

M8637 SERIES

DC/DC POWER SUPPLY



PRODUCT HIGHLIGHTS

- **MINIATURE**
- **HIGH DENSITY**
- **TRIPLE OUTPUT**
- **DC/DC CONVERTERS**
- **UP TO 125W**

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Applications

Military, Ruggedized, Telecom, Industrial

Special Features

- Miniature size
- High efficiency
- Wide input range
- Input / Output isolation
- Fixed switching frequency (250 kHz)
- External synchronization capability
- TTL logic enable
- EMI filters included
- Indefinite short circuit protection with auto-recovery
- Over temperature protection

Environmental Conditions

Designed to meet MIL-STD-810F

Temperature:

Operating $-55\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$ (baseplate)

Storage $-55\text{ }^{\circ}\text{C}$ to $+125\text{ }^{\circ}\text{C}$

Altitude:

Method 500.4, Procedures I & II up to 70,000 ft. Operational

Humidity:

Method 507.4 - Up to 95% RH (including condensation)

Salt Fog:

Method 509.4

Vibration and Shock:

Shock: Saw-tooth, 20 g peak, 11 ms.

Vibration: Figure 514.5C-17 general minimum integrity exposure (1 hour per axis)

Reliability

150,000 hours calculated per MIL-STD-217F Notice 2, at $+85\text{ }^{\circ}\text{C}$ baseplate, Ground Fixed.

Electrical Specifications

DC INPUT

Normal voltage range: 18 to 70 V_{DC}

Option: 12 to 70 V_{DC} – *consult factory*

Abnormal transient protection:

No damage (may shut down) when exposed to abnormal transients IAW MIL-STD-1275A (100 V for 50 ms) and MIL-STD-704A (80 V for 0.1 s)

Efficiency: up to 80%

EMC: Designed to meet MIL-STD-461F*

CE101, CE102, CS101, CS114, CS115, CS116, RE101, RE102, RS101, RS103

Isolation:

Input to Output:

200 V_{DC} Input to Case:

200 V_{DC}

DC OUTPUT (floating)

Line/Load regulation:

Up to $\pm 1\%$ (no load to full load, $-55\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$)

Ripple and Noise: $50\text{ mV}_{\text{p-p}}$, typical (max. 1%)

Current limiting (Hiccup):

Continuous protection for unlimited time

Over Voltage Protection:

Passive transorbs on outputs.

Over Temperature

Protection:

Shutdown if baseplate temperature exceeds $+105\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$; Automatic recovery upon cooldown to below $+95\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$.

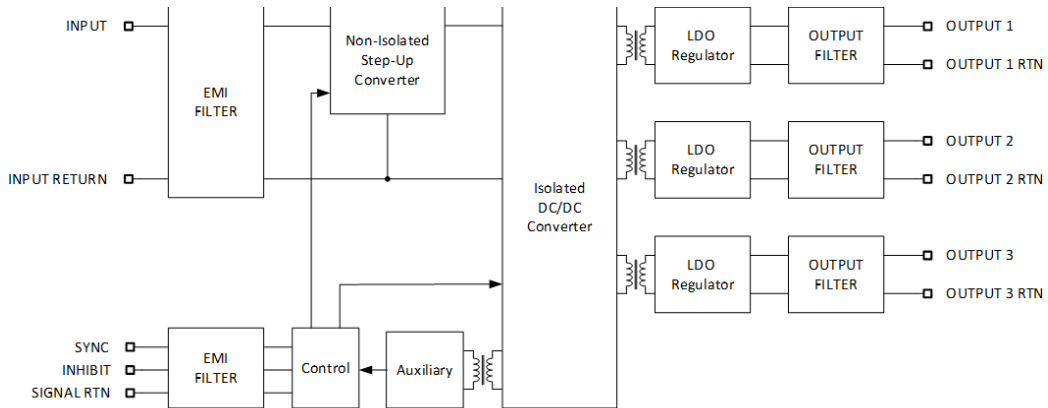
Isolation:

Output to Case: 100 V_{DC}

* EMC compliance achieved when tested with $5\text{ }\mu\text{H}$ LISNs, shielded harness and static resistive load.

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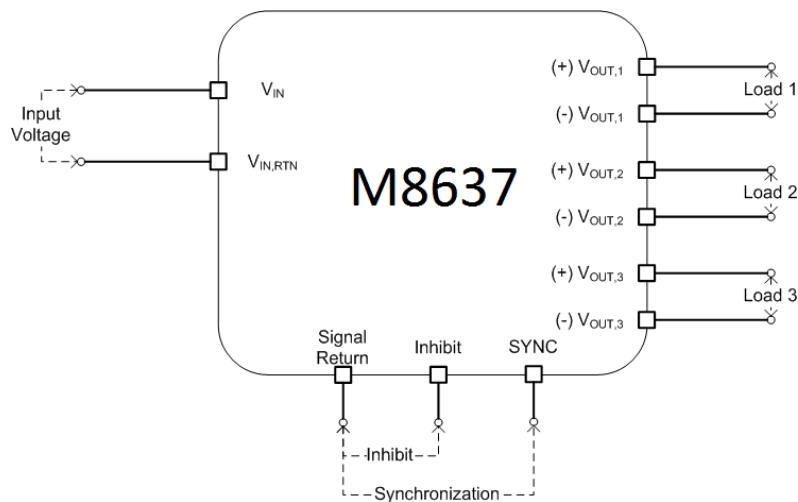
Operational Block Diagram



