

40 Watt Medical (MVLT)



Features

- 4 x 2 x 1.07 inches
- Ultra high efficiency > 82%
- Low leakage current < 250  $\mu$ A
- Nemko, UL & CSA approvals to IEC60601
- EN55022-B, CISPR22-B, FCC Part15 Level B, IEC60601-1-2
- Cover kit accessory available

Electrical Specifications

|                                                                |                                                                                                |                        |
|----------------------------------------------------------------|------------------------------------------------------------------------------------------------|------------------------|
| AC Input                                                       | 90-132 V & 180-264 V, Auto Ranging                                                             |                        |
| Input Frequency                                                | 47-63 Hz                                                                                       |                        |
| Input Current                                                  | 120 VAC: 0.85 A max.                                                                           | 230 VAC: 0.45 A max.   |
| Inrush Current                                                 | 120 VAC: 40 A max.                                                                             | 230 VAC: 75 A max.     |
| Leakage Current                                                | 120 VAC: < 140 $\mu$ A                                                                         | 230 VAC: < 250 $\mu$ A |
| Efficiency <sup>1</sup>                                        | 120 VAC: 80% typical                                                                           | 230 VAC: 80% typical   |
| Hold-up Time                                                   | 120 VAC: 6 ms                                                                                  | 230 VAC: 6 ms          |
| Output Power                                                   | 40 W                                                                                           |                        |
| Line Regulation                                                | +/-0.3%                                                                                        |                        |
| Load Regulation                                                | V1: +/-0.5%; V2 & V3: +/-5%                                                                    |                        |
| Transient Response                                             | < 10%, 50% to 100% load change, 50/60 Hz, 50% duty cycle, 0.1 A/ $\mu$ s, recovery time < 5 ms |                        |
| Rise Time                                                      | < 100 ms                                                                                       |                        |
| Set Point Tolerance                                            | V1: +/-3%; V2 & V3: +/-5%                                                                      |                        |
| Over Current Protection                                        | 130% typical above rating                                                                      |                        |
| Over Voltage Protection<br>(For V1 & triple output model only) | 3.95 V +/-0.25 V for 3.3 V; 6.2 V +/-0.4 V for 5 V                                             |                        |
| Short Circuit Protection                                       | Short term, autorecovery                                                                       |                        |
| Switching Frequency                                            | Boost converter: 105 kHz typical<br>Resonant converter: 45 kHz typical                         |                        |
| Operating Temperature                                          | 0 to 70°C, refer derating curve                                                                |                        |
| Storage Temperature                                            | -40 to +70°C                                                                                   |                        |
| Relative Humidity                                              | 95% Rh, noncondensing                                                                          |                        |
| Altitude                                                       | Operating: 10,000 ft.; Nonoperating: 40,000 ft.                                                |                        |
| MTBF                                                           | 0.91m Hours, Telcordia SR332 Issue-3                                                           |                        |
| Isolation Voltage                                              | Min. 5700 VDC between input to output                                                          |                        |
| Cooling                                                        | Convection                                                                                     |                        |

| Model Number                         | Voltage                            | Max. Load <sup>2</sup>          | Min. Load                       | Ripple <sup>3</sup>    |
|--------------------------------------|------------------------------------|---------------------------------|---------------------------------|------------------------|
| LFMVL40-1200                         | V1=5.1 V                           | 8.0 A                           | 0.2 A                           | 1%                     |
| LFMVL40-1201                         | V1=12 V                            | 3.5 A                           | 0.1 A                           | 1%                     |
| LFMVL40-1202                         | V1=15 V                            | 2.7 A                           | 0.1 A                           | 1%                     |
| LFMVL40-1203                         | V1=24 V                            | 1.7 A                           | 0.2 A                           | 1%                     |
| LFMVL40-1204                         | V1=48 V                            | 0.83 A                          | 0.05 A                          | 1%                     |
| LFMVL40-3200                         | V1=5.2 V, V2=12.5 V,<br>V3=-12.8 V | V1=6.0 A, V2=2.0 A,<br>V3=0.5 A | V1=0.5 A, V2=0.1 A,<br>V3=0.0 A | 1%                     |
| LFMVL40-3201                         | V1=5.2 V, V2=24 V,<br>V3=-12.8 V   | V1=6.0 A, V2=1.0 A,<br>V3=0.5 A | V1=0.5 A, V2=0.1 A,<br>V3=0.0 A | 1%                     |
| LFMVL40-3202                         | V1=5.2 V, V2=14.6 V,<br>V3=-14.8 V | V1=6.0 A, V2=1.5 A,<br>V3=0.5 A | V1=0.5 A, V2=0.1 A,<br>V3=0.0 A | 1%                     |
| LFMVL40-3203                         | V1=3.3 V, V2=5.2 V,<br>V3=-12.8 V  | V1=6.0 A, V2=3.0 A,<br>V3=0.5 A | V1=1.0 A, V2=0.1 A,<br>V3=0.0 A | V1=1.5%,<br>V2 & V3=1% |
| LFVLT60-CK metal cover kit accessory |                                    |                                 |                                 |                        |

