

VSX40MD23C



40 Watt Dual Output Quarter Brick DC/DC Converter

DISCONTINUED



- 2.5V & 3.3V Dual Output
- 2.3" x 1.5" x 0.5"
- 90% Efficiency
- Low Output Noise
- Input Filtering
- Remote On/Off, Input Side
- Output Voltage Trim, +/-10%
- Fixed Frequency Operation
- -40C° to +100C° Baseplate Temp.
- Output Current Limit, Self-Start
- 1,500 Vdc Isolation, Input to Output
- UL/CUL 1950, EN60 950
- 36 to 75 Vdc Input Models
- Continuous Short Circuit Protection
- Non-latching Protection:
 - Input Undervoltage
 - Input Overvoltage
 - Output Overvoltage
 - Overtemperature
- Output Voltage Tracking at Turn-on and Turn-off
- No Minimum Load Current
- RoHS Compliant

APPLICATIONS

- Distributed Power Architectures
- Workstations
- EDP Equipment
- Telecommunications

OPTIONS

- Choice of Remote On/Off logic Configuration
- Heatsink Available for Extended Operation

ADDITIONAL INFORMATION

- See Application Note DCAN-41 at www.cd4power.com

The VSX40C series are dual output converters having two input ranges, either 18-36V or 36-75V. The units dual asymmetric output voltages are 5V and 3.3V. The converter features an industry-standard quarter-brick size (2.3" x 1.5" x 0.5") coupled with 90% efficiency.

These converters utilize Vx high density technology. This technology has been featured in our highly efficient VKP and VKA series now successfully in use

worldwide. The very high efficiency minimizes the requirement for heat-sinking and the low output ripple minimizes the need for additional filtering. For maximum flexibility, power can be traded between outputs as required. The VSX40C series feature virtually all of the options required by design engineers but not at the competition's typical additional price for each option. This multitude of features are standard on the VSX40C series.

ABSOLUTE MAXIMUM RATINGS

| PARAMETER | SYMBOL | MIN | MAX | UNIT |
|------------------------------|--------|-----|------|------|
| Input Voltage: VSX40MD23C | V_i | | 100 | Vdc |
| I/O Isolation Voltage | | | 1500 | Vdc |
| I/P to case | | | 1500 | Vdc |
| O/P to case | | | 200 | Vdc |
| Operating Case Temperature | T | -40 | 100 | °C |

SPECIFICATIONS, ALL MODELS

Specifications are at $T_{CASE} = +40^{\circ}C$ nominal input voltage unless otherwise specified.

| INPUT | PARAMETER | SYMBOL | MIN | TYP | MAX | UNITS |
|-------|--|-----------|-----|-----|-----|--------|
| | Operating Input Voltage VSX40MD23C | V_i | 36 | 48 | 75 | VDC |
| | Maximum Input Current ($V_i=0V$ to V_i max, $I_o=I_o$ max) VSX40MD23C | I_i max | | | 1.5 | A |
| | I/P Reflected Ripple Current | | | | 260 | mA p-p |
| | No Load Input Current | I_{iNL} | | 35 | | mA |
| | On/Off Activated Input Current | I_{iQ} | | 20 | | mA |

