

**SERIES:** VYC30W-T | **DESCRIPTION:** DC-DC CONVERTER

**FEATURES**

- chassis mount with screw terminal connectors
- up to 30 W output
- compact size
- 4:1 input range (9~36 V, 18~75 V)
- single and dual outputs
- 1,500 V isolation
- short circuit, over current, and over voltage protection
- wide temperature operation (-40~85°C)
- efficiency up to 88%



| 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 and<br>noise <sup>1</sup><br>max<br>(mVp-p) | efficiency<br><br>typ<br>(%) |
|------------------|------------------------------------|----------------------------|---------------------------------|-------------------------------|----------------------------------------------------|------------------------------|
| VYC30W-Q24-S5-T  | 9 ~ 36                             | 5                          | 6                               | 30                            | 120                                                | 87                           |
| VYC30W-Q24-S12-T | 9 ~ 36                             | 12                         | 2.5                             | 30                            | 120                                                | 88                           |
| VYC30W-Q24-S15-T | 9 ~ 36                             | 15                         | 2                               | 30                            | 120                                                | 87                           |
| VYC30W-Q24-D5-T  | 9 ~ 36                             | ±5                         | ±3                              | 30                            | 120                                                | 86                           |
| VYC30W-Q24-D12-T | 9 ~ 36                             | ±12                        | ±1.25                           | 30                            | 120                                                | 88                           |
| VYC30W-Q24-D15-T | 9 ~ 36                             | ±15                        | ±1                              | 30                            | 120                                                | 87                           |
| VYC30W-Q48-S5-T  | 18 ~ 75                            | 5                          | 6                               | 30                            | 120                                                | 87                           |
| VYC30W-Q48-S12-T | 18 ~ 75                            | 12                         | 2.5                             | 30                            | 120                                                | 88                           |
| VYC30W-Q48-S15-T | 18 ~ 75                            | 15                         | 2                               | 30                            | 120                                                | 87                           |
| VYC30W-Q48-D5-T  | 18 ~ 75                            | ±5                         | ±3                              | 30                            | 120                                                | 86                           |
| VYC30W-Q48-D12-T | 18 ~ 75                            | ±12                        | ±1.25                           | 30                            | 120                                                | 88                           |
| VYC30W-Q48-D15-T | 18 ~ 75                            | ±15                        | ±1                              | 30                            | 120                                                | 87                           |

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

**PART NUMBER KEY**

**VYC30W - QXX - XXX - X - T**

Base Number

Input Voltage

Output  
S = single output  
D = dual output

Output Voltage

Heatsink  
"blank" = No  
H = Yes

## INPUT

| parameter                  | conditions/description                                                                       | min       | typ      | max         | units                    |
|----------------------------|----------------------------------------------------------------------------------------------|-----------|----------|-------------|--------------------------|
| operating input voltage    |                                                                                              | 9<br>18   | 24<br>48 | 36<br>75    | Vdc<br>Vdc               |
| start-up time              |                                                                                              |           | 10       |             | ms                       |
| under voltage lockout      | power up 24 V input<br>power up 48 V input<br>power down 24 V input<br>power down 48 V input | 8<br>16.0 |          | 9.0<br>17.8 | Vdc<br>Vdc<br>Vdc<br>Vdc |
| Remote on/off <sup>1</sup> | module off<br>module on (or open circuit)                                                    | 0<br>3.5  |          | 1.2<br>12   | Vdc<br>Vdc               |
| filter                     | PI type                                                                                      |           |          |             |                          |

Notes: 1. The on/off pin voltage is referenced to GND

## OUTPUT

| parameter                | conditions/description                                                             | min | typ   | max  | units |
|--------------------------|------------------------------------------------------------------------------------|-----|-------|------|-------|
| line regulation          | measured from low line to high line                                                |     | ±0.2  | ±0.5 | %     |
| load regulation          | measured from 10% to full load                                                     |     | ±0.5  | ±1   | %     |
| voltage accuracy         | refer to recommended circuit                                                       |     | ±1    | ±3   | %     |
| transient recovery time  | 25% step load charge                                                               |     | 300   | 500  | µs    |
| transient peak deviation | 25% rated load                                                                     |     | 300   |      | µs    |
| cross regulation         | dual output models<br>main output 50%,<br>supplemental output from<br>10~100% load |     |       | ±5   | %     |
| adjustability            |                                                                                    |     | ±10%  |      | Vdc   |
| switching frequency      | 100% load, input voltage range                                                     |     | 400   |      | kHz   |
| temperature coefficient  |                                                                                    |     | ±0.02 |      | %/°C  |