| Connectors      |       |            |
|-----------------|-------|------------|
| J1              | Pin 1 | AC NEUTRAL |
|                 | Pin 2 | AC LINE    |
| Spade Connector |       | EARTH      |
| J2              | Pin 1 | V1         |
|                 | Pin 2 | V1         |
|                 | Pin 3 | RTN        |
|                 | Pin 4 | RTN        |
|                 | Pin 5 | V3         |
|                 | Pin 6 | V2         |

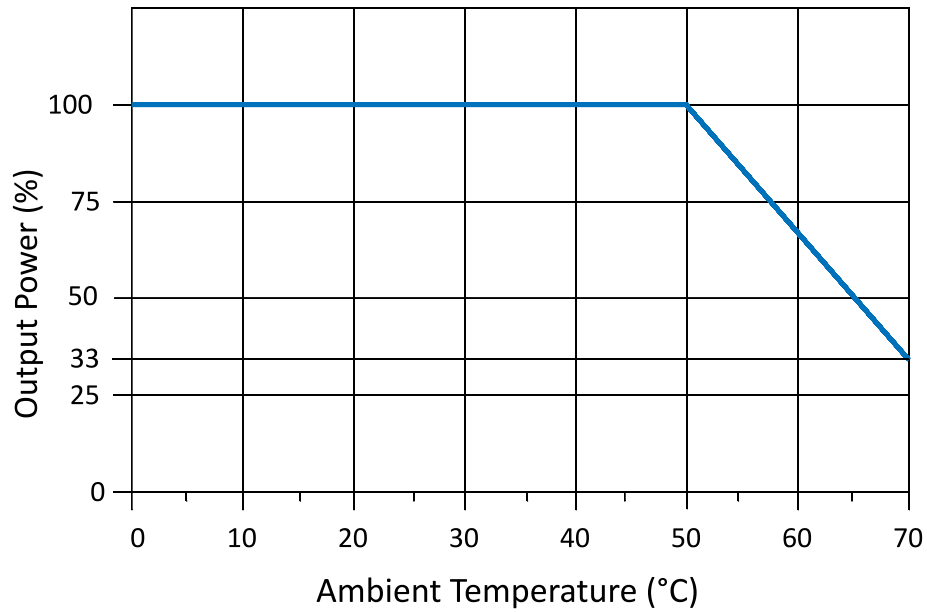
## Notes

1. For MVL40-3203 efficiency is 75% typical.
2. Maximum current per output channel. Do not exceed total output power rating.
3. Ripple is peak to peak with 20 MHz bandwidth and 10  $\mu$ F (Electrolytic capacitor) in parallel with a 0.1  $\mu$ F capacitor at rated line voltage and load ranges.
4. Specifications are for nominal input voltage, 25°C and max. load unless otherwise stated.
5. Derate output power linearly to 80% from 90 VAC to 80 VAC input.

