

**Proven  
Reliability**

# GP SERIES

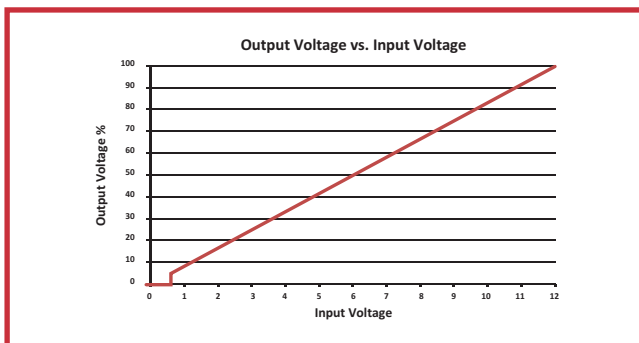
ISOLATED, PROPORTIONAL DC TO HV DC CONVERTERS

100V to 6kV at 1W



## PRODUCT DESCRIPTION

The GP Series is a line of miniature DC to HV DC converters providing 100V to 6kV, positive or negative in a compact PC mount package. This line features low power consumption, making it ideal for portable, battery powered applications. The isolated output is proportional to the input, and is linear from approximately 0.7 volts in. A low noise quasi-sine wave oscillator and shielded transformer provide clean, reliable DC to HV DC conversion with low EMI and RFI. The isolated output allows for user selectable output polarity. No minimum load is required.



## APPLICATIONS

- Portable, Battery Powered
- Sustaining Ion Pumps
- Vacuum Gauges
- Photomultiplier Tubes
- Spectrometry
- Electrostatic Chuck
- Non-impact Printers
- Field Generation
- Piezo Devices
- Electrophoresis

## OPTIONS

- External Mounting Enclosure (AB Suffix)

## PRODUCT SELECTION TABLE

| MODEL  | OUTPUT VOLTAGE*2 | OUTPUT CURRENT*1 |
|--------|------------------|------------------|
| GP01   | 100V             | 10mA             |
| GP02   | 200V             | 5mA              |
| GP03   | 300V             | 3.3mA            |
| GP05   | 500V             | 2mA              |
| GP06   | 600V             | 1.67mA           |
| GP08   | 800V             | 1.25mA           |
| GP10   | 1kV              | 1mA              |
| GP12   | 1.2kV            | 840uA            |
| GP15   | 1.5kV            | 660uA            |
| GP20   | 2kV              | 500uA            |
| GP25   | 2.5kV            | 400uA            |
| GP30   | 3kV              | 340uA            |
| GP40*5 | 4kV              | 250uA            |
| GP50*5 | 5kV              | 200uA            |
| GP60*5 | 6kV              | 166uA            |

## FEATURES

- Proportional Input/Output
- Compact, PCB Mount Package
- Low Power Consumption
- Low Ripple, Low EMI / RFI
- Short Circuit Protected
- Input/Output Isolation
- Low Leakage Current
- Low Input/Output Coupling Capacitance
- No External Components Required
- No Minimum Load Required
- MTBF: >2.31 million hrs per Bellcore TR-332
- UL Certified Encapsulant, Meets 94V-0 Flammability
- RoHS Compliant