Outputs Range

| Output # | Voltage Range | Current Range | Power Range |
|--------------|---------------------------|---------------|-------------------|
| 1 | 3.3 to 28 V _{DC} | 0 to 10 A | 0 to 50 W |
| 2 | 3.3 to 28 V _{DC} | 0 to 6 A | 0 to 50 W |
| 3 | 7 to 28 V _{DC} | 0 to 6 A | 0 to 50 W |
| Total | | | 0 to 125 W |

Typical Connection Diagram



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Pin Assignment*

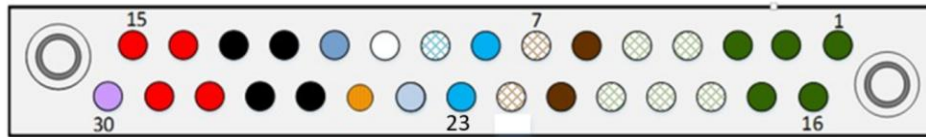
Connector type: 55302/61-A30

Mates with: M55302/62-A30M (solder cup termination) or M55302/66-30M (#22 AWG crimp termination) or eq.

| Pin No. | Function | |
|---------|---------------|---|
| 1 | OUT 1 (+) | ● |
| 2 | OUT 1 (+) | ● |
| 3 | OUT 1 (+) | ● |
| 4 | OUT 1 RTN (-) | ○ |
| 5 | OUT 1 RTN (-) | ○ |
| 6 | OUT 2 (+) | ● |
| 7 | OUT 2 RTN (-) | ○ |
| 8 | OUT 3 (+) | ● |
| 9 | OUT 3 RTN (-) | ○ |
| 10 | N.C. | |

| Pin No. | Function | |
|---------|---------------|---|
| 11 | SIGNAL RTN | ○ |
| 12 | VIN RTN (-) | ● |
| 13 | VIN RTN (-) | ● |
| 14 | VIN (+) | ● |
| 15 | VIN (+) | ● |
| 16 | OUT 1 (+) | ● |
| 17 | OUT 1 (+) | ● |
| 18 | OUT 1 RTN (-) | ○ |
| 19 | OUT 1 RTN (-) | ○ |
| 20 | OUT 1 RTN (-) | ○ |

| Pin No. | Function | |
|---------|---------------|---|
| 21 | OUT 2 (+) | ● |
| 22 | OUT 2 RTN (-) | ○ |
| 23 | OUT 3 (+) | ● |
| 24 | OUT 3 RTN (-) | ○ |
| 25 | INHIBIT | ● |
| 26 | VIN RTN (-) | ● |
| 27 | VIN RTN (-) | ● |
| 28 | VIN (+) | ● |
| 29 | VIN (+) | ● |
| 30 | SYNC | ○ |



* For optimal performance, connect all pins with identical designation together.

Functions and Signals

INHIBIT

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

TTL “1” or OPEN – Power supply is ON (For normal operation, leave this pin unconnected.)

TTL “0” or SHORT to ***SIGNAL RTN*** – Power supply is OFF.

SYNC

The ***SYNC*** signal is used to allow the power supply's switching frequency to sync with the system clock.

The external clock's frequency can be 250 kHz \pm 10 kHz.

When this pin is left open (unconnected) the power supply will synchronize to its internal clock, set at 250 kHz \pm 10 kHz.

