

M7425 SERIES

DC/DC POWER SUPPLY



PRODUCT HIGHLIGHTS

- MINIATURE
- HIGH DENSITY
- SINGLE OUTPUT
- DC/DC CONVERTER
- UP TO 800W



Applications

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

Special Features

- Miniature size
- High efficiency
- Wide input range
- Input-to-output isolation
- Remote sense compensation
- Remote inhibit (ON/OFF)
- Fixed switching freq. (250 kHz)
- External sync. capability
- EMI filters included
- Indefinite short circuit protection with auto-recovery
- Over-voltage shutdown with auto-recovery
- Over temperature shutdown with auto-recovery

Electrical Specifications

DC Input

Voltage range: 18 to 48V_{DC}
 Transient protection:
 No damage due to surges IAW MIL-STD-1275A (100V for 50ms)
 MIL-STD-704A (80V for 0.1s)

DC Output

Voltage range: 3.3V to 50V_{DC}
 Current range: up to 50A
 Power range: 800W
 Peak power (short period): 1kW

Isolation

Input to Output: 200V_{DC}
 Input to Case: 200V_{DC}
 Output to Case: 100V_{DC}

Output Voltage Regulation

Up to ±1% (no load to full load, -55°C to +85°C and over input voltage range).

Efficiency

Typical 85% (28V_{DC} output, nominal input voltage, full load, room temperature)

EMC

Designed to meet MIL-STD-461C CE03, CE07, CS01, CS02, CS06, RE02, RS02, RS03

Ripple and Noise

Less than 50mV_{p-p}, typical (max. 1%) without external capacitance. When connected to system capacitance ripple drops significantly.

Transient Over- and Undershoot

Output resistance at load change of 50%-100% is 30-120mΩ (depending on output voltage). Output back to steady stated within 300-500μs.

Turn on Transient

Voltage overshoot at during power on is less than 3% nominal voltage.

Protections *		
<u>Input</u>	<u>Output</u>	<u>General</u>
<ul style="list-style-type: none"> • Under Voltage Lock Out Unit shuts down when input voltage falls below 16.5V_{DC} ±1V_{DC} • Over Voltage Lock Out Unit shuts down when input voltage rises above 52V_{DC} ±2V_{DC} 	<ul style="list-style-type: none"> • Active Over-Voltage Protection The converter shuts down if it exceeds 110% ±5% of the nominal voltage. The converter restarts after a preset period of time if output voltage decreases back to normal value. • Passive Over-Voltage Protection Load protected by a transorb rated 120% ±10% above nominal output voltage. • Overload Protection (Hiccup) Continuous protection (20% ±10% above maximum current) for unlimited time. 	<ul style="list-style-type: none"> • Over Temperature Protection The converter shuts down if baseplate temperature exceeds +105°C ±5°C. The converter automatically recovers when its baseplate temperature falls back below +95°C ±5°C.

<u>Environmental</u>		
Design to Meet MIL-STD-810F		
<u>Temperature</u>	<u>Altitude</u>	<u>Salt Fog</u>
Operating: -55°C to +85°C (base plate) Storage: -55°C to +125°C	Method 500.4 Procedure I & II, Up to 70,000 ft. operational	Method 509-4
<u>Humidity</u>	<u>Vibration (random)</u>	<u>Shock</u>
Method 507.4 Procedure I Up to 95% RH	Method 514.5 Category 4 - General minimum integrity exposure IAW Figure 514.5C-17 1 hour per axis.	Method 516.5 Procedure I 30g, 11ms terminal peak saw-tooth.

Reliability

150000 hours, calculated per MIL-STD-217F Notice 2 at +85°C baseplate, Ground Fixed environment.

Environmental Stress Screening (ESS)

Including random vibration and thermal cycles is also available. **Please consult factory for details.**

* Thresholds and protections can be modified / removed – please consult factory.

Pin Assignment**Input connector - J1**

Connector type: M24308/24-39F or eq.

Mates with: M24308/2-3F or eq.

