

## 1 Watt

- 5V and 12V Input Models
- Precision Voltage Regulated
- Output Voltages from 100V to 2000V
- 0 to 100% Programmable Output
- On-board Voltage Reference
- Operating Temperature -10°C to +50°C
- <25ppm/°C Temperature Coefficient
- Shielded Case with Isolated Case Ground
- Ultra Low Ripple, down to 5ppm
- 3 Year Warranty



### Dimensions:

CA Series: 1.75 x 1.11 x 0.50" (44.45 x 28.29 x 12.70mm)

### Key Applications:

- Photo Multiplier Tube
- Solid State Detectors
- Avalanche Photodiodes
- Electrophoresis
- Piezo Devices
- Capacitor Charging
- EO Lenses

The CA Series is a high performance, precision regulated, high voltage converter with high stability and low ripple, along with a built-in voltage monitor output and an on-board precision voltage reference. Each model is programmed from 0 to 100% of rated output via a DAC compatible high impedance programming input. The voltage reference can be used to drive the high voltage output at 100% or to adjust the output with an external potentiometer or voltage divider. The output voltage monitor is internally buffered to provide a low impedance (up to 1 mA) signal to external circuitry. A quasi-sinewave oscillator, internal transformer shielding, and an isolated steel case reduce EMI/RFI radiation to extremely low levels.

A proprietary encapsulation process and custom 94 V-0 listed, high performance formula are used to achieve excellent high voltage and thermal properties. CM Series Mounting Kits are available separately and can be used to convert any CA Series unit into a chassis mount solution with high voltage connectors.

## Input

### 12Vin Models

| Characteristic            | Minimum | Typical | Maximum | Units | Notes & Conditions  |
|---------------------------|---------|---------|---------|-------|---------------------|
| Input Voltage, Vin        | 11.5    | 12.0    | 15.5    | VDC   | For 12Vin models    |
| Input Current, No Load    |         |         | 80      | mA    | 200V-1200V          |
| Input Current, No Load    |         |         | 100     | mA    | 2kV                 |
| Input Current, Full Load  |         |         | 220     | mA    | All Output Voltages |
| Programming Voltage, Vpgm | 0       |         | 5       | VDC   | <150μA              |

### 5Vin Models

| Characteristic            | Minimum | Typical | Maximum | Units | Notes & Conditions |
|---------------------------|---------|---------|---------|-------|--------------------|
| Input Voltage, Vin        | 4.75    | 5       | 5.25    | VDC   | For 5Vin models    |
| Input Current, No Load    |         |         | 65      | mA    | 200V-1200V         |
| Input Current, No Load    |         |         | 155     | mA    | 2kV                |
| Input Current, Full Load  |         |         | 420     | mA    | 200V-1200V         |
| Input Current, Full Load  |         |         | 550     | mA    | 2kV                |
| Programming Voltage, Vpgm | 0       |         | 2.048   | VDC   | <150μA             |

## Output

| Characteristic                   | Minimum                  | Typical  | Maximum  | Units  | Notes & Conditions                              |
|----------------------------------|--------------------------|----------|----------|--------|-------------------------------------------------|
| Output Voltage                   |                          |          | 2000     | VDC    | See Models and Ratings Table                    |
| Output Current                   |                          |          | 5        | mA     | See Models and Ratings Table                    |
| Output Programming               | 0                        |          | 100      | %      |                                                 |
| Setpoint Accuracy <sup>(4)</sup> |                          | ±1       |          | %      |                                                 |
| Gain Adjust <sup>(5)</sup>       |                          | ±1       |          | %      | Potentiometer                                   |
| Linearity <sup>(6)</sup>         |                          |          | ±0.5     | %      | From 15% to 100% Vout                           |
| Minimum Load                     | No minimum load required |          |          |        |                                                 |
| Line Regulation                  | 0.001                    |          | 0.01     | %      | Conditions: 100% Vpgm, Full Load                |
| Load Regulation                  | 0.001                    |          | 0.05     | %      | No Load to Full Load at 100% Vpgm, Nominal Vin. |
| Short Circuit Protection         | 1                        |          |          | min    |                                                 |
| Ripple and Noise                 | 0.0005                   |          | 0.01     | %      | 1MHz bandwidth                                  |
| Temperature Coefficient          |                          | 25       |          | ppm/°C |                                                 |
| Stability                        |                          |          | 50       | ppm/hr |                                                 |
| Voltage Monitor Output           | 0                        |          | Max Vpgm | VDC    | Range corresponds to 0 to 100% Vout             |
| Voltage Reference Output         |                          | Max Vpgm |          |        | Vref is a fixed output equal to Max Vpgm        |

## General

| Characteristic            | Minimum                                                                         | Typical | Maximum | Units | Notes & Conditions           |
|---------------------------|---------------------------------------------------------------------------------|---------|---------|-------|------------------------------|
| Isolation                 | N/A – Input ground is connected to output ground                                |         |         |       |                              |
| Construction              | Case materials is zinc plated steel. UL 94 V-0 rated solid vacuum encapsulation |         |         |       |                              |
| Switching Frequency       | 45                                                                              |         | 400     | kHz   |                              |
| Mean Time Between Failure | 2.1                                                                             |         |         | MHrs  | Per Bellcore TR 332 GB +25°C |

## Environmental

| Characteristic        | Minimum | Typical | Maximum | Units     | Notes & Conditions |
|-----------------------|---------|---------|---------|-----------|--------------------|
| Operating Temperature | -10     |         | +50     | °C        | Case temperature   |
| Storage Temperature   | -25     |         | +95     | °C        |                    |
| Humidity              |         |         | 95      | %RH       | Non-condensing     |
| Cooling               |         |         |         |           | Natural convection |
| Thermal Shock Limit   |         |         | 1       | °C/10secc |                    |

## Safety Approvals

| Safety Agency | Safety Standard                     | Notes & Conditions |
|---------------|-------------------------------------|--------------------|
| UL            | IEC/UL/EN62368                      |                    |
| CE            | CE Directive: RoHS and LVD          | Where applicable   |
| RoHS          | RoHS 2 and 3 Directive (2011/65/EU) | Where applicable   |

## Notes

- Maximum rated output current is available from 100% Max Vout down to 50% Max Vout, then derates linearly from 50% Max Vout down to zero.
- Specifications after 1 hour warm-up, full load, 25°C unless otherwise indicated.
- Proper thermal management techniques are required to maintain safe case temperature.
- SET POINT ACCURACY refers to the ability of the unit to accurately deliver the programmed voltage.
- GAIN ADJUST refers to the ability to alter the gain of the circuit to allow for set-point accuracy error.
- LINEARITY refers to how much the transfer function can deviate from a straight line in the absence of any set-point error.