

## Hybrid IC Isolation Amplifiers 20 Series

### ISOLATION AMPLIFIER

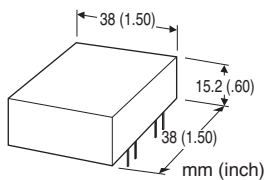
(5 kV input isolation)

#### Functions & Features

- Being used for printed wiring board installation
- Up to 5 kV isolation between input to output or power input
- High CMRR
- Small installation area in printed wiring board
- Gain adjustable range,  $\times 1$  to  $\times 10$
- Power 15 V DC

#### Typical Applications

- Isolating the field and input circuit of microprocessor to reduce noise from field
- Available for manufacturers of small-lot products to omit the development of isolation circuit



### MODEL: 20VS4-384-U

#### ORDERING INFORMATION

- Code number: 20VS4-384-U

INPUT RANGE -5 - +5 V DC

OUTPUT RANGE -5 - +5 V DC

#### POWER INPUT

**DC Power**

U: 15 V DC

#### GENERAL SPECIFICATIONS

**Construction:** Hybrid IC

**Housing material:** Flame-resistant resin (black)

**Isolation:** Input to output or power

#### INPUT SPECIFICATIONS

■ **DC Voltage**

**Input :** -5 - +5 V DC

**Input resistance:**  $\geq 1 \text{ M}\Omega$  (10 k $\Omega$  in power failure)

**Overload input voltage:** 240 V AC continuous

**Input offset voltage:**  $\pm 15 \text{ mV}$

**Input bias current:** 0.5 nA TYP. (@25°C)

#### OUTPUT SPECIFICATIONS

■ **DC Voltage:** -5 - +5 V DC

**Load resistance:**  $\geq 2 \text{ k}\Omega$

**Output impedance:**  $\leq 1 \Omega$

#### REFERENCE VOLTAGE SOURCE

**Output voltage:**

$\pm 7.5 \text{ V DC TYP. (+15 V power supply)}$

$\pm 7.0 \text{ V DC TYP. (+14 V power supply)}$

**Load current:**  $\leq 5 \text{ mA}$

#### INSTALLATION

**Power input**

• **DC:**

Operational voltage range 13 - 16 V;

ripple 2 %p-p max.; approx. 7 mA with no load

**Operating temperature:** -10 to +70°C (14 to 158°F)

**Operating humidity:** 30 to 90 %RH (non-condensing)

**Mounting:** Soldering to the printed wiring board

**Weight:** 20 g (0.71 oz)

#### PERFORMANCE in percentage of span

**Linearity:**  $\pm 0.05 \%$

**Temp. coefficient:**

Offset drift 10 ppm/°C TYP. @G = 1 (20 ppm/°C max.)

span drift 20 ppm/°C TYP. @G = 1 (50 ppm/°C max.)

**Frequency characteristics:** Approx. 1 kHz, -3 dB

**Response time:**  $\leq 450 \mu\text{sec.}$  (0 - 90 %)

**Conversion gain:**  $\times 1 \pm 1 \%$

**Gain adjustable range:**  $\times 1$  to  $\times 10$

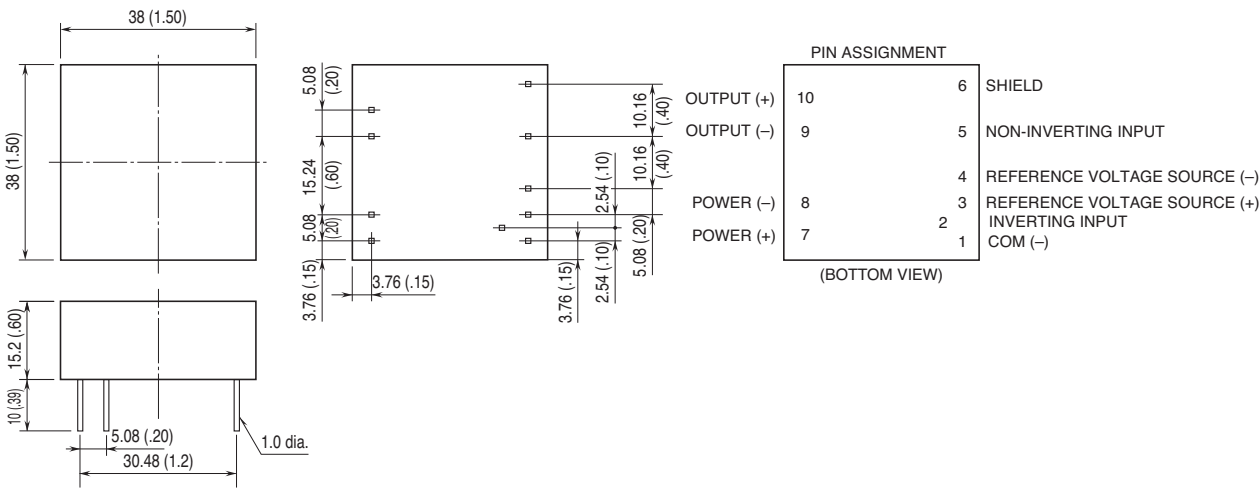
**Line voltage effect:**  $\pm 0.1 \%$  over voltage range

