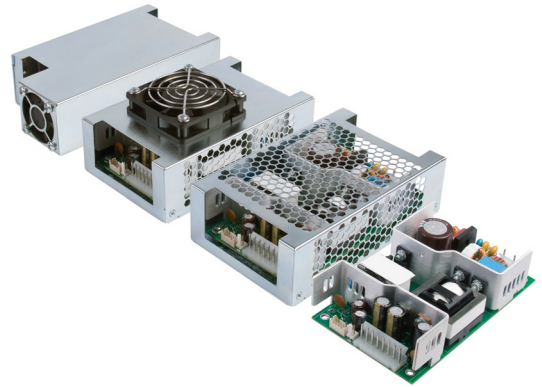


### 150/180/250/350 Watts

- Convection/Forced-cooled Ratings
- Universal 85 - 264 VAC Input
- IT & Medical Safety Approvals (Class I & II)
- < 0.5 W Standby Power (150 & 180 Models)
- -40° C to +70° C Operation
- Remote On/Off
- Class B Emissions
- 3 Year Warranty



The GCS Series has been designed to minimise the no load power consumption and maximise efficiency in order to facilitate equipment design to the latest environmental legislation. Approved for Class I and Class II applications, this range of single output AC-DC power supplies are packaged in an industry standard 3.0" x 5.0" x 1.42" package and achieves EN55011/32 Level B emissions compliance whilst maintaining very low earth leakage currents, making them suitable for a wide range of 1U and other industrial, IT and medical applications.

The series has single output versions from 12 V to 56 VDC, dual-fusing for compliance with IEC60601-1 and feature minimal excess heat generation as efficiencies reach 94%. They will deliver up to 350 W of power over an operating range of -40 °C and up to +70 °C and are available with a number of cover options.

#### Dimensions:

##### GCS150/GCS180/GCS250/GCS350:

5.00 x 3.00 x 1.42" (127.0 x 76.2 x 36.3 mm)  
 (-C): 5.50 x 3.48 x 1.70" (139.7 x 88.5 x 43.2 mm)  
 (-TF): 5.50 x 3.48 x 2.20" (139.7 x 88.5 x 57.8 mm)  
 (-EF): 6.35 x 3.48 x 1.70" (161.3 x 88.5 x 43.2 mm)  
 (350-EF): 6.00 x 3.50 x 1.75" (152.4 x 88.9 x 44.4 mm)

#### Models & Ratings

| Output Voltage V1 | Output Current V1                  |                              | Output Voltage (Vfan) & Current | Max Output Power | Model Number <sup>(1,2,3,4,5)</sup> |
|-------------------|------------------------------------|------------------------------|---------------------------------|------------------|-------------------------------------|
|                   | Convection-cooled <sup>(6,7)</sup> | Forced-cooled <sup>(8)</sup> |                                 |                  |                                     |
| 12.0 VDC          | 9.2 A                              | 12.5 A                       | 12.0 VDC/0.6 A                  | 157 W            | GCS150PS12                          |
| 15.0 VDC          | 7.3 A                              | 10.0 A                       | 12.0 VDC/0.6 A                  | 157 W            | GCS150PS15                          |
| 24.0 VDC          | 4.6 A                              | 6.3 A                        | 12.0 VDC/0.6 A                  | 157 W            | GCS150PS24                          |
| 28.0 VDC          | 3.9 A                              | 5.4 A                        | 12.0 VDC/0.6 A                  | 157 W            | GCS150PS28                          |
| 48.0 VDC          | 2.3 A                              | 3.2 A                        | 12.0 VDC/0.6 A                  | 157 W            | GCS150PS48                          |
| 12.0 VDC          | 12.5 A                             | 15.0 A                       | 12.0 VDC/0.6 A                  | 187 W            | GCS180PS12                          |
| 15.0 VDC          | 10.0 A                             | 12.0 A                       | 12.0 VDC/0.6 A                  | 187 W            | GCS180PS15                          |
| 24.0 VDC          | 6.3 A                              | 7.5 A                        | 12.0 VDC/0.6 A                  | 187 W            | GCS180PS24                          |
| 28.0 VDC          | 5.4 A                              | 6.4 A                        | 12.0 VDC/0.6 A                  | 187 W            | GCS180PS28                          |
| 48.0 VDC          | 3.1 A                              | 3.7 A                        | 12.0 VDC/0.6 A                  | 187 W            | GCS180PS48                          |
| 12.0 VDC          | 15.0 A                             | 18.8 A                       | 12.0 VDC/0.6 A                  | 232 W            | GCS250PS12                          |
| 15.0 VDC          | 12.0 A                             | 15.0 A                       | 12.0 VDC/0.6 A                  | 232 W            | GCS250PS15                          |
| 24.0 VDC          | 7.5 A                              | 10.4 A                       | 12.0 VDC/0.6 A                  | 257 W            | GCS250PS24                          |
| 28.0 VDC          | 6.4 A                              | 8.9 A                        | 12.0 VDC/0.6 A                  | 257 W            | GCS250PS28                          |
| 48.0 VDC          | 3.7 A                              | 5.2 A                        | 12.0 VDC/0.6 A                  | 257 W            | GCS250PS48                          |
| 56.0 VDC          | 3.2 A                              | 4.5 A                        | 12.0 VDC/0.6 A                  | 257 W            | GCS250PS56                          |
| 12.0 VDC          | 16.7 A                             | 29.2 A                       | 12.0 VDC/0.6 A                  | 350 W            | GCS350PS12 <sup>(9)</sup>           |
| 15.0 VDC          | 13.3 A                             | 23.4 A                       | 12.0 VDC/0.6 A                  | 350 W            | GCS350PS15 <sup>(9)</sup>           |
| 24.0 VDC          | 8.3 A                              | 14.6 A                       | 12.0 VDC/0.6 A                  | 350 W            | GCS350PS24 <sup>(10)</sup>          |
| 28.0 VDC          | 7.1 A                              | 12.5 A                       | 12.0 VDC/0.6 A                  | 350 W            | GCS350PS28 <sup>(10)</sup>          |
| 48.0 VDC          | 4.2 A                              | 7.3 A                        | 12.0 VDC/0.6 A                  | 350 W            | GCS350PS48 <sup>(10)</sup>          |
| 56.0 VDC          | 3.6 A                              | 6.25 A                       | 12.0 VDC/0.6 A                  | 350 W            | GCS350PS56 <sup>(10)</sup>          |

#### Notes

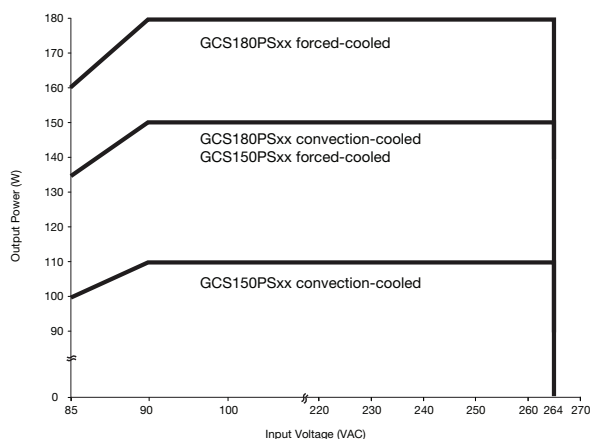
1. Add suffix -C for convection-cooled cover, e.g. GCS150PS12-C.
2. Cover kits available. Order part no.: GCS150/180 CVR KIT
3. Add suffix -EF for fan-cooled cover with end fan e.g. GCS150PS12-EF, add suffix -TF for fan-cooled cover with top fan, e.g. GCS150PS12-TF. Note: Vfan output no longer available.
4. Add suffix -R for remote on/off, e.g. GCS150PS12-R, GCS150PS12-RC with convection cover or GCS150PS12-REF/GCS150PS12-RTF with fan covers, (remote on/off is standard on GCS350 models).
5. GCS250PS12-C & GCS250PS15-C models derate 20% when convection cooled.
6. GCS350 convection rating quoted at 40 °C, others at 50 °C, see thermal derating curve.
7. GCS350-C models derate 15% when convection-cooled at 40 °C.
8. 7 CFM required to meet stated current for GCS150/180/250 and 15 CFM for GCS350.
9. Add suffix '-J' for optional dual row molex connector. See GCS350 model mechanics for details.
10. Add suffix '-S' for optional screw terminals. See GCS350 mechanics for details.

