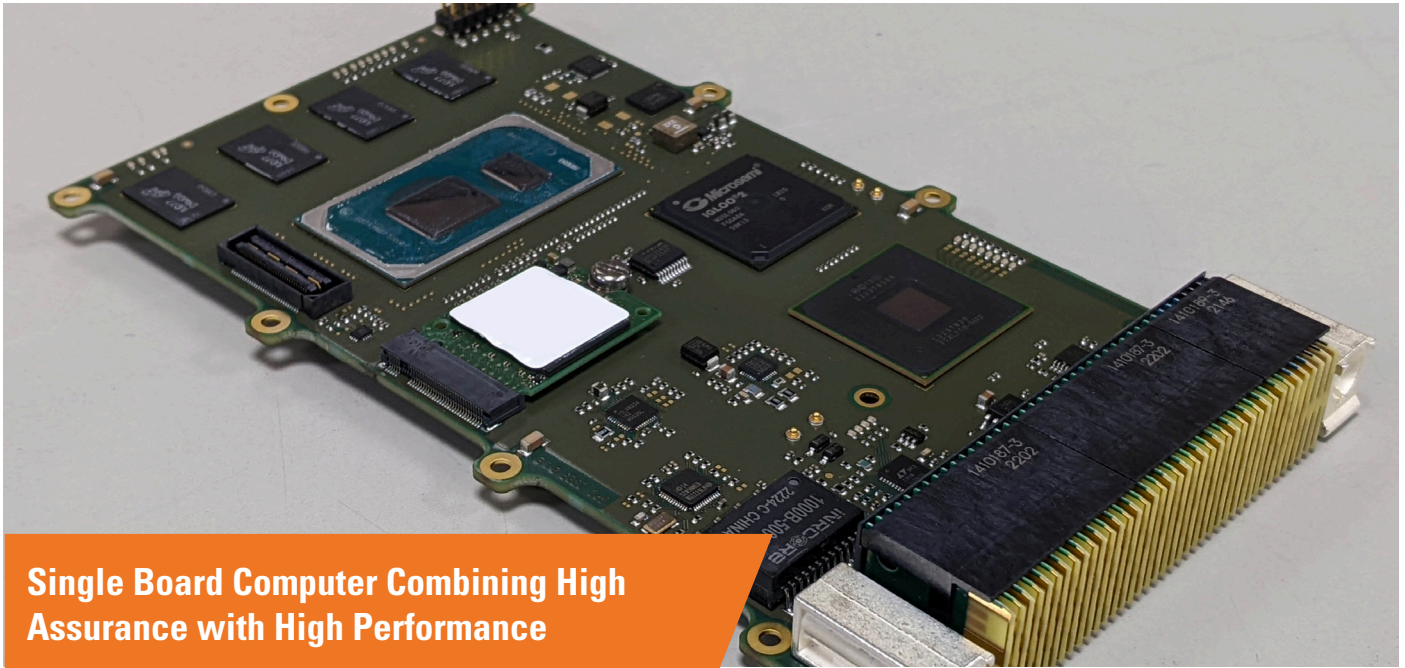# Single Board Computer
High Performance Intel® Based Processing Board

Single Board Computer Combining High Assurance with High Performance

General Dynamics has developed the Single Board Computer (SBC) to provide a high performance 3U VPX module that can be used in systems that require high assurance levels. The processor can be used single-core or multi-core to provide improved performance and has built-in General Purpose Graphics Processing Unit (GPGPU) for high resolution display graphics and parallel compute.

Processor Unit:

- 11th Generation Intel® Tiger Lake i7-1186GRE Processor
  - » i7-1185GRE available as build option
- i7-1186GRE has automatic thermal throttling disabled
- 4-Core with hyperthreading (8 threads)
- Base frequency 1.8GHz (configurable) with Intel® Turbo Boost 2.0 allowing bursts of processor clock to 4.40GHz
- Integrated Platform Controller Hub (PCH)
- Integrated Intel® Iris® Xe graphics engine (1.35GHz) with up to 96 EUs
- OpenGL 4.6 support
- Open CL 2.0 support
- Vulkan 1.2 support
- Engineered in accordance with RTCA/DO-254

VPX Backplane:

Single Slot 3U SOSA aligned to MOD3-PAY-1F1F2U1TU1T1U1T-16.2.15-2 / SLT3-PAY-1F1F2U1TU1T1U1T-14.2.16

Utility Plane:

- 12V core supply
- 3V3 AUX system management supply
- VBAT RTC support
- IPMI

Utility Data Plane:

- Supports a non-transparent bridge (NTB)
- PCIe Gen 3 x 4

Expansion Plane
PCIe Gen 3 x 4

Control Plane
2 x 10G Ethernet (10GBase-KR)
1 x 1G Ethernet (1000Base-T)

Maintenance Port
RS232

Serial Ports
2 x RS232 or 1 x RS422 serial interface (or 1x RS485 as a build option)
2 x USB 2

Volatile Memory
2 channel LPDDR4x 32GB (16GB per channel)

Non-Volatile Memory
256GB NAND Flash SSD
2 x 32MB NOR Flash

Video Output
1 x DP v1.2
Supports single display of 3840 x 2160 pixels @ 60 Hz
Supports dual display of 3840 x 2160 pixels @ 30Hz

Other I/O
4 x GPIO as defined in VITA 65.0 (Section 5.15.1)

Cooling
Air Flow Through based upon ANSI/VITA 48.8
Conduction in accordance with ANSI/VITA 46.0
Other options available

Security
TPM 2.0

Power
Min - 18W
Nominal - 24W -36W (dependant upon usage)
Peak - 72W (e.g. power up)

Environmental

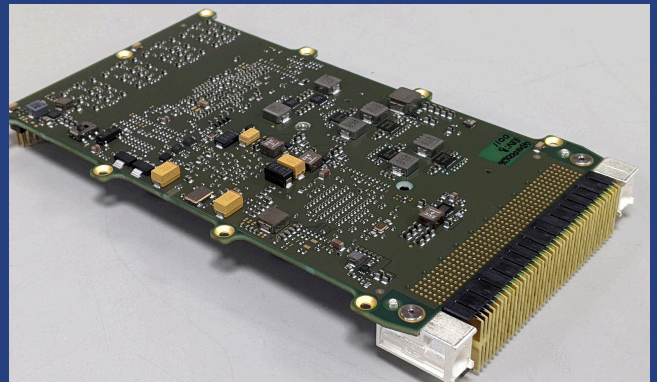|	
Temperature & Altitude	RTCA/DO-160G, Section 4.5 (Category B4) Operating -40°C to +70°C Storage -55°C to 90°C RTCA/DO-160G, Section 4.6.1 (Category F)
Humidity	RTCA/DO-160G, Section 6.3 Relative humidity of 95%
Acceleration	RTCA/DO-160G, Section 7
Vibration	RTCA/DO-160G, Section 8
Abnormal Vibration	RTCA/DO 160G, Section 8.6
Explosive Atmosphere	RTCA/DO-160G, Section 9
Fungus Resistance	RTCA/DO-160G, Section 13
EMC	Voltage spike conditions of RTCA/DO-160G, Section 17 Radio frequency subsceptibility conditions of RTCA/DO-160G, Section 20 Radio frequency emissions do not exceed the levels defined in RTCA/DO-160G, Section 21

General Dynamics SBC design provides a highly capable module that can be used in high assurance applications.

GENERAL DYNAMICS
Mission Systems