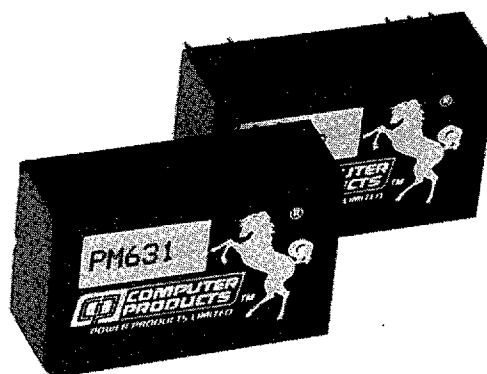


# PM600 SERIES

Single and dual output

Recommended for new design-ins

- 24 pin DIP package
- Regulated outputs
- Pi input filter
- 20mV pk-pk ripple and noise
- Short circuit protection



**2 YEAR WARRANTY**

The PM600 Series is a broad line of low cost, high performance single and dual output DC/DC converters packaged in an IC compatible 24 pin DIP configuration. These ultra-miniature converters are ideal for use on high density PC boards, or wherever low power, isolated and regulated outputs are required. A self contained input Pi network filter, available on all models, minimizes reflected ripple current for critical applications. This feature eliminates the need for external filters, reducing overall system costs and leaves more room for the

required components. The units maintain tight regulation for input voltage variations of  $\pm 10\%$ , and they require no derating over specified operating temperature range. Other pertinent specifications include: line regulation,  $\pm 0.3\%$ ; load regulation,  $\pm 0.4\%$ ; output voltage accuracy,  $\pm 5\%$ ; ripple and noise, 20mV pk-pk; efficiency, 50%; isolation, 300VDC; temperature coefficient,  $\pm 0.01\%/^{\circ}\text{C}$  and 1.25 x 0.8 x 0.4 inch case dimensions.

## SPECIFICATION

ALL SPECIFICATIONS ARE TYPICAL AT NOMINAL INPUT, FULL LOAD AND  $25^{\circ}\text{C}$  UNLESS OTHERWISE STATED

| OUTPUT SPECIFICATIONS    |                                         |                                         |
|--------------------------|-----------------------------------------|-----------------------------------------|
| Voltage accuracy         |                                         | $\pm 5.0\%$ , max.                      |
| Line regulation          | LL to HL                                | $\pm 0.3\%$                             |
| Load regulation          | NL to FL                                | $\pm 0.4\%$                             |
| Ripple and noise         | 20MHz BW<br>See Note 5                  | 20mV pk-pk, max.                        |
| Transient response       | Overshoot for<br>10% to 90% FL          | $\pm 0.1\%$ , typical                   |
| Temperature coefficient  |                                         | $\pm 0.01\%/^{\circ}\text{C}$ , typical |
| Short circuit protection | Output thermal<br>limited               | Continuous<br>automatic recovery        |
| INPUT SPECIFICATIONS     |                                         |                                         |
| Input voltage range      | 5VDC, See Note 10<br>12VDC, See Note 10 | 4.5 to 5.5VDC<br>10.8 to 13.2VDC        |
| Input filter             | See Note 8                              | Pi network                              |
| Fault current mode       |                                         | 150% of FL<br>input current             |

| GENERAL SPECIFICATIONS       |                                                                         |                                                                                                                                                                           |
|------------------------------|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Efficiency                   |                                                                         | 50% typical                                                                                                                                                               |
| Isolation voltage            |                                                                         | 300VDC                                                                                                                                                                    |
| Switching frequency          | Fixed                                                                   | 40kHz to 70kHz                                                                                                                                                            |
| Case material                |                                                                         | Non-conductive<br>black plastic                                                                                                                                           |
| Weight                       |                                                                         | 14g (0.5oz)                                                                                                                                                               |
| MTBF<br>(75% FL)             | Single Outputs<br>Dual Outputs                                          | 434,000 hours<br>268,000 hours                                                                                                                                            |
| ENVIRONMENTAL SPECIFICATIONS |                                                                         |                                                                                                                                                                           |
| Thermal performance          | Operating ambient<br>Non-operating amb.,<br>Case<br>Derating<br>Cooling | $-25^{\circ}\text{C}$ to $+71^{\circ}\text{C}$<br>$-40^{\circ}\text{C}$ to $+125^{\circ}\text{C}$<br>$+95^{\circ}\text{C}$ , max.<br>None required<br>Free air convection |
| Relative humidity            | Non-condensing                                                          | 20% to 95% RH                                                                                                                                                             |
| Altitude                     | Operating<br>Non operating                                              | 10,000 feet max.<br>40,000 feet max.                                                                                                                                      |
| Vibration                    |                                                                         | 2.5G rms (approx.)<br>5Hz to 500Hz                                                                                                                                        |