| OUTPUT Under any conditions, the voltage of V1 will always be greater or equal to that of V2. | PARAMETER | SYMBOL | MIN | TYP | MAX | UNITS | |
|--|--|-----------------|-------|------|-------------|--------|--|
| | Output voltage (Note 1) Over all conditions of I/P voltage, load and temperature) | | | | | | |
| | 2.5 Vout (V2) | 2.5 V_o | 2.375 | – | 2.555 | Vdc | |
| | 3.3 Vout (V1) | 3.3 V_o | 3.225 | – | 3.450 | Vdc | |
| | Output Voltage Setpoint ($V_i=48V$, $I_{o2}=9A$, $I_{o3}=6A$, $T_c=25^{\circ}C$) | | | | | | |
| | 2.5 (V2) | 2.5 $V_{o,set}$ | 2.450 | | 2.510 | Vdc | |
| | 3.3 (V1) | 3.3 $V_{o,set}$ | 3.310 | | 3.390 | Vdc | |
| | Output Ripple and Noise Voltage (peak-to-peak, 100 MHz BW) | | | | | | |
| | 2.5 (V2) | – | – | – | 60 | mv p-p | |
| | 3.3 (V1) | – | – | – | 80 | mv p-p | |
| | Output Current (Total module O/P power should not exceed 40 Watts) | | | | | | |
| | 2.5 (V2) | I_{o2} | – | – | 16 | A | |
| | 3.3 (V1) | I_{o1} | – | – | 12.12 | A | |
| | Output Current Limit Inception ($V_o=95\%$ of V_o nom) | | | | | | |
| | 2.5 (V2) | $I_{o2,cli}$ | 16.8 | 18.5 | 21.0 | A | |
| | 3.3 (V1) | $I_{o1,cli}$ | 12.7 | 14.0 | 15.9 | A | |
| | Output Short Ckt Current (Max impedance across short circuit = 65m Ω) | | | | | | |
| | 2.5 V_o | | 15 | 19 | 22 | A | |
| | 3.3 V_o | | 11 | 13.2 | 17 | A | |
| | Efficiency ($V_i=48V$, $I_{o2}=8A$, $I_{o3}=6A$, $T_c=40^{\circ}C$) | η | 88 | 90 | – | % | |
| Dynamic Response ($\Delta I_o/\Delta t=0.2A/\mu sec$, $V_i=48V$, $T_c=25^{\circ}C$, either O/P) Load change of 50% I_o max; at any operating load up to $I_{o,max}$ or $P_{o,max}$ Peak Deviation outside settling point | | | | | | | |
| | – | – | 2 | – | % V_o nom | | |

NOTE: 1. Worst case voltage conditions occur with full load drawn from one output only, zero being drawn from the other. For worst case voltages at less extreme loading conditions, consult the factory.

