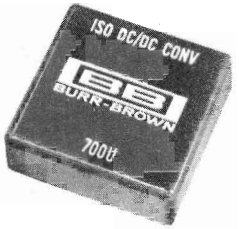
BURR-BROWN®




# 700/700U

# ISOLATED DC-TO-DC CONVERTER

## FEATURES

- HIGH BREAKDOWN VOLTAGE 5000V PEAK
- LOW LEAKAGE CAPACITANCE ≈ 3pF
- SHIELDED AND UNSHIELDED UNITS
- COMPLETELY SPECIFIED

## APPLICATIONS

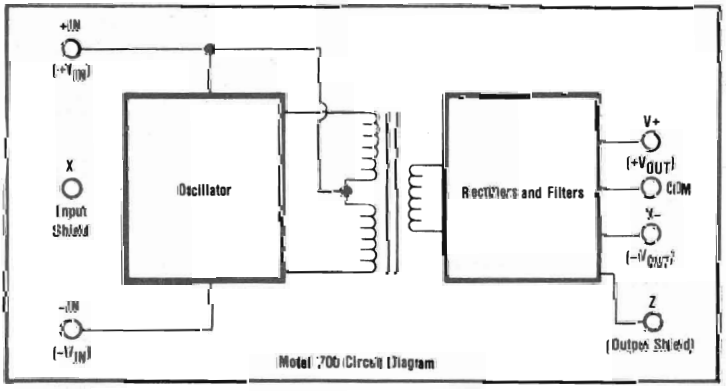
- INDUSTRIAL PROCESS CONTROL
- MEDICAL INSTRUMENTATION
- TEST EQUIPMENT
- DATA ACQUISITION SYSTEMS

## BENEFITS

- HIGH VOLTAGE RATING PROTECTS EXPENSIVE INSTRUMENTATION
- LOW LEAKAGE CURRENT PROTECTS HUMAN LIFE
- EXCELLENT ISOLATION CMR IMPROVES SYSTEM PERFORMANCE
- SHIELDING PREVENTS ELECTROSTACTIC AND EMI PROBLEMS

## DESCRIPTION

The Model 700 converts a 10VDC to 18VDC input to a dual output of the same value as the input voltage. The internal hybrid integrated circuit reduces size and cost. A self-contained frequency stable 130kHz oscillator drives switching circuitry which is designed to minimize the common problem of spiking due to transformer saturation. Regulation and short circuit protection, if desired, can easily be added (see Figure 3). Models 700 and 700M have separate internal input and output shields. Models 700U and 700UM have no internal shields.




Model 700 Circuit Diagram

International Airport Industrial Park - P.O. Box 11400 - Tucson, Arizona 85734 - Tel. (602) 746-1111 - Twx: 910-952-1111 - Cable: BBRCORP - Telex: 66-6491

PDS-328F

# SPECIFICATIONS

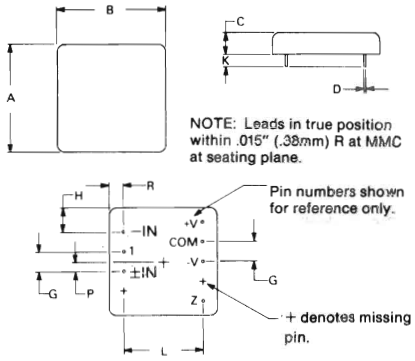
## ELECTRICAL

Typical at 25°C with 15VDC supply unless otherwise noted.

