



# M702 Pulse TWT Amplifier

## Features:

- **Lightweight and compact**
- **Operates from +28 VDC**
- **Over 300 watts of output power**
- **Qualified for extreme military environments**
- **Remote control and monitoring**
- **Automatic fault protection**
- **Uses the L5843 TWT**



The M702 TWT amplifier is designed for military airborne use and typically supplied fully integrated with an L5843 TWT, thereby forming a self-contained pulsed microwave amplifier operating over a 7.0 to 16.5.0 GHz band.

It can be optimized for narrow band radar or data link applications.

The M702 is designed with digital controls, status signals, analog monitoring signals, and has extensive fault protection.

DS7020807

### Electrical

Prime Power	. . . . . +28VDC (per MIL-STD-704B 24 VDC min.
Power Consumption	. . . . . .380 Watts max at 28 VDC and 7% duty cycle
Output Power (to TWT)	. . . . . .300 Watts max
Filament Voltage*	. . . . . -6.3 VDC
Filament Current	. . . . . 1.4 Amps typical
Warm-Up Time	. . . . . .3 minutes max
Cathode Voltage	. . . . . -5.1 to -6.7 kV, adjustable
Beam Current	. . . . . .640 mA typical
Helix Current	. . . . . 100 mA typical
Collector Voltage*	. . . . . 4.25 kV typical
Collector Current	. . . . . .540 mA typical
Grid Drive Voltage*	. . . . . .40 to 110 Volts, adjustable
Grid Drive Current	. . . . . .95 mA typical
Grid Bias Off Voltage*	. . . . . -105 Volts typical
Pulse Width	. . . . . 500 nsec to 20 µsec
Pulse Repetition Frequency	. . . . . .50 KHz max Burst . . . . . 100 KHz max
Duty Cycle	. . . . . .7% max
Modulator Output Rise Time	. . . . . 15 nsec max
Modulator Output Fall Time	. . . . . 25 nsec max
Acquisition (TTL to RF) Time	. . . . . 70 nsec max

\*with respect to cathode

### Interface

Controls	. . . . . Standby/Operate, Pulse
Status	. . . . . Standby/Operate, Fault
Monitors	. . . . . Cathode Voltage, Helix Current, Beam Current

### Environment

Temperature	. . . . . -54°C to +85°C
Altitude	. . . . . 35K feet
Vibration	. . . . . 5g's, 5 to 2000 Hz
Shock	. . . . . 10g's, 11 msec half-sine
Humidity	. . . . . 95% RH, with condensation

### Mechanical

Cooling	. . . . . Conduction
Weight	
HVPS	. . . . . 8.5 lbs max
TWT	. . . . . 2.3 lbs max
Dimensions	. . . . . See Outline Drawing

### Protection

TWT Arcing	Excess Duty Cycle
Pulse Width	Helix Current
Beam Current	Prime Power Current
Cathode Voltage	Power Supply Temperature
Prime Power Voltage	TWT Temperature

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### Control Input Signals

Pin 3 Standby/operate command  
 Standby: Open circuit (or TTL High)  
 Operate: Ground (or TTL Low)  
 Pin 5 Ground return