## PROTECTIONS

| parameter                | conditions/description                                  | min | typ             | max | units             |
|--------------------------|---------------------------------------------------------|-----|-----------------|-----|-------------------|
| short circuit protection | hiccup, automatic recovery                              |     |                 |     |                   |
| over current protection  | all models<br>input voltage range                       |     | 130             |     | %                 |
| over voltage protection  | single and dual<br>output models<br>5 V<br>12 V<br>15 V |     | 6.1<br>15<br>18 |     | Vdc<br>Vdc<br>Vdc |

## SAFETY AND COMPLIANCE

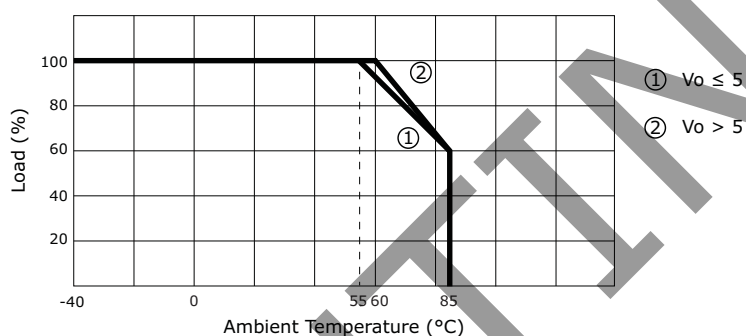
| parameter             | conditions/description           | min       | typ   | max | units |
|-----------------------|----------------------------------|-----------|-------|-----|-------|
| isolation voltage     | tested for 1 minute at 1 mA max. | 1,500     |       |     | Vdc   |
| isolation resistance  | at 500 Vdc                       | 1,000     |       |     | MΩ    |
| isolation capacitance | input to output, 100 kHz / 0.1 V |           | 2,000 |     | pF    |
| RoHS compliant        | yes                              |           |       |     |       |
| MTBF                  | M1L-HDBK-217F                    | 1,000,000 |       |     | hours |

## ENVIRONMENTAL

| parameter                  | conditions/description | min | typ | max | units |
|----------------------------|------------------------|-----|-----|-----|-------|
| case operating temperature |                        | -40 |     | 85  | °C    |
| maximum case temperature   | during operation       |     |     | 105 | °C    |
| storage temperature        |                        | -40 |     | 125 | °C    |
| storage humidity           | non-condensing         | 5   |     | 95  | %     |

