

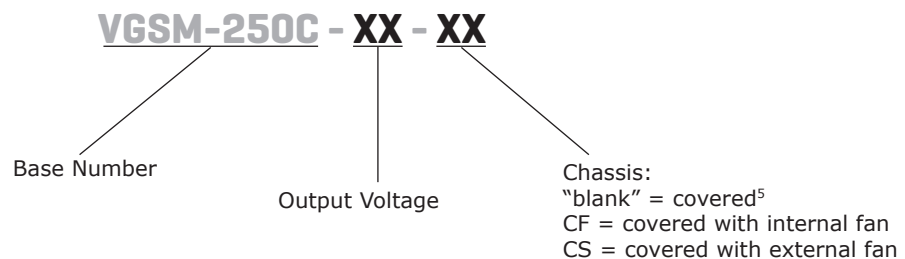
SERIES: VGSM-250C | **DESCRIPTION: AC-DC POWER SUPPLY**
FEATURES

- up to 250 W continuous power
- 300 W peak power with 3 s duration
- active power factor correction
- 3,000 Vac isolation voltage
- over load, over voltage, over temperature, and short circuit protections
- IEC/EN 60601-1 safety approvals, 2xMOPP
- safety Class I or Class II
- operating altitude 5,000 m
- external fan power or internal fan, where appropriate



| MODEL | output voltage | output current ^{1,2} | | output power ¹ | ripple and noise ³ | efficiency ⁴ |
|--------------|----------------|-------------------------------|----------|---------------------------|-------------------------------|-------------------------|
| | typ (Vdc) | max1 (A) | max2 (A) | max (W) | max (mVp-p) | typ (%) |
| VGSM-250C-12 | 12 | 10.0 | 20.83 | 250 | 108 | 91 |
| VGSM-250C-15 | 15 | 8.00 | 16.66 | 250 | 135 | 91 |
| VGSM-250C-19 | 19 | 6.31 | 13.15 | 250 | 170 | 91 |
| VGSM-250C-24 | 24 | 5.00 | 10.41 | 250 | 210 | 92 |
| VGSM-250C-30 | 30 | 4.00 | 8.32 | 250 | 270 | 92 |
| VGSM-250C-36 | 36 | 3.33 | 6.94 | 250 | 300 | 93 |
| VGSM-250C-48 | 48 | 2.50 | 5.20 | 250 | 300 | 93 |

- Notes:
1. For models equipped with a fan, the maximum load is achieved with 8 CFM of forced air, while models without a fan require 18 CFM of forced air to reach maximum load. The maximum output power for models without a fan, using 8 CFM of forced air, is 120 W.
 2. Max1 = convection cooling; Max2 = forced air
 3. At full load, nominal input, 20 MHz bandwidth oscilloscope, tip & barrel method, output terminated with 47 μ F electrolytic and 0.1 μ F ceramic capacitors.
 4. Efficiency is measured at full load, and 230 Vac input.

PART NUMBER KEY

- Notes:
5. The covered models without a fan will be available in January 2025.

INPUT

| parameter | conditions/description | min | typ | max | units |
|---------------------------|---|-----|------------|----------|--------|
| voltage | | 85 | 100~240 | 264 | Vac |
| frequency | | 47 | 50~60 | 63 | Hz |
| current | low line, at 100 Vac, full load high line, at 240 Vac, full load | | 3.1 1.3 | | A A |
| inrush current | low line, at 100 Vac, full load, cold start, 25°C high line, at 240 Vac, full load, cold start, 25°C | | | 20 40 | A A |
| leakage current | at 240 Vac, 60 Hz | | 0.25 | | mA |
| power factor correction | at full load | 0.9 | | 1 | |
| no load power consumption | without fan with internal or external fan | | 0.21 3 | | W W |

OUTPUT

| parameter | conditions/description | min | typ | max | units |
|---------------------------------|--|-----|------|-------|-------|
| line regulation ⁶ | at 100~120 Vac or 200~240 Vac, full load | | | 1 | % |
| load regulation ⁷ | | | ±3 | | % |
| transient response time | at 110 Vac, full load to half load | | | 4 | ms |
| start-up time | at 100~240 Vac, full load | | 1 | | s |
| hold-up time ⁸ | at 110 Vac, full load | | | 10 | ms |
| temperature coefficient | | | | ±0.04 | %/°C |
| fan output voltage ⁹ | | | 7~12 | | Vdc |
| fan output current | | | 0.5 | | A |