Pin No.	Function	P
1	INPUT	+
2	INPUT	+
3	INPUT	+
4	INPUT	+
5	INPUT	+
6	N.C.	
7	INPUT RTN	-
8	INPUT RTN	-
9	INPUT RTN	-

Pin No.	Function	P
10	INPUT RTN	-
11	CHASSIS	
12	INHIBIT	+
13	SIGNAL RTN	-
14	INPUT	+
15	INPUT	+
16	INPUT	+
17	INPUT	+
18	N.C.	

Pin No.	Function	P
19	INPUT RTN	-
20	INPUT RTN	-
21	INPUT RTN	-
22	INPUT RTN	-
23	INPUT RTN	-
24	N.C.	
25	SYNC	+

Output connector – J2

Connector type: M24308/23-39F or eq.

Mates with: M24308/4-3F or eq.

Pin No.	Function	P
1	SENSE	+
2	OUTPUT	+
3	OUTPUT	+
4	OUTPUT	+
5	OUTPUT	+
6	OUTPUT	+
7	N.C.	
8	OUTPUT RTN	-
9	OUTPUT RTN	-

Pin No.	Function	P
10	OUTPUT RTN	-
11	OUTPUT RTN	-
12	OUTPUT RTN	-
13	SENSE RTN	-
14	OUTPUT	+
15	OUTPUT	+
16	OUTPUT	+
17	OUTPUT	+
18	OUTPUT	+

Pin No.	Function	P
19	N.C.	
20	N.C.	
21	OUTPUT RTN	-
22	OUTPUT RTN	-
23	OUTPUT RTN	-
24	OUTPUT RTN	-
25	OUTPUT RTN	-

NOTE: All pins with identical function/designation should be connected together for best performance.

Functions and Signals

INHIBIT

Description: Inhibits output.

Use: Apply short circuit or TTL "LOW" to inhibit selected output.

Leave open or apply TTL "HIGH" to enable all outputs.

Referenced to: SIGNAL RTN

SYNC

Description: Synchronizes internal switching frequency to system clock. Use: Apply TTL level, 250 kHz \pm 10 kHz, 50% duty-cycle clock.

Leave open if unused. In this case, the switching frequency will be set by the internal clock.

Referenced to: SIGNAL RTN

SIGNAL RTN

Description: Signals return reference.

Referenced to: Connected by a 100 Ω resistor to INPUT RTN

SENSE

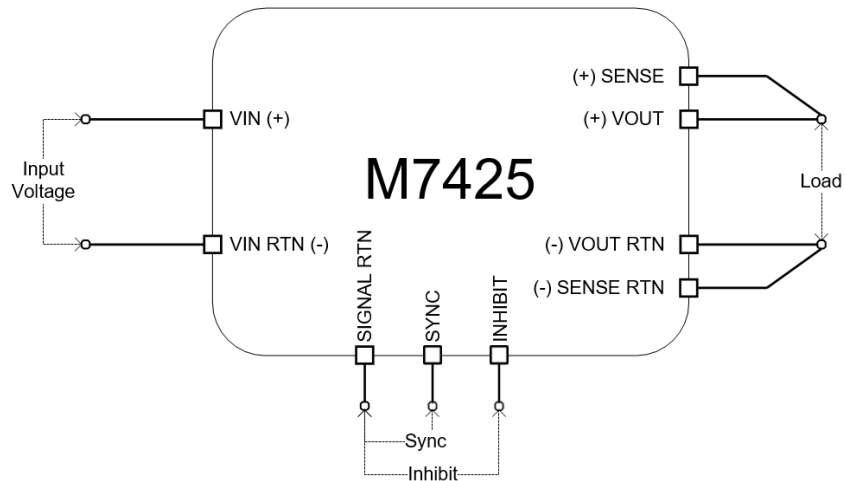
Description: Used to achieve accurate voltage regulation at load terminals, to compensate for voltage drop across the leads connecting the converter to the load, between 2% to 10%.

