CUI INC
a bel group



# **SERIES:** VGS-35C | **DESCRIPTION:** INTERNAL AC-DC POWER SUPPLY

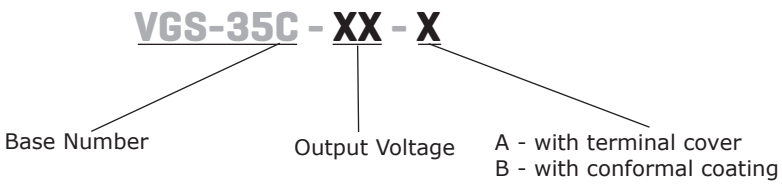
## FEATURES

- universal input range (85 ~ 264 VAC)
- UL/EN/IEC 62368 certified
- designed to meet IEC/EN 61558, IEC/EN 60335, and GB4943 system requirements
- short-circuit, over-current, over-voltage protections
- CISPR/EN55032 Class B radiated/conducted emissions
- output adjustable via trimpot +/- 10%

| MODEL | output voltage (Vdc) | output current max (A) | output power max (W) | ripple and noise[1] typ (mVp-p) | efficiency[2] typ (%) |
|---|---|---|---|---|---|
| VGS-35C-5 | 5 | 7.0 | 35 | 80 | 83 |
| VGS-35C-12 | 12 | 3.0 | 36 | 120 | 87 |
| VGS-35C-15 | 15 | 2.4 | 36 | 120 | 89 |
| VGS-35C-24 | 24 | 1.5 | 36 | 150 | 88 |

Notes: 1. Ripple & noise are measured at 20 MHz BW with 47 µF aluminum electrolytic capacitor and 0.1 µF ceramic capacitor on the output.
2. Measured at 230 Vac

## PART NUMBER KEY



## INPUT

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| voltage | ac input<br>dc input | 85<br>120 | | 264<br>373 | Vac<br>Vdc |
| frequency | | 47 | | 63 | Hz |
| current | at 115 Vac<br>at 230 Vac | | | 0.8<br>0.6 | A<br>A |
| inrush current | at 115 Vac, cold start<br>at 230 Vac, cold start | | 30<br>50 | | A<br>A |
| leakage current | at 240 Vac | | | 0.75 | mA |
| no load power consumption | | | | 0.3 | W |

## OUTPUT

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| capacitive load | 5 Vdc output<br>12 Vdc output<br>15 Vdc output<br>24 Vdc output | | | 8,000<br>1,500<br>1,000<br>750 | µF<br>µF<br>µF<br>µF |
| initial set point accuracy | 5 Vdc output, full load<br>other outputs, full load | | ±2<br>±1 | | %<br>% |
| line regulation | | | ±0.5 | | % |
| load regulation | 5 Vdc output, 0%~100% load<br>other outputs, 0%~100% load | | ±1<br>±0.5 | | %<br>% |
| adjustability | built in trim pot | ±10 | | | % |
| hold-up time | at 115 Vac<br>at 230 Vac | 8<br>30 | | | ms<br>ms |
| switching frequency | | | 65 | | kHz |
| temperature coefficient | | | ±0.03 | | %/°C |

## PROTECTIONS

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| over voltage protection | 5 Vdc output, clamp<br>12 Vdc output, clamp<br>15 Vdc output, clamp<br>24 Vdc output, clamp | | | 6.3<br>16.2<br>21.75<br>33.6 | Vdc<br>Vdc<br>Vdc<br>Vdc |
| over current protection | auto-recovery | 110 | | 200 | % |
| short circuit protection | hiccup, continuous, auto-recovery | | | | |

## SAFETY & COMPLIANCE

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| isolation voltage | input to ground<br>input to output<br>output to ground | 2,000<br>4,000<br>1,250 | | | Vac<br>Vac<br>Vac |
| safety approvals | certified to: 62368: IEC/EN/UL<br>designed to meet: 60335: IEC/EN<br>designed to meet: 61558: IEC/EN<br>designed to meet: 4943: GB | | | | |
| safety class | Class I | | | | |
| EMI/EMC | CISPR32/EN55032 Class B, IEC/EN61000-3-2 Class A | | | | |
| ESD | IEC/EN 61000-4-2 Contact ±6KV /Air ±8KV, perf. Criteria A | | | | |
| radiated immunity | IEC/EN 61000-4-3 10V/m, perf. Criteria A | | | | |
| EFT/burst | IEC/EN 61000-4-4 ±2KV, perf. Criteria A | | | | |
| surge | IEC/EN 61000-4-5 line to line ±2KV/line to ground ±4KV, perf. Criteria A | | | | |