### Input

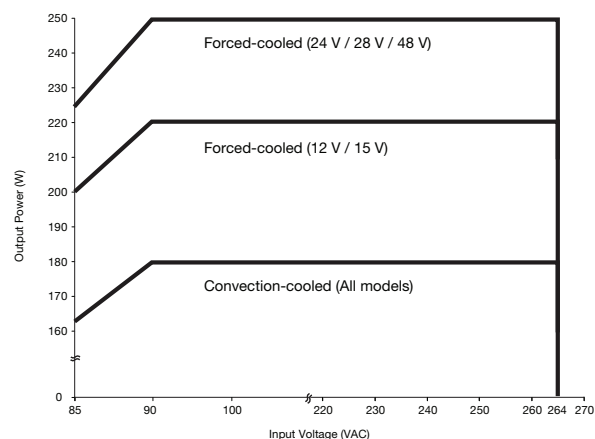
| Characteristic            | Minimum                                                                                                      | Typical | Maximum | Units | Notes & Conditions                                 |
|---------------------------|--------------------------------------------------------------------------------------------------------------|---------|---------|-------|----------------------------------------------------|
| Input Voltage - Operating | 85                                                                                                           | 115/230 | 264     | VAC   | Derate output power <90 VAC. See fig 1.            |
| Input Frequency           | 47                                                                                                           | 50/60   | 63      | Hz    |                                                    |
| Power Factor              |                                                                                                              | >0.9    |         |       | 230 VAC, 100% load                                 |
| Input Current - Full Load |                                                                                                              | 1.5/0.7 |         | A     | GCS150: 115/230 VAC                                |
|                           |                                                                                                              | 1.8/0.8 |         |       | GCS180: 115/230 VAC                                |
|                           |                                                                                                              | 2.2/1.1 |         |       | GCS250 12-15 V models: 115/230 VAC                 |
|                           |                                                                                                              | 2.4/1.2 |         |       | GCS250 ≥24 V models: 115/230 VAC                   |
|                           |                                                                                                              | 3.6/1.8 |         |       | GCS350: 115/230 VAC                                |
| Inrush Current            |                                                                                                              | 80      |         | A     | 230 VAC cold start 25 °C                           |
| No Load Input Power       |                                                                                                              |         | 0.5     | W     | All GCS150 & GCS180 (including -R Models)          |
|                           |                                                                                                              | 2.3     |         |       | GCS150 & GCS180 -R Models with inhibit activated   |
|                           |                                                                                                              | 5       |         |       | All GCS250 (including -R Models) 115V AC           |
|                           |                                                                                                              | 3       |         |       | All GCS250 (including -R Models) 230V AC           |
|                           |                                                                                                              | 1       |         |       | GCS250 -R Models with inhibit activated 115V AC    |
|                           |                                                                                                              | 3       |         |       | GCS250 -R Models with inhibit activated 230V AC    |
|                           |                                                                                                              | 4       |         |       | GCS350: 115/230 VAC                                |
| Earth Leakage Current     |                                                                                                              | 60/120  | 200     | μA    | GCS150: 115/230 VAC/50 Hz Typ., 264 VAC/60 Hz Max. |
|                           |                                                                                                              | 95/185  | 250     |       | GCS180: 115/230 VAC/50 Hz Typ., 264 VAC/60 Hz Max. |
|                           |                                                                                                              | 95/185  | 250     |       | GCS250: 115/230 VAC/50 Hz Typ., 264 VAC/60 Hz Max. |
|                           |                                                                                                              | 95/185  | 250     |       | GCS350: 115/230 VAC/50 Hz Typ., 264 VAC/60 Hz Max. |
| Input Protection          | GCS150/180: F3.15 A/250 V internal fuse in both lines. GCS250/350: F5.0 A/250 V internal fuse in both lines. |         |         |       |                                                    |

### Input Voltage Derating Curve

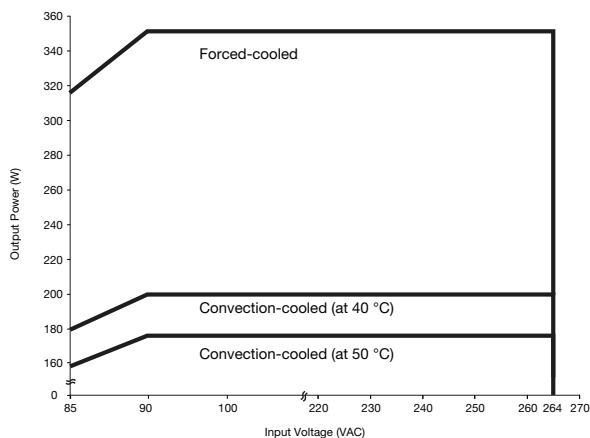
Figure 1



GCS150 & GCS180



GCS250



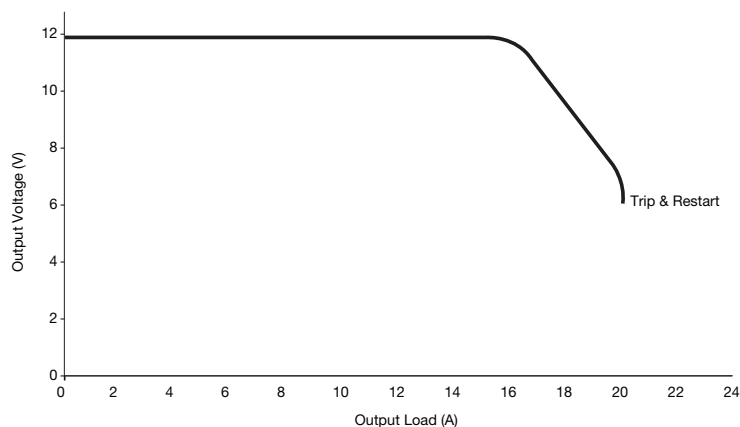
GCS350

## Output

| Characteristic                | Minimum | Typical | Maximum                          | Units   | Notes & Conditions                                                                    |
|-------------------------------|---------|---------|----------------------------------|---------|---------------------------------------------------------------------------------------|
| Output Voltage - V1           | 12      |         | 56                               | VDC     | See Models and Ratings table                                                          |
| Initial Set Accuracy          |         |         | $\pm 1^{(V1)} & \pm 5^{(Vfan)}$  | %       | 50% load, 115/230 VAC                                                                 |
| Output Voltage Adjustment -V1 |         |         | $\pm 2$                          | %       | Via potentiometer. See mech. details, Vfan will track                                 |
| Minimum Load                  | 0       |         |                                  | A       |                                                                                       |
| Start Up Delay                |         |         | 2                                | s       | 115/230 VAC full load                                                                 |
| Hold Up Time                  |         | 20      |                                  | ms      | GCS150 Models                                                                         |
|                               |         | 16/18   |                                  |         | GCS180 Models                                                                         |
|                               |         | 25      |                                  |         | GCS250PS12 (225W)                                                                     |
|                               |         | 17      |                                  |         | GCS250 Other Models (250W)                                                            |
|                               |         | 17      |                                  |         | GCS350                                                                                |
| Drift                         |         |         | $\pm 0.2$                        | %       | After 20 min warm up                                                                  |
| Line Regulation               |         |         | $\pm 0.5$                        | %       | 90-264 VAC                                                                            |
| Load Regulation               |         |         | $\pm 0.5^{(V1)}, \pm 5^{(Vfan)}$ | %       | 0-100% load                                                                           |
| Transient Response - V1       |         |         | 4                                | %       | Recovery within 1% in less than 500 $\mu$ s for a 50-75% and 75-50% load step         |
| Over/Undershoot - V1          |         | 0       |                                  | %       |                                                                                       |
| Ripple & Noise - V1           |         |         | 1                                | % pk-pk | 20 MHz bandwidth, 12V Models 1.5% max                                                 |
| Overvoltage Protection - V1   | 110     |         | 140                              | %       | Vnom DC. Output 1, recycle input to reset                                             |
| Overload Protection - V1      | 110     |         | 150                              | % I nom | See fig. 2. Trip and Restart                                                          |
| Short Circuit Protection - V1 |         |         |                                  |         | Continuous                                                                            |
| Temperature Coefficient       |         |         | 0.05                             | %/°C    |                                                                                       |
| Overtemperature Protection    |         |         | 110                              | °C      | At measurement point. Present on GCS350 only. Measurement internally, auto resetting. |

## Output Overload Characteristic

Figure 2  
GCS180PS12 example (other similar).

