

SERIES: VGS-50W | **DESCRIPTION:** INTERNAL AC-DC POWER SUPPLY

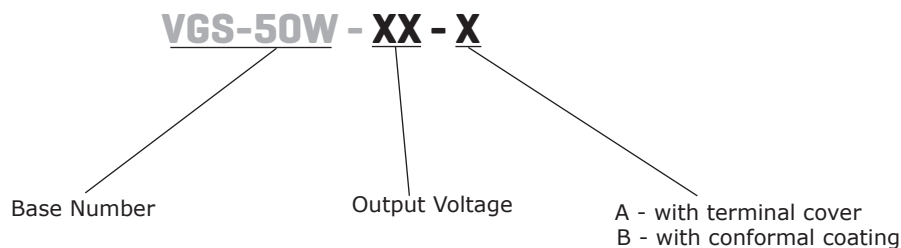
FEATURES

- wide input range (85 ~ 305 VAC)
- available with conformal coating or terminal cover options
- UL/EN/IEC 62368 certified
- designed to meet IEC/EN 61558 and IEC/EN 60335 system requirements
- short-circuit, over-current, over-voltage protections
- CISPR/EN55032 class B radiated/conducted emissions



| MODEL | output voltage | output current | output power | ripple and noise ¹ | efficiency ² |
|------------|----------------|----------------|--------------|-------------------------------|-------------------------|
| | (Vdc) | max (A) | max (W) | typ (mVp-p) | typ (%) |
| VGS-50W-5 | 5 | 10 | 50 | 80 | 83 |
| VGS-50W-12 | 12 | 4.2 | 50 | 120 | 86 |
| VGS-50W-15 | 15 | 3.4 | 51 | 120 | 87 |
| VGS-50W-24 | 24 | 2.2 | 52 | 150 | 88 |
| VGS-50W-36 | 36 | 1.45 | 52 | 240 | 89 |
| VGS-50W-48 | 48 | 1.1 | 52 | 240 | 90 |

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

PART NUMBER KEY


INPUT

| parameter | conditions/description | min | typ | max | units |
|---------------------------|--------------------------------|-----|-----|------|-------|
| voltage | ac input | 85 | | 305 | Vac |
| | dc input | 120 | | 430 | Vdc |
| frequency | | 47 | | 63 | Hz |
| current | 115 Vac | | | 1.2 | A |
| | 230 Vac | | | 0.8 | A |
| inrush current | 115 Vac, full load, cold start | | 30 | | A |
| | 230 Vac, full load, cold start | | 60 | | A |
| leakage current | 277 Vac | | | 0.75 | mA |
| no load power consumption | | | | 0.5 | W |

OUTPUT

| parameter | conditions/description | min | typ | max | units |
|----------------------------|--------------------------|-----|-------|-------|-------|
| capacitive load | 5 Vdc output | | | 8,500 | μF |
| | 12 Vdc output | | | 2,000 | μF |
| | 15 Vdc output | | | 1,500 | μF |
| | 24 Vdc output | | | 1,000 | μF |
| | 36 Vdc output | | | 470 | μF |
| | 48 Vdc output | | | 220 | μF |
| line regulation | full load | | ±0.5 | | % |
| load regulation | 0% ~ 100%, 5 Vdc output | | ±1 | | % |
| | 0% ~ 100%, other outputs | | ±0.5 | | % |
| hold-up time | 115 Vac, full load | | 8 | | ms |
| | 230 Vac, full load | | 30 | | ms |
| switching frequency | | | 65 | | kHz |
| adjustability | built in trim pot | | ±10 | | % |
| temperature coefficient | | | ±0.03 | | % |
| initial set point accuracy | 5 V model | | ±2 | | % |
| | other models | | ±1 | | % |

PROTECTIONS

| parameter | conditions/description | min | typ | max | units |
|--------------------------|--------------------------------------|-----|-----|-------|-------|
| over voltage protection | 5 Vdc output, clamp, auto recovery | | | 6.3 | Vdc |
| | 12 Vdc output, hiccup, auto recovery | | | 16.2 | Vdc |
| | 15 Vdc output, hiccup, auto recovery | | | 21.75 | Vdc |
| | 24 Vdc output, hiccup, auto recovery | | | 33.6 | Vdc |
| | 36 Vdc output, hiccup, auto recovery | | | 49.0 | Vdc |
| | 48 Vdc output, hiccup, auto recovery | | | 60.0 | Vdc |
| over current protection | 230 Vac, auto recovery | 110 | | 200 | % |
| short circuit protection | continuous, auto recovery | | | | |