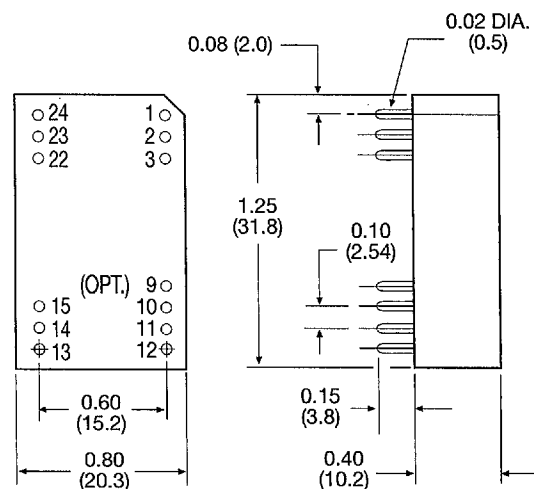
## 0.5 to 1 Watt Nominal input DC/DC converters

| INPUT VOLTAGE | OUTPUT VOLTAGE | OUTPUT CURRENT | INPUT CURRENT <sup>(1)</sup> | TYPICAL EFFICIENCY | REGULATION          |                     | MODEL NUMBER         |
|---------------|----------------|----------------|------------------------------|--------------------|---------------------|---------------------|----------------------|
|               |                |                |                              |                    | LINE <sup>(2)</sup> | LOAD <sup>(3)</sup> |                      |
| 5VDC          | 5VDC           | 100mA          | 260mA                        | 50%                | ±0.3%               | ±0.4%               | PM621                |
| 5VDC          | 12VDC          | 80mA           | 380mA                        | 50%                | ±0.3%               | ±0.4%               | PM623                |
| 5VDC          | ±12VDC         | ±40mA          | 380mA                        | 50%                | ±0.3%               | ±0.4%               | PM671 <sup>(4)</sup> |
| 5VDC          | ±15VDC         | ±33mA          | 380mA                        | 50%                | ±0.3%               | ±0.4%               | PM672 <sup>(4)</sup> |
| 12VDC         | 5VDC           | 100mA          | 100mA                        | 50%                | ±0.3%               | ±0.4%               | PM631                |
| 12VDC         | 12VDC          | 80mA           | 145mA                        | 50%                | ±0.3%               | ±0.4%               | PM633                |
| 12VDC         | ±12VDC         | ±40mA          | 145mA                        | 50%                | ±0.3%               | ±0.4%               | PM681 <sup>(4)</sup> |
| 12VDC         | ±15VDC         | ±33mA          | 145mA                        | 50%                | ±0.3%               | ±0.4%               | PM682 <sup>(4)</sup> |

### Notes

- Maximum figure, at full load.
- Measured from high line to low line.
- Measured as load changes from no load to 100% full load.
- The PM671 is available with optional voltage balance pin, and is designated by suffix letter "P". For connection information, see case drawing. In addition, both the PM671 and PM672 are available with alternate pin-out (including balance pin) designated by suffix letter "R". See case drawing. If not required, the balance pin can be left floating.
- Measured with a 15µF tantalum capacitor across each output.
- On dual output models the four common pins are internally connected. The outputs can be returned through one pin while the others remain floating.
- Standard specifications are conservative and can be optimized for specific applications. In particular, converter start-up at lower than specified temperature, wider input voltage range and output voltage adjustment are all relatively simple modifications to the standard product. Consult factory for details.
- Fixed frequency design provides for easier input filtering and better noise performance.
- Units are tested with resistive load only.
- Output current derates to 0 at 110% nominal Vin.

### CASE F

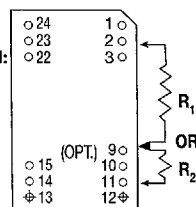


ALL DIMENSIONS INCHES (mm)

| PIN CONNECTIONS |                      |                                   |                                           |
|-----------------|----------------------|-----------------------------------|-------------------------------------------|
| PIN NUMBER      | SINGLE OUTPUT MODELS | DUAL OUTPUT MODELS <sup>(5)</sup> | ALTERNATE PIN-OUT SUFFIX R <sup>(4)</sup> |
| 1               | +V Input             | +V Input                          | +V Input                                  |
| 2               | Do not connect       | -V Output                         | +V Input                                  |
| 3               | Do not connect       | Common                            | +V Input                                  |
| 9               | No Pin               | Balance (opt)*                    | No Pin                                    |
| 10              | -V Output            | Common                            | Common                                    |
| 11              | +V Output            | +V Output                         | Common                                    |
| 12              | -V Input             | -V Input                          | Do not connect                            |
| 13              | -V Input             | -V Input                          | -V Output                                 |
| 14              | +V Output            | +V Output                         | Balance                                   |
| 15              | -V Output            | Common                            | +V Output                                 |
| 22              | Do not connect       | Common                            | -V Input                                  |
| 23              | Do not connect       | -V Output                         | -V Input                                  |
| 24              | +V Input             | +V Input                          | -V Input                                  |

\* PM671P.

### BALANCE PIN CONNECTION:



Connect R<sub>1</sub> as required to balance outputs when  $|+V_{out}| > |-V_{out}|$

Connect R<sub>2</sub> as required to balance outputs when  $|-V_{out}| > |+V_{out}|$

Input to balance pin: ±5mA, max. R<sub>1</sub> or R<sub>2</sub>: 3K Ohm, min.

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