## DERATING CURVES

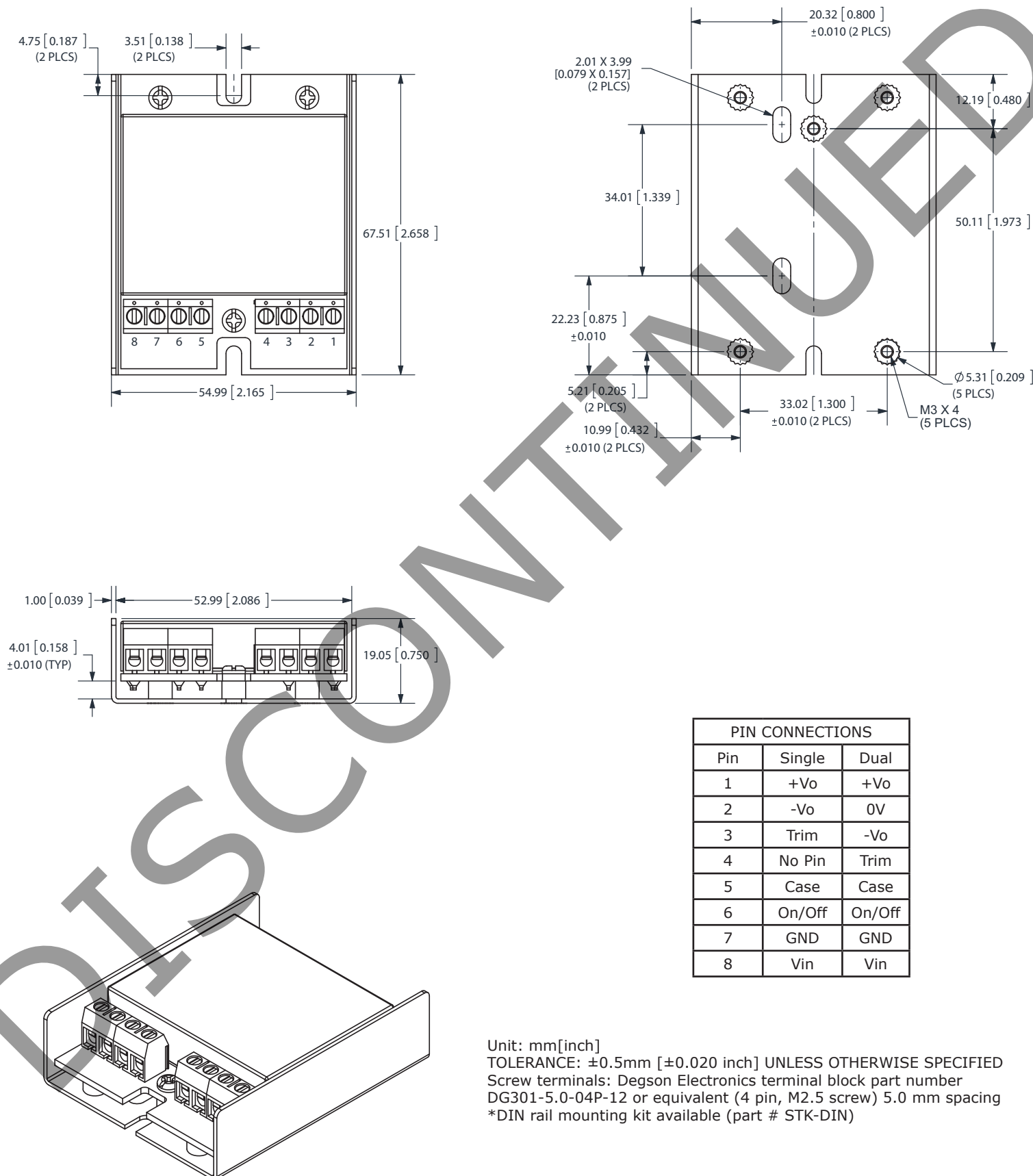
output power vs. ambient temperature



## MECHANICAL

| parameter     | conditions/description                          | min | typ  | max | units |
|---------------|-------------------------------------------------|-----|------|-----|-------|
| dimensions    | 2.17 x 2.66 x 0.75 inch (55.0 x 67.5 x 19.1 mm) |     |      |     |       |
| case material | aluminum                                        |     |      |     |       |
| weight        |                                                 |     | 83.5 |     | g     |

## MECHANICAL DRAWING



## APPLICATION NOTES

### 1. EMI & EMS recommended external circuit

|     | Single output, 18 ~ 75 Vin                 | Single output, 9 ~ 36 Vin                  | Dual output, 18 ~ 75 Vin                   | Dual output, 9 ~ 36 Vin                    |
|-----|--------------------------------------------|--------------------------------------------|--------------------------------------------|--------------------------------------------|
| TVS | SMCJ90A,1500W(Bringtking)                  | SMCJ48A,1500W(Bringtking)                  | SMCJ90A,1500W(Bringtking)                  | SMCJ48A,1500W(Bringtking)                  |
| LCM | 232uH(0.1V 100KHz) 15T<br>core: N5 T12*6*4 | 232uH(0.1V 100KHz) 15T<br>core: N5 T12*6*4 | 232uH(0.1V 100KHz) 15T<br>core: N5 T12*6*4 | 232uH(0.1V 100KHz) 15T<br>core: N5 T12*6*4 |
| C0  | 680μF/1000V (CapXon)                       | 1000μF/50V(CapXon)                         | 680μF/100V (CapXon)                        | 1000μF/50V(CapXon)                         |
| C1  | 105K/100V 1210(TDK)                        | 105K/100V 1210(TDK)                        | 105K/100V 1210(TDK)                        | 105K/100V 1210(TDK)                        |
| C2  | 225K/100V 1210(TDK)                        | 225K/100V 1210(TDK)                        | 225K/100V 1210(TDK)                        | 225K/100V 1210(TDK)                        |
| C3  | No component                               | No component                               | 102K/2000V 1206 (TDK)                      | 102K/2000V 1200 (TDK)                      |
| C4  | No component                               | No component                               | 102K/2000V 1206 (TDK)                      | 102K/2000V 1206 (TDK)                      |

