

### FEATURES AND BENEFITS

40W Open Frame and PCB-mount Power Supply

2.0" x 4.0" x 1.0" Package

Universal Input 90-264VAC

<0.1W No Load Input Power

Approved to CSA/EN/IEC/UL62368-1

Meets Heavy Industrial and IEC60601-1-2 4<sup>th</sup> Edition Levels of EMC

Approved to CSA/EN/IEC/UL60601-1, 3<sup>rd</sup> Edition

E-cap Life of >8 Years

>1,000,000 Hours MTBF

3 Year Warranty

Meets Class B Radiated & Conducted EMI, with Margin

Note: \*Consult Factory for compliance information.



### MODEL SELECTION

| Model Number <sup>2</sup> | Volts | Rated Current | Output Power | Ripple & Noise <sup>1</sup> | Line Regulation | Load Regulation | Input Class/Termination                                                                                        | Output Termination                                      |
|---------------------------|-------|---------------|--------------|-----------------------------|-----------------|-----------------|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| GB40S05K01                | 5.0V  | 5.0A          | 25W          | 75mV pk-pk                  | ±1%             | ±5%             | Class I (Grounded) input, 5-pin AMP/Molex type connector (2 pins removed) Change "K" to "C" for class II input | 4-pin AMP/Molex type connector for "K" and "C" versions |
| GB40S09K01                | 9.0V  | 4.0A          | 36W          | 90mV pk-pk                  | ±1%             | ±5%             |                                                                                                                |                                                         |
| GB40S12K01                | 12.0V | 3.4A          | 40W          | 120mV pk-pk                 | ±1%             | ±5%             |                                                                                                                |                                                         |
| GB40S18K01                | 18.0V | 2.22A         | 40W          | 120mV pk-pk                 | ±1%             | ±5%             | Change "K" to "P" for PCB mount pins, class I input Change "K" to "V" for PCB mount pins", class II input      | PCB mount pins for "P" and "V" versions                 |
| GB40S24K01                | 24.0V | 1.7A          | 40W          | 240mV pk-pk                 | ±1%             | ±5%             |                                                                                                                |                                                         |
| GB40S48K01                | 48.0V | 0.83A         | 40W          | 480mV pk-pk                 | ±1%             | ±5%             |                                                                                                                |                                                         |

Note: 1. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uF & 47uF parallel capacitor.

2. Other output voltages available, consult factory.

3. All specifications are typical at 230VAC, full load, at 25°C ambient unless noted.

### INPUT

|                                          |                                                      |
|------------------------------------------|------------------------------------------------------|
| Input Voltage and Frequency              | 100-240VAC, ±10%, 47-63Hz, 1Ø                        |
| Input Current                            | 115VAC: 1.2A, 230VAC: 0.6A                           |
| Inrush Current                           | 264VAC, cold start: will not exceed 40A peak         |
| Input Fuses                              | 3.15A, 250VAC fuse in both line and neutral          |
| Earth Leakage Current (Input to Ground)  | <500µA@264VAC, 60Hz, NC<br><1mA@264VAC, 60Hz, SFC    |
| Earth Leakage Current (Output to Ground) | <100µA@264VAC, 60Hz, NC<br><500µA@264VAC, 60Hz, SFC  |
| Efficiency                               | >88%, typical                                        |
| Power Factor                             | 0.9, min., 230VAC, 80-100% load vector, 25°C ambient |

Note: All specifications are typical at 230VAC input, full load, at 25°C ambient unless noted.

### OUTPUT

|                    |                                                                                                                                                                                   |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Turn On Time       | <700ms                                                                                                                                                                            |
| Hold-Up Time       | 20ms/100VAC at full load                                                                                                                                                          |
| Output Power       | 25W-40W continuous – See models chart for specific voltage model ratings                                                                                                          |
| Output Voltage     | See models chart                                                                                                                                                                  |
| Transient Response | 500µs resp. time for return to w/in 0.5% of final value for any 50% load step from 5% to 100% of rated load, $\Delta i/\Delta t < 0.2A/\mu s$<br>Max voltage deviation is +/-3.5% |
| Regulation         | See models chart                                                                                                                                                                  |

Note: All specifications are typical at 230VAC input, full load, at 25°C ambient unless noted.