ISO 9001:2008  
CERTIFIED

ISO 14001:2004  
CERTIFIED

RoHS  
COMPLIANT

IPC  
Certified J-STD-001  
Application Specialist

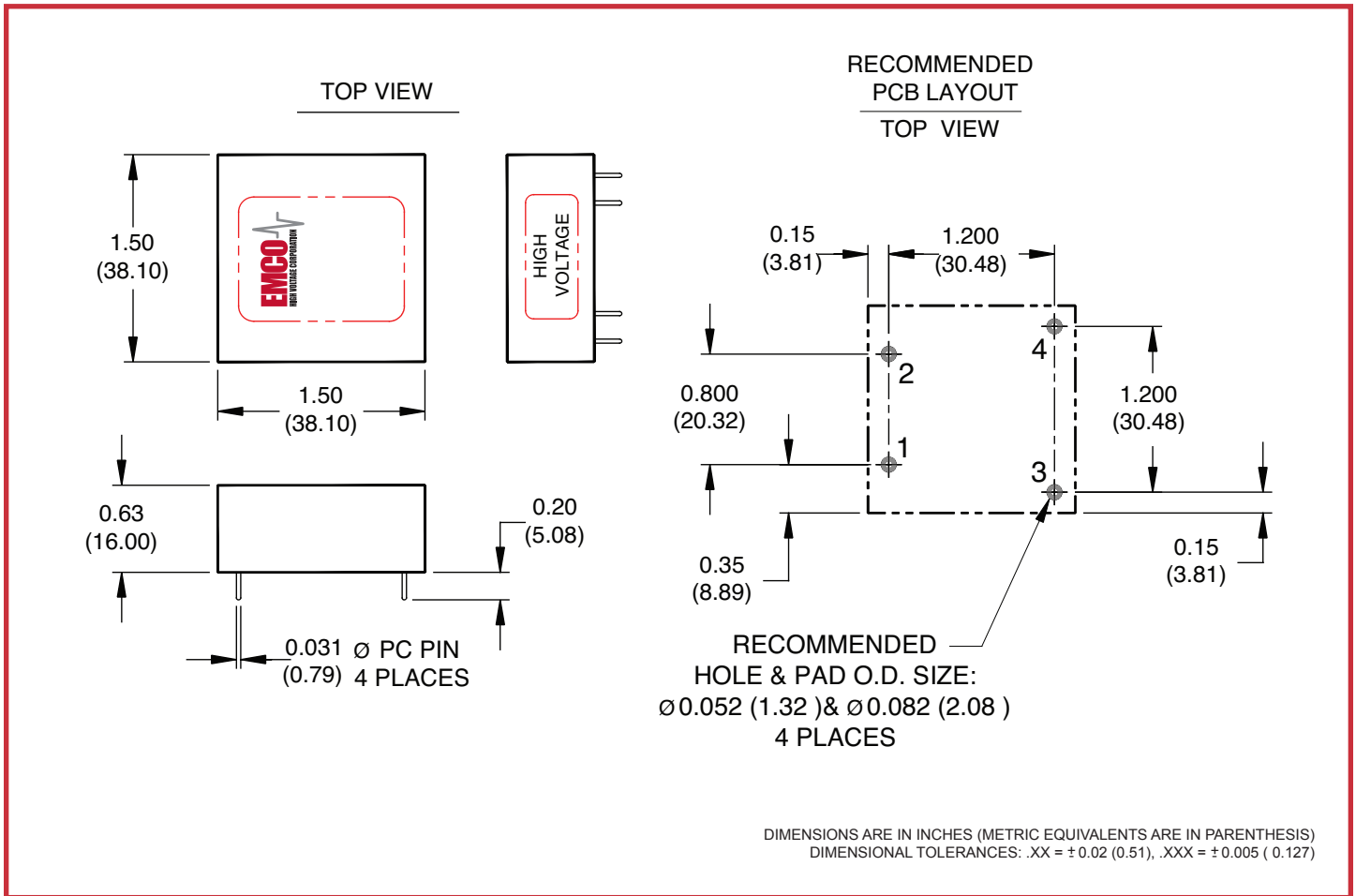
ELECTRICAL SPECIFICATIONS<sup>\*3</sup>

| REVERSIBLE MODEL   | OUTPUT VOLTAGE <sup>*2</sup> | OUTPUT CURRENT <sup>*1</sup> | INPUT CURRENT (NO LOAD) | INPUT CURRENT (FULL LOAD) | RIPPLE |
|--------------------|------------------------------|------------------------------|-------------------------|---------------------------|--------|
| GP01               | 0 to 100V                    | 10mA                         | <45mA                   | <150mA                    | <0.75% |
| GP02               | 0 to 200V                    | 5mA                          | <45mA                   | <150mA                    | <1.75% |
| GP03               | 0 to 300V                    | 3.3mA                        | <45mA                   | <125mA                    | <0.50% |
| GP05               | 0 to 500V                    | 2mA                          | <15mA                   | <125mA                    | <0.50% |
| GP06               | 0 to 600V                    | 1.67mA                       | <15mA                   | <125mA                    | <0.50% |
| GP08               | 0 to 800V                    | 1.25mA                       | <25mA                   | <125mA                    | <0.75% |
| GP10               | 0 to 1kV                     | 1mA                          | <15mA                   | <125mA                    | <0.75% |
| GP12               | 0 to 1.2kV                   | 840uA                        | <15mA                   | <125mA                    | <0.75% |
| GP15               | 0 to 1.5kV                   | 660uA                        | <20mA                   | <125mA                    | <0.75% |
| GP20               | 0 to 2kV                     | 500uA                        | <30mA                   | <130mA                    | <0.75% |
| GP25               | 0 to 2.5kV                   | 400uA                        | <30mA                   | <130mA                    | <1.0%  |
| GP30               | 0 to 3kV                     | 340uA                        | <40mA                   | <130mA                    | <1.0%  |
| GP40 <sup>*5</sup> | 0 to 4kV                     | 250uA                        | <50mA                   | <130mA                    | <1.0%  |
| GP50 <sup>*5</sup> | 0 to 5kV                     | 200uA                        | <75mA                   | <150mA                    | <1.5%  |
| GP60 <sup>*5</sup> | 0 to 6kV                     | 166uA                        | <85mA                   | <175mA                    | <1.0%  |