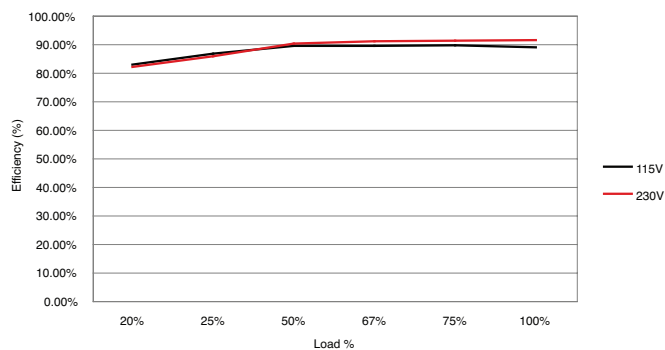


### General

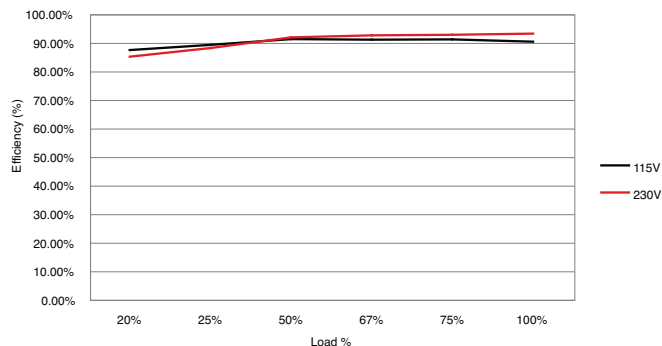
| Characteristic                                                     | Minimum        | Typical     | Maximum | Units             | Notes & Conditions                |
|--------------------------------------------------------------------|----------------|-------------|---------|-------------------|-----------------------------------|
| Efficiency                                                         |                | 93          |         | %                 | 230 VAC Full load (see fig.3-5)   |
|                                                                    | 80 Plus Silver |             |         |                   | All models except 12 V models     |
|                                                                    | 80 Plus Bronze |             |         |                   | 12 V models                       |
| Isolation: Input to Output<br>Input to Ground<br>Output to Ground  | 4000           |             |         | VAC               |                                   |
|                                                                    | 1500           |             |         | VAC               |                                   |
|                                                                    | 1500           |             |         | VAC               |                                   |
| Switching Frequency                                                | 60             |             | 200     | kHz               | PFC Converter                     |
|                                                                    | 90             |             | 150     |                   | Main Converter                    |
| Power Density                                                      |                |             | 7.4     | W/in <sup>3</sup> | GCS150                            |
|                                                                    |                |             | 8.8     |                   | GCS180                            |
|                                                                    |                |             | 12.1    |                   | GCS250                            |
|                                                                    |                |             | 16.4    |                   | GCS350                            |
| Mean Time Between Failure                                          |                | 569         |         | kHrs              | MIL-HDBK-217F, Notice 2 +25 °C GB |
| Weight: Open Frame<br>End Fan Unit<br>Top Fan Unit<br>Covered Unit |                | 0.65 (0.29) |         | lb (kg)           |                                   |
|                                                                    |                | 1.30 (0.59) |         | lb (kg)           |                                   |
|                                                                    |                | 1.15 (0.52) |         | lb (kg)           |                                   |
|                                                                    |                | 1.05 (0.48) |         | lb (kg)           |                                   |

### Efficiency Vs Load

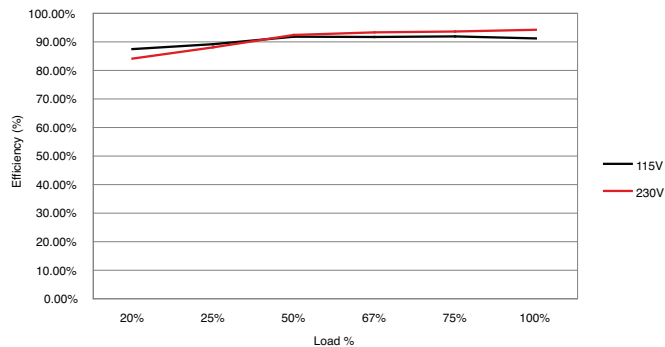
**Figure 3**  
12 V Models



**Figure 4**  
24 V Models



**Figure 5**  
48 V Models

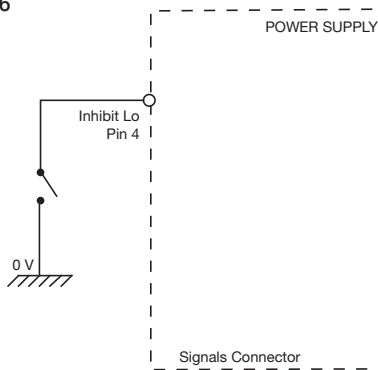


### Signals & Controls

| Characteristic                                           |         | Notes & Conditions                                                                                                                                        |
|----------------------------------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Remote Sense                                             |         | Compensates for 0.5 V total voltage drop                                                                                                                  |
| Remote On/Off (-R models)<br>(Standard on GCS350 models) | Inhibit | The inhibit lo (pin 4), should be pulled below 0.4 V to switch V1 & Vfan off. Open circuit or >4 V to switch on (see fig. 6)                              |
|                                                          | Enable  | With the inhibit lo (pin 4) pulled low as detailed above, connecting inhibit hi (pin 5) to inhibit lo (pin 4) will enable V1 & V fan output. (see fig. 7) |

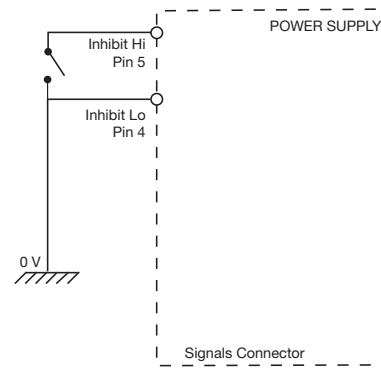
#### Remote On/Off (Inhibit)

Figure 6



#### Remote On/Off (Enable)

Figure 7



### Environmental

| Characteristic        | Minimum | Typical | Maximum | Units | Notes & Conditions                                                                                                          |
|-----------------------|---------|---------|---------|-------|-----------------------------------------------------------------------------------------------------------------------------|
| Operating Temperature | -40     |         | +70     | °C    | See derating curve, fig. 8                                                                                                  |
| Storage Temperature   | -40     |         | +85     | °C    |                                                                                                                             |
| Cooling               | 7       |         |         | CFM   | Forced Cooled >110 W GCS150                                                                                                 |
|                       | 15      |         |         |       | Forced Cooled >150 W GCS180                                                                                                 |
|                       |         |         |         |       | Forced Cooled >180 W GCS250                                                                                                 |
|                       |         |         |         |       | GCS350                                                                                                                      |
| Humidity              | 5       |         | 95      | %RH   | Non-condensing                                                                                                              |
| Operating Altitude    |         |         | 5000    | m     |                                                                                                                             |
| Shock                 |         |         |         |       | ±3 x 30g shocks in each plane, total 18 shocks. 30g = 11ms (+/-0.5msec), half sine. Conforms to EN60068-2-27 & EN60068-2-47 |
| Vibration             |         |         |         |       | Single axis 10 - 500 Hz at 2g sweep and endurance at resonance in all 3 planes. Conforms to EN60068-2-6                     |

### Thermal Derating Curve

Figure 8 - GCS150, 180, 250

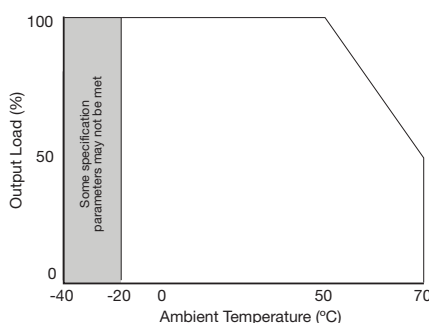


Figure 9 - GCS350 Convection cooled ratings

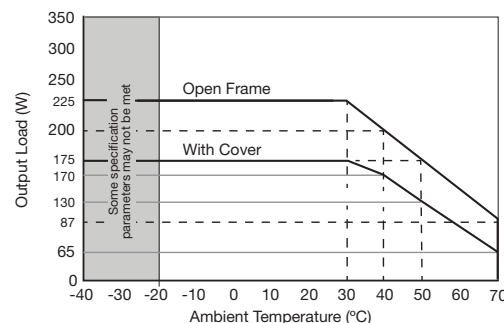
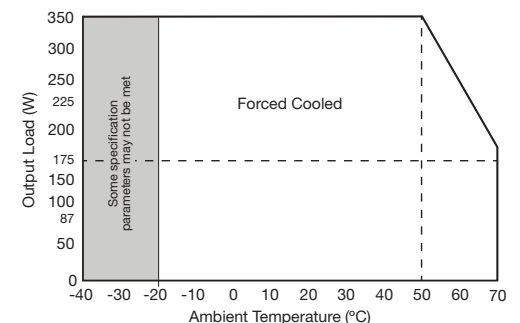


Figure 10 - GCS350 Forced cooled ratings



## EMC: Emissions

| Phenomenon            | Standard    | Test Level | Criteria | Notes & Conditions                                                                                                                      |
|-----------------------|-------------|------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Conducted             | EN55011/32  | Class B    |          |                                                                                                                                         |
| Radiated              | EN55011/32  | Class B    |          | GCS150                                                                                                                                  |
|                       |             | Class A    |          | GCS180/GCS250/GCS350                                                                                                                    |
|                       |             | Class B    |          | GCS180 & GCS250 with 3 turns of output cable through added ferrite core. (Manufacturer: Fair - Rite Products Corp, Part No: 2643800502) |
| Harmonic Fluctuations | EN61000-3-3 |            |          |                                                                                                                                         |