- Notes:
- Line regulation is defined by changing ±10% of input voltage from nominal line at rated load.
 - Load regulation is defined by changing ±40% of measured output load from 60% rated load.
 - Hold up time is measured from the end of the last charging pulse to the time which the main output drops down to low limit of main output at rated load and nominal line.
 - Temperature controlled fan output voltage: 7V-12V.
 - At factory, in 60% rated load condition, each output is checked to be within voltage accuracy.

PROTECTIONS

| parameter | conditions/description | min | typ | max | units |
|-----------------------------|------------------------|-----|-----|-----|-------|
| over voltage protection | latching | 112 | | 132 | % |
| over current protection | auto recovery | 120 | | 150 | % |
| over temperature protection | auto recovery | | | | |

SAFETY & COMPLIANCE

| parameter | conditions/description | min | typ | max | units |
|----------------------------|--|-----|-----|----------------|------------|
| isolation voltage | input to output 10 mA max input to ground 10 mA max | | | 4,000 1,500 | Vac Vac |
| safety approvals | certified to 60601-1: UL, EN, BS EN | | | | |
| safety class ¹¹ | class I, II | | | | |
| conducted emissions | EN 60601 Class B | | | | |
| radiated emissions | EN 60601 Class B | | | | |
| harmonic current | EN 61000-3-2, Class A, Class D | | | | |
| ESD | IEC 61000-4-2 15 kV air discharge, 8 kV contact discharge, perf. Criteria A | | | | |
| radiated immunity | IEC 61000-4-3, perf. Criteria A | | | | |
| EFT/burst | IEC610000-4-4 Power line 2 kV, 5 or 100 kHz, perf. Criteria A | | | | |
| surge | IEC 61000-4-5 1 kV line to neutral, 2 kV line to PE, neutral to PE, perf. Criteria A | | | | |
| conducted immunity | IEC 61000-4-6 3 Vrms, 6 Vrms, perf. Criteria A | | | | |
| PFMF | IEC 61000-4-8 30 A/m, 50 Hz, perf. Criteria A | | | | |

SAFETY & COMPLIANCE (CONTINUED)

| parameter | conditions/description | min | typ | max | units |
|-----------------------|---|---------|-----|-----|-------|
| voltage dips | IEC 61000-4-11 100% reduction for 0.5 cycle at 50 Hz, perf. Criteria A IEC 61000-4-11 100% reduction for 1 cycle at 50 Hz, perf. Criteria A IEC 61000-4-11 30% reduction for 25/30 cycles at 50/60 Hz, perf. Criteria A | | | | |
| voltage interruptions | IEC 61000-4-11, 100% reduction for 250/300 cycles at 50/60 Hz, perf. Criteria B | | | | |
| MTBF | as per MIL-HDBK-217F at 25°C | 300,000 | | | hours |
| RoHS | yes | | | | |

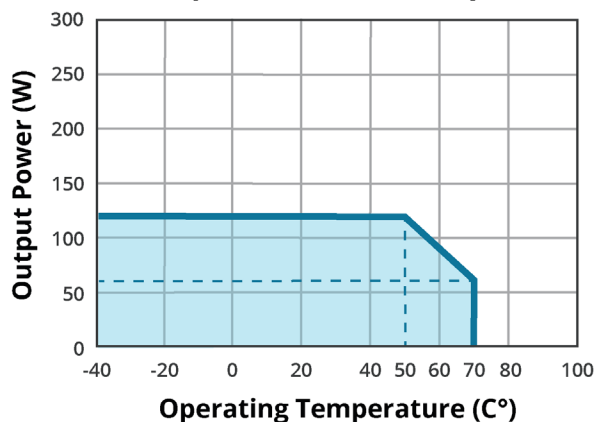
Notes: 11. Safety Class II operation may require external EMI/EMC components.