### Status Output Signals

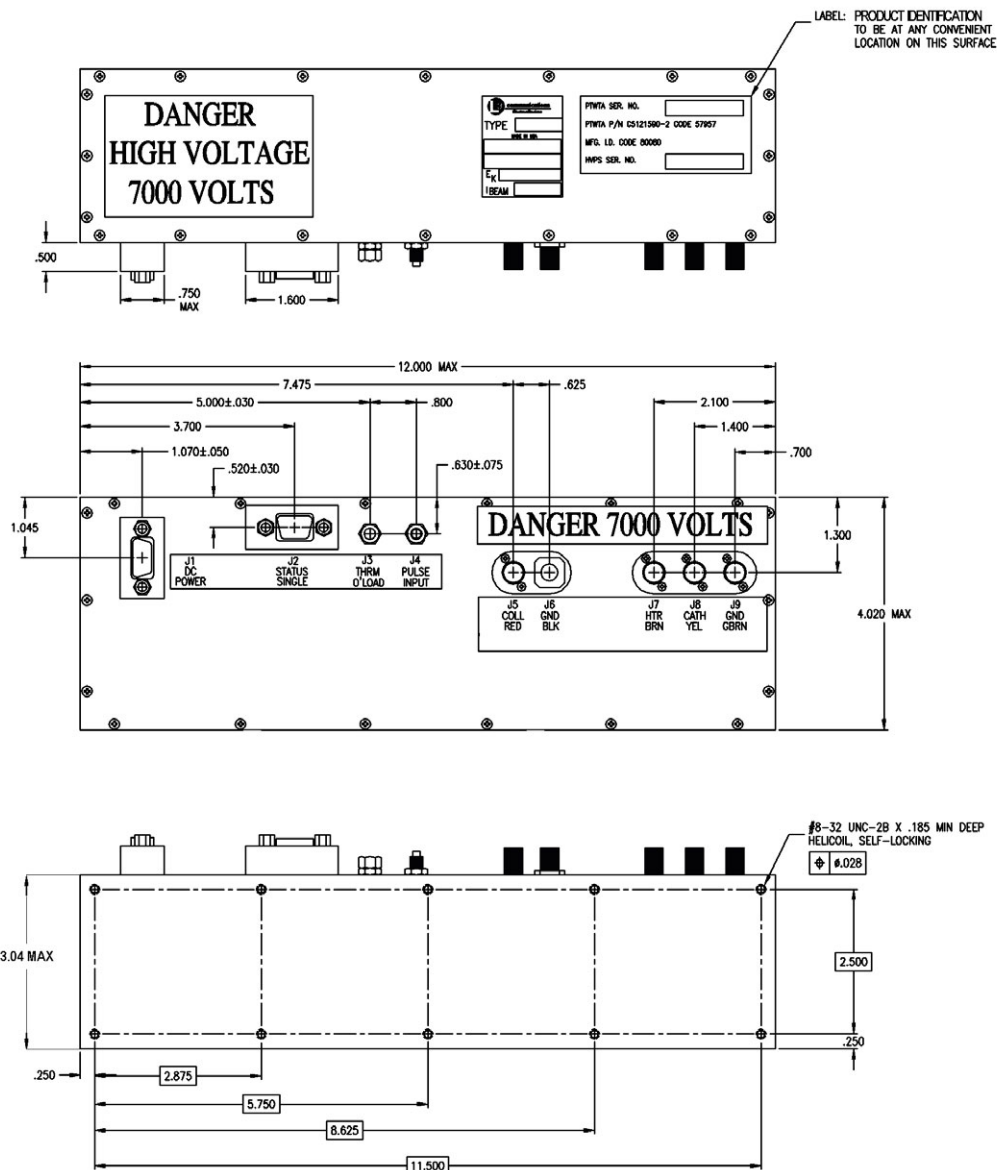
Description	Output Voltage	Max Load Current
Pin 4 Standby Indicator		
On	0.4 V max	Sink = 100 mA
Off	12 V min.	Source = 1 mA
Pin 6 Operate Indicator		
On	0.4 V max	Sink = 100 mA
Off	12 V min.	Source = 1 mA
Pin 7 Fault Indicator		
Active	0.4 V max	Sink = 100 mA
Inactive	12 V min.	Source = 1 mA

### Monitoring Signals

Pin 2 Cathode Voltage 1 volt/kilovolt  
 Pin 8 Helix current: 15 volts/ampere  
 Pin 9 Beam Current 1 volt/ampere

### Summary of Connector Functions

Connector	Type	Function
J1	M24308/4-1	Prime Power
J2	M24308/2-1	Control Status and Monitoring Signals
J3	SMC male	TWT thermal overload. Normally closed. Opens at 140°C. Isolated.
J4	SMC female	Pulse Input
J5	LGH1/2 I	To TWT collector
J6	LGH1/2 I	To TWT ground
J7	LGH1/2 I	To TWT heater
J8	LGH1/2 I	To TWT cathode
J9	LGH1/2 I	To TWT grid



Electron Devices