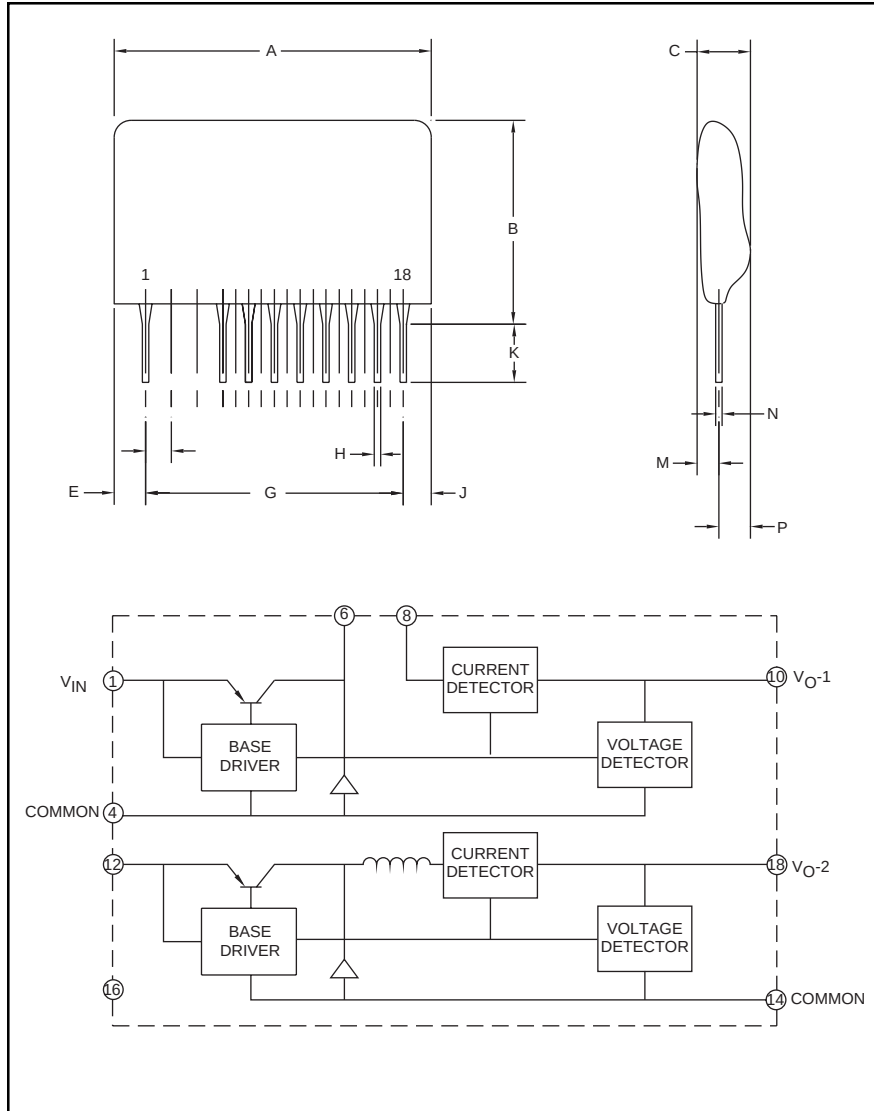


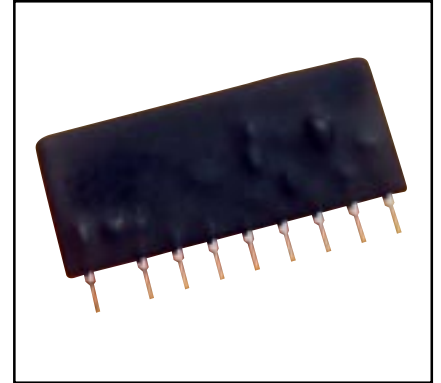
### High Voltage Input DC-to-DC Converter



Outline Drawing and Circuit Diagram

| Dimensions | Inches    | Millimeters |
|------------|-----------|-------------|
| A          | 2.07 Max. | 52.5 Max.   |
| B          | 0.97 Max. | 24.5 Max.   |
| C          | 0.47 Max. | 12.0 Max.   |
| E          | 0.18 Max. | 4.5 Max.    |
| F          | 0.10      | 2.54        |
| G          | 1.70      | 43.18       |

| Dimensions | Inches    | Millimeters |
|------------|-----------|-------------|
| H          | 0.02±0.01 | 0.55±0.1    |
| J          | 0.18 Max. | 4.5 Max.    |
| K          | 0.18±0.6  | 4.5±1.5     |
| M          | 0.18 Max. | 4.5 Max.    |
| N          | 0.01±0.1  | 0.35±0.2    |
| P          | 0.3 Max.  | 7.5 Max.    |



#### Description:

M57184N-715 is a non-isolated step down DC-to-DC converter designed to take direct input of 140 ~ 360VDC and provide 2 outputs. One output is +15V/350mA and the other is rated at +5V/200mA. This converter allows use of fewer external components than does a combination of electrolytic capacitors and choke coils only.

