



Space Business Unit Product Overview

Q3 CY2025

Last Updated: 09.25.025

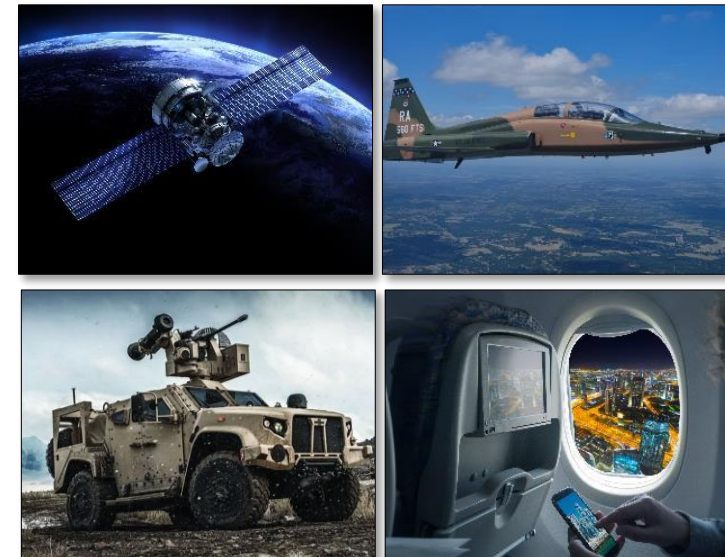
Company Confidential and Proprietary Information

About Us

Power Device Corporation delivers high-reliability power, control, and motion solutions for the most demanding aerospace, defense, space, and industrial applications.

With over 60 years of proven performance, our global team engineers and manufactures advanced systems—from radiation-hardened components and space-qualified SBCs to solid-state power controllers and precision motor control technologies.

PDC is powering mission success through innovation, vertical integration, and a relentless commitment to quality, efficiency, and reliability.