SAFETY & COMPLIANCE

| parameter | conditions/description | min | typ | max | units |
|-------------------|---|--------------------|-----|-----|-------|
| isolation voltage | input to ground, 1 min. <10mA | 2,000 | | | Vac |
| | input to output, 1 min. <10mA | 4,000 | | | Vac |
| | output to ground, 1 min. <10mA | 1,250 | | | Vac |
| safety approvals | certified to | 62368: IEC, EN, UL | | | |
| | designed to meet | 60335: IEC, EN | | | |
| | designed to meet | 61558: IEC, EN | | | |
| safety class | class I | | | | |
| EMI/EMC | CISPR 32/EN 55032 class B, IEC/EN 61000-3-2 class A | | | | |
| ESD | IEC/EN 61000-4-2 Contact ±6KV/Air ±8kV perf. criteria A | | | | |
| radiated immunity | IEC/EN 61000-4-3 10 V/m perf. criteria A | | | | |
| EFT/burst | IEC/EN 61000-4-4 ±2KV perf. criteria A | | | | |

SAFETY & COMPLIANCE

| | | | |
|-------------------------------|---|---------|-------|
| surge | IEC/EN 61000-4-5 line to line ±2kV/line to ground ±4kV perf. criteria A | | |
| conducted immunity | IEC/EN 61000-4-6 10 Vr.m.s perf. criteria A | | |
| voltage dips and interruption | IEC/EN 61000-4-11 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 | % |

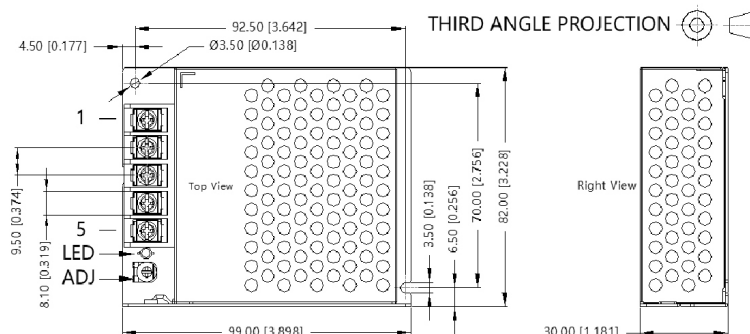
MECHANICAL

| parameter | conditions/description | min | typ | max | units |
|---------------|------------------------|-----|-----|-----|-------|
| dimensions | 99 x 82 x 30 mm | | | | mm |
| weight | | | 190 | | g |
| cooling | free air convection | | | | |
| case material | metal (AL1100, SGCC) | | | | |

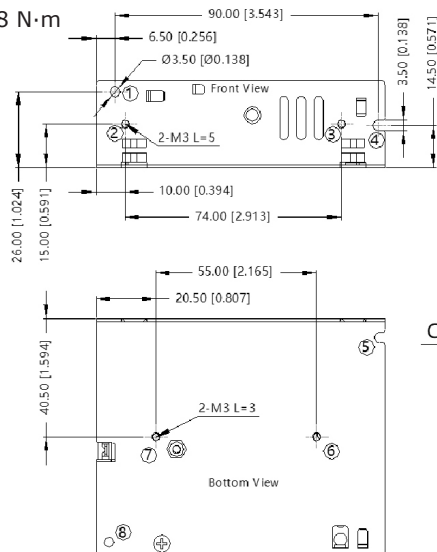
MECHANICAL DRAWING

units: mm
tolerance: ±1 mm [±0.039 mm]