## SAFETY & COMPLIANCE

| | | | | | |
|---|---|---|---|---|---|
| conducted immunity | IEC/EN61000-4-6 10 Vr.m.s, perf. Criteria A | | | | |
| voltage dips and interruptions | IEC/EN61000-4-11 0%, 70%, perf. Criteria B | | | | |
| MTBF | as per MIL-HDBK-217F at 25°C | 300,000 | | | hours |
| RoHS | yes | | | | |

## ENVIRONMENTAL

| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| operating temperature | | -30 | | 70 | °C |
| storage temperature | | -40 | | 85 | °C |
| operating humidity | non-condensing | 20 | | 90 | % |
| storage humidity | non-condensing | 0 | | 95 | % |

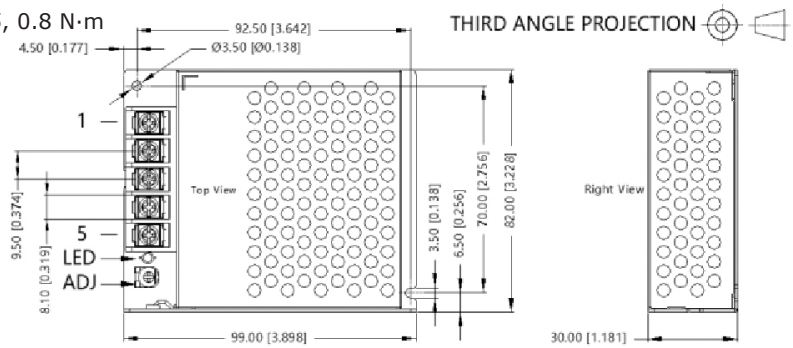
## MECHANICAL

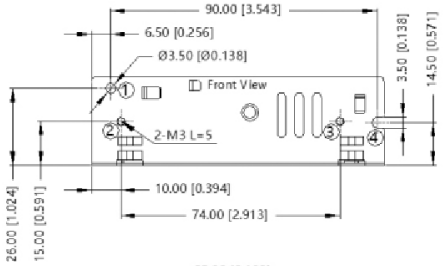
| parameter | conditions/description | min | typ | max | units |
|---|---|---|---|---|---|
| dimensions | 99.00 x 82.00 x 30.00 | | | | mm |
| weight | | | 170 | | g |
| cooling | natural convection | | | | |
| case material | metal (AL1100, SGCC) | | | | |

## MECHANICAL DRAWING

units: mm [inch]
tolerance: ±1.0 [±0.039]
wire range: 22-12 AWG
connector tightening torque: M3.5, 0.8 N·m

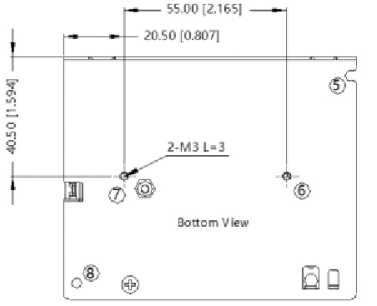
| PIN CONNECTIONS | |
|---|---|
| PIN | Function |
| 1 | AC(L) |
| 2 | AC(N) |
| 3 | ⏚ |
| 4 | -Vo |
| 5 | +Vo |

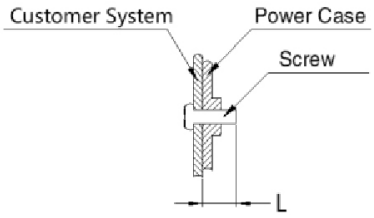



| Position | Screw spec. | L (max) | Torque (max) |
|---|---|---|---|
| ② - ③ | M3 | 5 mm | 0.4 N·m |
| ⑥ - ⑦ | M3 | 3 mm | 0.4 N·m |