| MODEL | 700/700M | 700U/700UM |
|---|---|---|
| **INPUT** | | |
| Voltage Range(1) | 10V to 18V | |
| Current at ±3mA Load | 20mA | |
| Current at ±30mA Load | ±100mA, max | |
| Ripple Current at ±3mA Load | ±3mA, peak | |
| Ripple Current at ±30mA Load | ±100mA, peak | |
| **ISOLATION(2)** | | |
| Voltage, Test, 5sec at 60Hz | 4200V, p | 5000V, p |
| Voltage, Continuous, derated | 1500V, p | 2000V, p |
| Impedance | 10GΩ \|\| 5pF | 10GΩ \|\| 3pF |
| Leakage Current at 240V/60Hz | 1μA, max | 1μA, max |
| **OUTPUT** | | |
| $V_{OUT}$ at ±3mA to ±30mA Load | $\pm V_{IN}$ with ±1V tolerance | |
| Operating Current total of both outputs | 60mA, max | |
| Safe Nondestructive Current at 25°C | 120mA, max | |
| Sensitivity to Input Voltage | 1.08V/V | |
| Load Regulation | 35mV/mA | |
| Ripple Voltage at ±3mA Load | ±15mV, peak | |
| Ripple Voltage at ±30mA Load | ±80mV, peak max | |
| Balance of +V and -V at +I = -I | ±20mV | |
| **TEMPERATURE RANGE** | | |
| Operating | -25°C to +85°C | |
| Storage | -55°C to +125°C | |

NOTES:
1. Derate to 16V max between $+V_{IN}$ and $-V_{IN}$ above 70°C.
2. A medical grade unit is available which is 100% screened to Patient Connected Circuit requirements for the leakage current (par. 27.5) and dielectric withstand voltage (par. 31.11) of UL544. Specify 700M or 700UM.

## MECHANICAL




| DIM | INCHES | | MILLIMETERS | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| A | 1.075 | 1.135 | 27.31 | 28.83 |
| B | 1.075 | 1.135 | 27.31 | 28.83 |
| C | .350 | .410 | 8.89 | 10.41 |
| D | .038 | .042 | 0.97 | 1.07 |
| G | .200 BASIC | | 5.08 BASIC | |
| H | .212 | .312 | 5.38 | 7.92 |
| K | .170 | .350 | 4.32 | 8.89 |
| L | .800 BASIC | | 20.32 BASIC | |
| P | .100 BASIC | | 2.54 BASIC | |
| R | .112 | .212 | 2.84 | 5.38 |

Material: Black epoxy
Weight: 22.67gm (0.80oz)
Grid: 2.50mm (0.10")

NOTE: Input and Output circuits have separate shields.

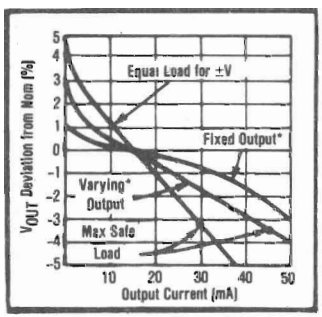



FIGURE 1. Load Regulation.

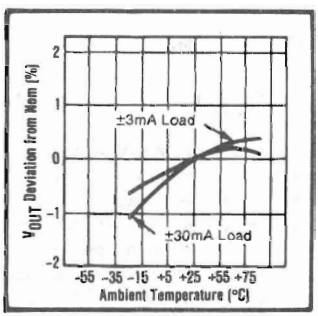



FIGURE 2. Temperature Drift.

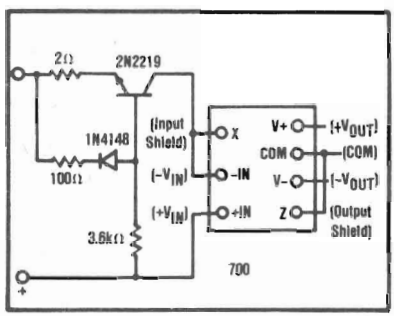



FIGURE 3. Short Circuit Protection.

*For one output with constant 15mA load and varying current on other output. (A minimum load of 3mA is recommended for each output.)

## USE WITH ISOLATION AMPLIFIERS:

When the Model 700/700U is used with isolation amplifiers such as the Burr-Brown 3650 and 3652 special attention should be given to current ratings to avoid over designing. Since the isolation amplifiers do not draw maximum current simultaneously from the V+ and V− Model 700/700U terminals, it is possible to drive more isolation amplifiers per Model 700/700U than one might initially expect. The Model 700/700U is capable of providing a total output current of 60mA balanced or unbalanced between the two outputs. A minimum load of 3mA is recommended for each output.