#### Features:

- ☐ Input Voltage Range  
DC 140V ~ 360V
- ☐ Output Specifications  
15V, 350mA and  
5V, 200mA

#### Applications:

- ☐ Power Source for DIP IPMs  
and ASIPMs
- ☐ Home Appliances
- ☐ Industrial Controls

#### Ordering Information:

M57184N-715

**M57184N-715**  
**High Voltage Input**  
**DC-to-DC Converter**

**Absolute Maximum Ratings,  $T_a = 25\text{ }^{\circ}\text{C}$  unless otherwise specified**

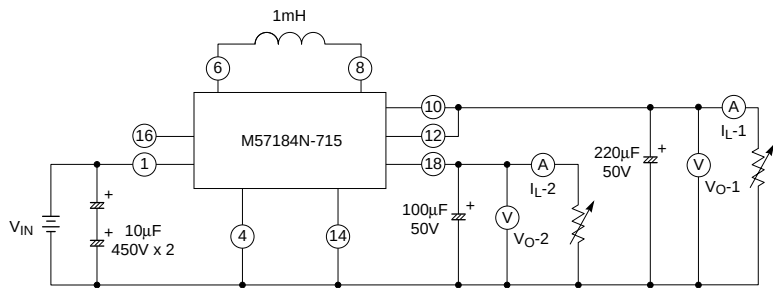
| Characteristics       | Symbol      | Test Conditions | M57184N-715 | Units              |
|-----------------------|-------------|-----------------|-------------|--------------------|
| Input Voltage         | $V_{IN}$    | —               | 600         | Volts              |
| Load Current-1        | $I_{L-1}^*$ | —               | 350         | mA                 |
| Load Current-2        | $I_{L-2}$   | —               | 200         | mA                 |
| Operating Temperature | $T_{opr}$   | No Condensation | -10 ~ +70   | $^{\circ}\text{C}$ |
| Storage Temperature   | $T_{stg}$   | Allowable       | -25 ~ +85   | $^{\circ}\text{C}$ |

**Electrical Characteristics,  $V_{IN} = 280\text{V}$ ,  $T_a = 25\text{ }^{\circ}\text{C}$  unless otherwise specified**

