

SERIES: VQE50W | **DESCRIPTION:** DC-DC CONVERTER

FEATURES

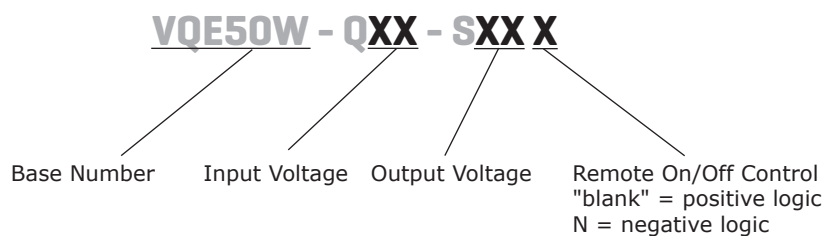
- up to 50 W isolated output
- industry standard quarter brick package
- 4:1 input range (9~36 V, 18~75 V)
- single output from 3.3~48 V
- 1,500 V isolation
- tantalum free capacitors used
- over current, over temperature, over voltage, and short circuit protections
- remote on/off
- very high efficiency up to 92%



| MODEL | input voltage range (Vdc) | output voltage (Vdc) | output current max (A) | output power max (W) | ripple and noise ¹ max (mVp-p) | efficiency typ (%) |
|-----------------|---------------------------|----------------------|------------------------|----------------------|---|--------------------|
| VQE50W-Q24-S3R3 | 9 ~ 36 | 3.3 | 10 | 33 | 100 | 90.5 |
| VQE50W-Q24-S5 | 9 ~ 36 | 5 | 10 | 50 | 100 | 91.5 |
| VQE50W-Q24-S12 | 9 ~ 36 | 12 | 4.16 | 50 | 150 | 91.5 |
| VQE50W-Q24-S15 | 9 ~ 36 | 15 | 3.33 | 50 | 150 | 91.5 |
| VQE50W-Q24-S24 | 9 ~ 36 | 24 | 2.08 | 50 | 240 | 90 |
| VQE50W-Q24-S48 | 9 ~ 36 | 48 | 1.04 | 50 | 480 | 88.5 |
| VQE50W-Q48-S3R3 | 18 ~ 75 | 3.3 | 10 | 33 | 100 | 90 |
| VQE50W-Q48-S5 | 18 ~ 75 | 5 | 10 | 50 | 100 | 92 |
| VQE50W-Q48-S12 | 18 ~ 75 | 12 | 4.16 | 50 | 150 | 92 |
| VQE50W-Q48-S15 | 18 ~ 75 | 15 | 3.33 | 50 | 150 | 91 |
| VQE50W-Q48-S24 | 18 ~ 75 | 24 | 2.08 | 50 | 240 | 90.5 |
| VQE50W-Q48-S48 | 18 ~ 75 | 48 | 1.04 | 50 | 480 | 89 |

Notes: 1. ripple and noise are measured at 20 MHz BW with 10µF tantalum capacitor and 1µF ceramic capacitor across output

PART NUMBER KEY



INPUT

| parameter | conditions/description | min | typ | max | units |
|---|---|------------|-----|-----|-------|
| operating input voltage | 24 V input | 9 | 24 | 36 | Vdc |
| | 48 V input | 18 | 48 | 75 | Vdc |
| surge voltage | 100 ms max. 24 V input 48 V input | | | 500 | Vdc |
| | | | | 100 | Vdc |
| under voltage lockout | power up | 24 V input | 8.8 | | Vdc |
| | | 48 V input | 17 | | Vdc |
| | power down | 24 V input | 8 | | Vdc |
| | | 48 V input | 16 | | Vdc |
| positive logic remote on/off ¹ | | | | | |
| filter | PI type | | | | |

- Notes:
- logic compatibility, open collector ref to -input
Module ON, 3.5 ~ 75 Vdc or open circuit
Module OFF, <1.2 Vdc
 - negative logic remote on/off available
Module ON, <1.2 Vdc current limit, 110~165% nominal output
Module OFF, 3.5 ~ 75 Vdc or open circuit

OUTPUT

| parameter | conditions/description | min | typ | max | units |
|--------------------------|--------------------------------------|-----|-------|------|-------|
| line regulation | measured from high line to low line | | | ±0.2 | % |
| load regulation | measured from full load to zero load | | | ±0.2 | % |
| voltage accuracy | | | | ±1.5 | % |
| transient response | 25% step load change | | | 500 | µs |
| external trim adj. range | | | ±10 | | % |
| switching frequency | 100% load, input voltage range | | 300 | | kHz |
| temperature coefficient | | | ±0.03 | | %/°C |