ELECTRICAL SPECIFICATIONS<sup>\*3</sup>

| PARAMETER                           | VALUE                                  |
|-------------------------------------|--|
| INPUT VOLTAGE                       | 0 to 12V                               |
| TURN-ON VOLTAGE                     | <0.7V                                  |
| ISOLATION                           | < +/-3.5kV BIAS                        |
| INPUT CAPACITANCE                   | 120uF                                  |
| RESPONSE TIME                       | <20ms                                  |
| OUTPUT VOLTAGE TOLERANCE            | +/-3% (Full Load, 100% output voltage) |
| REGULATION                          | <10% VARIATION OVER LOAD RANGE         |
| FREQUENCY                           | 60-400kHz                              |
| OPERATING TEMPERATURE <sup>*4</sup> | -20°C to +70°C (CASE)                  |
| STORAGE TEMPERATURE                 | -20°C to +105°C                        |

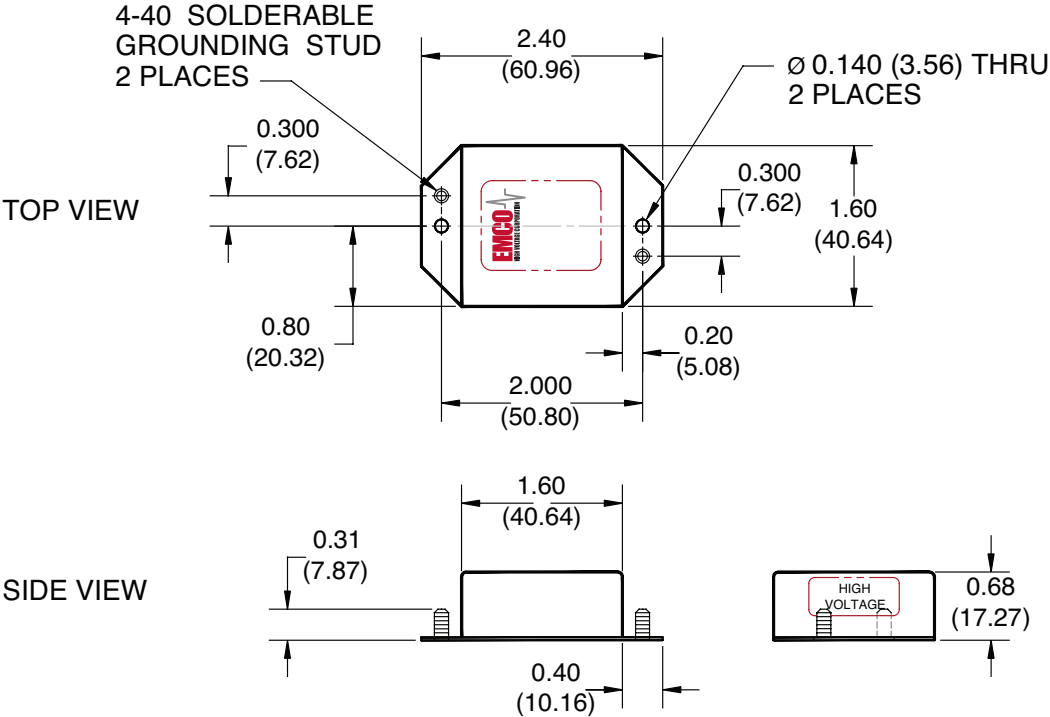
GP01 thru GP60 MECHANICAL SPECIFICATIONS



| PARAMETER     | VALUE                                       |
|---------------|---|
| WEIGHT        | Weight: 1.40 OZ (40 Grams)                  |
| VOLUME        | 1.4 cubic Inches (23 cubic centimeters)     |
| DIMENSIONS    | 1.5L (38.1L) x 1.5W (38.1L) x 0.63H (16.0H) |
| CASE MATERIAL | Diallyl Phthalate (DAP)                     |

| PIN # | FUNCTION   |
|-------|------------|
| 1     | (+) Input  |
| 2     | (-) Input  |
| 3     | (+) Output |
| 4     | (-) Output |

