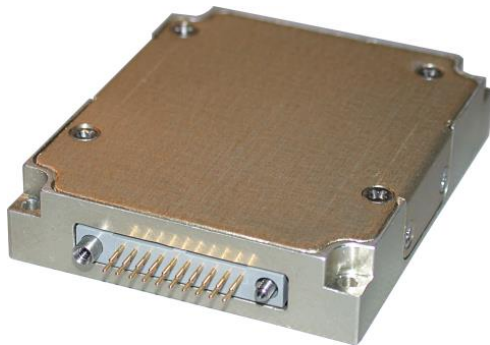


# M7419 SERIES

*DC/DC POWER SUPPLY*



## PRODUCT HIGHLIGHTS

- **MINIATURE**
- **HIGH DENSITY**
- **SINGLE OUTPUT**
- **DC/DC CONVERTER**
- **UP TO 50W**

## M7419 Series– DC/DC Power Supply

### Applications

Military (Airborne, ground-fix, shipboard), Ruggedized, Telecom, Industrial

### Special Features

- Miniature size
- High efficiency
- Wide input range
- Input / Output isolation
- Remote sense compensation
- Remote Inhibit (On/Off)
- Fixed switching freq. (250 kHz)
- External sync. capability
- EMI filters included
- Conduction cooled
- Non-latching protections:
  - Overload/short-circuit
  - Over-voltage
  - Over temperature

### Electrical Specifications

#### DC Input

Normal range: 18 to 48 V<sub>DC</sub>

Not damaged (may restart) when exposed to surges IAW MIL-STD-1275A (100 V / 50 ms) and IAW MIL-STD-704A (80 V / 0.1 s)

#### Output Voltage Regulation

Better than or equal to  $\pm 1\%$  (low to high line voltage, no load to full load,  $-55\text{ }^{\circ}\text{C}$  to  $+85\text{ }^{\circ}\text{C}$  at baseplate).

#### Ripple and Noise

Less than 50 mV<sub>p-p</sub>, typical (max. 1%) without external capacitance. When connected to system capacitance ripple drops significantly.

#### DC Output

Voltage range: 1.8 to 50 V<sub>DC</sub>

Current: 0 to 10 A

Power: 0 to 50 W

#### Efficiency

Typically 70% to 80%, depending on output voltage.

Up to 83% @ 28 V<sub>DC</sub> output, 28 V<sub>DC</sub> input, full load and room temperature.

#### Load Transient Overshoot and undershoot

Output resistance at load change of 50%-100% is 30-70 m $\Omega$  (depending on output voltage). Output back to steady stated within 300-500  $\mu\text{s}$

#### Isolation

Input to Output: 200 V<sub>DC</sub>

Input to Case: 200 V<sub>DC</sub>

Output to Case: 100 V<sub>DC</sub>

#### EMC

Complies with MIL-STD-1686 Indirect 4 kV ESD.

Designed to meet\* MIL-STD-461F CE101, CE102, CS101, CS114, CS115, CS116, RE101, RE102, RS101, RS103

#### Turn on Transient

No voltage overshoot during power on.

\* Compliance achieved with 5 $\mu\text{H}$  LISN, shielded harness and static resistive load.

## M7419 Series– DC/DC Power Supply

### Protections <sup>†</sup>

#### Input

- **Under-Voltage Lockout**  
Unit may shut down if input voltage drops below  $16.5 \pm 1$  V.
- **Over-Voltage Lockout**  
Unit may shut down if input voltage rises above  $52 \pm 2$  V.

#### Output

- **Over-Voltage Protection**  
Passive transorb, chosen at  $120\% \pm 10\%$  of nominal voltage.
- **Current Limiting**  
Continuous protection (10-30% above maximum current) for unlimited time (Hiccup).

#### General

- **Over temperature protection:**  
Shutdown if base plate temperature rises above  $+105\text{ °C} \pm 5\text{ °C}$ .  
Auto recovery when baseplate cools down to  $+95\text{ °C} \pm 5\text{ °C}$ .

### Environmental Conditions

Designed to meet MIL-STD-810F

#### Temperature

Methods 501.4 & 502.4  
Operating:  $-55\text{ °C}$  to  $+85\text{ °C}$  (at baseplate)  
Storage:  $-55\text{ °C}$  to  $+125\text{ °C}$  (ambient)

#### Vibration

Method 514.5  
Procedure I  
 $14.76\text{ g}_{\text{rms}}$  20-2000 Hz for 500 seconds  
at each of 3 perpendicular axes.