Use: Connect SENSE line directly to the load's positive terminal, and SENSE RTN directly to the load's negative terminal.

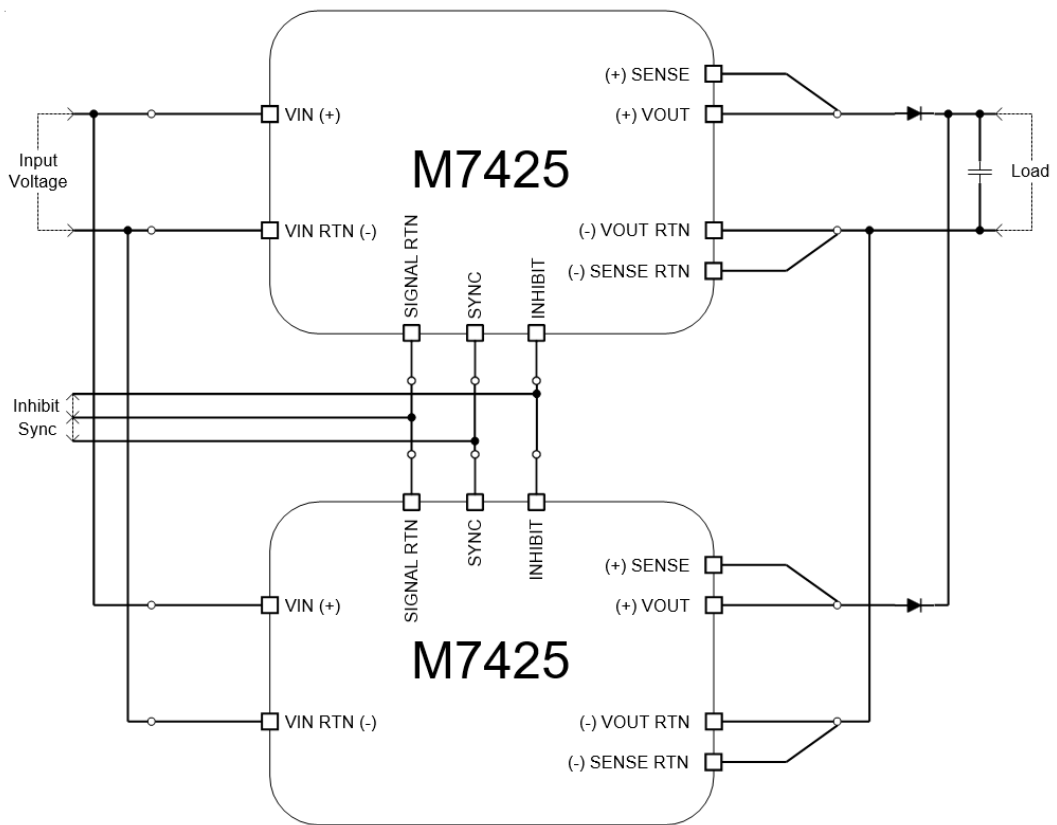
If not used, connect SENSE to OUTPUT and SENSE RTN to OUTPUT RTN. Do not leave open!