1964

Business Established



4

Business Units



3

Design &
Manufacturing Sites



210

Employees

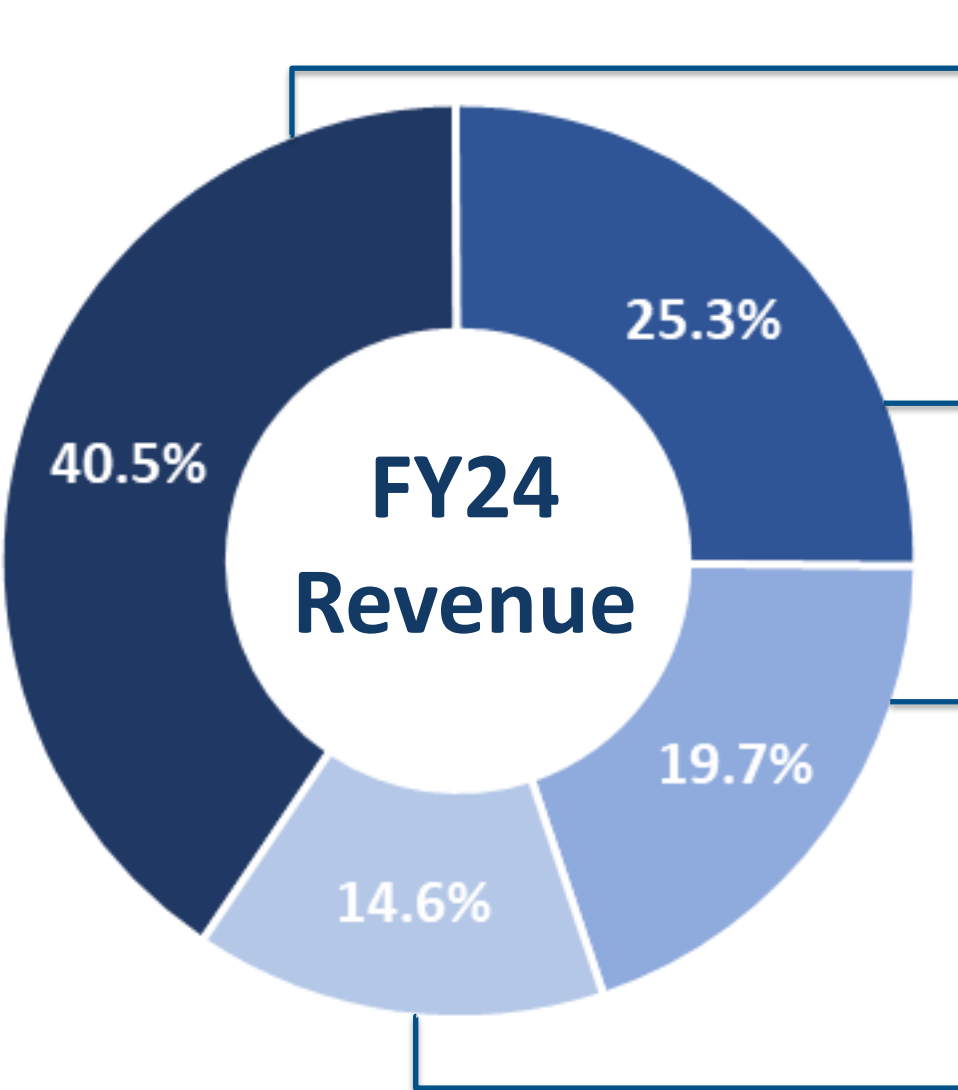


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Shared Mission

Design and manufacture feature-rich, high-reliability Power, Motion Control, and Space solutions.

PDC Business Units At-A-Glance



Motion Control

Resolver to Digital Converters | Digital to Resolver Converters Motor Control Hybrid Microelectronics | Reference Oscillators

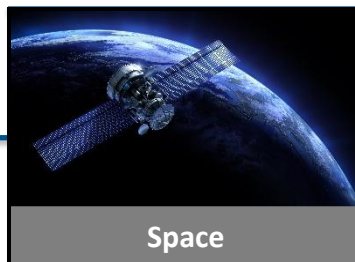
Leader in the design, development, and production of motion control and motor control solutions for defense, commercial aerospace, space and industrial applications.



Power Control

Solid State Power Controllers | Custom Motor Controllers

Leader in the design, development, and production of solid state power controllers and custom motor control LRUs for ground vehicle, military aircraft and space applications.



Space

Single Board Computers | Rad-Hard Memory Devices ADC/DAC/Logic/Analog ASICs | Nuclear Event Detectors (NEDs)

Leader in the design, development, and production of radiation-hardened and radiation-tolerant Space electronic solutions for LEO, MEO, GEO, cislunar and Interplanetary missions.



Power Supplies

Custom Power Supplies (PSUs) | AC – DC Converters DC – DC Converters | Hermetically Sealed High-Rel PSUs

Leader in the design, development, and production of high-reliable and high-efficiency, customer power supplies for military, commercial aerospace, and industrial applications.

PDC's Global Footprint... Local Support



Power Device Corp Value Proposition

- Proven Reliability with Zero Flight Failures
- Advanced Radiation Hardening Technologies
- Compact, Lightweight, and Power-Efficient Designs
- Broad Orbit and Mission Compatibility
- End-to-End Custom Engineering Capabilities

100+

Programs Supported
World-Wide

0

Flight Failures

Products

Single Board Computers

Memory Devices

ADC / DAC / Analog / Logic Components

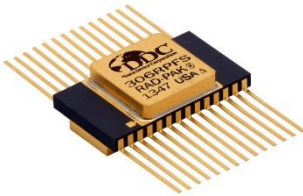
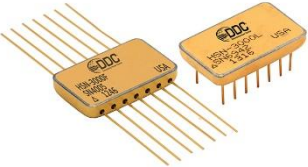
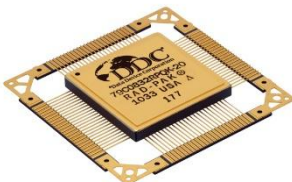
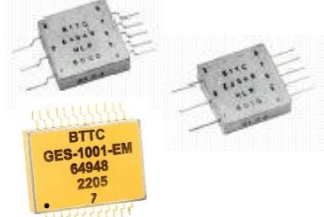
Motion Control and Motor Controllers