#### Altitude

Method 500.4  
Procedures I – Storage/Air transport:  
up to 70,000 ft. (non-operational)  
Procedure II – Operation/Air Carriage:  
up to 70,000 ft. (operational)

#### Shock

Method 516.5  
Procedure I  
50 g / 11 ms terminal peak half-sine shock pulse

#### Humidity

Method 507.4  
Up to 95% RH

#### Salt Fog

Method 509.4

### Reliability

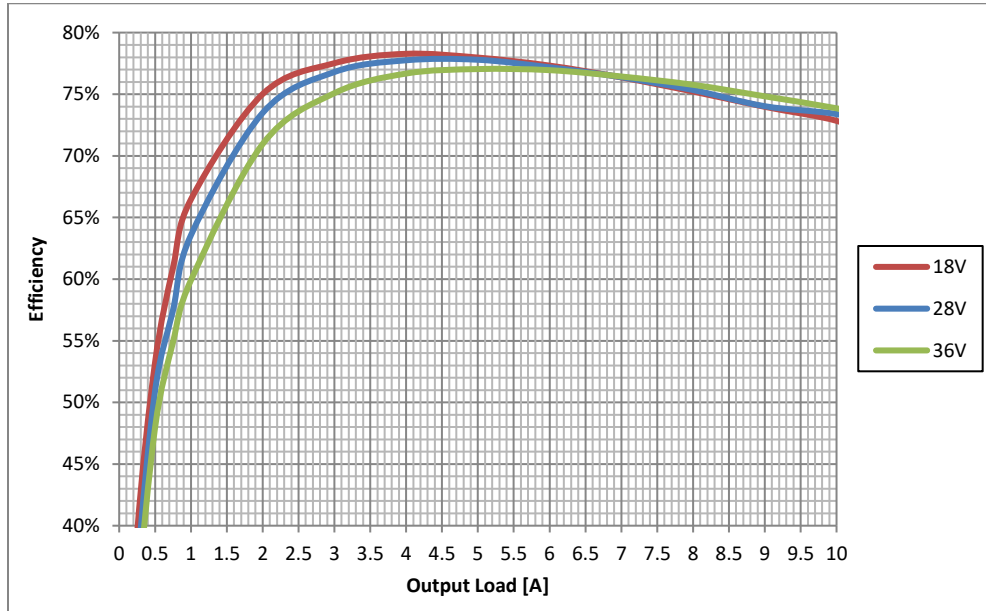
150,000 hours, calculated IAW MIL-HDBK-217F Notice 2 at  $+85\text{ °C}$  baseplate, Ground fixed conditions.

<sup>†</sup> Thresholds and protections can be modified / removed – please consult factory.