Figure 1 (Single output)

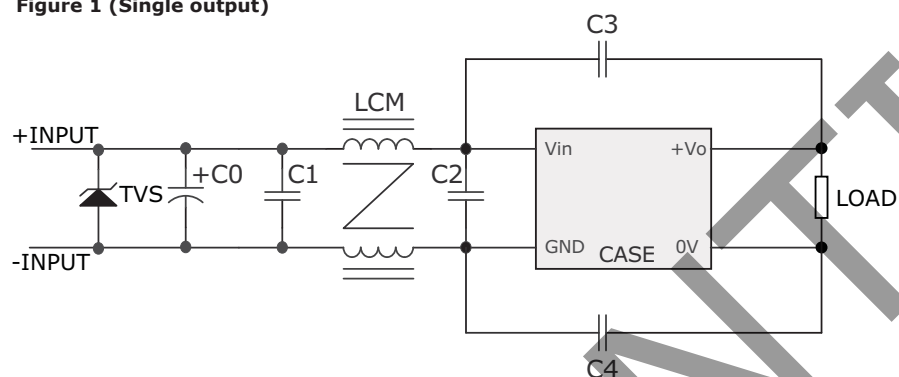
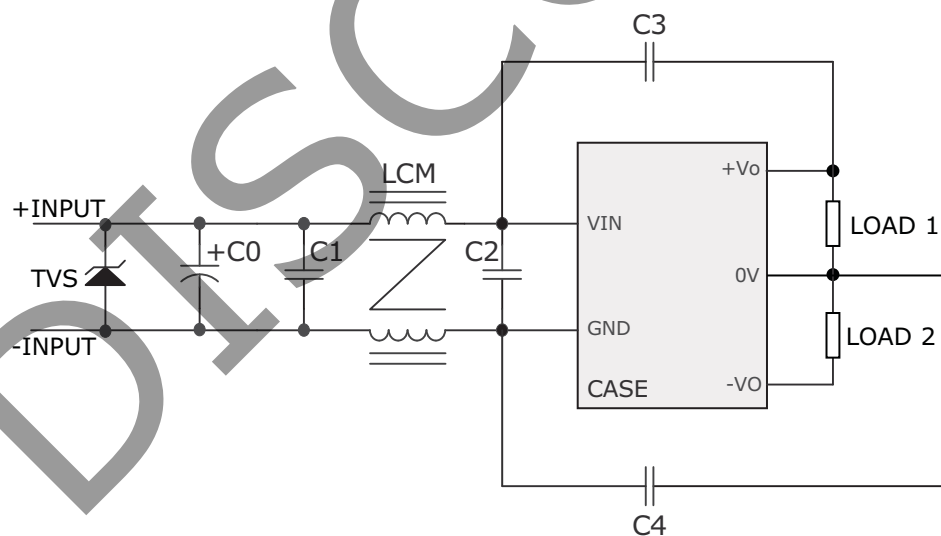


Figure 2 (Dual output)



## REVISION HISTORY

| rev. | description                               | date       |
|------|-------------------------------------------|------------|
| 1.0  | initial release                           | 08/23/2011 |
| 1.01 | added VYC30W-Q24-D5-T and VYC30W-Q48-D5-T | 03/08/2012 |
| 1.02 | V-Infinity branding removed               | 08/29/2012 |

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

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