

SEMICONDUCTOR CIRCUITS

Switch Mode Regulated DC/DC Converters

UM, UMC

- SINGLE OUTPUTS TO 30 WATTS
- 2:1 INPUT RANGE
- CONVERTER SHUTDOWN INPUT PROTECTION

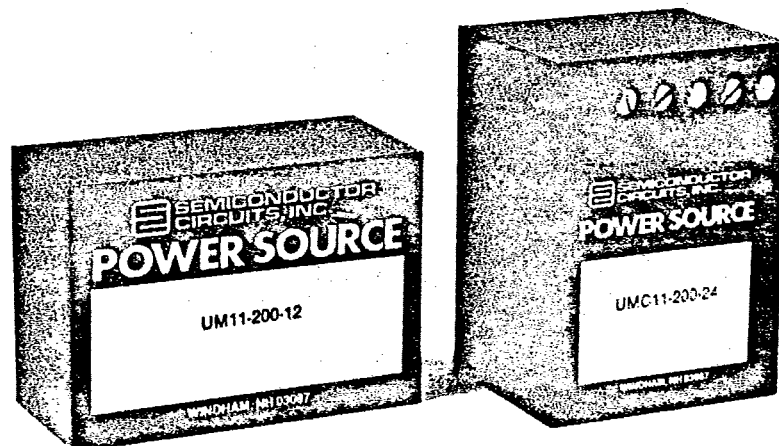
The UM, UMC Series are very efficient (to 80%) single output DC/DC converters that offer the versatility of a 2:1 input range.

The series offers input ranges of 9-18 Vdc, 18-36 Vdc and 35-70 Vdc and can withstand surges of 25, 60 and 100 V respectively for 12, 24 and 48 Vin models. The self-resetting shutdown, which occurs at 19 V, 38 V and 75 V, depending on model, protects the supply in the event of an input supply failure while input filtering holds reflected ripple to 30 mA Pk-Pk (max) to protect the input source from internally generated "spikes".

The UM, UMC Series offers single outputs of 5, 12 and 15 Vdc at from 1 A to 4 A. All outputs are free of chip damaging overshoot and are over-current protected by power foldback. Overvoltage protection is by automatic self-resetting crowbar. Thus, this series offers protection for both the input source and output load making it system safe for a variety of applications.

This series features input to output (I/O) isolation of 1500 Vdc and is available in both chassis mount (UMC) and P.C. mount (UM) versions by model designation.

Careful design techniques of this pulse width modulated forward converter series result in a low case temperature rise of less than 15°C above ambient, for all but the 30 watt models which have a rise of less than 25°C. This cool operation substantially increases the MTBF of the converter and nearby load circuitry.



Application Notes

The 2:1 input range makes the UM, UMC series ideal for use where the input source is poorly regulated. The worst situations involve industrial process control where raw 24 Vdc is bussed over long distances, therefore being subject to noise pickup and large inductive spikes caused by load changes.

Telecommunications applications operating from 48 V central office batteries are susceptible to wide voltage variations, due to battery charge and discharge cycles, as well as high noise conditions. The special features used in this converter allow the use of external transient suppression devices that do not draw any current within the operating specifications of the converter.

General Specifications

- Input Reflected Ripple**
30 mA pk-pk (max)
- Output Voltage Tolerance**
± 2% Fixed
- Regulation (line/load)**
0.1/0.1%
- Ripple & Noise**
7 mV (VRMS): Greater of 50 mV pk-pk or 1% of Vout (Vpk-pk)
- Operating Temperature Range**
- 25°C to + 71°C (no derating)
- Storage Temperature Range**
- 40°C to + 85°C
- Input to Output Isolation**
Voltage 1500 Vdc
- Temperature Coefficient**
0.02%/°C (typ)
- Overcurrent Protection**
Power Foldback
- Overvoltage Protection**
Automatic self-resetting crowbar
- Input Protection**
(Converter Shutdown)
- 9-18 V Rated Input**
25 V sustained; shutdown set at 19 V
- 18-36 V Rated Input**
60 V sustained; shutdown set at 38 V
- 35-70 V Rated Input**
100 V sustained; shutdown set at 75 V
- Switching Frequency**
33 kHz (typ)
- Startup Time**
70 ms (typ)