## EMC: Immunity

| Phenomenon             | Standard              | Test Level               | Criteria | Notes & Conditions                    |
|------------------------|-----------------------|--------------------------|----------|---------------------------------------|
| Low Voltage PSU EMC    | EN61204-3             | High severity level      | as below |                                       |
| Harmonic Current       | EN61000-3-2           | Class A                  |          | All models                            |
|                        |                       | Class C                  |          | > 50 W GCS150                         |
|                        |                       |                          |          | > 50 W GCS180                         |
|                        |                       |                          |          | > 80 W GCS250                         |
|                        |                       |                          |          | >125 W GCS350                         |
| Radiated               | EN61000-4-3           | 3                        | A        |                                       |
| EFT                    | EN61000-4-4           | 3                        | A        |                                       |
| Surges                 | EN61000-4-5           | Installation class 3     | A        |                                       |
| Conducted              | EN61000-4-6           | 3                        | A        |                                       |
| Dips and Interruptions | EN55035 (100 VAC)     | Dip >95% (0 VAC), 8.3ms  | A        |                                       |
|                        |                       | Dip 30% (70 VAC), 416ms  | B        |                                       |
|                        |                       | Dip >95% (0 VAC), 4160ms | B        |                                       |
|                        | EN55035 (240 VAC)     | Dip >95% (0 VAC), 10.0ms | A        |                                       |
|                        |                       | Dip 30% (168 VAC), 500ms | B        |                                       |
|                        |                       | Dip >95% (0 VAC), 5000ms | B        |                                       |
|                        | EN60601-1-2 (100 VAC) | Dip >95% (0 VAC), 10.0ms | A        |                                       |
|                        |                       | Dip 60% (40 VAC), 100ms  | A        | Derate Output Power to 85 W (GCS150)  |
|                        |                       |                          |          | Derate Output Power to 90 W (GCS180)  |
|                        |                       |                          |          | Derate Output Power to 120 W (GCS250) |
|                        |                       |                          |          | Derate Output Power to 150 W (GCS350) |
|                        |                       | Dip 30% (70 VAC), 500ms  | A        |                                       |
|                        |                       | Dip >95% (0 VAC), 5000ms | B        |                                       |
|                        | EN60601-1-2 (240 VAC) | Dip >95% (0 VAC), 10.0ms | A        |                                       |
|                        |                       | Dip 60% (96 VAC), 100ms  | A        |                                       |
|                        |                       | Dip 30% (168 VAC), 500ms | A        |                                       |
|                        |                       | Dip >95% (0 VAC), 5000ms | B        |                                       |

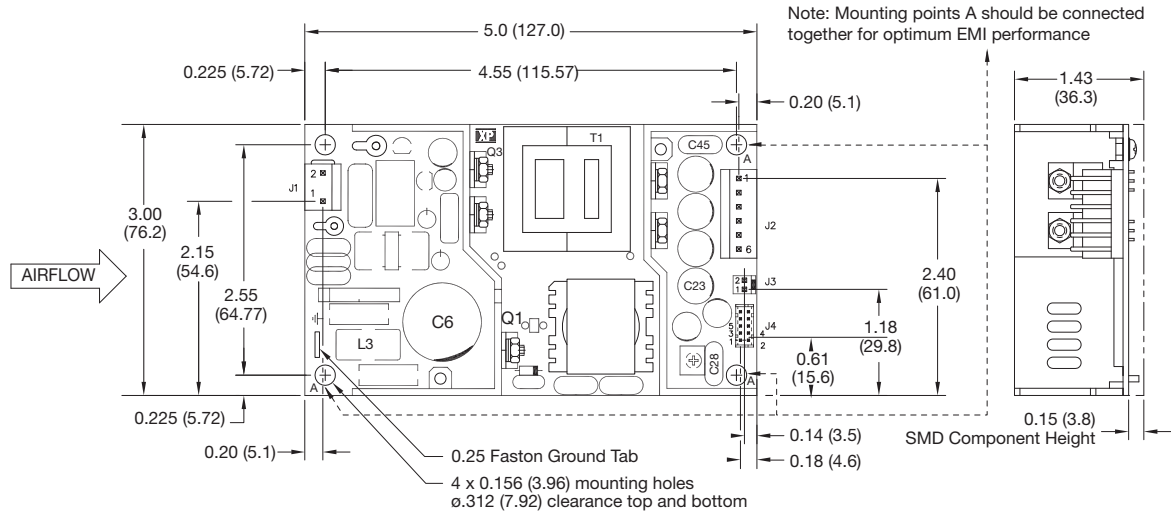
## Safety Approvals

| Safety Agency              | Safety Standard                                     | Notes & Conditions                                        |
|----------------------------|-----------------------------------------------------|-----------------------------------------------------------|
| CB Report                  | IEC60950-1:2005 Ed 2 / IEC62368-1:2014              | Information Technology                                    |
|                            | IEC60601-1 Ed 3 Including Risk Management           | Medical                                                   |
| UL                         | UL 62368-1 & CAN/CSA C22.2 No. 62368-1-14,          | Information Technology                                    |
|                            | ANSI/AAMI ES60601-1:2005 & CSA C22.2, No.60601-1:08 | Medical                                                   |
| EN                         | EN62368-1:2014/A11:2017                             | Information Technology                                    |
|                            | EN60601-1/A12:2006                                  | Medical                                                   |
| CE                         | LVD & RoHS                                          |                                                           |
| Equipment Protection Class | Class I & Class II                                  | See safety agency conditions of acceptability for details |

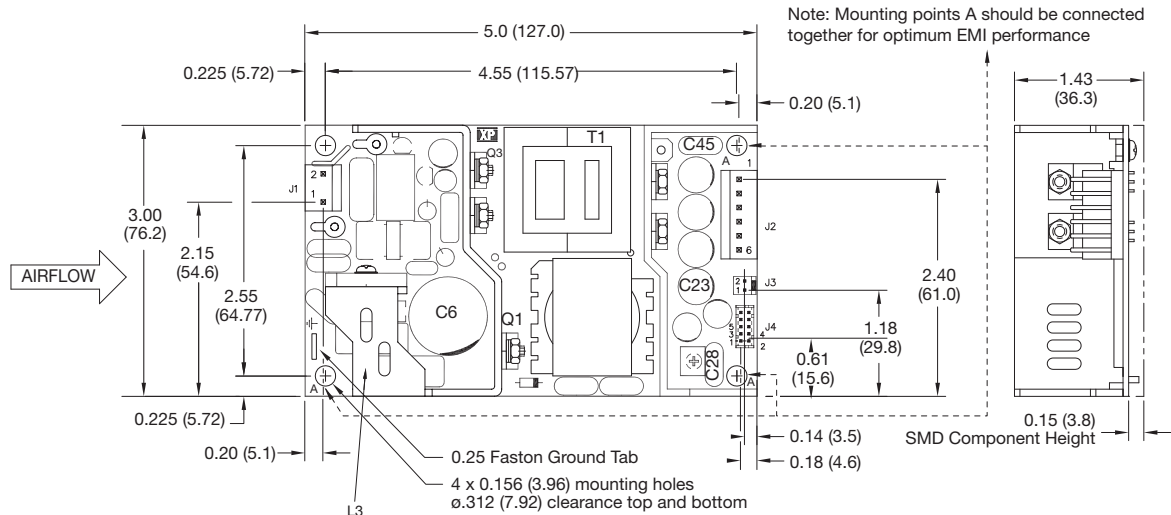
| Means of Protection  |                                        | Category        |
|----------------------|----------------------------------------|-----------------|
| Primary to Secondary | 2 x MOPP (Means of Patient Protection) | IEC60601-1 Ed 3 |
| Primary to Earth     | 1 x MOPP (Means of Patient Protection) |                 |
| Secondary to Earth   | 1 x MOPP (Means of Patient Protection) |                 |

### Mechanical Details

#### GCS150



#### GCS180



| Input Connector J1<br>Molex pn. 09-65-2038 |          |
|--------------------------------------------|----------|
| Pin                                        | Function |
| 1                                          | Line     |
| 2                                          | Neutral  |

| Output Connector J2<br>Molex pn. 09-65-2068 |               |
|---------------------------------------------|---------------|
| Pin                                         | Single Output |
| 1                                           | +V1           |
| 2                                           | +V1           |
| 3                                           | +V1           |
| 4                                           | RTN           |
| 5                                           | RTN           |
| 6                                           | RTN           |

| Fan Connector J3<br>Molex pn. 22-04-1021 |             |
|------------------------------------------|-------------|
| Pin                                      | Function    |
| 1                                        | Fan +(12 V) |
| 2                                        | Fan -       |

| Signal Connector J4<br>JST PN B10B-PHDS5 |                 |
|------------------------------------------|-----------------|
| Pin                                      | Single Output   |
| 1                                        | +Sense          |
| 2                                        | -Sense          |
| 3                                        | XP Internal Use |
| 4                                        | Inhibit LO      |
| 5                                        | Inhibit HI      |
| 6                                        | N/C             |
| 7                                        | N/C             |
| 8                                        | N/C             |
| 9                                        | N/C             |
| 10                                       | N/C             |