**Insulation resistance:**  $\geq 100 \text{ M}\Omega$  with 500 V DC

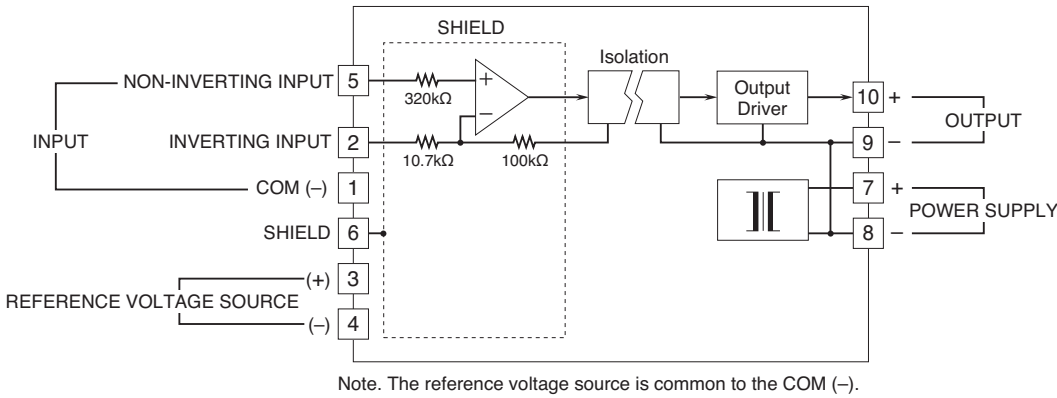
**Dielectric strength:** 5000 V AC @3 minute (input or reference voltage source to output or power)