ENVIRONMENTAL

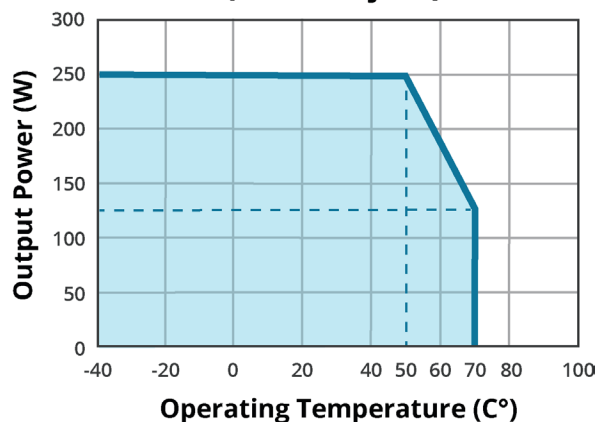
| parameter | conditions/description | min | typ | max | units |
|-----------------------|--|-----|-----|-------|-------|
| operating temperature | see derating curves | -40 | | 70 | °C |
| storage temperature | 10~95% RH | -40 | | 85 | °C |
| operating humidity | non-condensing | 0 | | 95 | % |
| storage humidity | non-condensing | 0 | | 95 | % |
| vibration | 10~500 Hz, 10 min/1 cycle, 60 min. each along X, Y, Z axes | | | 5 | g |
| altitude | | | | 5,000 | m |

DERATING CURVES

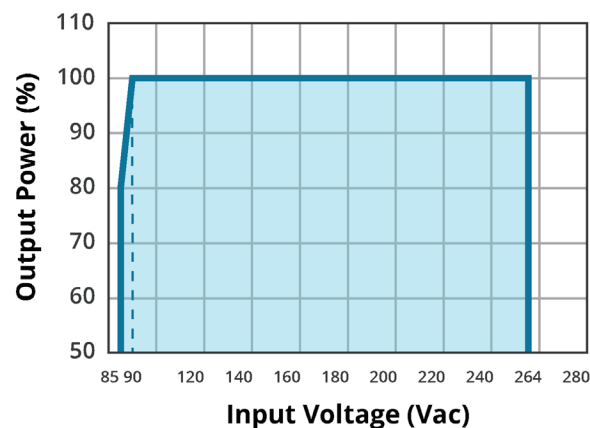
**TEMPERATURE DERATING CURVE
(natural convection)**



**TEMPERATURE DERATING CURVE
(8 CFM airflow)**

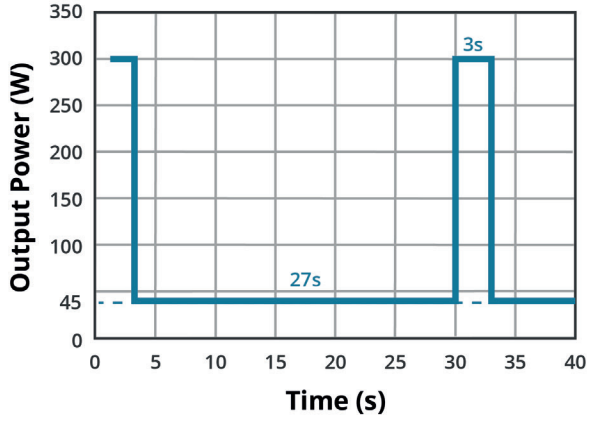


INPUT VOLTAGE DERATING CURVE

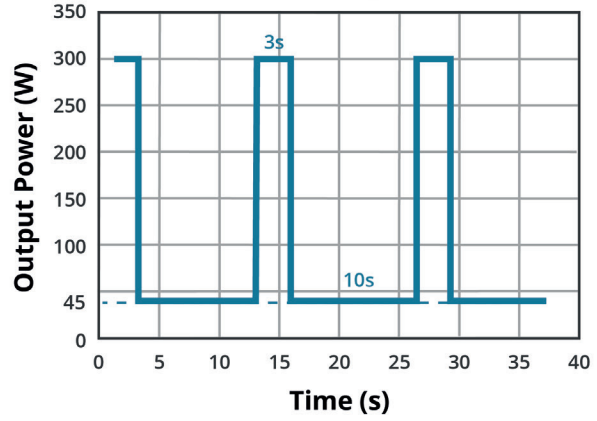


DERATING CURVES (CONTINUED)