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Ordering Information

UM, UMC

Input Voltage Range (Vdc)	Output Voltage (Vdc)	Output Current (Vdc)	Efficiency (%)	Pkg. (Fig.)	Model Number
9-18	5V	3000	70-80	1-C 2-D	UM11-300-12 UMC11-300-12
18-36			70-80	1-C 2-D	UM11-300-24 UMC11-300-24
35-70			70-80	1-C 2-D	UM11-300-48 UMC11-400-48
18-36		4000	70-80	1-D 2-D	UM11-400-24 UMC11-400-24
35-70			70-80	1-D 2-D	UM11-400-48 UMC11-400-48
9-18	12V	1000	70-80	1-C 2-D	UM12-100-12 UMC12-100-12
18-36			70-80	1-C 2-D	UM12-100-24 UMC12-100-24
35-70			70-80	1-C 2-D	UM12-100-48 UMC12-100-48
35-70		2000	70-80	1-D 2-D	UM12-200-48 UMC12-200-48
35-70			70-80	1-D 2-D	UM12-200-48 UMC12-200-48
9-18	15V	1000	70-80	1-C 2-D	UM13-100-12 UMC13-100-12
18-36			70-80	1-C 2-D	UM13-100-24 UMC13-100-24
35-70			70-80	1-C 2-D	UM13-100-48 UMC13-100-48
35-70		2000	70-80	1-D 2-D	UM13-200-48 UMC13-200-48
35-70			70-80	1-D 2-D	UM13-200-48 UMC13-200-48

*Other versions available, please consult factory.

Socket Information: Standard UM, UMC use socket P/N #100013
(For socket dimensional information refer to page 23)

Dimensions and Connections

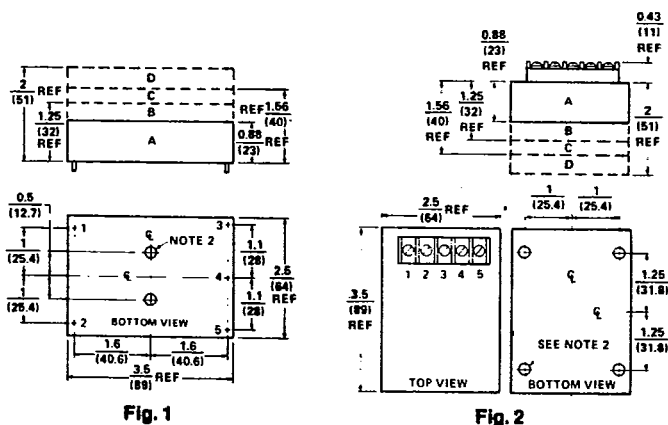


Fig. 1

Fig. 2

Connections
PIN/TERMINAL

- 1 +Vdc in
- 2 -Vdc in
- 3 +Vdc out
- 4 Do not connect
- 5 -Vdc out

Application Notes:

1. The Crowbar automatically triggers at the threshold level and clamps the output voltage to less than 1 Volt until reset. For O.V. conditions persisting less than 10 ms, reset occurs automatically; for O.V. conditions persisting over 20 ms, the unit remains clamped until cycled. The threshold levels are factory set at 6.2, 13.5 and 17 V for the 5, 12 and 15 V models respectively.
2. For decoupling, we recommend the addition of a 10 μ F tantalum capacitor in shunt with the load.

Notes:

1. Five Pins, 0.040 (1) Dia $\times$ 0.20 (5.1) Lg Min
2. Mounting Inserts 4-40 $\times$ 0.1 (2.5) Dp Min
3. Dimensions are given in both inches and (mm)

Specifications Subject to Change Without Notice.



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