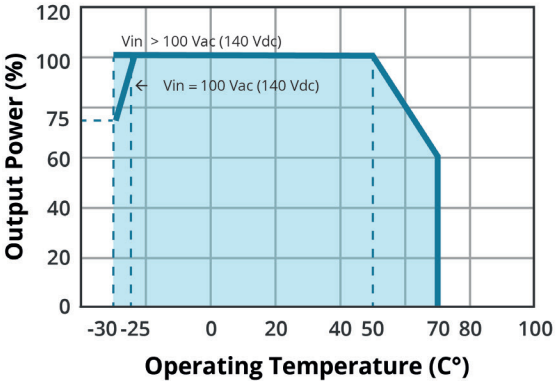
Note: At least one hole position, ①~⑧, must be securely connected to Protective Earth (PE) ⏚



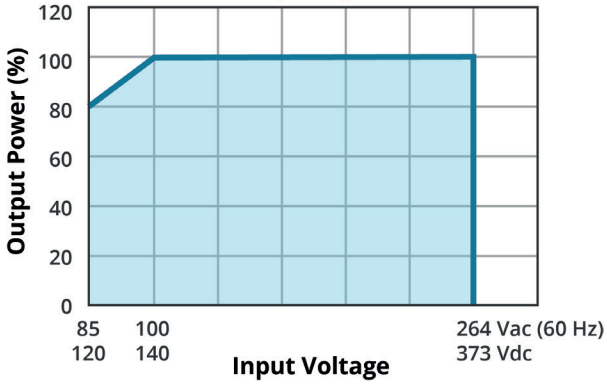



## DERATING CURVES

***TEMPERATURE DERATING CURVE***

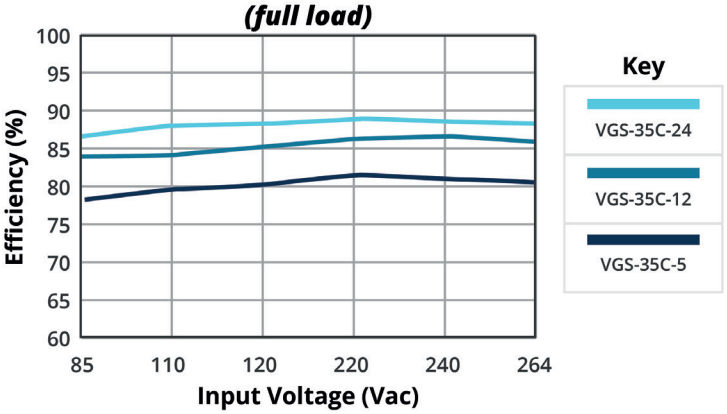



***INPUT VOLTAGE DERATING CURVE (25°C)***

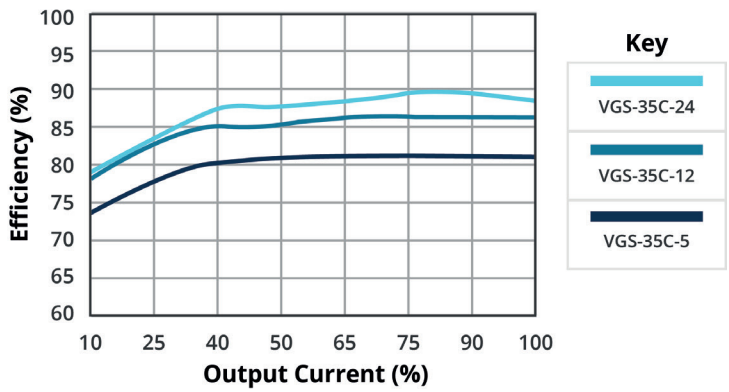



## EFFICIENCY CURVES

***EFFICIENCY VS INPUT VOLTAGE (full load)***




***EFFICIENCY VS OUTPUT LOAD***



## REVISION HISTORY

| rev. | description | date |
|---|---|---|
| 1.0 | initial release | 09/28/2020 |
| 1.01 | derating and efficiency curves updated | 02/10/2022 |
| 1.02 | UKCA mark added | 06/06/2022 |

The revision history provided is for informational purposes only and is believed to be accurate.

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CUI offers a two (2) year limited warranty. Complete warranty information is listed on our website.

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