Nuclear Event Detectors

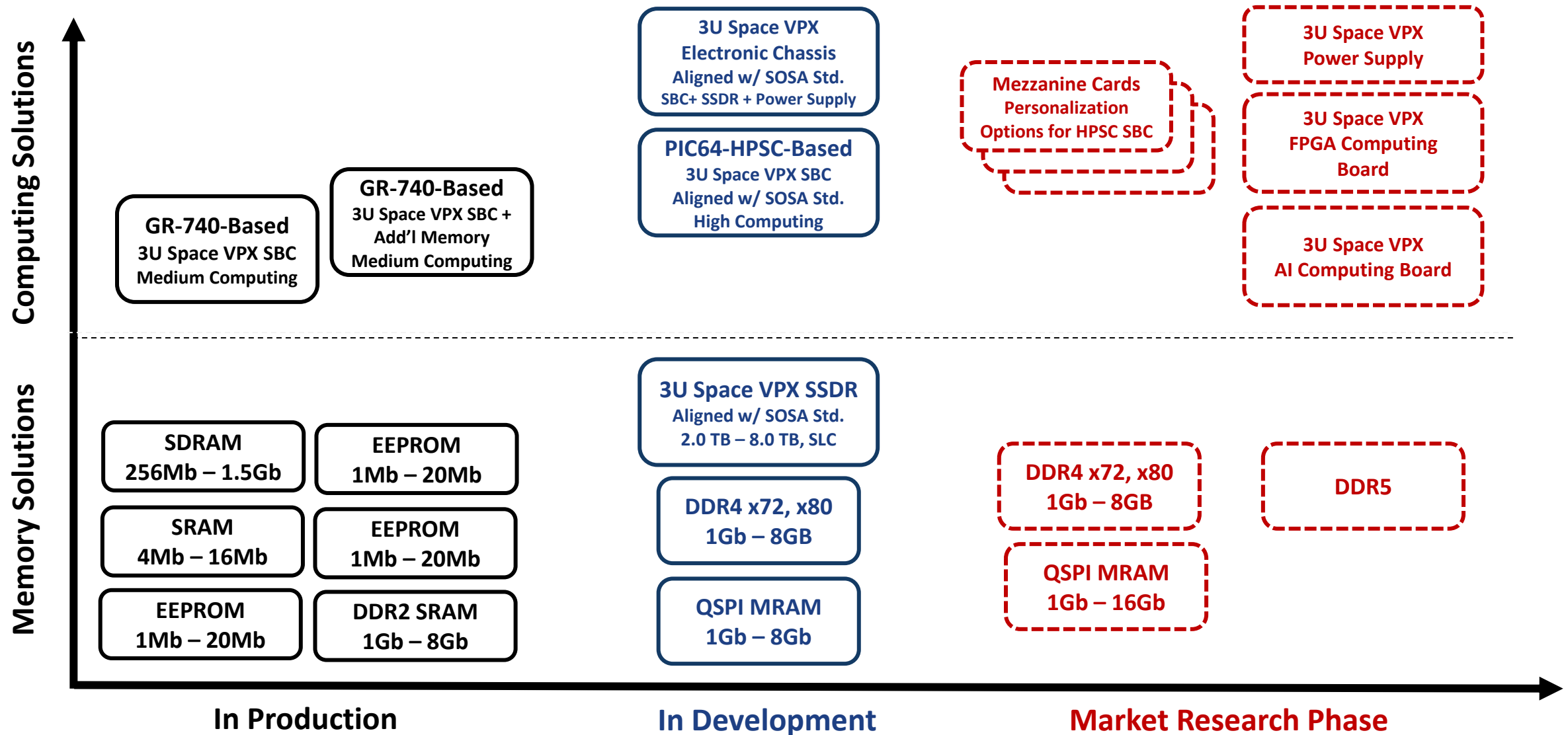
Supported Platform Examples



Space Solutions Product Portfolio

					
Single Board Computers	Solid State Data Recorder	DDR2, DDR4	NAND Flash	MRAM	SDRAM
					
Analog-Digital Converters	Digital-Analog Converters	Analog Multiplexers	Nuclear Event Detectors	EEPROM PROM	Interface Logic
					
Motor Controllers	Motor Drives	Resolver to Digital Converters	Sine Reference Oscillators	1553 Components*	Signal Transformers*

Space Product Technology Roadmap



High Performance Space Computing SBC

- Powered by Microchip PIC64™-HPSC MPU
 - Eight 64-bit RISC-V cores, up to 1 GHz operation
- 16 GB EDAC corrected PDC DDR4 SDRAM
 - 80-bit Interface for multi-bit error correction & memory chip failure protection
- 128 MB Rad-Hard MRAM (ECC protected)
- PCI-Express 3.0 for Backplane Communication
- Secure, trusted boot options
- 3U SOSA/Space VPX
 - SpaceVPX interface that is aligned with SOSA standards for maximum interoperability
- Rad-Hard and Rad-Tolerant options:
 - 50krad (RT) and 100krad (RH)
 - Latchup LET >78 (RH) and >42 (RT)
 - SEE: 2E-3 uncorrected per board-day
 - Rad-Hard and Rad-Tolerant SBCs will have the same footprint

