

# 10A-25A SERIES

## 10kV to 25kV High Voltage Biasing Supplies

The 10A-25A Series of regulated, high-voltage DC-DC converters are an extension of the A Series, directly addressing the needs of the miniature PCB or chassis-mount  $\geq 10\text{kV}$  application. Designed and built utilizing state-of-the-art power conversion topology, these units feature surface-mount technology and encapsulation techniques providing high reliability and low cost. Typical applications for the 10A-25A Series include the following: electrophoresis, mass spectroscopy, electron microscopes, plasma and cathode ray tubes (CRT).

- 0 to 10kV, 15kV, 20kV, or 25kV output
- 4, 15 or 30 watts of output power
- Maximum Iout capability down to 0 Volts
- Wide input voltage range
- Indefinite output short-circuit protection



- Output current & voltage monitors
- Fixed-frequency, low-stored-energy design
- >450,000 hour MTBF @65°C
- UL/cUL Recognized Component; CE Mark (LVD & RoHS)

| PARAMETER                  | CONDITIONS                              | MODELS   |       |       |             |       |       |  |       |       |             |       |       | UNITS      |
|----------------------------|---|--|-------|-------|-------------|-------|-------|--|-------|-------|-------------|-------|-------|------------|
| INPUT                      |   | 12V  |       |       |             |       |       | 24V  |       |       |             |       |       |            |
| Voltage Range              | Full Power                              | + 11 to 16   |       |       |             |       |       | + 23 to 30                                     |       |       |             |       |       | VDC        |
| Voltage Range              | Derated Power Range                     | + 9 to 32  |       |       |             |       |       | + 9 to 32                                      |       |       |             |       |       | VDC        |
| Current                    | Standby / Disable                       | < 30   |       |       |             |       |       | < 30   |       |       |             |       |       | mA         |
| Current                    | No Load, Max Eout                       | 10A < 0.20, 15A/20A/25A < 0.25   |       |       |             |       |       | 10A < 0.17, 15A < 0.20, 20A < 0.21, 25A < 0.25 |       |       |             |       |       | A          |
| Current                    | Max Load, Max Eout                      | ~ 500  |       |       |             |       |       | ~ 1600   |       |       |             |       |       | mA         |
| AC Ripple Current          | Nominal Input, Full Load                | < 80   |       |       |             |       |       | < 80   |       |       |             |       |       | mA p-p     |
| OUTPUT                     |   | 10A  |       |       | 15A         |       |       | 20A  |       |       | 25A         |       |       |            |
| Voltage Range              | Nominal Input                           | 0 to 10,000  |       |       | 0 to 15,000 |       |       | 0 to 20,000                                    |       |       | 0 to 25,000 |       |       | VDC        |
| Nominal Input Voltage      |   | 12   | 24    | 24    | 12          | 24    | 24    | 12   | 24    | 24    | 12          | 24    | 24    | VDC        |
| Power                      | Nominal Input, Max Eout                 | 4  | 15    | 30    | 4           | 15    | 30    | 4  | 15    | 30    | 4           | 15    | 30    | Watts      |
| Current                    | Iout Entire Output Voltage Range        | 0.40   | 1.5   | 3.0   | 0.26        | 1.0   | 2.0   | 0.20   | 0.75  | 1.5   | 0.16        | 0.60  | 1.2   | mA         |
| Current Scale Factor       | Full Load                               | 0.167  | 0.184 | 0.381 | 0.158       | 0.181 | 0.378 | 0.152  | 0.178 | 0.184 | 0.145       | 0.175 | 0.183 | mA/V       |
| Voltage Monitor Scaling    |   | 1000:1 $\pm$ 2% into 10M $\Omega$  |       |       |             |       |       |  |       |       |             |       |       | -          |
| Ripple                     | Full Load, Max Eout, 300pF bypass Cap.  | 0.012  | 0.039 | 0.076 | 0.024       | 0.043 | 0.080 | 0.020  | 0.031 | 0.080 | 0.020       | 0.080 | 0.051 | %V p-p     |
| Ripple with -F-M Option    | Full Load, Max Eout, 300pF bypass Cap.  | 0.008  | 0.034 | 0.072 | 0.021       | 0.028 | 0.073 | 0.010  | 0.018 | 0.039 | 0.010       | 0.040 | 0.040 | %V p-p     |
| Dynamic Load Regulation    | 1/2 to Full Load, Max Eout per 0.1mA    | <5.0   | <5.0  | <5.0  | <7.5        | <7.5  | <7.5  | <10.0  | <10.0 | <10.0 | <10.0       | <10.0 | <10.0 | V pk       |
| Line Regulation            | Nom. Input, Max Eout, Full Power        | < 0.01 %   |       |       |             |       |       |  |       |       |             |       |       | VDC        |
| Static Load Regulation     | No Load to Full Load, Max Eout          | < 0.01%  |       |       |             |       |       |  |       |       |             |       |       | VDC        |
| Stability                  | 30 Min. warmup, per 8 hr/ per day       | < 0.01% / < 0.02%  |       |       |             |       |       |  |       |       |             |       |       | VDC        |
| PROGRAMMING & CONTROLS     |   | ALL TYPES  |       |       |             |       |       |  |       |       |             |       |       |            |
| Input Impedance            | Nominal Input                           | + Output Models 1.1M $\Omega$ to GND, - Output Models 1.1M $\Omega$ to +5 Vref         |       |       |             |       |       |  |       |       |             |       |       | M $\Omega$ |
| Adjust Resistance          | Typical Potentiometer Values            | 10K to 100K (Pot across Vref. & Signal GND, Wiper to Adjust)                           |       |       |             |       |       |  |       |       |             |       |       | $\Omega$   |
| Adjust Logic               | 0 to +5 for +Out, +5 to 0 for - Out     | +4.64 VDC for +Output or +0.36 for -Output = Nominal Eout                              |       |       |             |       |       |  |       |       |             |       |       | -          |
| Output Voltage & Impedance | T=+25°C                                 | + 5.00VDC $\pm$ 2%, Zout = 464 $\Omega$ $\pm$ 1%                                       |       |       |             |       |       |  |       |       |             |       |       | -          |
| Enable/Disable             |   | 0 to +0.5 Disable, +2.4 to 32 Enable (Default = Enable)                                |       |       |             |       |       |  |       |       |             |       |       | VDC        |
| ENVIRONMENTAL              |   | STANDARD   |       |       |             |       |       | -25PPM   |       |       |             |       |       |            |
| Operating                  | Full Load, Max Eout, Case Temp.         | -40 to +65   |       |       |             |       |       | +10 to +45                                     |       |       |             |       |       | °C         |
| Coefficient                | Over the Specified Temperature          | $\pm$ 50   |       |       |             |       |       | $\pm$ 25                                       |       |       |             |       |       | PPM/°C     |
| Thermal Shock              | Mil-Std 810, Method 503-4, Proc. II     | -40 to +65   |       |       |             |       |       |  |       |       |             |       |       | °C         |
| Storage                    | Non-Operating, Case Temp.               | -55 to +105  |       |       |             |       |       |  |       |       |             |       |       | °C         |
| Humidity                   | All Conditions, Standard Package        | 0 to 95% non-condensing  |       |       |             |       |       |  |       |       |             |       |       | -          |
| Altitude                   | Standard Package, All Conditions        | Sea Level through Vacuum (Vacuum may require -P2 option, contact factory for details.) |       |       |             |       |       |  |       |       |             |       |       | -          |
| Shock                      | Mil-Std-810, Method 516.5, Proc. IV     | 20 (Standard), 40 (-C Option)  |       |       |             |       |       |  |       |       |             |       |       | G's        |
| Vibration                  | Mil-Std-810, Method 514.5, Fig.514.5C-3 | 10 (Standard), 20 (-C Option)  |       |       |             |       |       |  |       |       |             |       |       | G's        |

