

# CW-A20M SERIES

20W WIDE INPUT RANGE

# DANUBE

## FEATURES

- 20W DIL PACKAGE
- 9-18V,18-36V,36-75V WIDE INPUT RANGE
- 100% BURN IN
- HIGH EFFICIENCY
- CUSTOM SOLUTIONS AVAILABLE
- RoHS COMPLIANT
- 3 YEARS WARRANTY



| OUTPUT SPECIFICATIONS                 |                     | INPUT SPECIFICATIONS           |                           |
|---------------------------------------|---------------------|--------------------------------|---------------------------|
| Voltage Set-point Accuracy            | +/-2% max.          | Input Voltage Range            | 2:1 Input Range           |
| Temperature Coefficient               | +/-0.05%/°C         | Input Filter                   | Pi Network                |
| Ripple & Noise(20MHz BW) <sup>1</sup> | 150mVp-p max.       | Protection                     | Fuse Recommended          |
| Line Regulation <sup>2</sup>          | +/-0.5% max.        | GENERAL SPECIFICATIONS         |                           |
| Load Regulation <sup>3</sup>          | +/-0.5% max.        |                                |                           |
| Minimum Load                          | 20% of Full Load    | Efficiency                     | 85% min.                  |
| Short Circuit Protection              | Continuous          | Isolation Voltage <sup>4</sup> | 1500VDC min.              |
| Short Circuit Restart                 | Automatic           | Isolation Resistance           | 10 <sup>9</sup> ohms min. |
| Over Load Protection                  | 120%~190%           | Isolation Capacitance          | 1200pF max.               |
| Transient Response <sup>5</sup>       | 500uS max.          | Switching Frequency            | 400KHz typ.               |
| ENVIRONMENTAL SPECIFICATIONS          |                     | MTBF <sup>6</sup>              | >224,000 Hours            |
|                                       |                     | Weight                         | 18.5g typ.                |
| Operating Temperature                 | -40°C to +100°C     | Case Material                  | Five-Side Shielded Case   |
|                                       | (with derating)     | Case Size                      | 31.8mm*20.3mm*12.2mm      |
| Case Temperature                      | +110°C max.         | Potting Material               | Epoxy (UL94V-0)           |
| Storage Temperature                   | -55°C to +125°C     | Radiated Emissions             | EN55032 Class A           |
| Humidity                              | 95% max.            |                                |                           |
| Cooling                               | Free-Air Convection |                                |                           |

ALL SPECIFICATIONS TYPICAL AT NOMINAL LINE, FULL LOAD , AND 25 °C UNLESS OTHERWISE NOTED.

<sup>1</sup> Measured with 1uF ceramic capacitor connect to the output pins.

<sup>2</sup> High Line to Low Line.

<sup>3</sup> Load Regulation is for output load current change from 20% to 100%.

<sup>4</sup> 1500VDC for 10 seconds.

<sup>5</sup> 25% Step Load Change.

<sup>6</sup> MIL-HDBK-217F @25 °C , Ground Benign.

