

## SERIES: VHB350 | DESCRIPTION: DC-DC CONVERTER

### FEATURES

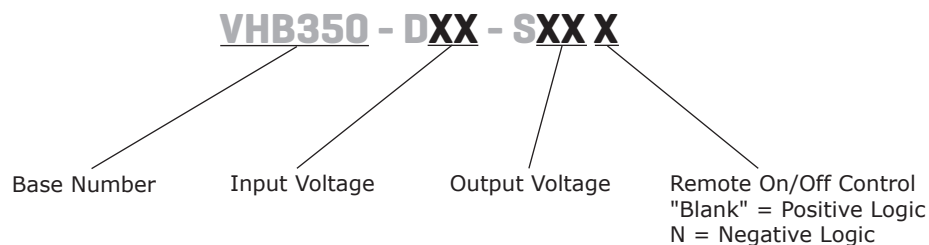
- up to 350 W isolated output
- industry standard half brick package
- 2:1 input range (18~36 V, 36~75 V)
- single output from 3.3~28 V
- 1,500 V isolation
- over current, over temperature, over voltage, and short circuit protections
- remote on/off
- efficiency up to 92.5%



| MODEL           | input<br>voltage<br>range<br>(Vdc) | output<br>voltage<br>(Vdc) | output<br>current<br>max<br>(A) | output<br>power<br>max<br>(W) | ripple<br>and noise <sup>1</sup><br>max<br>(mVp-p) | efficiency<br><br>typ<br>(%) |
|-----------------|------------------------------------|----------------------------|---------------------------------|-------------------------------|----------------------------------------------------|------------------------------|
| VHB350-D24-S3R3 | 18 ~ 36                            | 3.3                        | 70                              | 231                           | 100                                                | 88                           |
| VHB350-D24-S5   | 18 ~ 36                            | 5                          | 70                              | 350                           | 100                                                | 89.5                         |
| VHB350-D24-S12  | 18 ~ 36                            | 12                         | 29.2                            | 350                           | 120                                                | 91.5                         |
| VHB350-D24-S24  | 18 ~ 36                            | 24                         | 14.6                            | 350                           | 280                                                | 90                           |
| VHB350-D24-S28  | 18 ~ 36                            | 28                         | 12.5                            | 350                           | 280                                                | 91                           |
| VHB350-D48-S3R3 | 36 ~ 75                            | 3.3                        | 70                              | 231                           | 100                                                | 89                           |
| VHB350-D48-S5   | 36 ~ 75                            | 5                          | 70                              | 350                           | 100                                                | 91                           |
| VHB350-D48-S12  | 36 ~ 75                            | 12                         | 29.2                            | 350                           | 120                                                | 92.5                         |
| VHB350-D48-S24  | 36 ~ 75                            | 24                         | 14.6                            | 350                           | 280                                                | 91.5                         |
| VHB350-D48-S28  | 36 ~ 75                            | 28                         | 12.5                            | 350                           | 280                                                | 92.5                         |

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      |                          |                          | 18<br>36 | 24<br>48 | 36<br>75 | Vdc<br>Vdc |
| surge voltage <sup>1</sup>   | 24 V input<br>48 V input |                          |          |          | 50       | Vdc        |
| under voltage lockout        | power up                 | 24 V input<br>48 V input | 16<br>34 | 17<br>35 | 18<br>36 | Vdc<br>Vdc |
|                              | power down               | 24 V input<br>48 V input | 15<br>32 | 16<br>33 | 17<br>35 | Vdc<br>Vdc |
| over voltage protection      | turn on                  | 24 V input<br>48 V input |          | 38<br>77 |          | Vdc<br>Vdc |
|                              | turn off                 | 24 V input<br>48 V input |          | 40<br>80 |          | Vdc<br>Vdc |
| positive logic remote on/off | see note 2               |                          |          |          |          |            |
| filter                       | PI type                  |                          |          |          |          |            |

Notes:

1. 100 ms max
2. logic compatibility, open collector ref to -input  
Module ON, >3.5 to 75 Vdc or open circuit  
Module OFF, <1.2 Vdc

## 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    |
| adjustability <sup>3</sup> |                                      |  |     | ±10   |      | %     |
| switching frequency        | 3.3 and 5 V models                   |  |     | 300   |      | kHz   |
|                            | all other models                     |  |     | 330   |      | kHz   |
| temperature coefficient    |                                      |  |     | ±0.03 |      | %/°C  |