PROTECTIONS

| parameter | conditions/description | min | typ | max | units |
|-----------------------------|--------------------------|-----|-----|-----|-------|
| over voltage protection | %Vo | 115 | | 140 | % |
| short circuit protection | continuous | | | | |
| current limit | % nominal output current | 110 | | 165 | % |
| thermal shutdown case temp. | | | 110 | | °C |

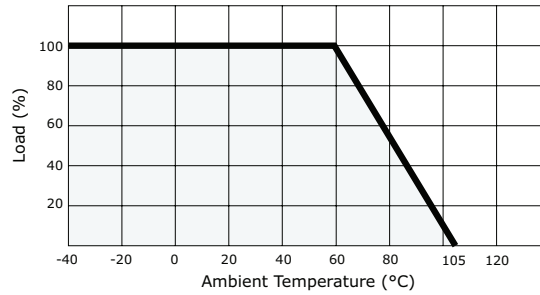
SAFETY AND COMPLIANCE

| parameter | conditions/description | min | typ | max | units |
|-----------------------|-----------------------------------|-------|-------|-----|-------|
| isolation voltage | input to output | 1,500 | | | Vdc |
| | input to case | 1,500 | | | Vdc |
| | output to case | 1,500 | | | Vdc |
| isolation resistance | | 10 | | | MΩ |
| isolation capacitance | | | 1,000 | | pF |
| safety approvals | UL 60950-1, CE | | | | |
| RoHS compliant | yes | | | | |
| MTBF | MIL-STD-217F, GB, 25°C, full load | | TBD | | hours |

ENVIRONMENTAL

| parameter | conditions/description | min | typ | max | units |
|----------------------------|------------------------|-----|-----|-----|-------|
| case operating temperature | | -40 | | 105 | °C |
| storage temperature | | -55 | | 125 | °C |
| humidity | non-condensing | | | 95 | % |

DERATING CURVE



MECHANICAL

| parameter | conditions/description | min | typ | max | units |
|---------------|--|-----|-----|-----|-------|
| dimensions | 1.45 x 2.28 x 0.50 (36.8 x 57.9 x 12.7 mm) | | | | inch |
| case material | aluminum | | | | |
| weight | | | 63 | | g |

MECHANICAL DRAWING

units: inches[mm]

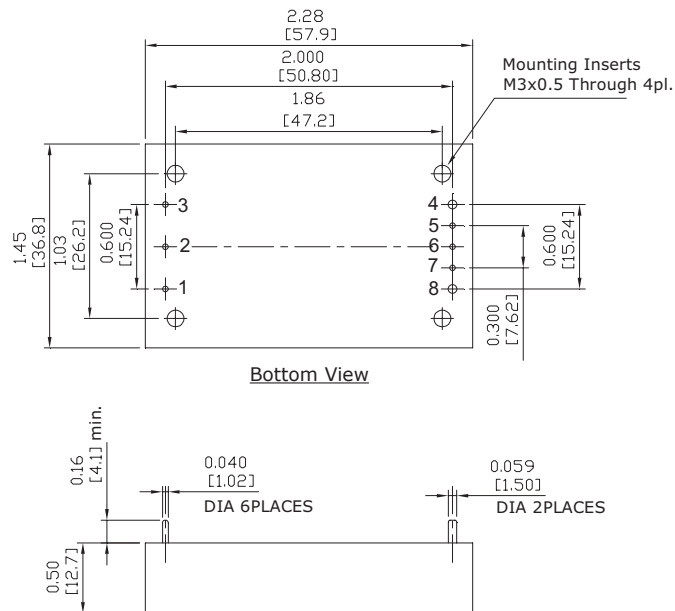
tolerance:

inches: X.XX = ±0.02

X.XXX = ±0.010

mm: X.XX = ±0.5

X.XXX = ±0.25



| PIN CONNECTIONS | |
|-----------------|----------|
| PIN | FUNCTION |
| 1 | +Vin |
| 2 | On/Off |
| 3 | -Vin |
| 4 | -Vo |
| 5 | -S |
| 6 | TRIM |
| 7 | +S |
| 8 | +Vo |

Note: All specifications measured at 25°C, nominal input voltage, and full load unless otherwise noted.

REVISION HISTORY

| rev. | description | date |
|------|--|------------|
| 1.0 | initial release | 08/22/2012 |
| 1.01 | added negative logic option to part number key, updated derating curve | 03/04/2013 |
| 1.02 | updated spec | 03/18/2013 |

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



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