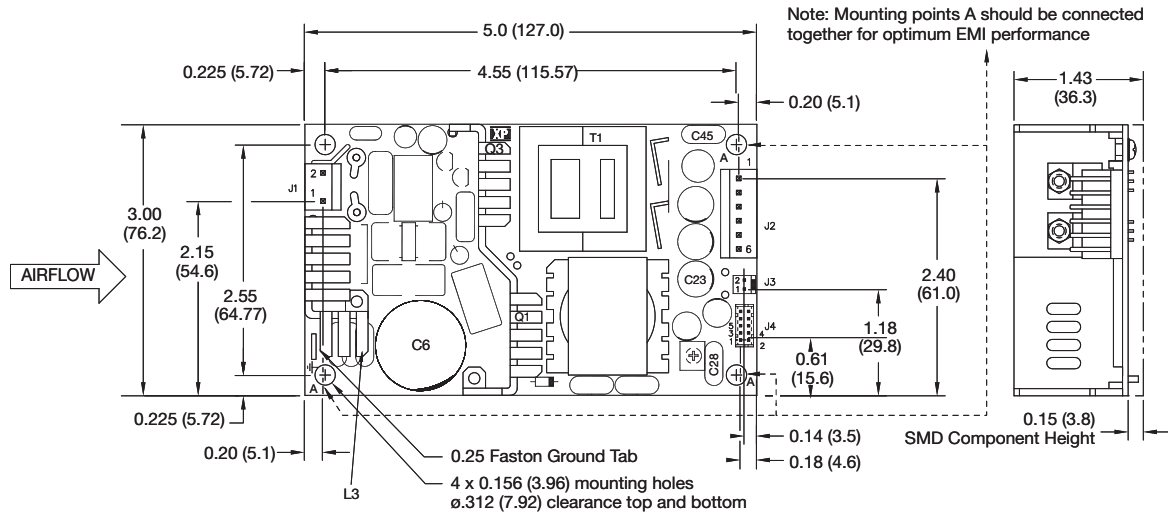
#### Notes

1. All dimensions in inches (mm).
2. Tolerance .xx =  $\pm 0.02$  (0.50); .xxx =  $\pm 0.01$  (0.25)
3. Weight: 0.65 lbs (0.29 kg)

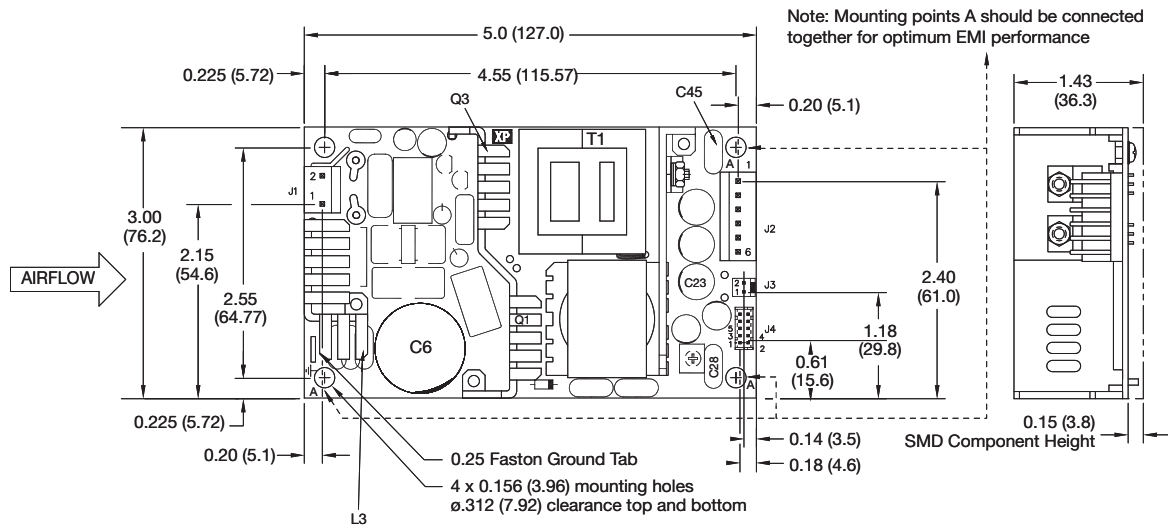
4. J1 mates with Molex Housing Pn. 09-50-1031. J2 mates with Molex Housing Pn. 09-50-1061 and both with Molex series 5194 crimp terminals. J4 mates with JST Housing Pn. PHDR-10VS and with JST SPHD-001T-P0.5 crimp terminals. J3 mates with Molex Housing Pn. 51191-0200 and with Molex series 50802 crimp terminals.

## Mechanical Details

## GCS250 12-15 V models



## GCS250 Other models



| Input Connector J1<br>Molex pn. 09-65-2038 |          |
|--------------------------------------------|----------|
| Pin                                        | Function |
| 1                                          | Line     |
| 2                                          | Neutral  |

| Output Connector J2<br>Molex pn. 09-65-2068 |               |
|---------------------------------------------|---------------|
| Pin                                         | Single Output |
| 1                                           | +V1           |
| 2                                           | +V1           |
| 3                                           | +V1           |
| 4                                           | RTN           |
| 5                                           | RTN           |
| 6                                           | RTN           |

| Fan Connector J3<br>Molex pn. 22-04-1021 |             |
|------------------------------------------|-------------|
| Pin                                      | Function    |
| 1                                        | Fan +(12 V) |
| 2                                        | Fan -       |

| Signal Connector J4<br>JST PN B10B-PHDS |                 |
|-----------------------------------------|-----------------|
| Pin                                     | Single Output   |
| 1                                       | +Sense          |
| 2                                       | -Sense          |
| 3                                       | XP Internal Use |
| 4                                       | Inhibit LO      |
| 5                                       | Inhibit HI      |
| 6                                       | N/C             |
| 7                                       | N/C             |
| 8                                       | N/C             |
| 9                                       | N/C             |
| 10                                      | N/C             |

## Notes

1. All dimensions in inches (mm).
2. Tolerance .xx =  $\pm 0.02$  (0.50); .xxx =  $\pm 0.01$  (0.25)
3. Weight: 0.65 lbs (0.29 kg)
4. J1 mates with Molex Housing Pn. 09-50-1031.  
J2 mates with Molex Housing Pn. 09-50-1061  
and both with Molex series 5194 crimp

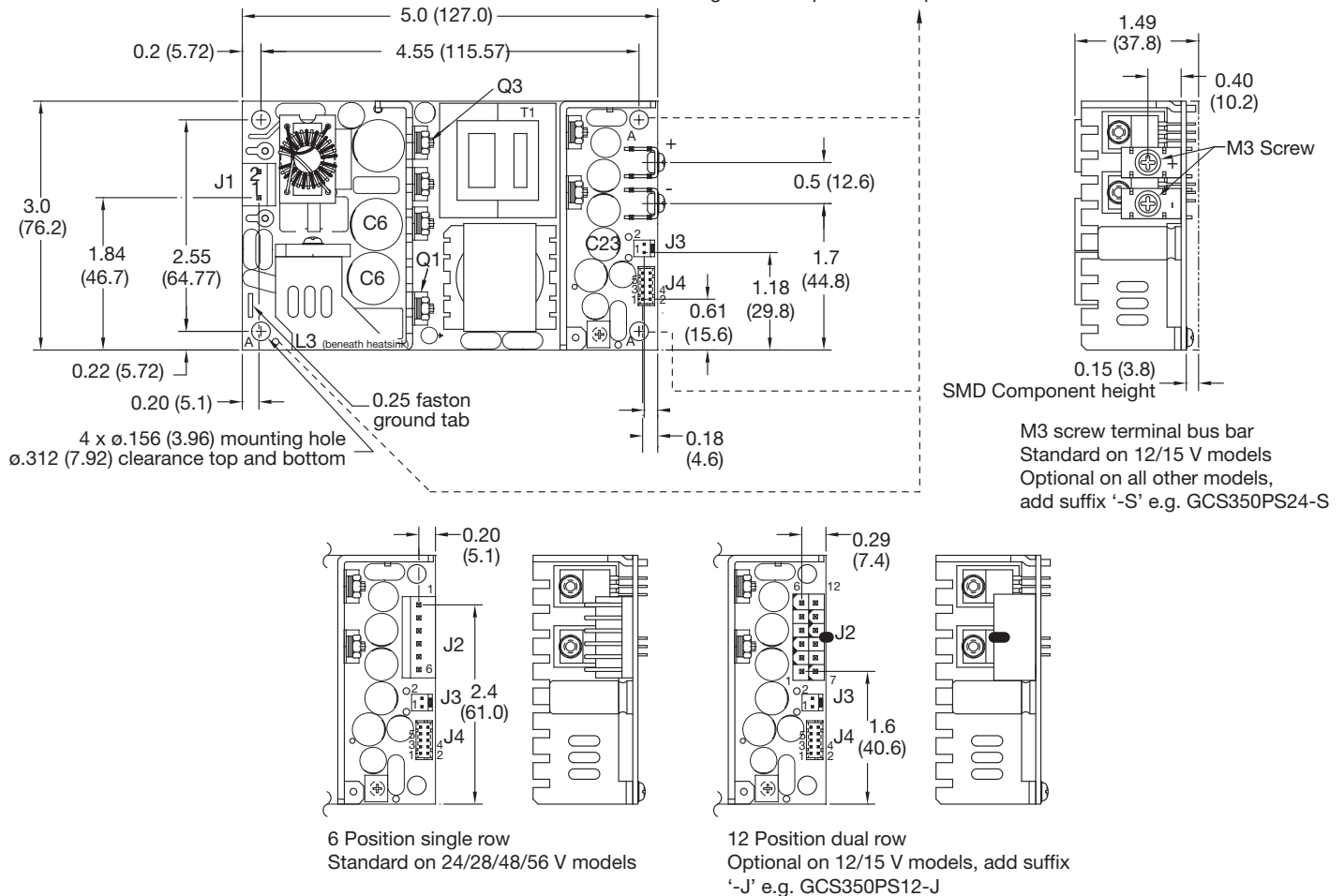
terminals. J4 mates with JST Housing Pn. PHDR-10VS and with JST SPHD-001T-P0.5 crimp terminals. J3 mates with Molex Housing Pn. 51191-0200 and with Molex series 50802 crimp terminals.



