

# M7025 SERIES

MINIATURE, HIGH DENSITY,  
SINGLE OUTPUT,  
DC/DC CONVERTERS  
(UP TO 500W)



## Applications

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

## Special Features

- Miniature size
- High efficiency
- Wide input range
- Input / Output isolation
- Remote sense
- External On/Off Inhibit
- Parallel connection with current share
- Redundancy connection
- High Density – up to 36 W/in<sup>3</sup>
- Fixed switching frequency (250 KHz)
- External synchronization capability
- EMI/RFI 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:

DC Input range: 18 to 48 V<sub>DC</sub>, per MIL-STD-704E.

No damage for:

MIL-STD-1275A (100V for 50mSec)  
MIL-STD-704A (80V for 0.1 Sec)

### Line/Load regulation:

Less than 1% (no load to full load, -55°C to +85°C).

### Ripple and Noise:

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

### DC Output:

Output range – 3.3V to 50V

Output current – max 40A.

Output power – 400W

### Efficiency :

Typical 80-88% - (full load, room temperature)

### Load Transient Overshoot and undershoot

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

### Isolation:

200V between Input and Output

200V between Input and Case

100V between Output and Case

### EMI/RFI:

Design to meet or exceed

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

### Turn on Transient

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

## Protections \*

### Input

- **Inrush Current Limiter** – peak value of 5 x I<sub>in</sub> for less than 50μSec.
- **Under voltage protection** – unit protects itself (no damage) below 16.5Vdc.
- **Over voltage protection** – unit protects itself (no damage) above 52Vdc

### Output

- **Electronic over voltage protection** – Internal control protects unit (no damage) 10% above nominal voltage.
- **Passive tranzorb on outputs** – 20% above nominal voltage.
- **Current limiting** – Continuous protection (10-30% above maximum current) for unlimited time (Hiccup).

### General

- **Over temperature protection:** Shutdown at base plate temperature of +105°C (±5°C) Automatic recovery at base plate temperature lower than +95°C (±5°C)

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

### **Environmental**

Design to Meet MIL-STD-810F

#### **Temperature:**

Operating: -55°C to +85°C  
(base plate)

Storage: -55°C to +125°C

#### **Humidity:**

Method 507.4 - Up to 95%.

#### **Altitude:**

Method 500.4, Procedure I & II, 40,000  
ft. and 70,000 ft. Operational

#### **Vibration and Shock:**

Shock - Saw-tooth, 20g peak, 11mS.

Vibration - Figure 514.5C-17. General  
minimum integrity exposure. (1 hour per  
axis.)

#### **Salt Fog:**

Method 509-4

#### **Reliability**

150,000 hours, calculated per

MIL-STD-217F at +85°C base plate,  
Ground fixed.

### **Environmental Stress Screening (ESS)**

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

## Pin Assignment

PIN No.	PIN Function
1	+ SENSE
2	+ OUT
3	+ OUT
4	+ OUT
5	- OUT
6	- OUT
7	- OUT
8	- OUT
9	- SENSE
10	SYN OUT

PIN No.	PIN Function
11	INHIBIT
12	+ VIN
13	+ VIN
14	- VIN
15	- VIN
16	N.C.
17	CURR. SHARE
18	N.C.
19	N.C.
20	+ OUT

PIN No.	PIN Function
21	+ OUT
22	+ OUT
23	+ OUT
24	+ OUT
25	- OUT
26	- OUT
27	- OUT
28	- OUT
29	SYN IN
30	+ VIN

PIN No.	PIN Function
31	+ VIN
32	+ VIN
33	- VIN
34	- VIN
35	- VIN
36	N.C.
37	SIGNAL RTN

\* All output parallel pins should be connected together for best performance.

## 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.

### SYN IN signal

The SYNC IN signal is used to allow the power supply frequency to sync with the system frequency. The system frequency should be 250Khz  $\pm$  10Khz.

When not connected the power supply will work at 250KHZ

### SYN OUT signal

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

### SIGNAL RTN

The INPUT SIGNAL RTN is referred to the input.

This is used as grounding for SYNC IN SYNC OUT, INHIBIT and CURRENT SHARE signals.

### 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).

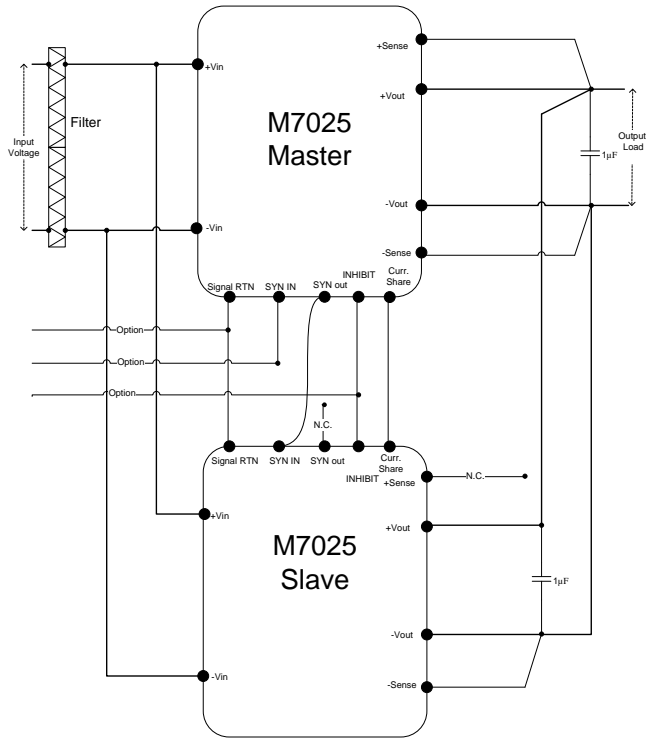
The use of remote sense has a limit of voltage dropout between converter's output and load terminals of 2-10% of voltage output.

