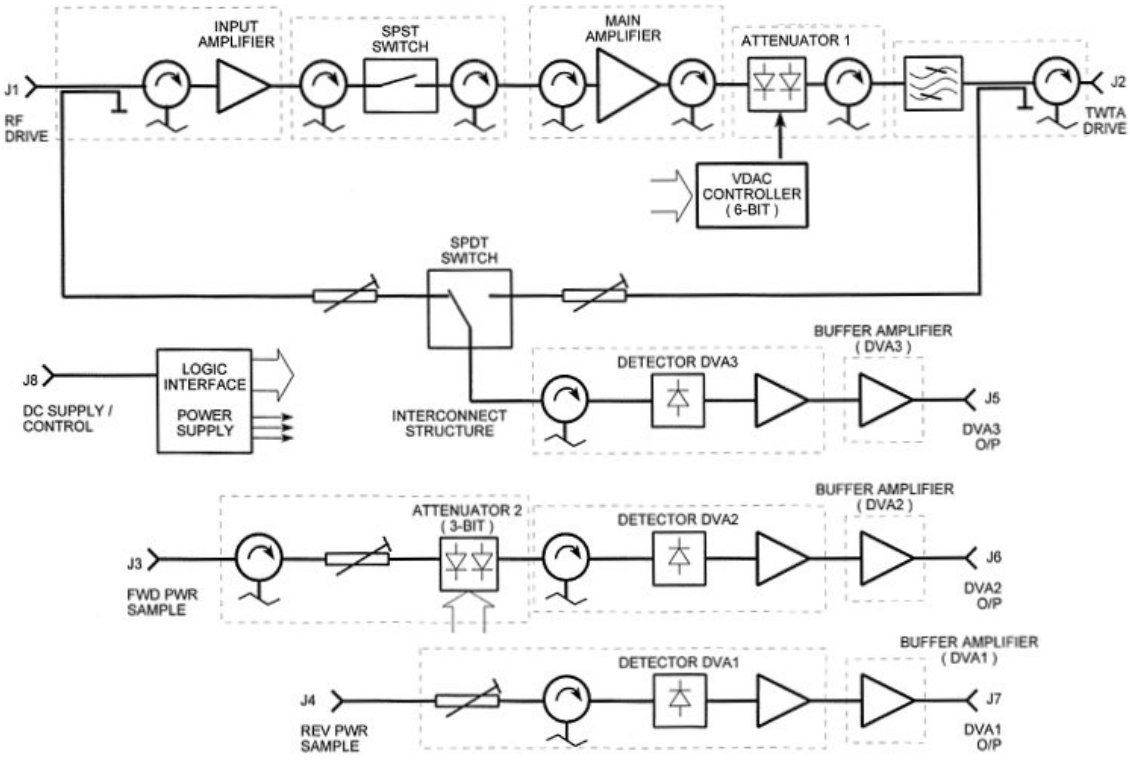
X-Band TWTA Driver Amplifier Module with Integrated Precision Video Detectors

Product Overview

e2v technologies have developed a fully-hermetic, X-band Driver Amplifier module, with integrated precision video detector channels (3) for built-in-test of the driver module, and monitoring of the TWT tube within the transmitter sub-system.
A light-weight, rigid construction, along with fully hermetic welded lid seals, lend the module to operation in hostile environments.

X-band Driver Amplifier Module

The amplifier chain utilises well-characterised and proven MMIC stages, along with e2v limiter and PIN switch diode technology, providing output drive levels up to **+28dBm CW**, from a wide range of input power levels.



Driver Module Schematic

The module package has a 140mm (5.12”) x 90mm (3.54”) footprint (excluding connectors), 25mm (1”) height.

RF pulse modulation is provided by a two-stage SPST Switch, providing RF pulse switching speed of typically **100ns**, and modulation from 200ns to 120µs pulse widths, 20% duty max.

For built-in test, the integrated SPDT switch circuit offers in excess of **60dB isolation**, with switching speed better than **1µs**.

The unit is designed to operate, and is factory tested over -**40°C** to **+90°C**.