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

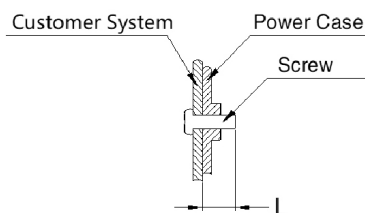


wire range: 22-12 AWG
connector tightening torque: M3.5, 0.8 N·m



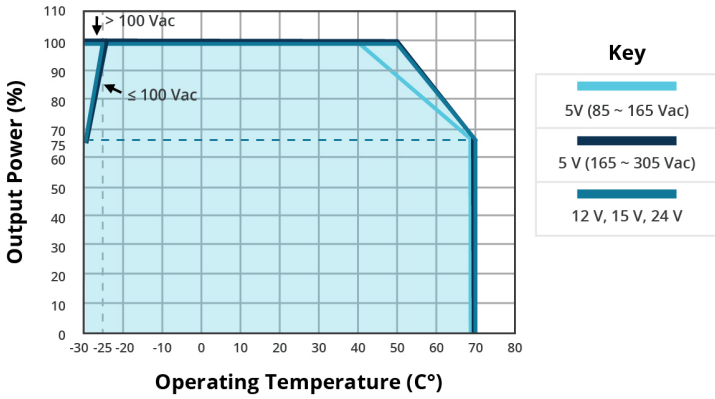
| Position | Screw spec. | L (max) | Torque (max) |
|----------|-------------|---------|--------------|
| ② - ③ | M3 | 5 mm | 0.4 N·m |
| ⑥ - ⑦ | M3 | 3 mm | 0.4 N·m |

Note: At least one hole position, ①~③ must be securely connected to Protective Earth (PE) ④

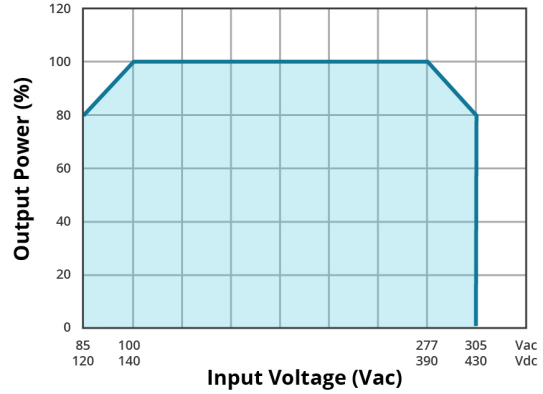


DERATING CURVE

TEMPERATURE DERATING CURVE

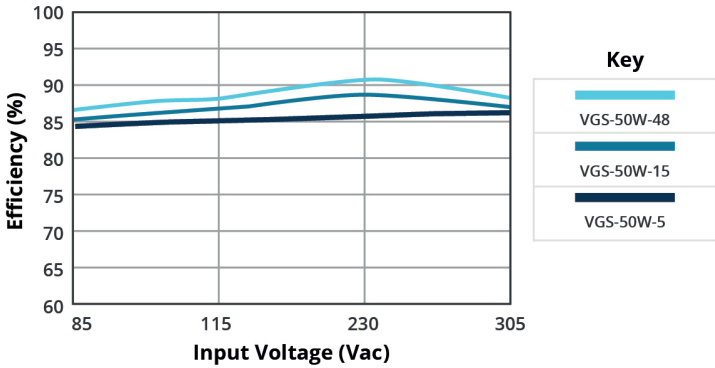


INPUT VOLTAGE DERATING CURVE (25 °C)

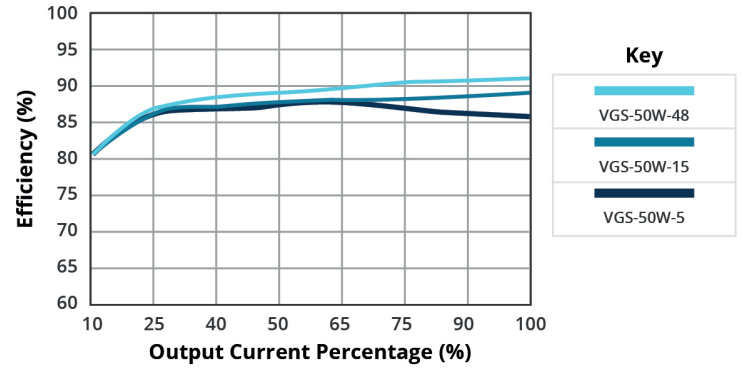


EFFICIENCY CURVES

EFFICIENCY VS INPUT LOAD (full load)



EFFICIENCY VS OUTPUT LOAD (at 230 Vac)



REVISION HISTORY

| rev. | description | date |
|------|--|------------|
| 1.0 | initial release | 09/02/2020 |
| 1.01 | derating and efficiency curves updated | 06/08/2021 |
| 1.02 | UKCA mark added | 06/13/2022 |
| 1.03 | derating curve updated | 05/31/2023 |

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



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