

## High Performance, Isolated Voltage-to-Current Converter

### 2B22

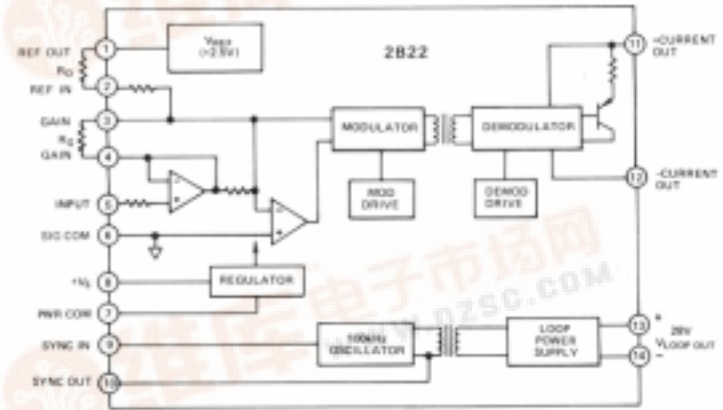
#### FEATURES

- Wide Input Range: 0 to +1V to 0 to +10V**
- Standard Output Range: 4 to 20mA**
- High CMV Input/Output Isolation: 1500V dc Continuous**
- Low Nonlinearity: 0.05% max, 2B22L**
- Low Span Drift: 0.005%/°C max, 2B22L**
- Single Supply: +14V to +32V**
- Meets IEEE Std 472: Transient Protection (SWC)**
- Meets ISA Std 50.1: Isolated Current Loop Transmitters**

#### APPLICATIONS

- Industrial Instrumentation and Process Control**
- Ground Loop Elimination**
- High Voltage Transient Protection**
- D/A Converter - Current Loop Interface**
- Analog Transmitters and Controllers**
- Remote Data Acquisition Systems**

Functional Block Diagram



#### GENERAL DESCRIPTION

Model 2B22 is a high performance, compact voltage-to-current converter offering 1500V dc input to output isolation in interfacing standard process signals. The input stage of the model 2B22 is single resistor programmable to accept voltage ranges from 0 to +1V to 0 to +10V. The isolated output current range is 4 to 20mA, and the 2B22 can be operated with 0 to 1000Ω grounded or floating loads.

Using modulation techniques with transformer isolation for reliable performance, the 2B22 is available in three accuracy selections offering guaranteed nonlinearity error (2B22L: ±0.05% max, 2B22K: ±0.1% max, and 2B22j: ±0.2% max) and guaranteed low span drift: ±0.005%/°C max, ±0.01%/°C max, and ±0.015%/°C max, respectively. The internally trimmed span and offset errors are ±0.1% max for the 2B22L and ±0.25% max for the 2B22J/2B22K. Both span and offset are adjustable by the optional external potentiometers.

Featuring a wide range, single supply operation (+14V to +32V), the 2B22 provides isolated +28V loop power and is capable of delivering rated current into an external 0 to 1000Ω load resistance. The unique output stage configuration also allows the user to utilize an optional external loop power supply to interface systems designed for a two-wire operation.

#### APPLICATIONS

Model 2B22 has been specifically designed for high accuracy applications in process control and monitoring systems to offer complete galvanic isolation and protection against damage from transients and fault voltages in transmitting information between subsystems or separated system elements. The 2B22

meets the requirements of the instrument Society of America Std. 50.1 "Compatibility of Analog Signals for Electronic Industrial Process instruments" for Type 4, Class U isolated current loop transmitters.

In the industrial environment, model 2B22 can serve as a transmission link between such system elements as transmitters, indicators, controllers, recorders, computers, actuators and signal conditioners. In data acquisition and control systems, the 2B22 may act as an isolated interface between the D/A converter output of a microcomputer and standard 4 to 20mA analog loops.

#### DESIGN FEATURES AND USER BENEFITS

**High Reliability:** Model 2B22 is a conservatively designed, compact module capable of reliable operation in harsh environments. To assure high reliability, the 2B22 has a calculated MTBF of over 270,000 hours and has been designed to meet the IEEE Standard for Transient Voltage Protection (472-1974: Surge Withstand Capability).

**Process Signal Compatibility:** The versatile input stage design with a single resistor gain adjustment enables the 2B22 to accept any one of the standard inputs—0-1V, 0-10V, 1-5V; or 1-5mA, 4-20mA, 10-50mA; and provide standard, isolated 4-20mA output.

**Isolated loop Power:** Internal 28V dc loop supply, completely isolated from the input power terminals (±1500V dc isolation), provides the capability to drive 0 to 1000Ω loads and eliminates the need for an external dc/dc converter.