### Mechanical Details

#### GCS350 model

Note: Mounting points A should be connected together for optimum EMI performance



M3 screw terminal bus bar  
Standard on 12/15 V models  
Optional on all other models,  
add suffix '-S' e.g. GCS350PS24-S

| Input Connector J1<br>Molex pn. 09-65-2038 |          |
|--------------------------------------------|----------|
| Pin                                        | Function |
| 1                                          | Line     |
| 2                                          | Neutral  |

| Output Connector<br>6 position J2<br>Molex pn. 09-65-2068 |          |
|-----------------------------------------------------------|----------|
| Pin                                                       | Function |
| 1                                                         | +V1      |
| 2                                                         | +V1      |
| 3                                                         | +V1      |
| 4                                                         | RTN      |
| 5                                                         | RTN      |
| 6                                                         | RTN      |

| Output Connector<br>12 position J2<br>Molex pn. 39-28-8120 |          |
|------------------------------------------------------------|----------|
| Pin                                                        | Function |
| 1-3                                                        | RTN      |
| 4-6                                                        | +V1      |
| 7-9                                                        | RTN      |
| 10-12                                                      | +V1      |

| Fan Connector J3<br>Molex pn. 22-04-1021 |             |
|------------------------------------------|-------------|
| Pin                                      | Function    |
| 1                                        | Fan +(12 V) |
| 2                                        | Fan -       |

| Signal Connector J4<br>JST PN B10B-PHDSS |                 |
|------------------------------------------|-----------------|
| Pin                                      | Function        |
| 1                                        | +Sense          |
| 2                                        | -Sense          |
| 3                                        | XP Internal Use |
| 4                                        | Inhibit LO      |
| 5                                        | Inhibit HI      |
| 6                                        | N/C             |
| 7                                        | N/C             |
| 8                                        | N/C             |
| 9                                        | N/C             |
| 10                                       | N/C             |

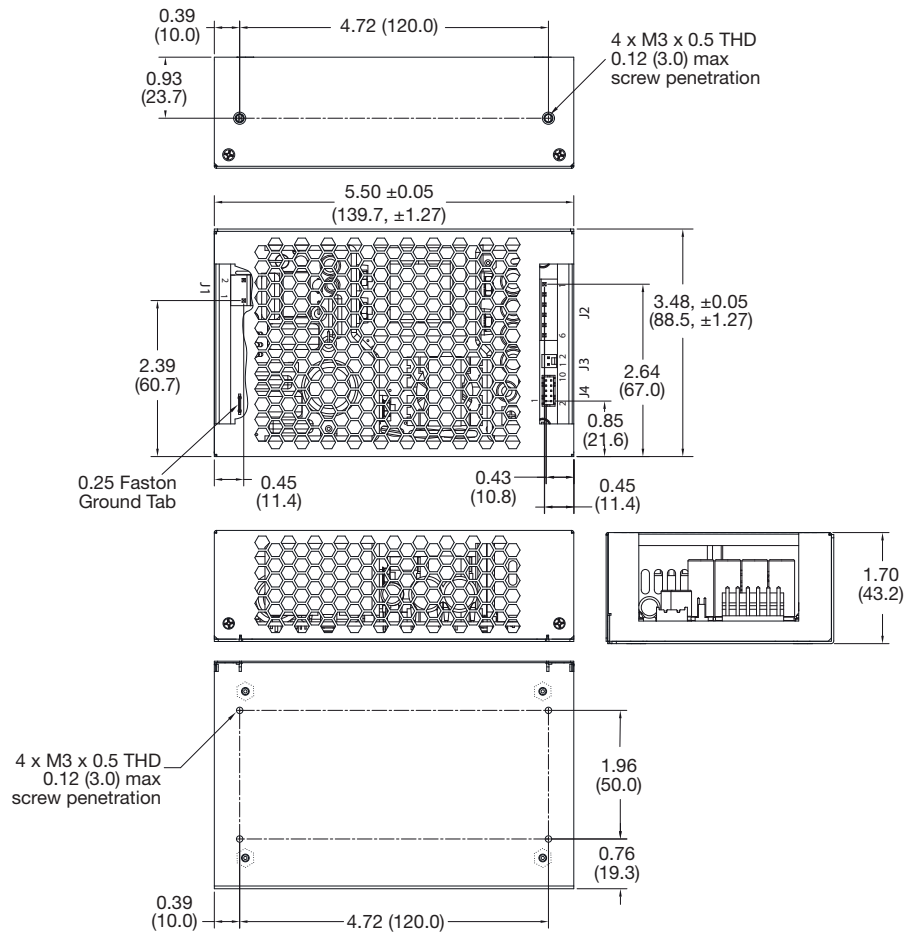
#### Notes

1. All dimensions in inches (mm).
2. Tolerance .xx =  $\pm 0.02$  (0.50); .xxx =  $\pm 0.01$  (0.25)
3. Weight: 0.65 lbs (0.29 kg)

4. J1 mates with Molex Housing Pn. 09-50-1031. 6 position single row J2 mates with Molex Housing Pn. 09-50-1061 and both with Molex series 5194 crimp terminals. 12 position dual row J2 mates with Molex Housing Pn. 39-01-2125 and with Molex series 5556 crimp terminals. J3 mates with Molex Housing Pn. 51191-0200 and with Molex series 50802 crimp terminals. J4 mates with JST Housing Pn. PHDR-10VS and with JST SPHD-001T-P0.5 crimp terminals.

### Mechanical Details

#### Covered (-C)



| Input Connector J1<br>Molex pn. 09-65-2038 |          |
|--------------------------------------------|----------|
| Pin                                        | Function |
| 1                                          | Line     |
| 2                                          | Neutral  |

| Output Connector J2<br>Molex pn. 09-65-2068 |               |
|---------------------------------------------|---------------|
| Pin                                         | Single Output |
| 1                                           | +V1           |
| 2                                           | +V1           |
| 3                                           | +V1           |
| 4                                           | RTN           |
| 5                                           | RTN           |
| 6                                           | RTN           |

| Fan Connector J3<br>Molex pn. 22-04-1021 |             |
|------------------------------------------|-------------|
| Pin                                      | Function    |
| 1                                        | Fan +(12 V) |
| 2                                        | Fan -       |

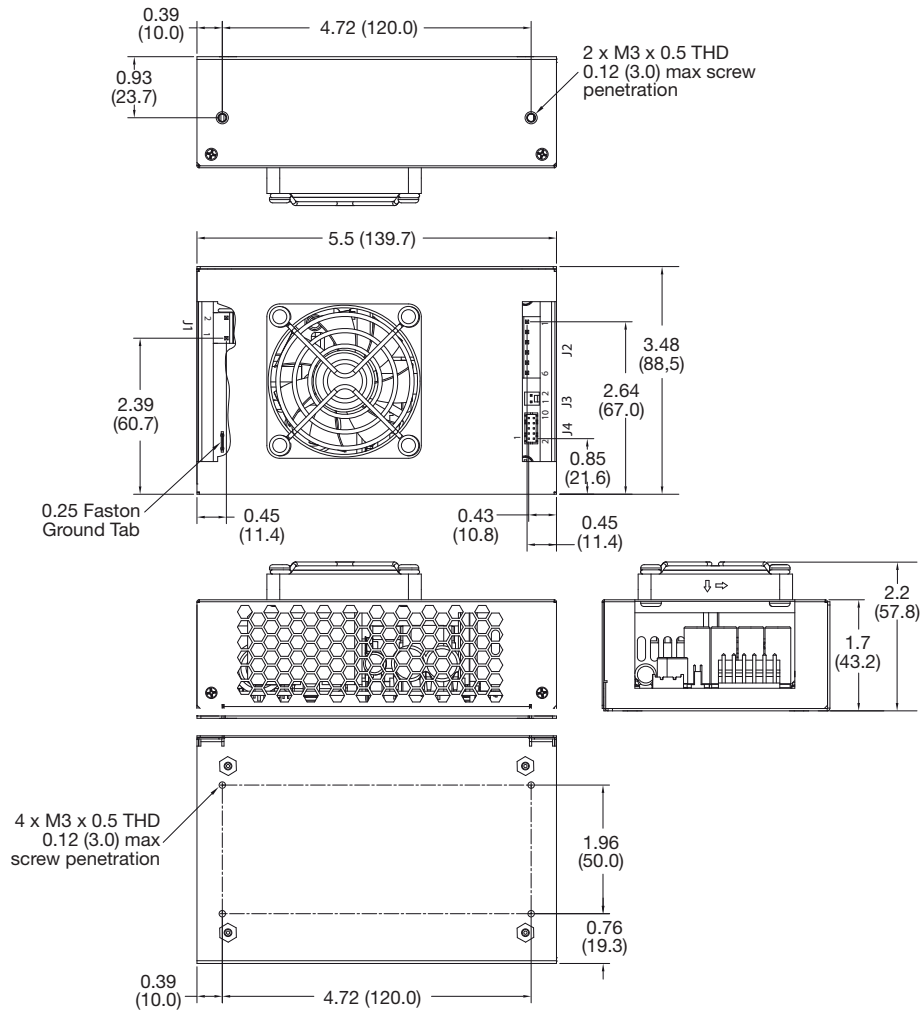
| Signal Connector J4<br>JST PN B10B-PHDSS |                 |
|------------------------------------------|-----------------|
| Pin                                      | Single Output   |
| 1                                        | +Sense          |
| 2                                        | -Sense          |
| 3                                        | XP Internal Use |
| 4                                        | Inhibit LO      |
| 5                                        | Inhibit HI      |
| 6                                        | N/C             |
| 7                                        | N/C             |
| 8                                        | N/C             |
| 9                                        | N/C             |
| 10                                       | N/C             |