EXTERNAL EMI/RFI SHIELD



DIMENSIONS ARE IN INCHES (METRIC EQUIVALENTS ARE IN PARENTHESIS)  
 DIMENSIONAL TOLERANCES: .XX = ±0.02 (0.51), .XXX = ±0.005 (0.127)

| PARAMETER | VALUE                    |
|-----------|--------------------------|
| BOX SIZE  | See Table                |
| MATERIAL  | 0.03 (0.76mm) Aluminum   |
| MOUNTING  | Two Tabs With Thru-Holes |

| PARAMETER              | VALUE                                       |
|------------------------|---|
| GROUND                 | Black Anodized Aluminum                     |
| DIMENSIONS WITH TAB    | 2.4L (60.96) x 1.6W (40.64) x 0.68H (17.27) |
| DIMENSIONS WITHOUT TAB | 1.6L (40.64) x 1.6W (40.64) x 0.68H (17.27) |

SHIELD DESCRIPTION

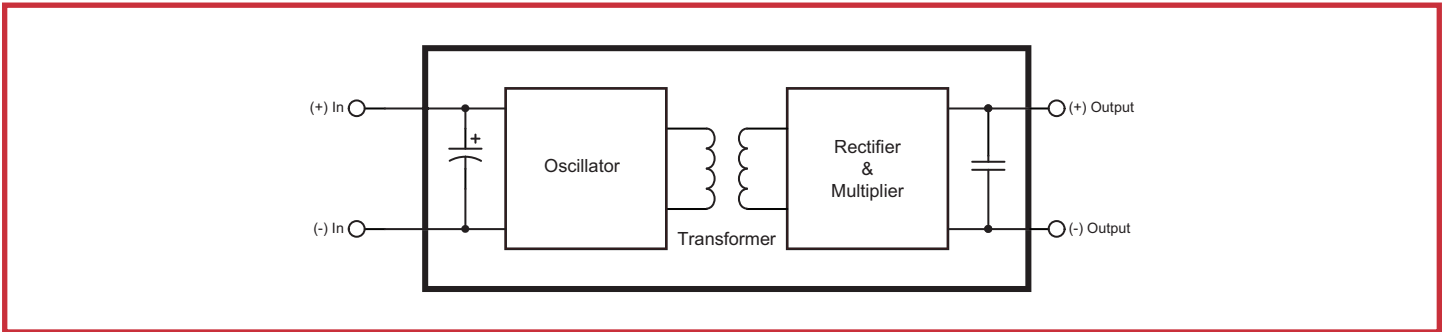
The "AB" Series provides low cost EMI/RFI shielding and rugged mounting for XP EMCO High Voltage DC to DC converters. These five-sided aluminum enclosures feature a durable, non-conductive black anodized finish. The enclosures are manufactured at our own sheet metal fabrication facility, which allows for low cost and stock delivery. Add an "AB" suffix to the model number for a factory-installed enclosure (e.g. E10AB). Contact our sales department by phone, fax or email for immediate attention.

APPLICATION INFORMATION

On models with outputs of 3kV or higher, special care must be taken to ensure adequate spacing and insulation between the metal can and the high voltage output. Single sided layout, encapsulants or conformal coating may be required.

Case grounding stud must be connected to ground. Case ground is not internally connected to (-) input.

**BLOCK DIAGRAM**

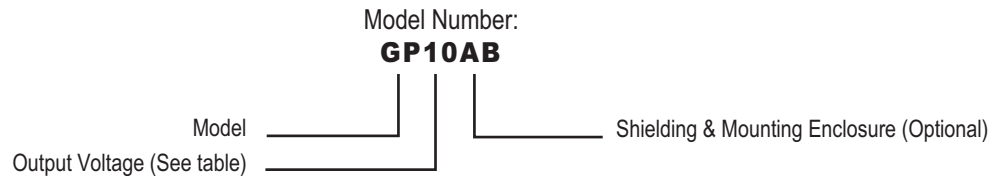


**OPTION CODE TABLE**

| OPTION  |                                  | ORDER CODE | MODELS |
|---------|----------------------------------|------------|--------|
| OPTIONS | Shielding and Mounting Enclosure | AB         | ALL    |

**HOW TO ORDER**

**PART NUMBER SELECTOR:**



EXAMPLE: **GP10AB** (**GP**-Model, **10**-Output Voltage, **AB**-Shielding & Mounting Enclosure)

\* Notes:

1. At maximum rated output voltage.
2. Output voltage is load dependent. Under light or no load conditions, reduce input voltage so maximum rated output voltage is not exceeded.
3. Specifications after 30 minute warm up, full load, at 25C unless otherwise indicated.
4. Proper thermal management techniques are required to maintain safe case temperature at maximum power output.
5. Models GP40, GP50 & GP60 do not have internal bleeder resistors on the output. Provisions must be made externally to discharge the output capacitors if this feature is desired.

XP EMCO reserves the right to make changes on products and literature, including specifications, without notice. XP EMCO standard product models are not recommended for "copy-exact" applications or any other application restricting product changes. "Copy-exact" options are available. Please contact an XP EMCO sales representative for more details.