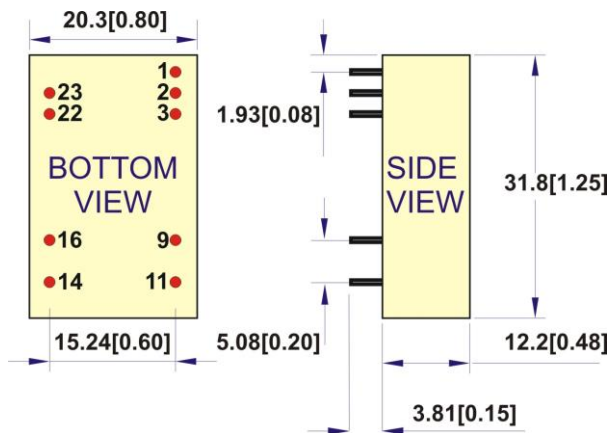
## ● SELECTION GUIDE(1) 2:1 20W OUTPUT

| MODEL <sup>7</sup><br>NUMBER | INPUT<br>VOLTAGE<br>(VDC) | OUTPUT<br>VOLTAGE<br>(VDC) | OUTPUT<br>CURRENT<br>(mA) | INPUT <sup>8</sup><br>CURRENT(mA) |            | EFF<br>(%) <sup>9</sup> | PACKAGE | Capacitor<br>Load max |
|------------------------------|---------------------------|----------------------------|---------------------------|-----------------------------------|------------|-------------------------|---------|-----------------------|
|                              |                           |                            |                           | FULL<br>LOAD                      | NO<br>LOAD |                         |         |                       |
| CWS-1205A20M                 | 9-18                      | 5                          | 4000                      | 1938                              | 110        | 86                      | A       | 1000uF                |
| CWS-1212A20M                 | 9-18                      | 12                         | 1666                      | 1937                              | 30         | 86                      | A       | 220uF                 |
| CWS-1215A20M                 | 9-18                      | 15                         | 1333                      | 1915                              | 30         | 87                      | A       | 220uF                 |
| CWS-2405A20M                 | 18-36                     | 5                          | 4000                      | 969                               | 60         | 86                      | A       | 1000uF                |
| CWS-2412A20M                 | 18-36                     | 12                         | 1666                      | 957                               | 25         | 87                      | A       | 220uF                 |
| CWS-2415A20M                 | 18-36                     | 15                         | 1333                      | 958                               | 25         | 87                      | A       | 220uF                 |
| CWS-4805A20M                 | 36-75                     | 5                          | 4000                      | 484                               | 45         | 86                      | A       | 1000uF                |
| CWS-4812A20M                 | 36-75                     | 12                         | 1666                      | 479                               | 25         | 87                      | A       | 220uF                 |
| CWS-4815A20M                 | 36-75                     | 15                         | 1333                      | 479                               | 25         | 87                      | A       | 220uF                 |

*Note: Other input to output voltages may be available. Please contact factory.*

## ● MECHANICAL DIMENSIONS & RECOMMENDED FOOTPRINT DETAILS

### PACKAGE "A"

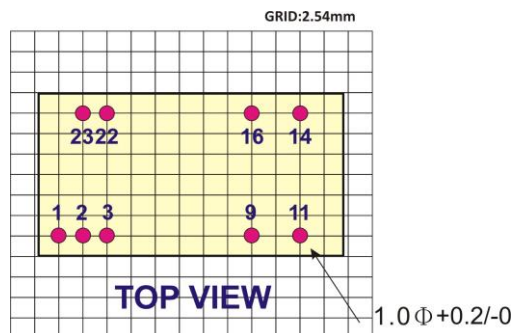


| PIN     | SINGLE        |
|---------|---------------|
| 1       | Remote On/Off |
| 2 & 3   | -Vin          |
| 9       | NC            |
| 11      | NC            |
| 14      | +Vout         |
| 16      | -Vout         |
| 22 & 23 | +Vin          |

NOTE: Pin Size is Tolerance 0.8Φ ±0.05mm

All Dimensions are in mm(Inches)

Tolerance .X or .XX= ±0.80mm



7 CW\*-\*\*\*\*\*A20M (Isolation For 1500 VDC)

8 NOMINAL INPUT VOLTAGE.

9 NOMINAL INPUT VOLTAGE, FULL LOAD.

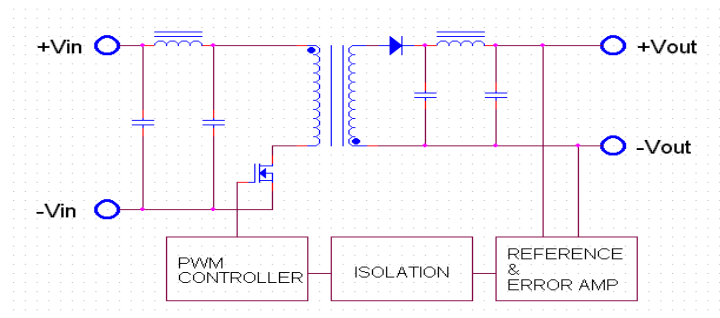
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## ● Table1 (Remote On/Off Control)

| Remote On/Off Control |  |                                 |                                      |
|-----------------------|--|---------------------------------|--------------------------------------|
| Control Input         |  | PIN1                            | Control Common                       |
| Control Voltage       |  |                                 | PIN2&PIN3                            |
| ON                    |  | >+2.5VDC or Open Circuit        | Converter Shutdown Idle Current 10mA |
| OFF                   |  | <+0.8VDC or Jumper to PIN2&PIN3 | CMOS or Open                         |
|                       |  |                                 | Logic Compatibility                  |
|                       |  |                                 | Collector TTL                        |