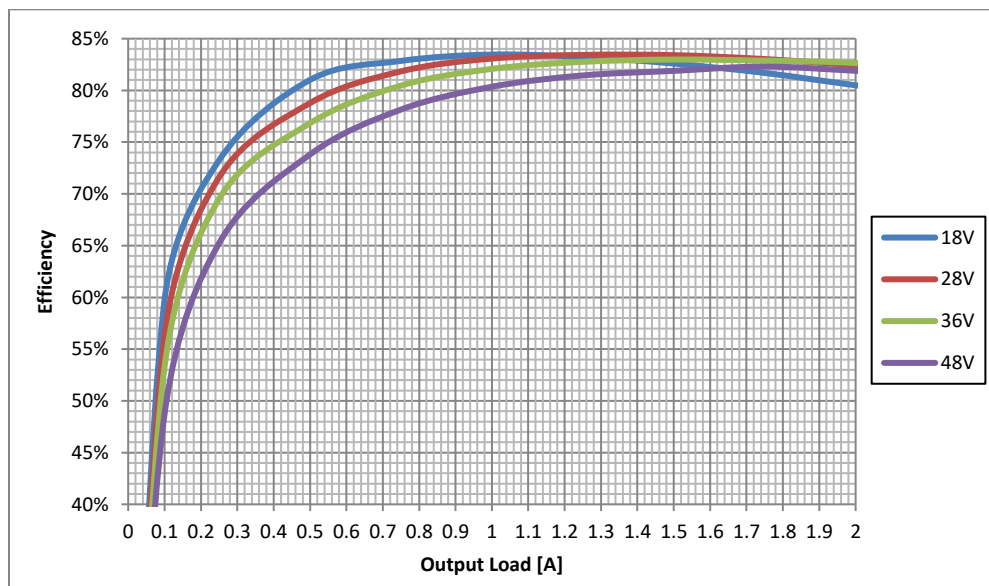
**M7419 Series– DC/DC Power Supply**

**Efficiency vs. Load**

- **5 V<sub>DC</sub> output:**



- **28 V<sub>DC</sub> output:**



## M7419 Series– DC/DC Power Supply

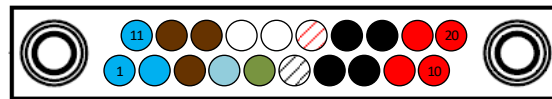
### Pin Assignment

**Connector type:** RM272-020-322-2900 or eq.

**Mates with:** RM242-020-571-5900 (crimp removable contacts) or RM242-020-241-5900 (solder cup contacts) or eq.

Pin #	Function	Polarity	
1	INPUT	+	●
2	INPUT	+	●
3	INPUT RTN	–	●
4	INHIBIT	+	●
5	SYNC	+	●
6	SENSE RTN	–	○
7	OUTPUT RTN	–	●
8	OUTPUT RTN	–	●
9	OUTPUT	+	●
10	OUTPUT	+	●

Pin #	Function	Polarity	
11	INPUT	+	●
12	INPUT RTN	–	●
13	INPUT RTN	–	●
14	N.C.		
15	N.C.		
16	SENSE	+	○
17	OUTPUT RTN	–	●
18	OUTPUT RTN	–	●
19	OUTPUT	+	●
20	OUTPUT	+	●



**Note:** All output pins with the same function should be connected together for best performance.

## M7419 Series– DC/DC Power Supply

### Functions and Signals

#### **INHIBIT signal**

The INHIBIT signal is used to turn the power supply ON and OFF.

TTL “1” or OPEN – will turn on the power supply. (For normal operation leave the signal not connected.)

TTL “0” – will turn off the power supply.

Grounding for signal is VIN RTN pin.

#### **SYNC signal**

The SYNC signal is used to allow the power supply frequency to sync with the system frequency.

SYNC frequency can be  $250 \pm 10$  kHz, TTL level.

When left open, the power supply will work at  $250 \pm 10$  kHz (internal clock).

This signal is referenced to VIN RTN pin.

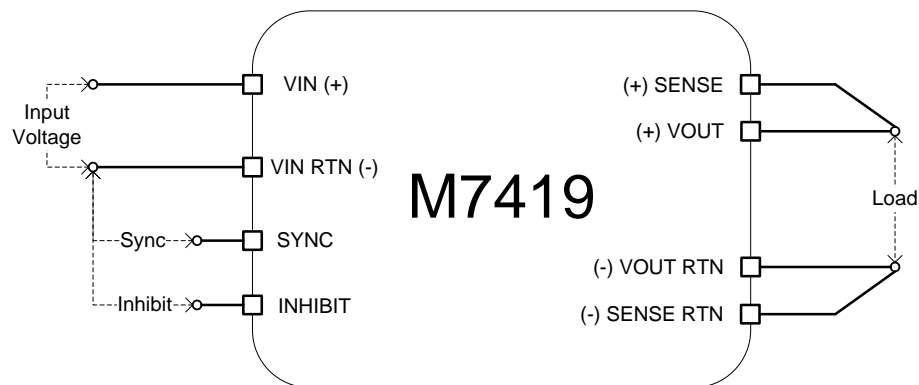
#### **SENSE**

The SENSE is used to achieve accurate load regulations at load terminals (this is done by connecting the pins directly to the load’s terminals).

The use of remote sense has a limit of voltage dropout between converter’s output and load terminals of 2-10% of voltage output.