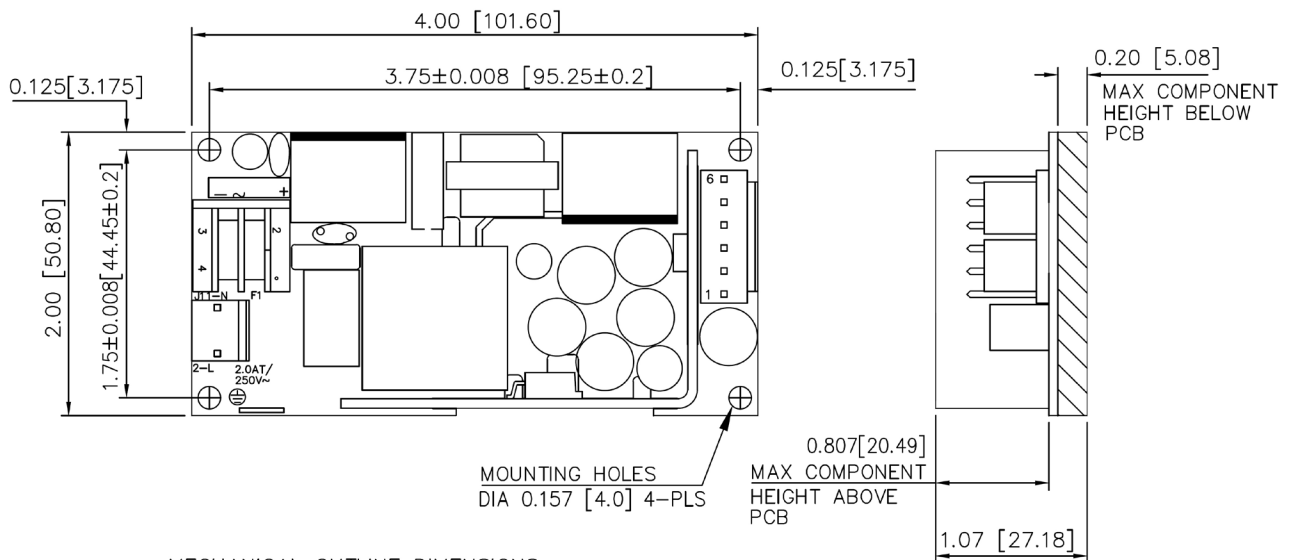


| Mechanical Specifications |                                                                                             |
|---------------------------|---------------------------------------------------------------------------------------------|
| AC Input Connector (J1)   | Molex: 26-60-4030 or equivalent<br>Mating: 09-50-3031; Pins: 08-50-0106                     |
| EARTH                     | Molex: 19705-4301 or equivalent<br>Mating: 190030001                                        |
| DC Output Connector (J2)  | Tyco: 640445-6 or equivalent<br>Mating: 647402-6; Pins: 3-647409-1                          |
| Dimensions                | 4.0 x 2.0 x 1.07 inches<br>(101.6 x 50.8 x 27.18 mm)                                        |
| Weight                    | 150 g                                                                                       |
| EMC                       |                                                                                             |
| CE Mark                   | Complies with LVD Directive                                                                 |
| Conducted Emissions       | EN55022-B, CISPR22-B, FCC PART15-B                                                          |
| Static Discharge          | EN61000-4-2, Level-3                                                                        |
| RF Field Susceptibility   | EN61000-4-3, Level-3                                                                        |
| Fast Transients/Bursts    | EN61000-4-4, Level-3                                                                        |
| Radiated Emissions        | EN55022-B, CISPR22-B, FCC PART15-B<br>To be controlled in end system                        |
| Surge Susceptibility      | EN61000-4-5, Level-3                                                                        |
| Safety                    |                                                                                             |
| Safety Standard(s)        | EN60601-1, IEC60601-1 (ed.3), UL60601-1 (1st Edition),<br>CSA C22.2 No. 601.1, Class 1 SELV |
| Approval Agency           | Nemko, UL, C-UL                                                                             |
| Safety File Number(s)     | Nemko: P11214761<br>UL: E173812                                                             |

### Derating Curve



### Mechanical Drawing



MECHANICAL OUTLINE DIMENSIONS  
ALL DIMENSIONS ARE IN INCHES[MM]  
GEN TOLERANCE :  $\pm 0.02$  [ $\pm 0.5$ mm]

Notes: In case the PCB is mounted in a metal enclosure, using metal hardware ensure the following

1. Stand off, used to mount PCB has OD of 5.4 mm max.
2. Screws, used to fix PCB on stand off, have head dia of 6.0 mm max.
3. Washer, if used, to have dia of 6.5 mm max.



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