Specifications subject to change without notice.



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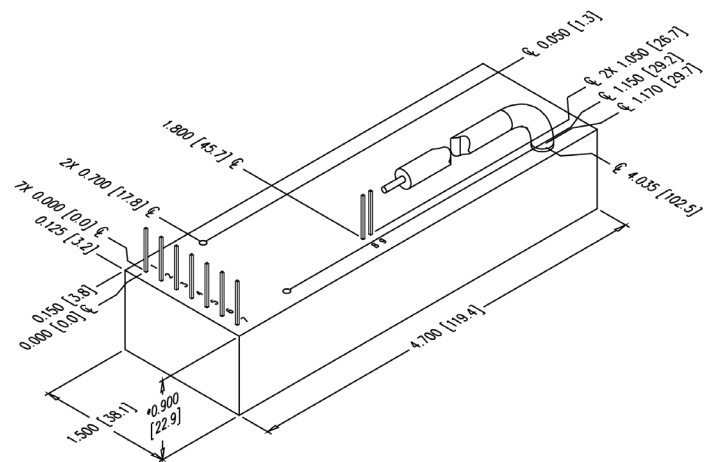
### 10A SERIES STANDARD CASE



### 20A SERIES STANDARD CASE



### 15A SERIES STANDARD CASE



### 25A SERIES STANDARD CASE



### CONSTRUCTION

Epoxy-filled DAP box certified to ASTM-D-5948 with -C Option:  
Aluminum Alloy 5052-H32, Finish: MIL-A-8625 Type II (Anodizing)

### SIZE

Volume:

10A: 4.90 in<sup>3</sup> (80.31cc), w/-C Option 8.80 in<sup>3</sup> (144.23cc)  
15A: 6.35 in<sup>3</sup> (104.08cc), w/-C Option 11.00 in<sup>3</sup> (180.29cc)  
20A: 8.55 in<sup>3</sup> (140.13cc), w/-C Option 14.40 in<sup>3</sup> (236.02cc)  
25A: 11.70 in<sup>3</sup> (191.76cc), w/-C Option 20.00 in<sup>3</sup> (327.80cc)

Weight:

10A: 6.00 oz (170.10g), w/-C Option 11.50 oz (326.02g)  
15A: 8.00 oz (226.80g), w/-C Option 14.00 oz (396.89g)  
20A: 11.00 oz (311.84g), w/-C Option 19.00 oz (538.64g)  
25A: 15.00 oz (452.24g), w/-C Option 22.00 oz (623.69g)

### TOLERANCE

Overall  $\pm 0.050''$  (1.27)  
Pin to Pin  $\pm 0.015''$  (0.38)  
Mounting hole locations  $\pm 0.025''$  (0.64)

### NOTES

Standard case length, width, and height specs are  $\pm 0.050''$  (1.27)  
-C Option case length, width and height specs are  $\pm 0.025''$  (0.635)  
15W and 30W versions are an additional 0.070'' (1.78) in height.  
-M equipped units are an additional 0.030'' (0.76) for each dimension.  
Contact [UV Customer Service](#) for drawings of models equipped with -E, -C, or -H options.

[Downloadable drawings \(complete with mounting & pin information\) and 3D models are available online.](#)



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# 10A-25A SERIES

## 10kV to 25kV High Voltage Biasing Supplies

| CONNECTIONS |                           |
|-------------|---------------------------|
| PIN         | FUNCTION                  |
| 1           | Input-Power Ground Return |
| 2           | Positive Power Input      |
| 3           | Iout Monitor              |
| 4           | Enable/Disable            |
| 5           | Signal Ground Return      |
| 6           | Remote Adjust Input       |
| 7           | +5VDC Reference Output    |
| 8           | HV Ground Return          |
| 9           | Eout Monitor              |

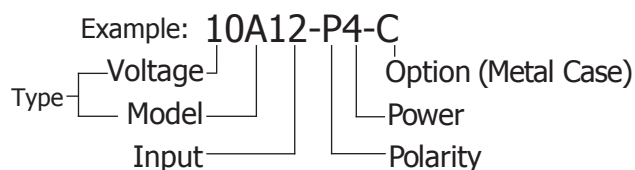
All grounds joined internally. Power-supply mounting points isolated from internal grounds by >100k $\Omega$ , .01 $\mu$ F / 50V (Max) on all models except -M (15W and above), -M-E, -M-C, and -M-H configurations which are 0 $\Omega$ .

| ORDERING INFORMATION                 |   |            |
|--------------------------------------|---|------------|
| Type                                 | 0 to 10,000 VDC Output  | 10A        |
|                                      | 0 to 15,000 VDC Output  | 15A        |
|                                      | 0 to 20,000 VDC Output  | 20A        |
|                                      | 0 to 25,000 VDC Output  | 25A        |
| Input                                | 12VDC Nominal (4W only)                                       | 12         |
|                                      | 24VDC Nominal (15W and 30W only)                              | 24         |
| Polarity                             | Positive Output   | -P         |
|                                      | Negative Output   | -N         |
| Power                                | Watts Output (12Vin Only)                                     | 4          |
|                                      | Watts Output (24Vin Only)                                     | 15         |
|                                      | Watts Output (24Vin Only)                                     | 30         |
| Case                                 | Plastic Case - Diallyl Phthalate                              | (Standard) |
|                                      | 'Eared' Chassis Mounting Plate (Plastic Case)                 | -E         |
|                                      | RF-Tight Aluminum Enclosure                                   | -C         |
| Heat Sink                            | .400" High (sized to fit case)                                | -H         |
| Shield                               | Six-sided Mu-Metal Shield                                     | -M         |
| Ripple Stripper <sup>®</sup>         | Integral Output Filter (See -F Option Datasheet) and Mu-Metal | -F-M       |
| Options                              | Shielded Flying Lead for HV Output                            | -WS        |
| Lead Options                         | Protected Flying Lead   | -AP        |
|                                      | Terminated Flying Lead (Contact Customer Service)             | -ATxx      |
| Temp. Coefficient                    | 25PPM Temperature Coefficient                                 | -25PPM     |
| Enhanced Interface (10A models only) | 5V Control and Monitors                                       | -I5        |
|                                      | 10V Control and Monitors                                      | -I10       |



Non-RoHS compliant units are available. Please contact the factory for more information.

Manufactured in USA



Popular accessories ordered with this product include CONN-KIT, BR-2, BR-3, and BR-5 mounting bracket kits, and our full range of high voltage output connectors (see Accessories & Connectors datasheet).



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