**PEAK CYCLE DIAGRAM
(natural convection)**



**PEAK CYCLE DIAGRAM
(8 CMF airflow)**



MECHANICAL

| parameter | conditions/description | min | typ | max | units |
|------------|--|---|-----|-----|-------|
| dimensions | covered | 63.0 × 121.6 × 40.0 [2.48 × 4.79 × 1.57 inch] | | | mm |
| | covered with internal fan | 63.0 × 121.6 × 50.8 [2.48 × 4.79 × 2.00 inch] | | | mm |
| | covered with external fan | 63.0 × 121.6 × 50.0 [2.48 × 4.79 × 1.97 inch] | | | mm |
| weight | covered | | 325 | | g |
| | covered with internal fan | | 340 | | g |
| | covered with external fan | | 330 | | g |
| cooling | natural convection or 8 CFM forced air | | | | |

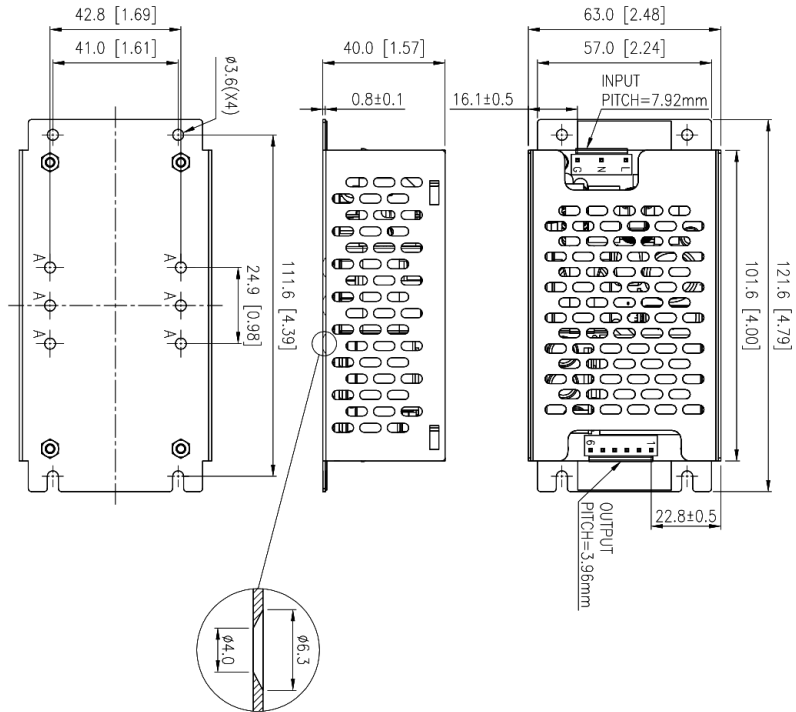
MECHANICAL DRAWING

Covered

units: mm [inch]

screw size diameter: 2.9 mm (min)

| PIN CONNECTIONS | | |
|-----------------|-----|--------------|
| Connector | PIN | Function |
| P1 | L | Line |
| P1 | N | Neutral |
| P1 | G | Ground or PE |
| P2 | 1 | +Vout |
| P2 | 2 | +Vout |
| P2 | 3 | +Vout |
| P2 | 4 | -Vout |
| P2 | 5 | -Vout |
| P2 | 6 | -Vout |