#### Notes

- All dimensions in inches (mm).
- Tolerance .xx = ±0.02 (0.50); .xxx = ±0.01 (0.25)
- J1 mates with Molex Housing Pn. 09-50-1031.  
J2 mates with Molex Housing Pn. 09-50-1061 and both with Molex series 5194 crimp terminals. J4 mates with JST Housing Pn. PHDR-10VS and with JST SPHD-001T-P0.5 crimp terminals. J3 mates with Molex Housing Pn. 51191-0200 and with Molex series 50802 crimp terminals.
- In class II installations the cover is floating and provides 1 x MOPP (2 x MOOP).
- Weight: 1.05 lbs (0.48 kg)

### Mechanical Details

#### Top Fan (-TF)



| Input Connector J1<br>Molex pn. 09-65-2038 |          |
|--------------------------------------------|----------|
| Pin                                        | Function |
| 1                                          | Line     |
| 2                                          | Neutral  |

| Output Connector J2<br>Molex pn. 09-65-2068 |               |
|---------------------------------------------|---------------|
| Pin                                         | Single Output |
| 1                                           | +V1           |
| 2                                           | +V1           |
| 3                                           | +V1           |
| 4                                           | RTN           |
| 5                                           | RTN           |
| 6                                           | RTN           |

| Fan Connector J3<br>Molex pn. 22-04-1021 |             |
|------------------------------------------|-------------|
| Pin                                      | Function    |
| 1                                        | Fan +(12 V) |
| 2                                        | Fan -       |

| Signal Connector J4<br>JST PN B10B-PHDSS |                 |
|------------------------------------------|-----------------|
| Pin                                      | Single Output   |
| 1                                        | +Sense          |
| 2                                        | -Sense          |
| 3                                        | XP Internal Use |
| 4                                        | Inhibit LO      |
| 5                                        | Inhibit HI      |
| 6                                        | N/C             |
| 7                                        | N/C             |
| 8                                        | N/C             |
| 9                                        | N/C             |
| 10                                       | N/C             |

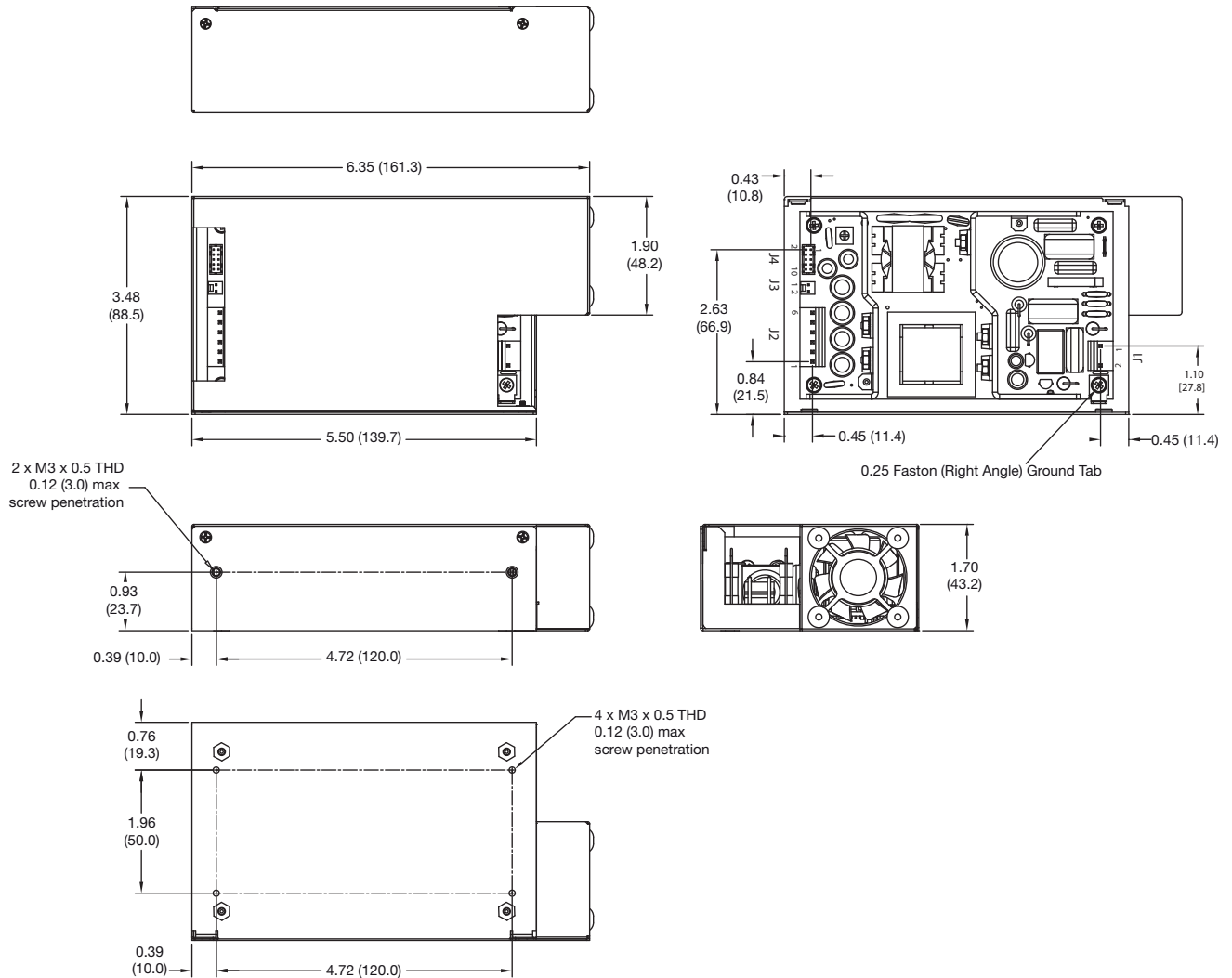
#### Notes

- All dimensions in inches (mm).
- Tolerance .xx =  $\pm 0.02$  (0.50); .xxx =  $\pm 0.01$  (0.25)
- J1 mates with Molex Housing Pn. 09-50-1031.  
J2 mates with Molex Housing Pn. 09-50-1061  
and both with Molex series 5194 crimp terminals. J4 mates with JST Housing Pn.

- PHDR-10VS and with JST SPHD-001T-P0.5 crimp terminals. J3 mates with Molex Housing Pn. 51191-0200 and with Molex series 50802 crimp terminals.
- In class II installations the cover is floating and provides 1 x MOPP (2 x MOOP).
- Weight: 1.15 lbs (0.52 kg)

### Mechanical Details

#### End Fan (-EF) GCS150/180/250



| Input Connector J1<br>Molex pn. 09-65-2038 |          |
|--------------------------------------------|----------|
| Pin                                        | Function |
| 1                                          | Line     |
| 2                                          | Neutral  |

| Output Connector J2<br>Molex pn. 09-65-2068 |               |
|---------------------------------------------|---------------|
| Pin                                         | Single Output |
| 1                                           | +V1           |
| 2                                           | +V1           |
| 3                                           | +V1           |
| 4                                           | RTN           |
| 5                                           | RTN           |
| 6                                           | RTN           |

| Fan Connector J3<br>Molex pn. 22-04-1021 |             |
|------------------------------------------|-------------|
| Pin                                      | Function    |
| 1                                        | Fan +(12 V) |
| 2                                        | Fan -       |

| Signal Connector J4<br>JST PN B10B-PHDSS |                 |
|------------------------------------------|-----------------|
| Pin                                      | Single Output   |
| 1                                        | +Sense          |
| 2                                        | -Sense          |
| 3                                        | XP Internal Use |
| 4                                        | Inhibit LO      |
| 5                                        | Inhibit HI      |
| 6                                        | N/C             |
| 7                                        | N/C             |
| 8                                        | N/C             |
| 9                                        | N/C             |
| 10                                       | N/C             |