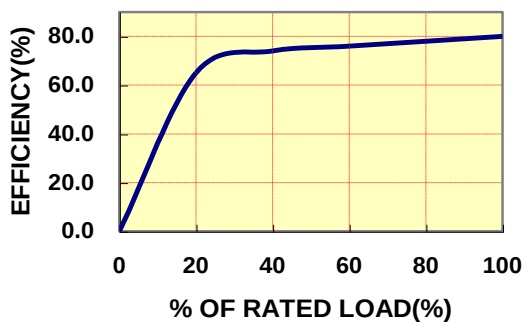
## ● SIMPLIFIED SCHEMATIC



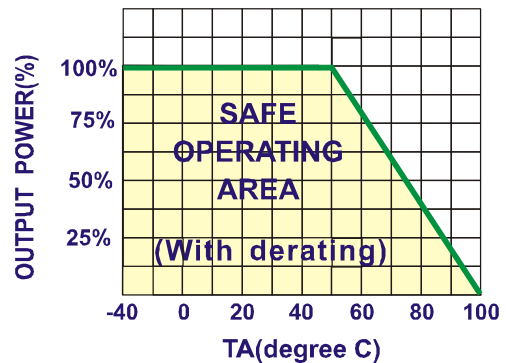
## ● TYPICAL PERFORMANCE CURVES

Specifications typical at  $T_a=25^\circ\text{C}$ , nominal input voltage, rated output current unless otherwise specified.

OUTPUT LOAD VS EFFICIENCY



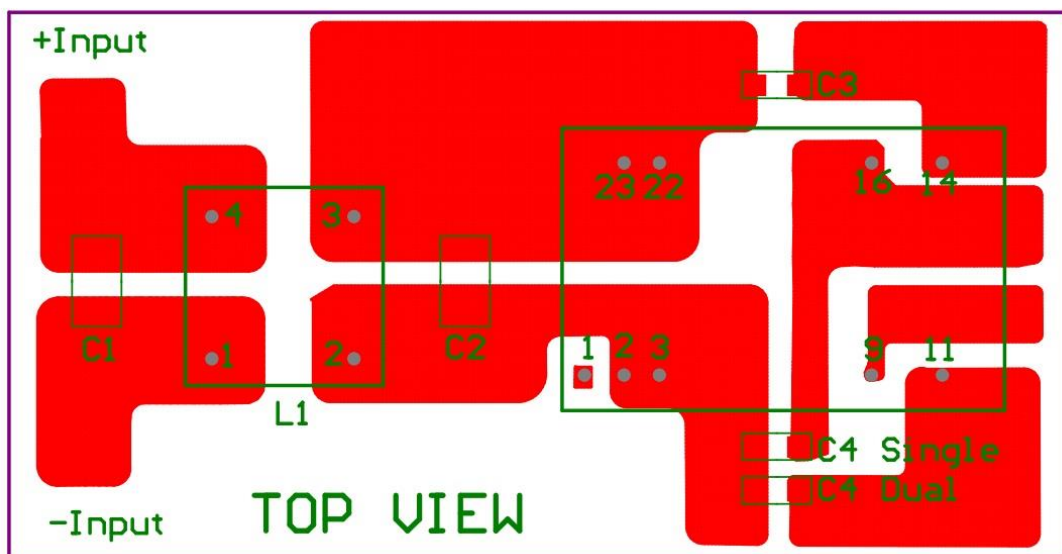
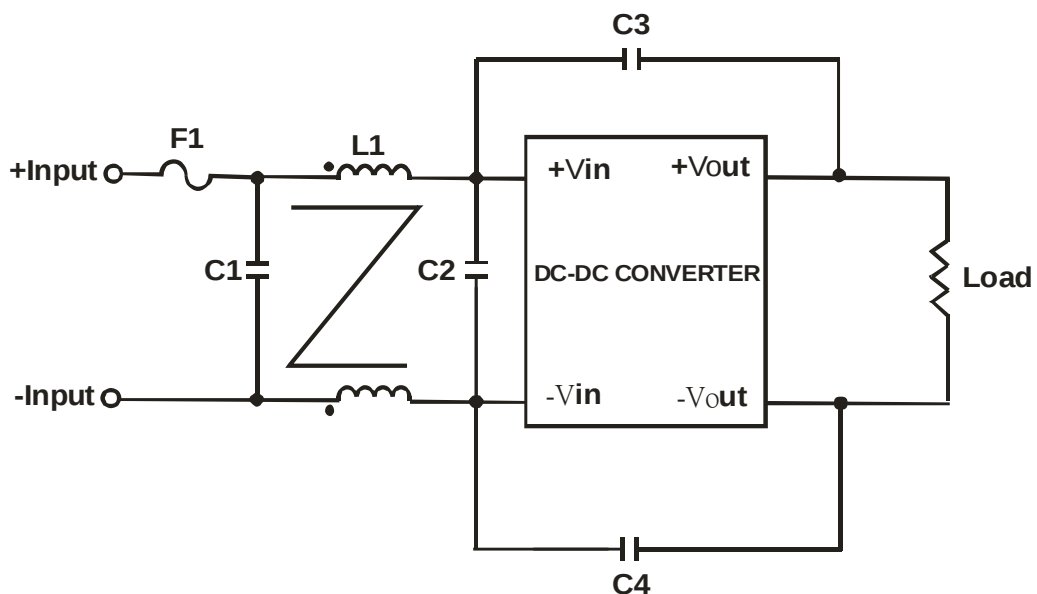
TEMPERATURE DERATING