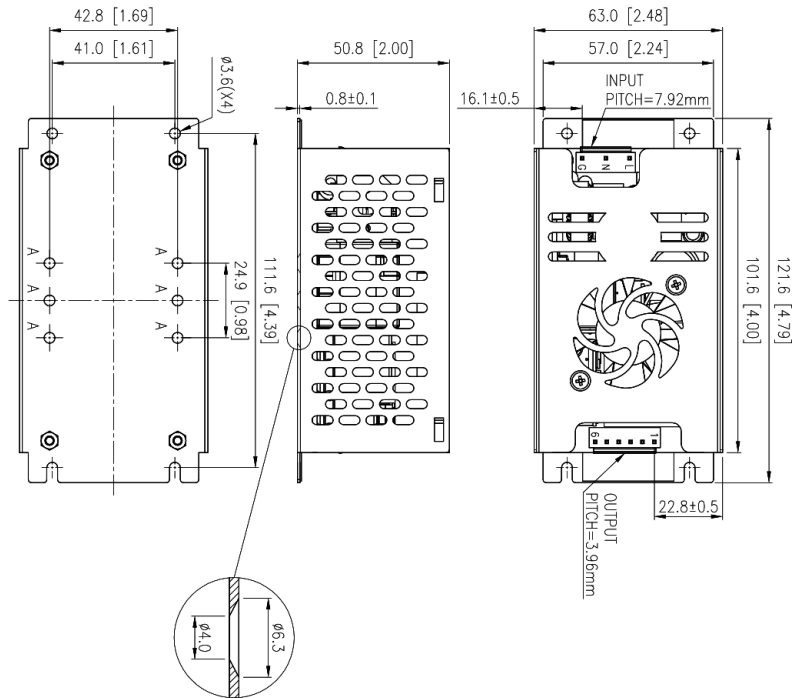
MECHANICAL DRAWING (CONTINUED)

Covered with Internal Fan

units: mm [inch]

screw size diameter: 2.9 mm (min)

| PIN CONNECTIONS | | |
|-----------------|-----|--------------|
| Connector | PIN | Function |
| P1 | L | Line |
| P1 | N | Neutral |
| P1 | G | Ground or PE |
| P2 | 1 | +Vout |
| P2 | 2 | +Vout |
| P2 | 3 | +Vout |
| P2 | 4 | -Vout |
| P2 | 5 | -Vout |
| P2 | 6 | -Vout |

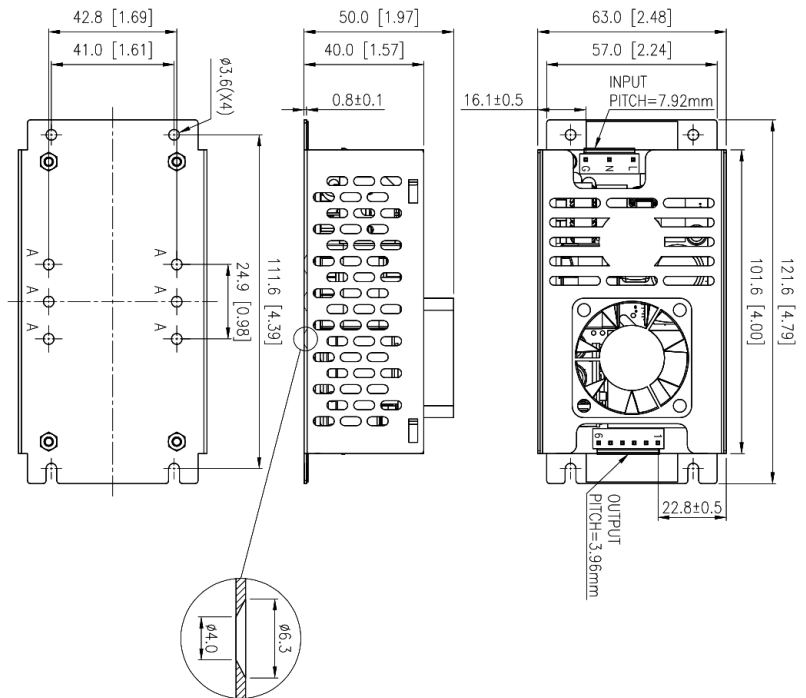


Covered with External Fan

units: mm [inch]

screw size diameter: 2.9 mm (min)

| PIN CONNECTIONS | | |
|-----------------|-----|--------------|
| Connector | PIN | Function |
| P1 | L | Line |
| P1 | N | Neutral |
| P1 | G | Ground or PE |
| P2 | 1 | +Vout |
| P2 | 2 | +Vout |
| P2 | 3 | +Vout |
| P2 | 4 | -Vout |
| P2 | 5 | -Vout |
| P2 | 6 | -Vout |



REVISION HISTORY

| rev. | description | date |
|------|-----------------|------------|
| 1.0 | initial release | 10/01/2024 |

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



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a bel group

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