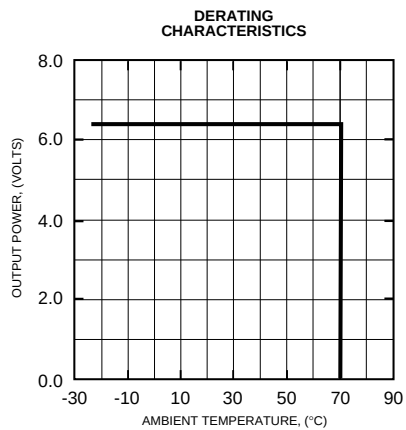
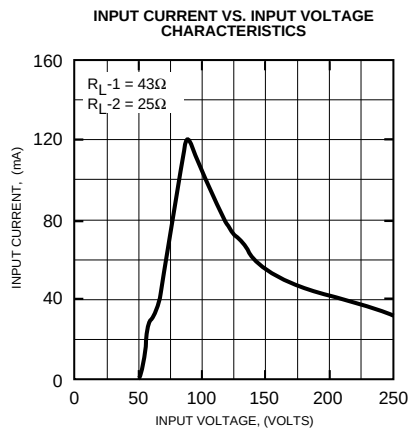
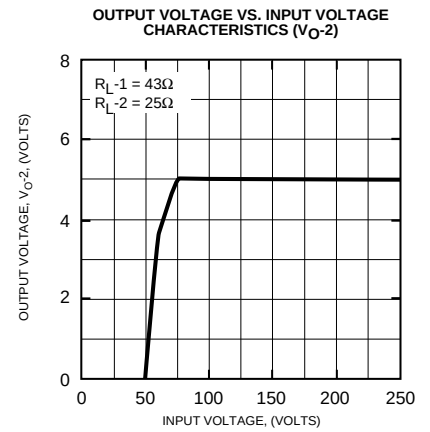
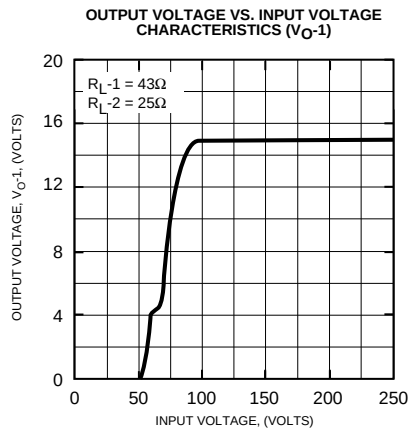
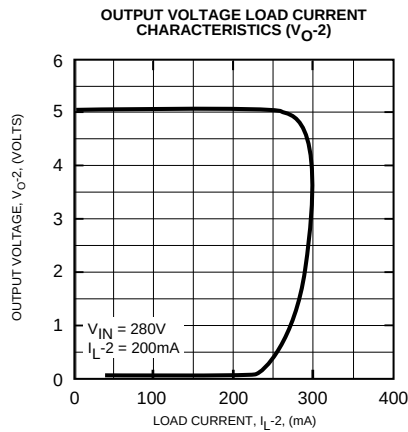
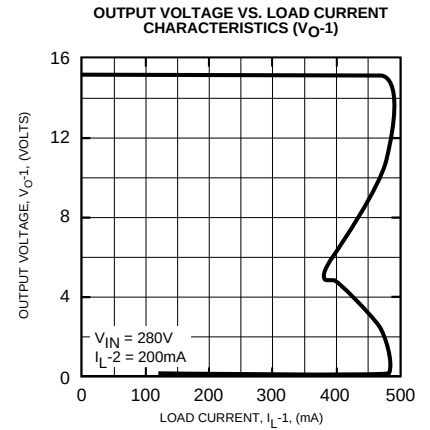
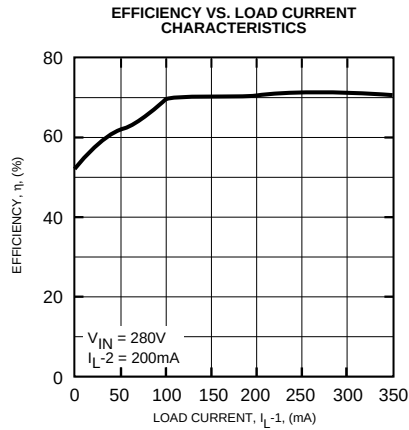
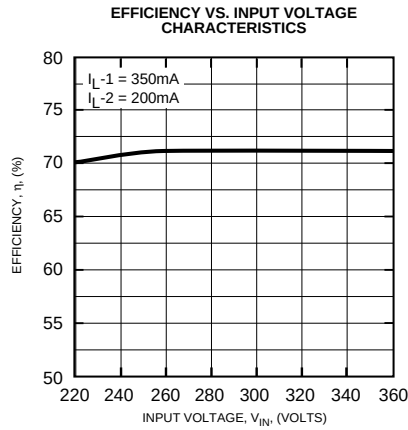
| Characteristics          | Symbol    | Test Conditions                                     | Min. | Typ. | Max. | Units |
|--------------------------|-----------|-----------------------------------------------------|------|------|------|-------|
| Input Source Voltage     | $V_{IN}$  | Recommended Range                                   | 140* | 280  | 360  | Volts |
| Output Voltage-1, Pin 10 | $V_{O-1}$ | $I_{L-1} = 0 \sim 350\text{mA}$                     | 14   | 15   | 16   | Volts |
| Output Voltage-2, Pin 18 | $V_{O-2}$ | $I_{L-2} = 0 \sim 200\text{mA}$                     | 4.7  | 5.0  | 5.3  | Volts |
| Efficiency               | $\eta$    | $I_{L-1} = 350\text{mA}$ , $I_{L-2} = 200\text{mA}$ | 65   | 73   | —    | %     |
| Ripple                   | $V_{p-p}$ | $I_{L-1} = 350\text{mA}$ , $I_{L-2} = 200\text{mA}$ | —    | 0.1  | 0.2  | Volts |

\*At input voltages less than 220VAC,  $I_{L-1}$  must be limited to less than 250mA.

**Application Circuit**



**M57184N-715**  
**High Voltage Input**  
**DC-to-DC Converter**



M57184N-715  
High Voltage Input  
DC-to-DC Converter

## Inductor for Application Example Circuit

### 1. Recommended Inductors

| Manufacturer | Part Number                  |
|--------------|------------------------------|
| Mitsumi      | C13-FR Series, Type # GA 102 |
| API Delevan  | 4590-105K                    |
| J.W. Miller  | 5900-102                     |

### 2. Specifications for Inductor

We recommend an inductor with these specifications: an inductance of 1mH, rated current of at least 500mA, and good performance with DC superimposition. Please note there must be no magnetic saturation in the inductor.

The following waveforms show the output ripple voltage on  $V_{O-1}$  for good versus bad inductors. These waveforms are produced with output  $V_{O-2}$  unloaded and the scope coupling set to AC.