## ● Recommended Filter for EN55032 Class B Compliance

The components used in the above figure, together with the manufacturer's part numbers for these components, are as follows:

|                    | C1                      | C2                      | C3                 | C4                 | L1                    |
|--------------------|-------------------------|-------------------------|--------------------|--------------------|-----------------------|
| CW-20W<br>CW*-12** | 3.3uF/50V<br>1812 MLCC  | N/A                     | 1000pF/2KV<br>MLCC | 1000pF/2KV<br>MLCC | 325uH<br>Common Choke |
| CW-20W<br>CW*-24** | 4.7uF/50V<br>1812 MLCC  | N/A                     | 1000pF/2KV<br>MLCC | 1000pF/2KV<br>MLCC | 325uH<br>Common Choke |
| CW-20W<br>CW*-48** | 2.2uF/100V<br>1812 MLCC | 2.2uF/100V<br>1812 MLCC | 1000pF/2KV<br>MLCC | 1000pF/2KV<br>MLCC | 325uH<br>Common Choke |



Recommended EN55032 Class B Filter Circuit Layout

## ● INPUT FUSE SELECTION GUIDE

| 9-18V<br>INPUT VOLTAGE(VDC) | 18-36V<br>INPUT VOLTAGE(VDC) | 36-75V<br>INPUT VOLTAGE(VDC) |
|-----------------------------|------------------------------|------------------------------|
| 4000mA Slow-Blow Type       | 2000mA Slow-Blow Type        | 1000mA Slow-Blow Type        |

The diagram shows a yellow rectangular block labeled "DC-DC CONVERTER". On the left side, there are two input terminals labeled "+Vin" (top) and "-Vin" (bottom). On the right side, there are two output terminals labeled "+Vout" (top) and "-Vout" (bottom). A blue line labeled "INPUT" points to the +Vin terminal, and a blue line labeled "OUTPUT" points to the +Vout terminal. A fuse, represented by a wavy line, is connected in series between the +Vin and -Vin input terminals.

**Note:** Certain applications may require the installation of external fuse in front of the input.

## CW-A20M SERIES APPLICATION NOTES:

### EXTERNAL CAPACITANCE REQUIREMENTS:

No external capacitance is required for operation of the CW-A20M SERIES.

To meet the reflected ripple requirements of the converter, an input impedance of less than 0.5 ohm from DC to 100KHz is required.

External output capacitance is not required for operation, however it is recommended that 10uF tantalum and 0.1uF ceramic capacitance be selected for reduced system noise.

We Can Offer EMC-Filter According To EN55032 Class B.

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## FOR MORE INFORMATION CALL:

**Danube Enterprise Co., Ltd.**

Tel: 886-7-3755165

Fax: 886-7-3755330

E-mail: [danube@ms10.hinet.net](mailto:danube@ms10.hinet.net)

Home Page

<http://www.danube.com.tw>

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