MILPOWER SOURCE
POWERFUL PRODUCTS. SMART SOLUTIONS.

7 Field Lane, Belmont, NH 03220
phone: (603) 267-1322 fax: (603) 267-7258
sales@milpower.com

M7027 SERIES

MINIATURE, HIGH DENSITY,
SINGLE OUTPUT,
DC/DC CONVERTERS
(UP TO 750W)

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: ±2% change in V_{OUT}; up to 5% difference in current share.
- High Density – up to 47 W/in³
- Fixed switching frequency (250 kHz)
- External synchronization 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:
DC Input range: 18 to 50 V_{DC},
Option for extended Input range: 18 to 70V_{DC},
per MIL-STD-704E.
No damage for:
MIL-STD-1275A (100V for 50mSec)
MIL-STD-704A (80V for 0.1 Sec)

DC Output:
Output range – 5V to 50V
Output current – max 40A
Output power – steady state 500W
Peak power – 750W up to 4 Sec
After that the voltage and power drop to min. 75% .

Isolation:
200V between Input and Output
200V between Input and Case
100V between Output and Case

Line/Load regulation:
Less than 1% (no load to full load, –55°C to +85°C, and over input voltage range).

Efficiency:
Typical 88-90% - (full load, room temperature) at worst case 86%-89%
For extended input voltage at worst case 83% - 86%

EMC:
Design to meet or exceed MIL-STD-461C&F CE101,CE102, CS101, CS114, CS115, CS116 RE101, RE102, RS101,RS103

Ripple and Noise:
Less than 50mVp-p, typical (max. 100mV) without external capacitance. When connected to system capacitance ripple drops significantly.

Load Transient Overshoot and undershoot
Output change at load transient of 30%-100% with Tr&Tf of max 30usec is 5% of output voltage. Output recover to steady stated within less 0.5ms.

Turn on Transient
Voltage overshoot at during power on is less than 1% nominal voltage.

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*Protections **

Input

- **Input reverse polarity:** Protection for unlimited time
- **Under voltage protection:** Unit protects itself (shutdown) below $15V_{DC}$. Turn on at 16V-18V with min. 3V hysteresis to shut down.
- **Over voltage protection** – unit protects itself (shut down) above 54Vdc, 75V for extended version.

Output

- **Electronic over voltage protection:** Internal control protects unit (no damage) 10% above nominal voltage.
- **Passive zener on output:** 20% above nominal voltage.
- **Current limiting:** Continuous protection (10-30% above maximum current) for unlimited time (Hick up).

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)
- **POR:** Protection override signal for BATTLE SHORT function

* 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, 30g 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.**

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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	N.C.

PIN No.	PIN Function
11	INHIBIT
12	+ VIN
13	+ VIN
14	- VIN
15	- VIN
16	N.C.
17	N.C.
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	POR
37	SIGNAL RTN

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" or short– 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 ± 10Khz.
When not connected the power supply will work at 250KHZ

SIGNAL RTN
The INPUT SIGNAL RTN is referred to the input.
This is used as grounding for SYNC IN, INHIBIT and POR 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 up to 0.5V .
When not used connect + SENSE to +VOUT and –SENSE to –VOUT

POR (Protection Over Ride)
The POR signal disables the under VIN protection, Over VIN protection, Over Temperature protection and Hiccup function (over and short circuit current).
TTL "0" or short – All protections are disable.
TTL "1"or OPEN – All protections are enable.