### PROTECTION

|                            |                                                                |
|----------------------------|----------------------------------------------------------------|
| Overtemperature Protection | Will shutdown upon an overtemperature condition, Auto-recovery |
| Overload Protection        | 130% to 160% of rated output current value, Hiccup mode        |
| Short Circuit Protection   | Hiccup mode                                                    |
| Overvoltage Protection     | 120% to 150% of nominal output voltage, Hiccup Mode            |

### RELIABILITY

|            |                                                                                                                                           |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| MTBF       | >1,000,000 hours, full load, 110 & 220VAC input, 25°C amb., per telcordia 332 issue 6, stress method                                      |
| E-cap Life | >8 year life based on calculations at 115VAC/60Hz & 230VAC/50Hz, ambient 25°C at 24 hrs per day, 365 days/year, 6 power up cycles per day |

### ISOLATION SPECIFICATIONS

|                      |                              |                    |
|----------------------|------------------------------|--------------------|
| Isolation            | Input-Output                 | : 4000VAC (2 MOPP) |
|                      | Input-Ground                 | : 1500VAC (1 MOPP) |
|                      | Output-Ground                | : 1500VAC (1 MOPP) |
| Isolation Resistance | I/P-O/P, I/P-FG, O/P-FG: TBD |                    |

### ENVIRONMENT

|                       |                                                                                                                                                                                                                                                                     |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating Temperature | -25 ~ +70°C, see derating curve for operation above 60°C                                                                                                                                                                                                            |
| Storage Temperature   | -40°C ~ +85°C                                                                                                                                                                                                                                                       |
| Cooling               | Convection                                                                                                                                                                                                                                                          |
| Relative Humidity     | 5% to 90%, Non-condensing                                                                                                                                                                                                                                           |
| Vibration             | Operating: 0.003g/Hz, 1.5grms overall, 3 axes, 10 min/axis, 1-500Hz<br>Non-Oper.: random waveform, 3 minutes per axis, 3 axes and sine waveform, vib. frequency/acceleration: 10-500Hz/1g, sweep rate of 1 octave/minutes, vibration time of 10 sweeps/axes, 3 axes |
| Shock                 | Operating: Half-sine, 20gpk, 10ms, 3 axes, 6 shocks total<br>Non-Operating: Half-sine waveform, impact acceleration of 50G, pulse duration of 6ms, Number of shocks: 3 for each of the three axis                                                                   |
| Dimensions            | 48.3 x 101.6 x 25mm<br>2.0 x 4.0 x 0.97 inch (Height is from top of tallest component to max. component pin protrusion on the bottom)                                                                                                                               |
| Weight                | 110g                                                                                                                                                                                                                                                                |

Note: Same dimensions for PCB & Pin Variants.

### SAFETY

|                       |                                           |
|-----------------------|-------------------------------------------|
| ITE/Industrial Safety | EN/IEC/UL62368-1                          |
| Medical Safety        | EN/IEC/UL60601-1, 3 <sup>rd</sup> edition |

