brown recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage.

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.