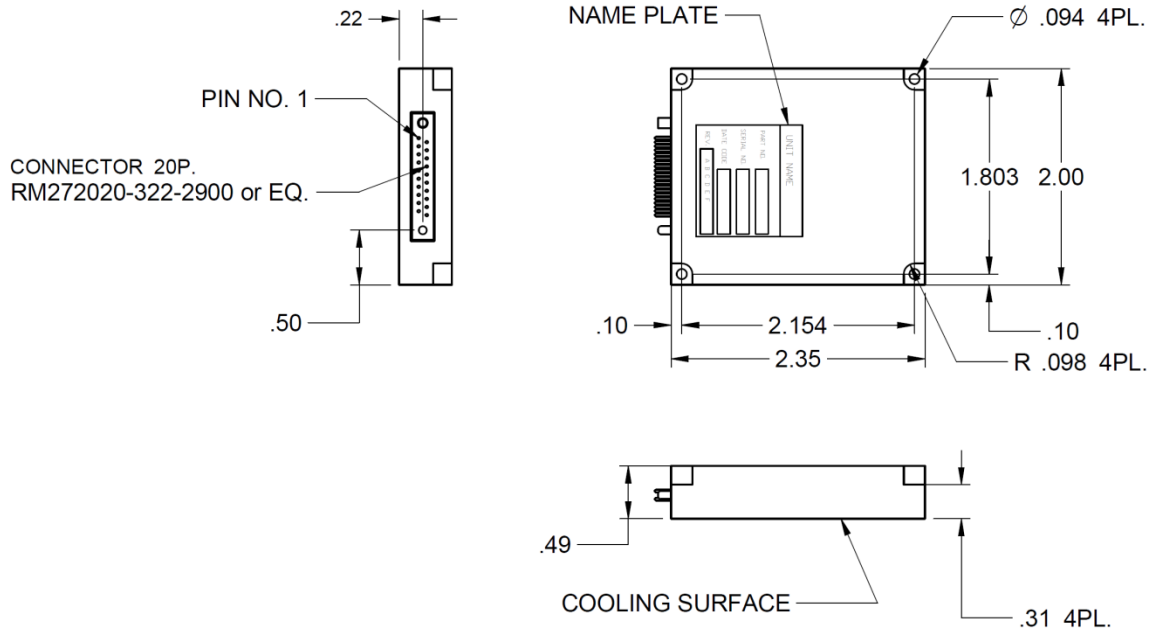
**When not used connect SENSE to VOUT and SENSE RTN to VOUT RTN.**

### Typical Connection Diagram

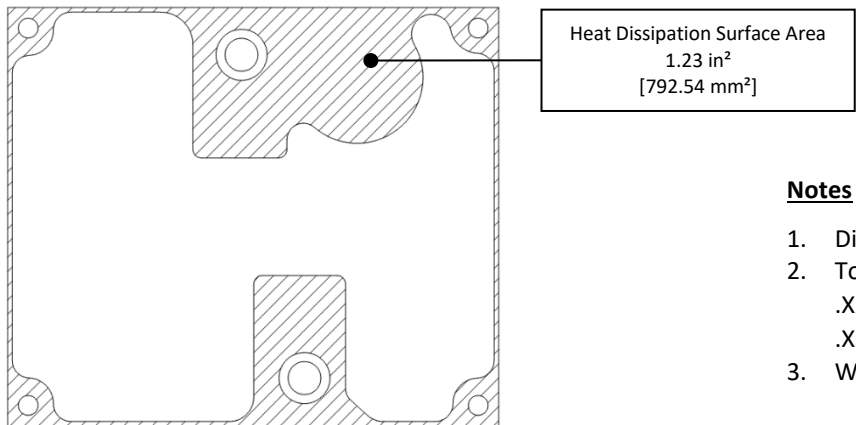


**M7419 Series– DC/DC Power Supply**

**Outline Drawing**



**Heat Dissipation Surface**



**Notes**

1. Dimensions are in inches [mm]
2. Tolerance is:  
.XX ± 0.01 in  
.XXX ± 0.005 in
3. Weight: Approx. 2.5 oz [70 g]

# M7419 Series– DC/DC Power Supply

## Standard Variants

Part number	Input configuration	Output configuration
M7419-100	18-48 V <sub>DC</sub>	5 V <sub>DC</sub> / 8 A
M7419-101	18-48 V <sub>DC</sub>	12 V <sub>DC</sub> / 3 A
M7419-102	18-48 V <sub>DC</sub>	15 V <sub>DC</sub> / 2.5 A
M7419-103	18-48 V <sub>DC</sub>	24 V <sub>DC</sub> / 2 A
M7419-104	18-48 V <sub>DC</sub>	28 V <sub>DC</sub> / 1.8 A
M7419-105	18-48 V <sub>DC</sub>	48 V <sub>DC</sub> / 0.8 A
M7419-106	18-50 V <sub>DC</sub>	24 V <sub>DC</sub> / 2 A

**Note: Specifications are subject to change without prior notice by the manufacturer.**