**CMRR:** 114 dB TYP. (500 V AC 50/60 Hz)

**EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm (inch)**

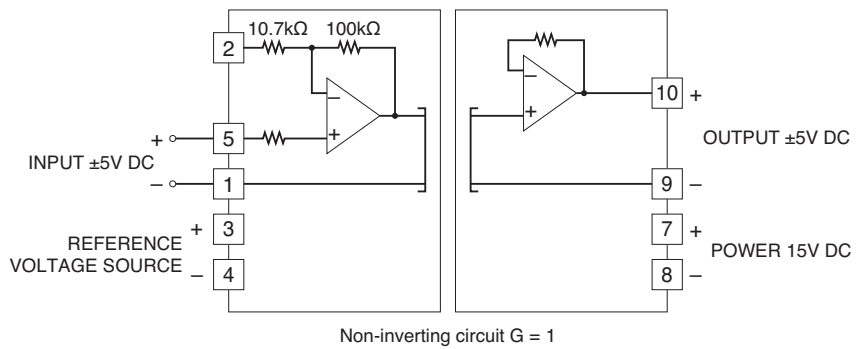


**SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM**

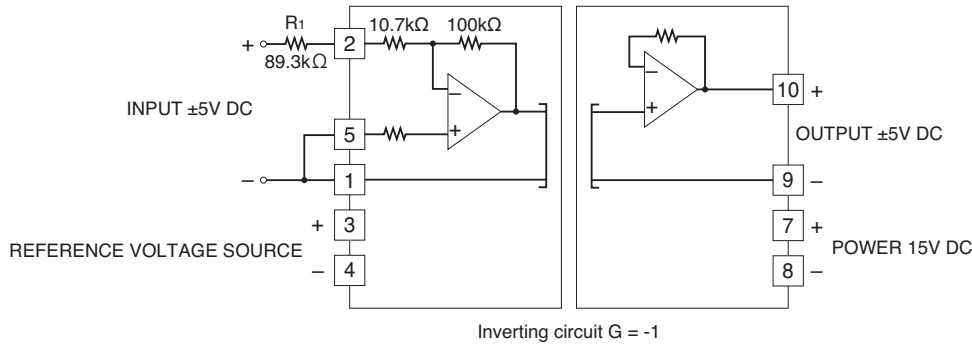


**APPLICATION EXAMPLE**

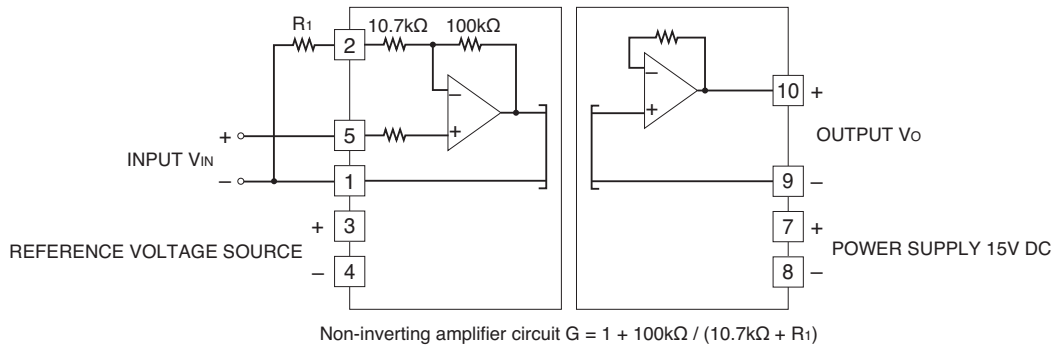
■ Non-inverting amplifier circuit: Basic example of G = 1



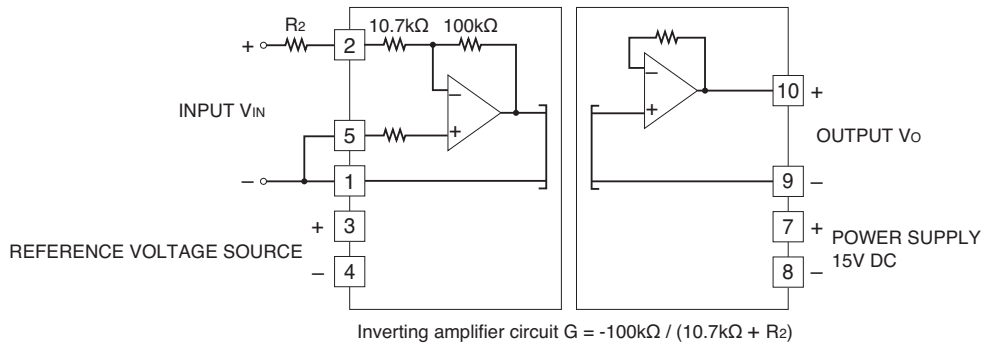
■ Inverting amplifier circuit: Basic example of  $G = -1$  (output inverted to the input)



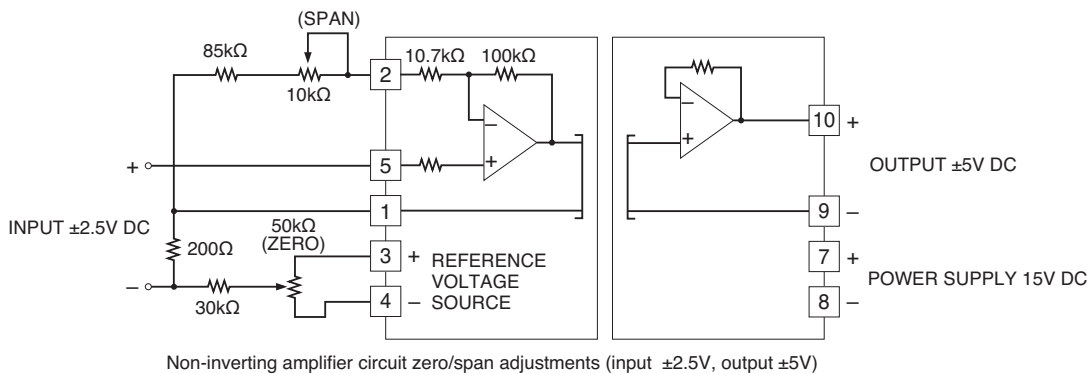
■ Non-inverting amplifier circuit: Example of  $G = 1 + 100k\Omega / (10.7k\Omega + R_1)$