Referenced to: SENSE RTN

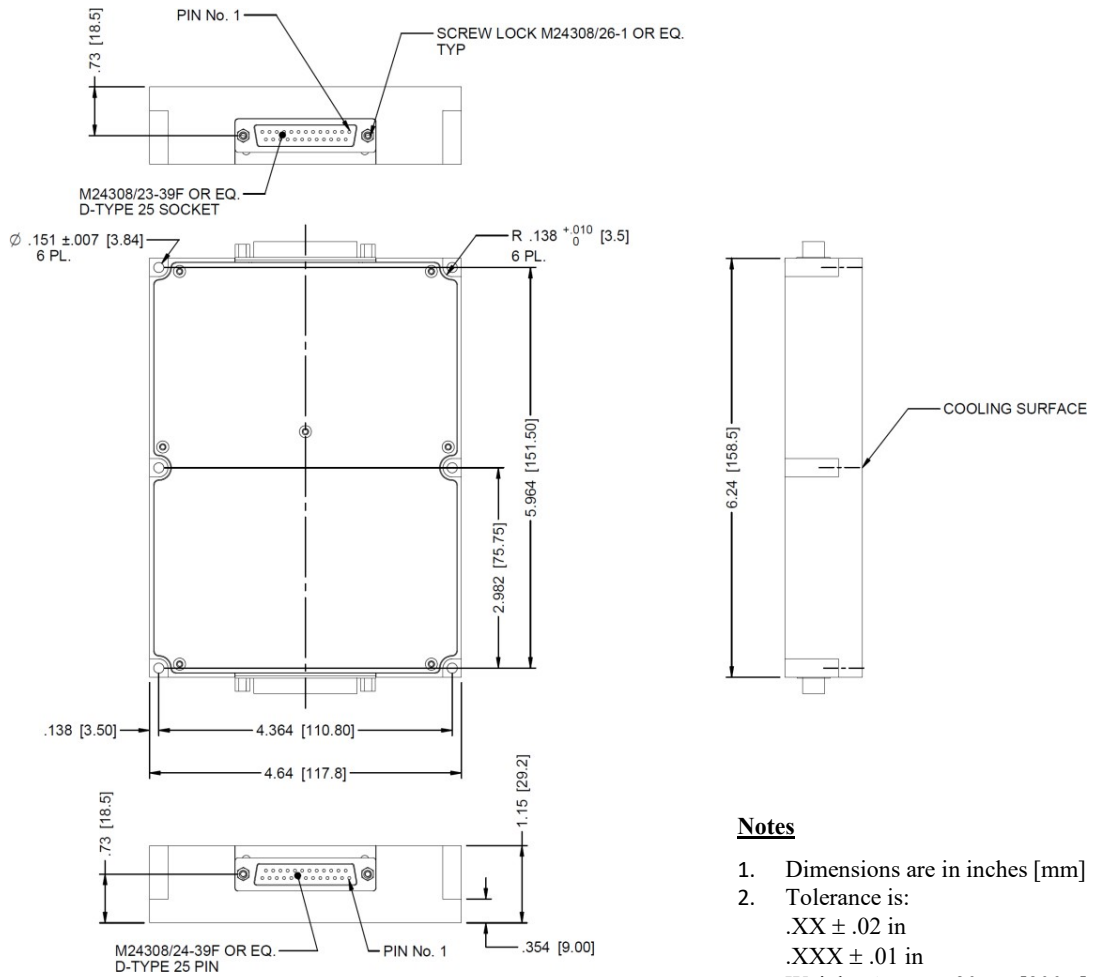
Typical Connection



Redundant Connection Diagram



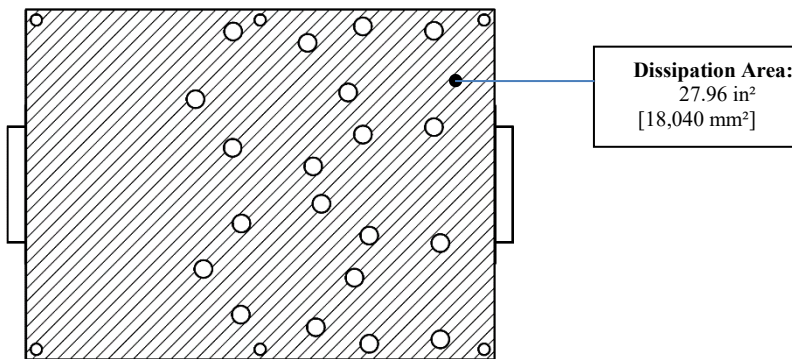
Outline Drawing



Notes

1. Dimensions are in inches [mm]
2. Tolerance is:
 .XX ± .02 in
 .XXX ± .01 in
3. Weight: Approx. 30 oz. [900 g]

Heat Dissipation Surface



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