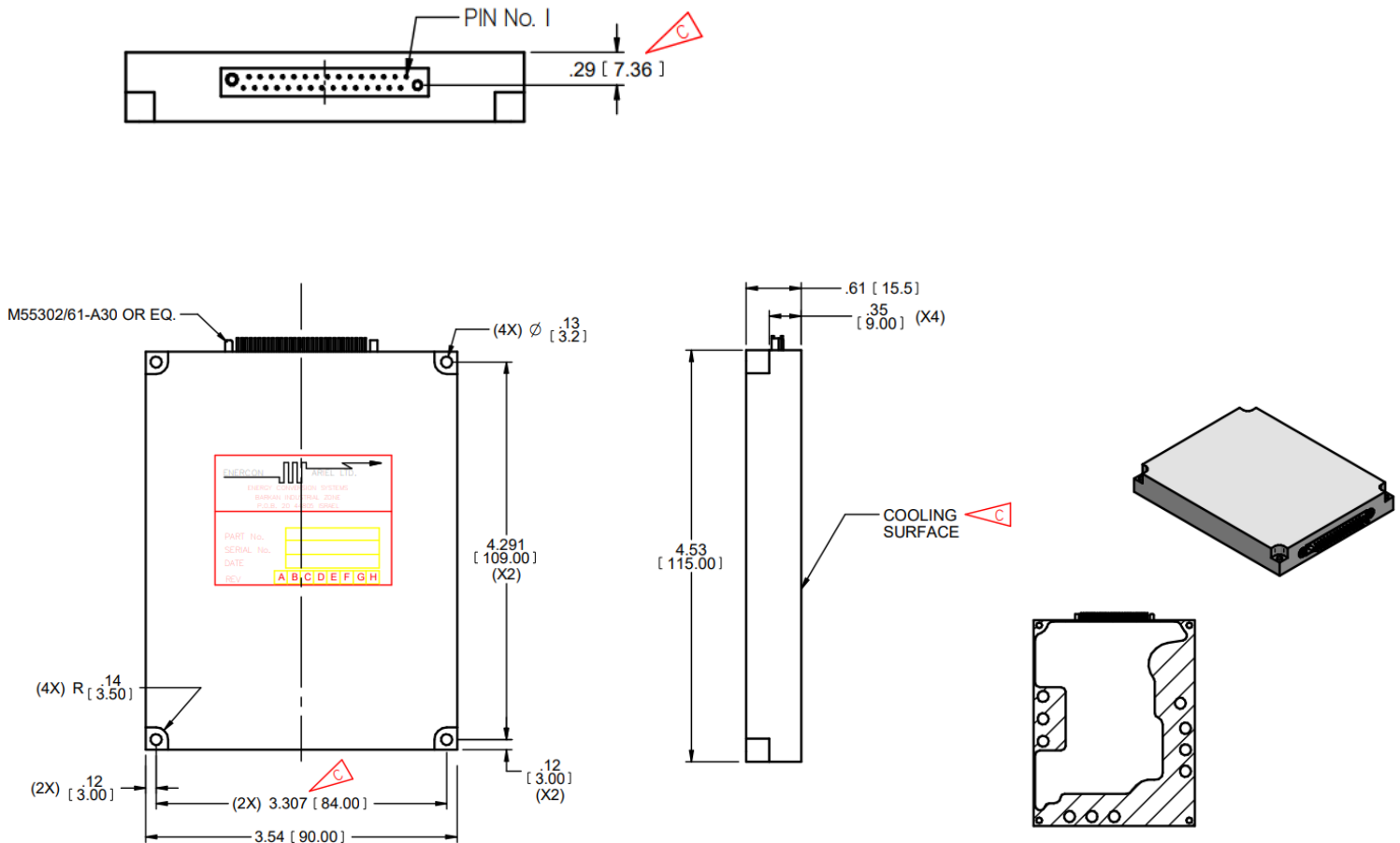
SIGNAL RTN

The ***SIGNAL RTN*** is used as a return path for the ***SYNC*** and ***INHIBIT*** signals.

This pin is referenced to ***VIN RTN***.

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Outline Drawing



UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES (MM).
TOLERANCES ARE:

| | |
|--------------|--------|
| DECIMALS | ANGLES |
| .XX ± 0.02 | ± |
| .XXX ± 0.010 | |

DO NOT SCALE DRAWING

NOTES :

1. MATERIAL: ALUMINUM ALLOY (6061-T65I & 5052-H32)
2. FINISH: CHEMICAL CONVERSION COATING MIL-DTL-5541 LAST REV, TYPE I, CLASS IA
3. WORKMANSHIP SHALL BE MIL-STD-454, REQ. 9
4. HEAT DISSIPATION AREA - 6.045 IN²

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Standard Models List (for other voltages – consult factory)

| Part number | Input | Output 1 | | Output 2 | | Output 3 | |
|-------------|--------------------------|-------------------|---------|---------------------|---------|--------------------|---------|
| | Voltage range | Voltage | Current | Voltage | Current | Voltage | Current |
| M8637-100 | 18 to 48 V _{DC} | 5 V _{DC} | 10 A | 3.3 V _{DC} | 6 A | 12 V _{DC} | 4 A |
| M8637-101 | 18 to 48 V _{DC} | 5 V _{DC} | 10 A | 3.3 V _{DC} | 6 A | 28 V _{DC} | 1.7 A |
| M8637-102 | 18 to 48 V _{DC} | 5 V _{DC} | 6 A | 15 V _{DC} | 3 A | 15 V _{DC} | 3 A |
| M8637-103 | 18 to 48 V _{DC} | 5 V _{DC} | 6 A | 12 V _{DC} | 4 A | 12 V _{DC} | 4 A |
| M8637-104 | 18 to 48 V _{DC} | 5 V _{DC} | 1.25 A | 15 V _{DC} | 3.2 A | 15 V _{DC} | 3.2 A |

- Additional standard configurations available. **Contact factory for more details.**
- All of our products can be configured to comply with EU REACH regulations. **Contact factory for more details.**

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