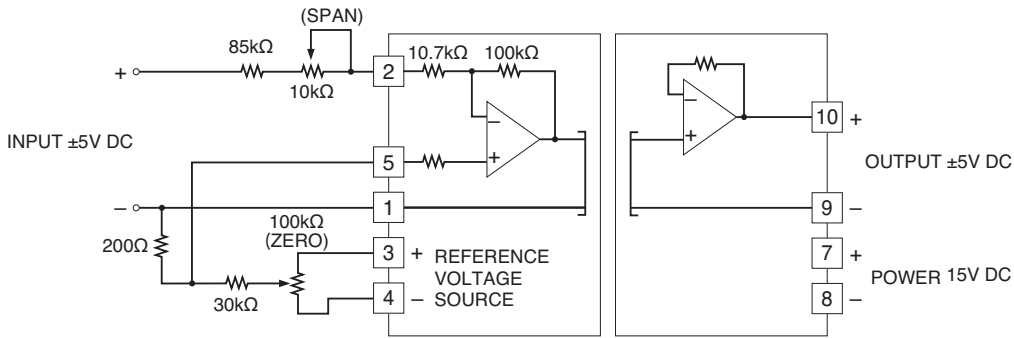
■ Inverting amplifier circuit: Example of  $G = -100k\Omega / (10.7k\Omega + R_2)$  (output inverted to the input,  $G: -0.5$  to  $-9.3$ )



■ Non-inverting amplifier's circuit with external adjustments: Example of  $G = 2$

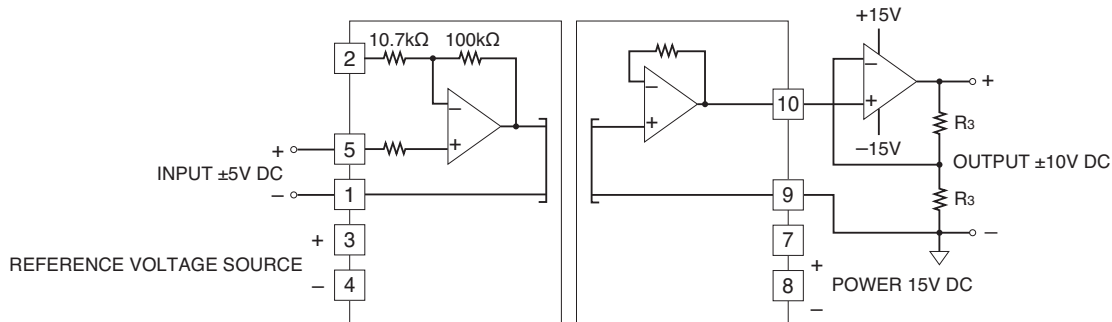


■ Inverting amplifier's circuit with external adjustments: Example of  $G = -1$  (output inverted to the input)



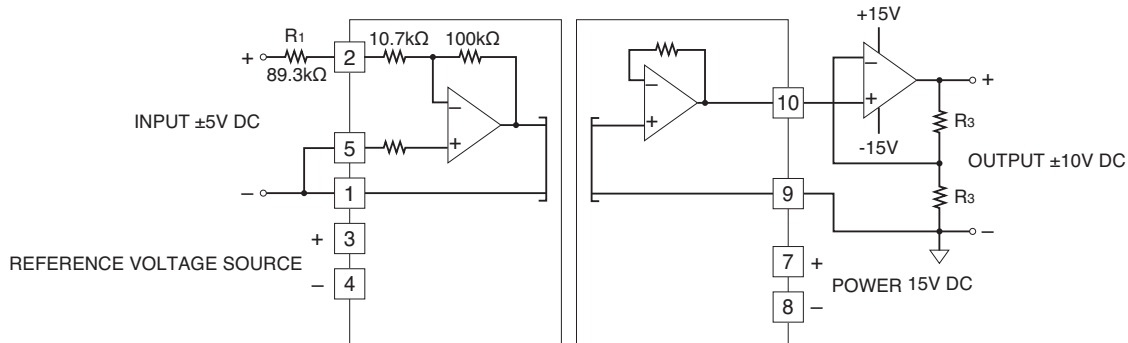
Inverting amplifier circuit zero/span adjustments (input  $\pm 5V$ , output  $\pm 5V$ )

■ Non-inverting amplifier circuit: Example of  $\pm 10V$  DC output ( $\pm 10V$  DC to the input  $\pm 5V$  DC)



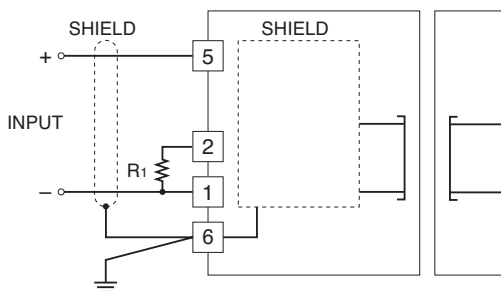
Non-inverting circuit  $G = 1 + R_3 / R_3 = 2$

■ Inverting amplifier circuit: Example of  $\pm 10V$  DC output (output inverted to the input)



Inverting circuit  $G = -(1 + R_3 / R_3) = -2$

• Shield Cable Wiring



Specifications are subject to change without notice.