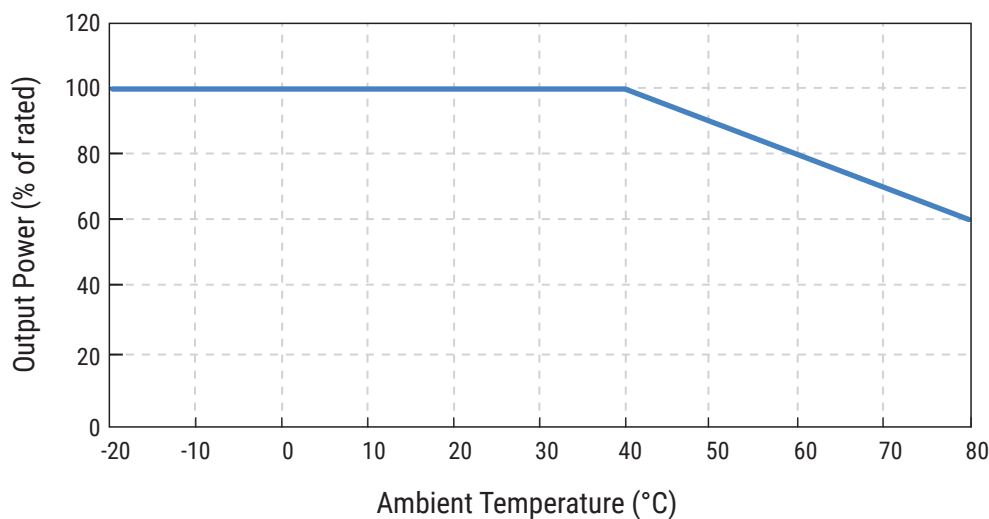
### EMI/EMC COMPLIANCE

|                                                             |                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Conducted Emissions                                         | EN55032, EN55011/CISPR11 Class B, FCC Part 15.107, Class B: 6db margin type, at 115 and 230VAC                                                                                                                                                                                                                          |
| Radiated Emissions                                          | EN55032, EN55011/CISPR11 Class B, FCC Part 15.109, Class B: 3db margin type, at 115 and 230VAC                                                                                                                                                                                                                          |
| Electro-Static Discharge (ESD) Immunity on Power Ports      | EN55024/IEC61000-4-2, Level 4: +/- 8kV contact, +/- 15kV air, Criteria A<br>IEC60601-1-2, 4 <sup>th</sup> edition, Table 4                                                                                                                                                                                              |
| Radiated RF EM Fields Susceptibility                        | EN55022/EN61000-4-3, 10V/m, 80MHz-2.7GHz, 80% AM at 1kHz<br>IEC60601-1-2, 4 <sup>th</sup> edition, Table 4                                                                                                                                                                                                              |
| Electrical Fast Transients (EFT)/Bursts                     | EN55024/IEC61000-4-4, Level 4, +/- 4.4kV, 100Khz rep rate, 40A, Criteria A<br>IEC60601-1-2, 4 <sup>th</sup> edition, Table 5                                                                                                                                                                                            |
| Surges, Line to Line (Diff Mode) and Line to GND (CMN Mode) | EN55024/IEC61000-4-5, Level 4, +/-2kV DM, +/-4kV CM, Criteria A<br>Surpasses IEC60601-1-2, 4 <sup>th</sup> edition requirements                                                                                                                                                                                         |
| Conducted Disturbances Induced by RF Fields                 | EN55022/IEC61000-4-6, 3.6V/m – Level 4, (0.15 to 80Mhz; and 12V/m) in ISM and amateur radio bands between 0.15Mhz and 80Mhz, 80% AM at 1KHz<br>IEC60601-1-2, 4 <sup>th</sup> edition, Table 5                                                                                                                           |
| Rated Power Frequency Magnetic Fields                       | EN55024/IEC1000-4-8, Level 4: 30 A/m, 50/60Hz<br>IEC60601-1-2, 4 <sup>th</sup> edition, Table 4                                                                                                                                                                                                                         |
| Voltage Interruptions, Dips, Sags & Surges                  | EN55024/IECEN61000-4-11:<br>--100% dip for 10ms, at 0, 45, 90, 135, 180, 225, 270 and 315 degrees, 100% dip for 20ms, 0 deg., Criteria A<br>--100% dip for 5000 ms (250/300 cycles), Criteria B<br>--60% dip for 100ms, Criteria B<br>--30% dip for 500ms, Criteria A<br>IEC60601-1-2, 4 <sup>th</sup> edition, Table 5 |
| Harmonic Current Emissions                                  | EN55011/EN61000-3-2, Class A                                                                                                                                                                                                                                                                                            |
| Flicker Test                                                | EN61000-3-3                                                                                                                                                                                                                                                                                                             |

- Note: 1. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives.  
2. All specifications are typical at nominal input, full load, at 25°C ambient unless noted. Consult factory for information regarding testing for or usage under special environments.