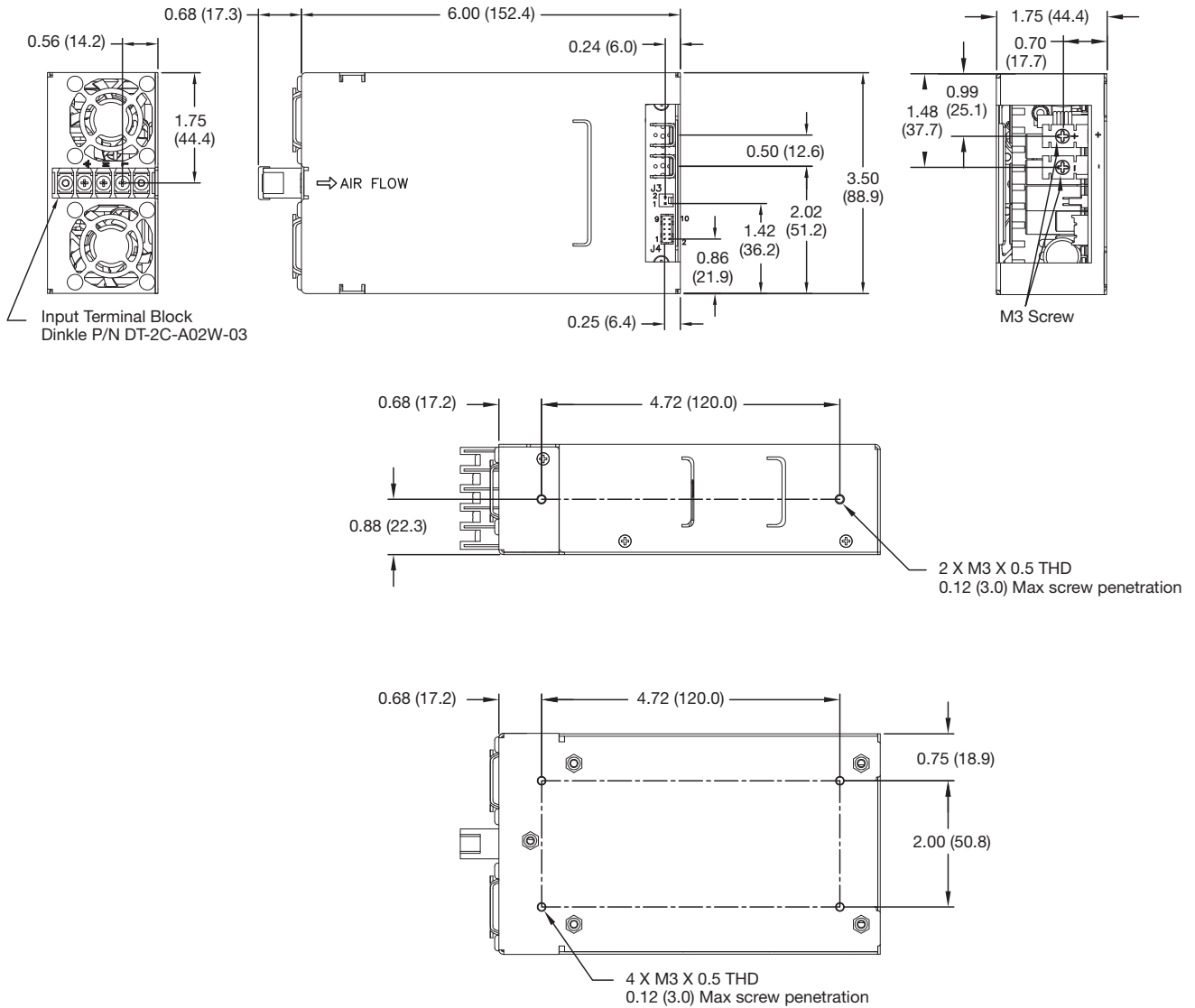
#### Notes

- All dimensions in inches (mm).
- Tolerance .xx =  $\pm 0.02$  (0.50); .xxx =  $\pm 0.01$  (0.25)
- J1 mates with Molex Housing Pn. 09-50-1031.  
J2 mates with Molex Housing Pn. 09-50-1061  
and both with Molex series 5194 crimp terminals. J4 mates with JST Housing Pn.

- PHDR-10VS and with JST SPHD-001T-P0.5 crimp terminals. J3 mates with Molex Housing Pn. 51191-0200 and with Molex series 50802 crimp terminals.
- In class II installations the cover is floating and provides 1 x MOPP (2 x MOOP).
- Weight: 1.30 lbs (0.59 kg)

### Mechanical Details

#### End Fan (-EF) GCS350



| Input Connector J1<br>Dinkle PN<br>DJ-26-AD2W-03 |          |
|--------------------------------------------------|----------|
| Pin                                              | Function |
| 1                                                | Line     |
| 2                                                | Neutral  |
| 3                                                |          |

| Output Connector<br>6 position J2<br>Molex pn. 09-65-2068 |          |
|-----------------------------------------------------------|----------|
| Pin                                                       | Function |
| 1                                                         | +V1      |
| 2                                                         | +V1      |
| 3                                                         | +V1      |
| 4                                                         | RTN      |
| 5                                                         | RTN      |
| 6                                                         | RTN      |

| Output Connector<br>12 position J2<br>Molex pn. 39-28-8120 |          |
|------------------------------------------------------------|----------|
| Pin                                                        | Function |
| 1-3                                                        | RTN      |
| 4-6                                                        | +V1      |
| 7-9                                                        | RTN      |
| 10-12                                                      | +V1      |

| Fan Connector J3<br>Molex pn. 22-04-1021 |             |
|------------------------------------------|-------------|
| Pin                                      | Function    |
| 1                                        | Fan +(12 V) |
| 2                                        | Fan -       |

| Signal Connector J4<br>JST PN B10B-PHDSS |                 |
|------------------------------------------|-----------------|
| Pin                                      | Function        |
| 1                                        | +Sense          |
| 2                                        | -Sense          |
| 3                                        | XP Internal Use |
| 4                                        | Inhibit LO      |
| 5                                        | Inhibit HI      |
| 6                                        | N/C             |
| 7                                        | N/C             |
| 8                                        | N/C             |
| 9                                        | N/C             |
| 10                                       | N/C             |

#### Notes

1. All dimensions in inches (mm).
2. Tolerance .xx =  $\pm 0.02$  (0.50); .xxx =  $\pm 0.01$  (0.25)
3. Weight: 0.65 lbs (0.29 kg)

4. 6 position single row J2 mates with Molex Housing Pn. 09-50-1061 and both with Molex series 5194 crimp terminals. 12 position dual row J2 mates with Molex Housing Pn. 39-01-2125 and with Molex series 5556 crimp terminals. J3 mates with Molex Housing Pn. 51191-0200 and with Molex series 50802 crimp terminals. J4 mates with JST Housing Pn. PHDR-10VS and with JST SPHD-001T-P0.5 crimp terminals.

### Thermal Considerations

In order to ensure safe operation of the PSU in the end-use equipment, the temperature of the components listed in the table below must not be exceeded. Temperature should be monitored using K type thermocouples placed on the hottest part of the component (out of direct air flow). See Mechanical Details for component locations.

| Temperature Measurements |                    |
|--------------------------|--------------------|
| Component                | Max Temperature °C |
| T1 Coil                  | 120 °C             |
| L3 Coil                  | 120 °C             |
| Q1 Body                  | 120 °C             |
| Q3 Body                  | 120 °C             |
| C6                       | 105 °C             |
| C23                      | 105 °C             |

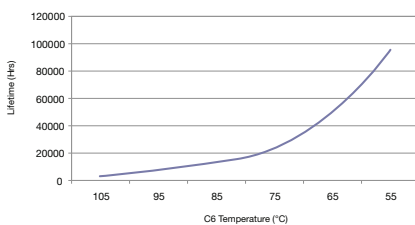
### Service Life

The estimated service life of the GCS Series is determined by the cooling arrangements and load conditions experienced in the end application. Due to the uncertain nature of the end application this estimated service life is based on the actual measured temperature of a key capacitors with in the product when installed by the end application. The worst case of the two figures should be taken as the indicative service life in 24/7 operation.

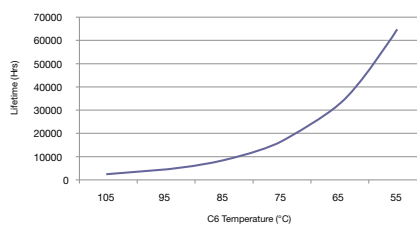
The graph below expresses the estimated lifetime of a given component temperature and assumes continuous operation at this temperature.

### Estimated Service Life vs Component Temperature

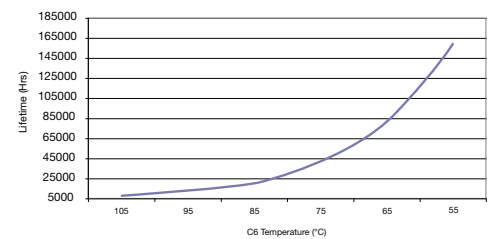
GCS150/180



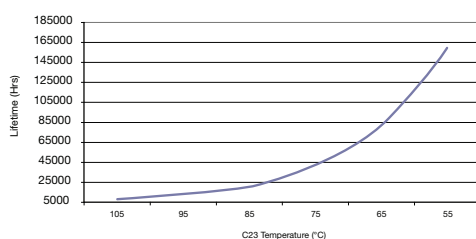
GCS250



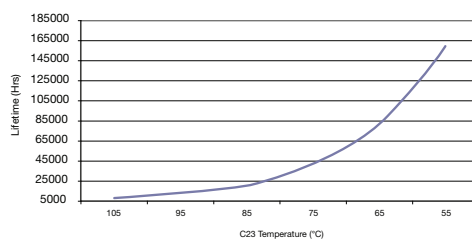
GCS350



GCS150/180



GCS250



GCS350