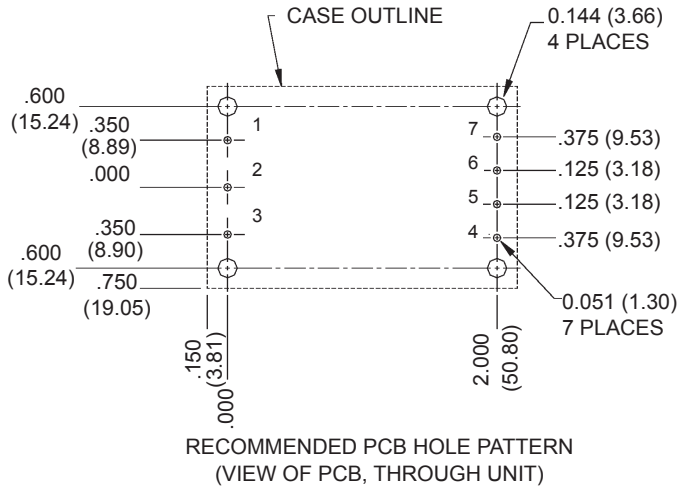
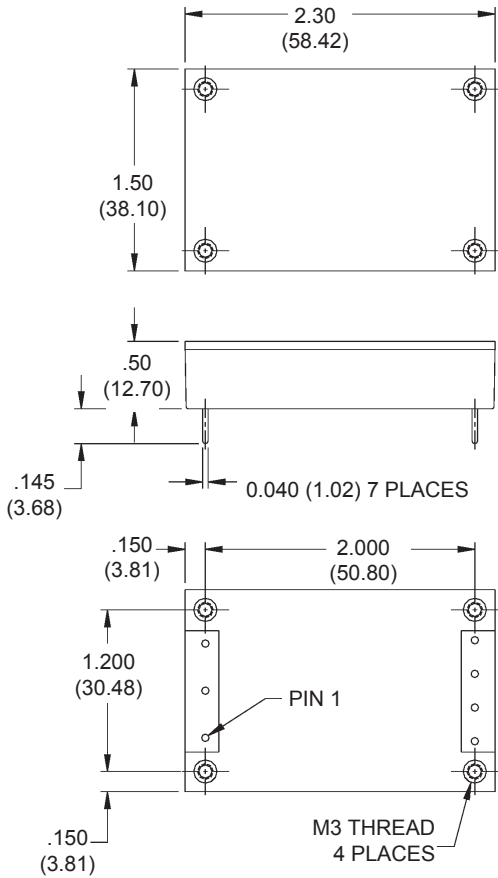
| GENERAL | PARAMETER | SYMBOL | MIN | TYP | MAX | UNITS |
|-------------------------------|---|---------|------|------|------|-------|
| | Isolation Specifications | | | | | |
| | Isolation Capacitance | – | – | 1000 | – | pF |
| | Isolation Resistance | – | 10 | – | – | MΩ |
| Feature Specifications | | | | | | |
| | Remote On/Off (open collector equivalent, signal referenced to -Vin terminal) | | | | | |
| | VSX40MD23C Preferred Logic (negative) | | | | | |
| | Logic Low - Module On | | | | | |
| | Logic High - Module Off | | | | | |
| | VSX40MD23-1C - Optional Logic (positive) | | | | | |
| | Logic Low - Module Off | | | | | |
| | Logic High - Module On | | | | | |
| | Logic Low: At Von/off = 0V | Von/off | 0 | – | 50 | Vdc |
| | | Ion/off | | – | 200 | μA |
| | Turn On Time (Vo within 1% of steady state) | | | | | |
| | From Application of Vin | – | – | 7 | 10 | mSecs |
| | From Remote On/Off Activation) | – | – | 3 | 4 | mSecs |
| | Input Undervoltage Lockout (Turn Off & Turn On Voltages Track) | | | | | |
| | Turn On | – | 30 | 33 | 36 | Vdc |
| | Turn Off | – | 27 | 30 | 33 | Vdc |
| | Input Overvoltage Lockout (Turn Off & Turn On Voltages Track) | | | | | |
| | Turn Off | – | 76 | 80 | 84 | Vdc |
| | Turn On | – | 74.5 | 78.5 | 82.5 | Vdc |
| | Output Overvoltage Set Point (Non-latching independent control loop) | | | | | |
| | 2.5 Vo | | 2.7 | 2.9 | 3.2 | Vdc |
| | 3.3 Vo | | 3.6 | 3.9 | 4.2 | Vdc |
| | Overtemperature Shutdown | Tc | 105 | 115 | 125 | °C |
| | Hysteresis | | | 10 | | °C |
| | Weight | | | | | |
| | VSX40MD23C, VSX40MD23-1C | | | 67 | | Grams |
| | VSX40MD23-UC, VSX40MD23-1UC | | | | | |
| | Output Trim | | | | | |
| | Tie Trim to +2.5 Vo for trim down | 2.5 V2 | – | -10 | – | % |
| | | 3.3 V1 | – | -10 | – | % |
| | Tie Trim to O/P RTN for trim up | 2.5 V2 | – | 10 | – | % |
| | | 3.3 V1 | – | 10 | – | % |

MECHANICAL

Dimensions are in inches (millimeters).

Tolerances: x.xx in. \pm 0.02 in.

x.xxx in. \pm 0.01 in.



| Pinout Key | |
|------------|-----------|
| 1 | +Vin |
| 2 | On/Off |
| 3 | -Vin |
| 4 | +2.5 Vout |
| 5 | O/P RTN |
| 6 | Trim |
| 7 | +3.3 Vout |

NOTES:

- Marked with: specific model ordered, date code, job code.
- MATERIAL:** Units are encapsulated in a low thermal resistance molding compound which has excellent chemical resistance and electrical properties in high humidity environments and over a wide operating temperature range. The encapsulant and outer shell of the unit have UL94V-0 ratings. Lead material is solder plated to allow ease of solderability.
- IMPORTANT:** When utilizing the PEM nuts for board mounting, it is required to follow guidelines in application note DCAN-41 available on the web at www.cd4power.com.

ORDERING INFORMATION

To Find Model Number

Device Family VSX40 - 1 U C
 VSX40MD23 (Quarter Brick, 40 Watt DC/DC)
 Logic: No Number = Preferred Logic (Negative);
 1 = Optional Logic (Positive)
 Package _____
 No Letter = Encapsulated; U = Unencapsulated
 RoHS Compliant _____

Model Numbers

VSX40MD23C

VSX40MD23-UC

VSX40MD23-1C

VSX40MD23-1UC

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