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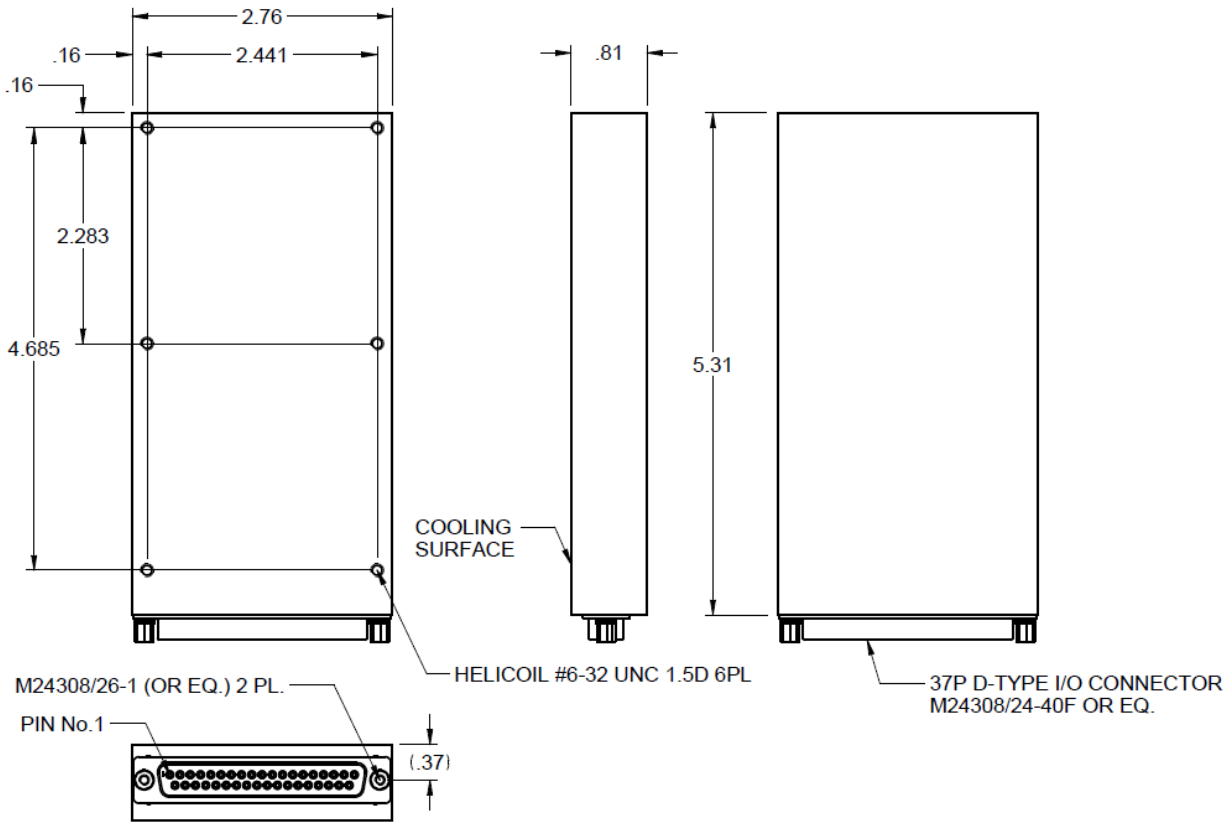
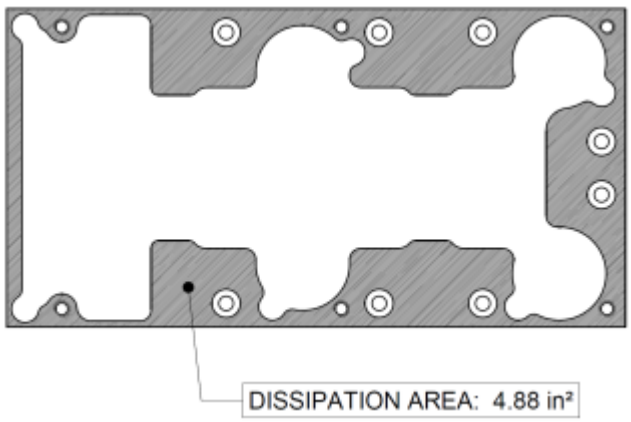
Outline Drawing



Heat Dissipation Surface



Notes

1. Dimensions are in Inches [mm]
2. Tolerance is:
   .XX ±0.02 IN
   .XXX ±0.008 IN
3. Weight: Approx. 400gr (14.1 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.