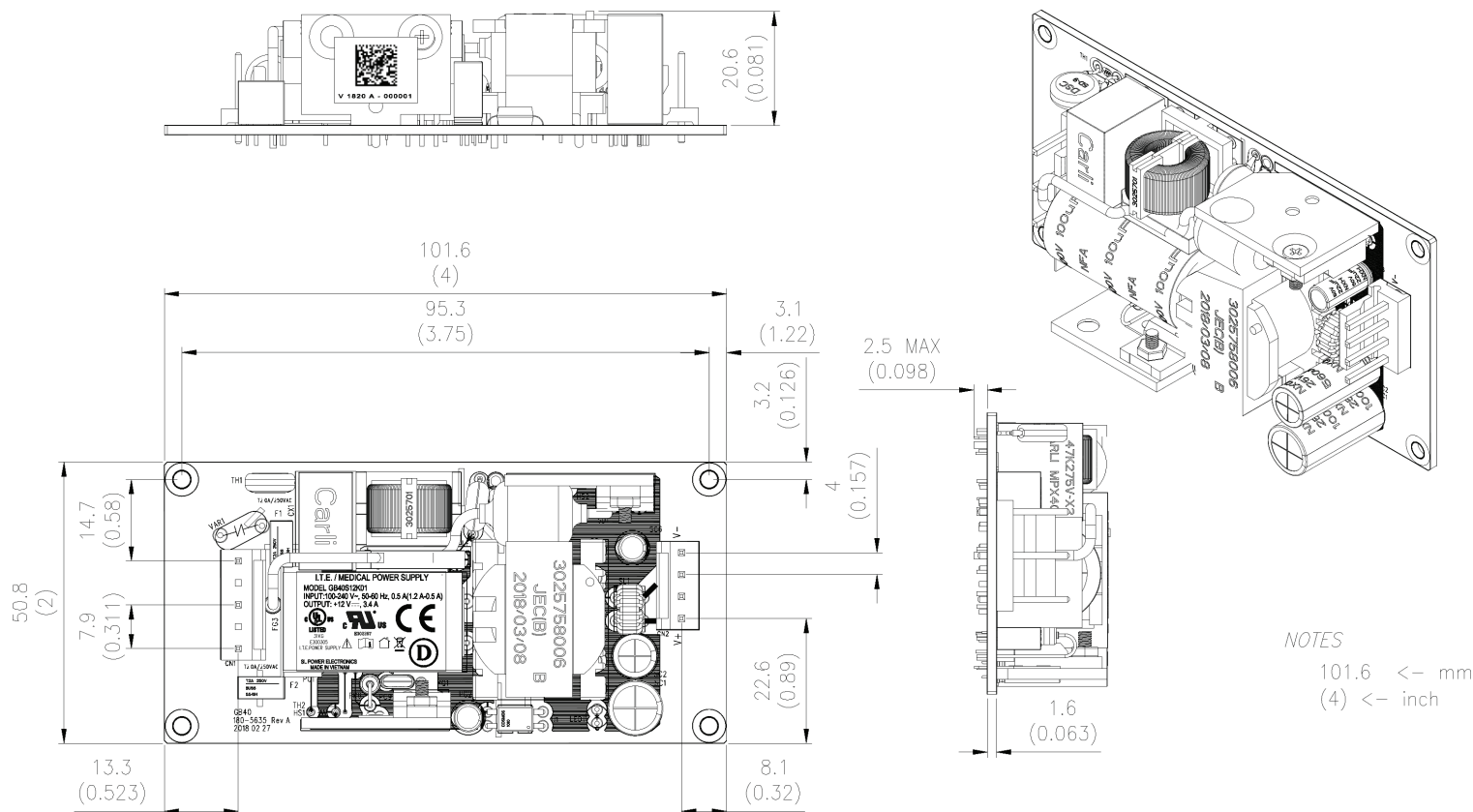


## DERATING CURVE



## MECHANICAL DRAWING

Mounting hole diameter: 3.2mm (0.125") 4 places





### CONNECTOR AND TERMINATION INFORMATION

| Input Connections       |                                                                                  |                                                                                                                | Output Connections                                           |                                                                                                  |
|-------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Version                 | Connector Pinout                                                                 | Connector Type/Part No.                                                                                        | Connector Pinout                                             | Connector Type/Part No.                                                                          |
| Open Frame:<br>"K", "C" | Pin 1: AC LINE<br>Pin 2: N/C<br>Pin 3: GROUND<br>Pin 4: N/C<br>Pin 5: AC NEUTRAL | Connector:<br>TE/AMP P/N 640445-5 (2 pins removed)<br>Mating Connector: TE/AMP P/N<br>640250-5, Pins= 770476-1 | Pin 1: +Vout<br>Pin 2: +Vout<br>Pin 3: -Vout<br>Pin 4: -Vout | Connector:<br>TE/AMP P/N 640445-4<br>Mating Connector:<br>TE/AMP P/N 640250-4,<br>Pins= 770476-1 |
| PCB Mount:<br>"P", "V"  | Pin 1: AC Line<br>Pin 2: GND<br>Pin 3: AC Neutral                                | Pencom PI3207 or equivalent                                                                                    | Pin 4: +Vout<br>Pin 5: +Vout<br>Pin 6: -Vout<br>Pin 7: -Vout | Pencom PI3207 or equivalent                                                                      |