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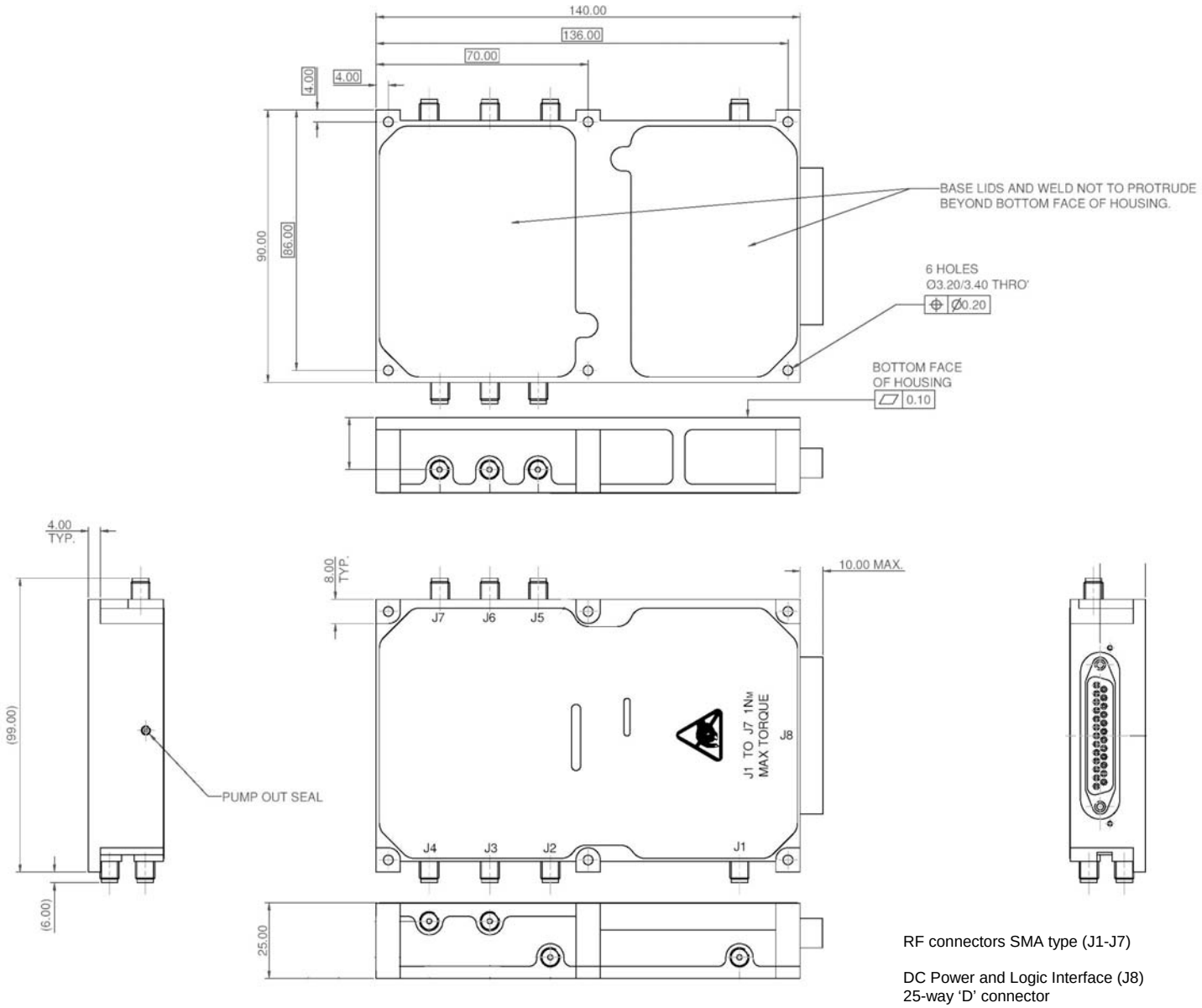

General Arrangement of X-band Driver Module

RF Performance and characteristics

Frequency	X-Band Bandwidth	5%
Input power (for saturated output)	-5dBm min.	+3dBm max.
Output Power	+25dBm min.	+27dBm max.
	-30dB stepped attenuation, in 0.5dB steps	
Noise Figure	8dB max.	
Input – Output Isolation	60dB min.	
Return Loss (J1 to J7)	<15dB	

Summary of Design Benefits

- X-band power amplifier: Output power **28dBm**
- Integrated variable attenuator with **30dB of attenuation** in 0.5dB steps, switched in <2.5µs
- Integrated precision video detectors allowing monitoring of input and output power levels
- High input-output isolation (>**60dB**)
- Low mass (<**650g**)
- **-40°C to +90°C** operation
- Thermal overload protection: shut-down at 120°C
- Military airborne environment compatibility

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