Notes:

3. trim-up: connect a resistor between the trim pin and +Sense  
trim-down: connect a resistor between the trim pin and -Sense

## PROTECTIONS

| parameter                   | conditions/description |  | min | typ | max | units |
|-----------------------------|------------------------|--|-----|-----|-----|-------|
| over voltage protection     | %Vo                    |  | 115 |     | 140 | %     |
| short circuit protection    | continuous             |  |     |     |     |       |
| current limit               |                        |  | 105 |     | 140 | %     |
| 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      | UL60950-1, EN60950-1   |  |       |       |     |       |
| RoHS compliant        | yes                    |  |       |       |     |       |

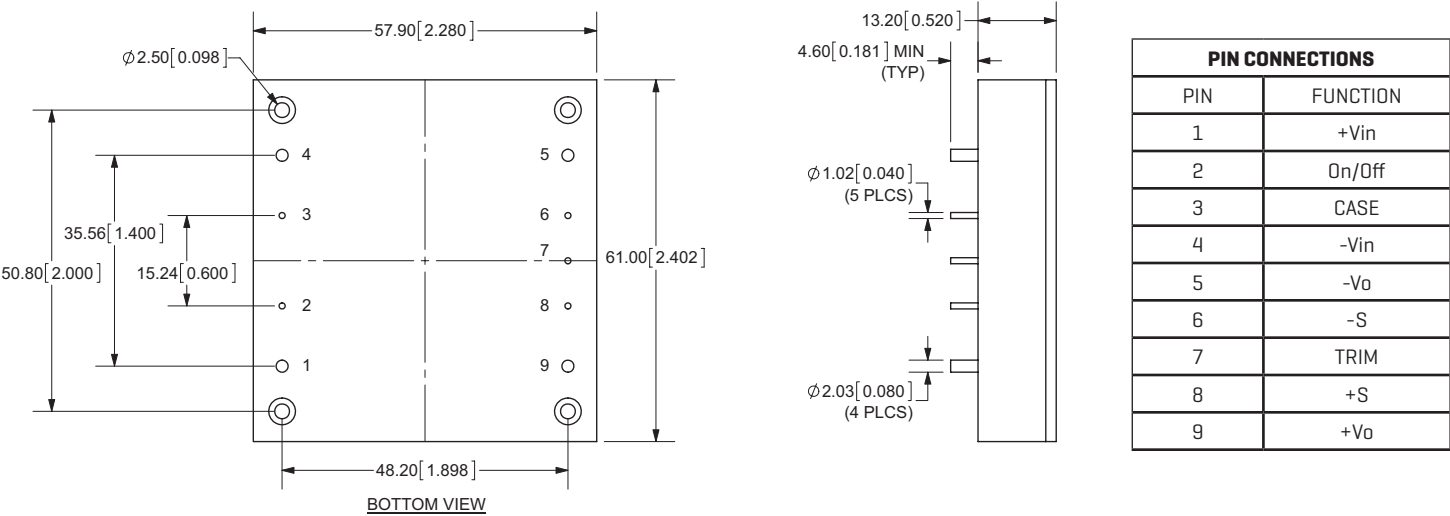
ENVIRONMENTAL

| parameter                  | conditions/description | min | typ | max | units |
|----------------------------|------------------------|-----|-----|-----|-------|
| case operating temperature |                        | -40 |     | 100 | °C    |
| storage temperature        |                        | -55 |     | 105 | °C    |
| humidity                   | non-condensing         |     |     | 95  | %     |

MECHANICAL

| parameter     | conditions/description                          | min | typ | max | units |
|---------------|-------------------------------------------------|-----|-----|-----|-------|
| dimensions    | 2.28 x 2.40 x 0.52 inch (57.9 x 61.0 x 13.2 mm) |     |     |     |       |
| case material | aluminum baseplate with plastic                 |     |     |     |       |
| weight        |                                                 |     | 114 |     | g     |

MECHANICAL DRAWING



All dimensions in mm[inches]:

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                                  | 06/01/2011 |
| 1.01 | add remote on/off control to the part number key | 11/23/2011 |
| 1.02 | V-Infinity branding removed                      | 08/30/2012 |
| 1.03 | updated spec                                     | 03/14/2013 |

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



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