When not used connect + SENSE to +VOUT and -SENSE to -VOUT

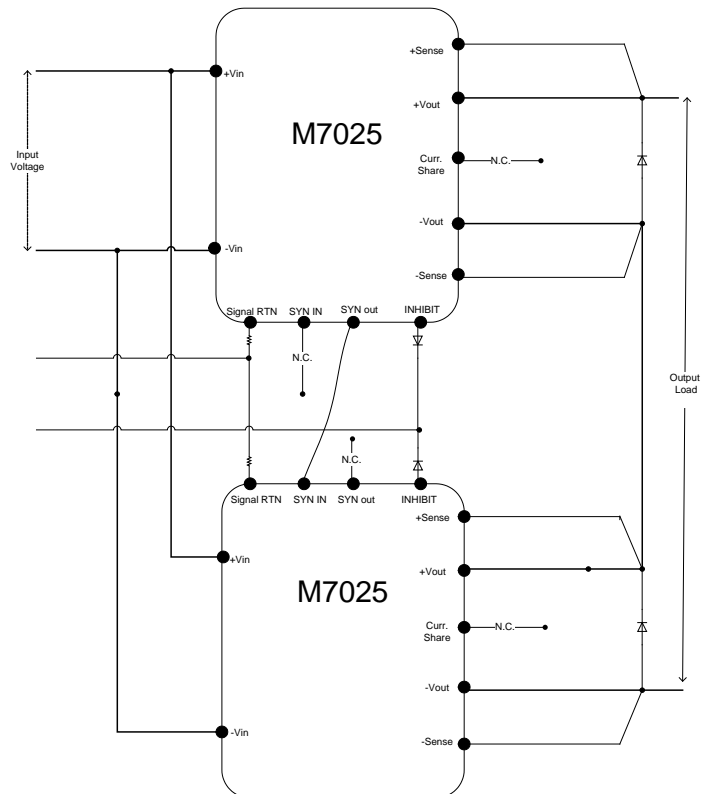
### CURRENT SHARE

The CURR SHARE signal is used to connect the power supply in parallel to other power supplies and have them divide equally the power between one another. All the power supplies should connect CURRENT SHARE signals together.

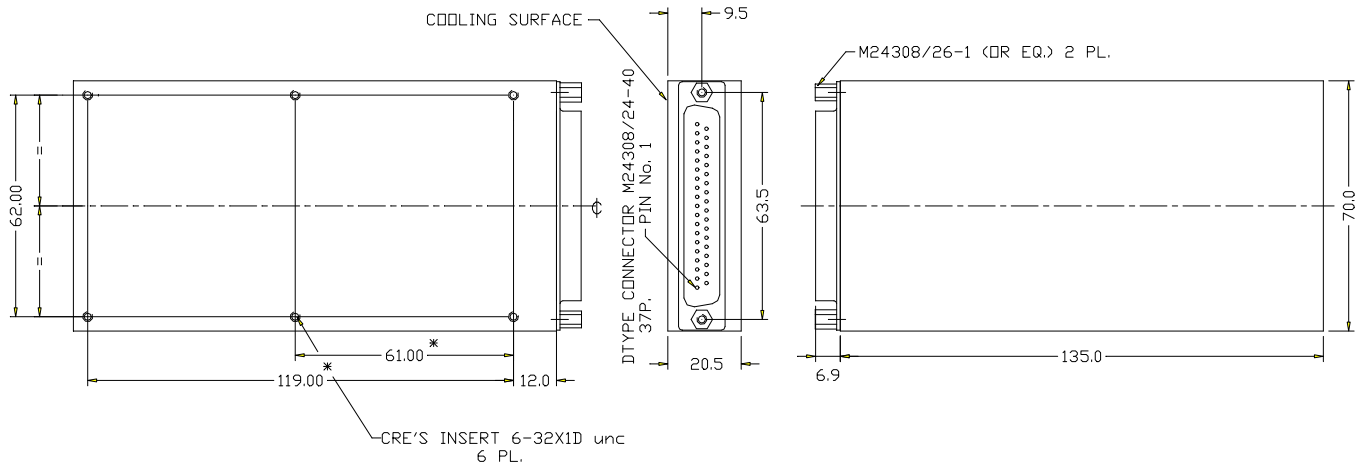
## Parallel connection with current share



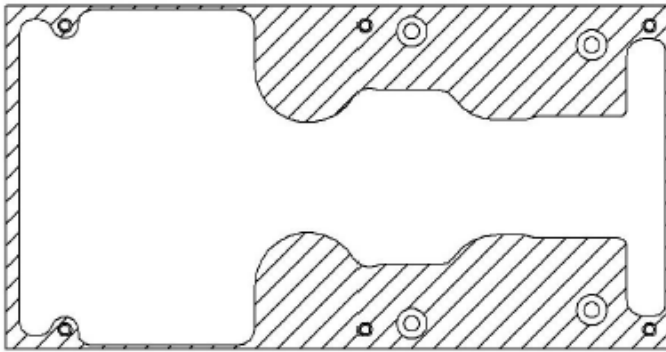
## Series connection



## Outline Drawing



## Heat Dissipation Surface



Dissipation Area  
5.49 in<sup>2</sup>  
(3546.79 mm<sup>2</sup>)

### Notes

1. Dimensions are in Inches [mm]
2. Tolerance is:  
.XX ±0.02 IN  
.XXX ±0.008 IN
3. Weight: Approx. 355gr (12.52 Oz)
4. Mounting holes can be modified – please consult factory.
5. Parasolide 3D module is available for download on site.

\* Specifications are subject to change without prior notice by the manufacturer