POC-DXM1B1X-A

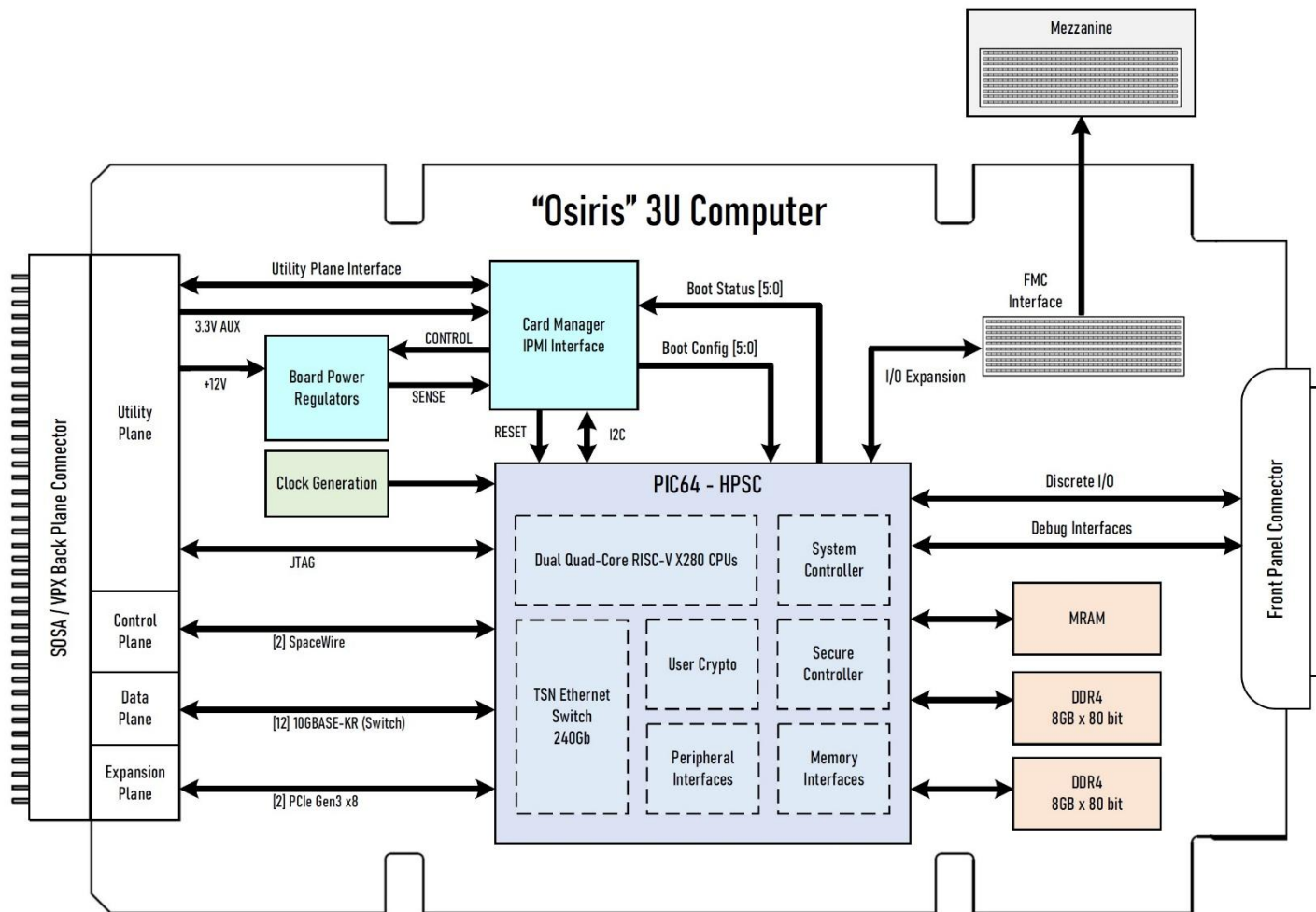


2025

Early Access Partner

Development Schedule	
EM Units	Q4 2026
FM Units	Q4 2027

High Performance Space Computing SBC



- PCI-Express Gen 3
 - 4 interfaces, 4 ports through bifurcation
 - Supports PDC SSDR: 2.0TB to 8.0TB
- 10 GbE Ethernet Interfaces – up to 10
 - Options for 4 ports of copper and fiber on mezzanine
 - 6 ports to the backplane
- Peripheral Interfaces (*quantity of each TBD*)
 - SPI (Serial Peripheral Interface)
 - UARTs, I2C, GPIOs, JTAG Host
 - One SpaceWire Port
 - For emergency access
- Operating System Support (Planned)
 - VxWorks, Linux
 - BSP for each OS

- 8GByte DDR4, data width options of x72 or x80 (HPSC)
 - x80 to support multi-bit error correction for PIC64-HPSC
- High speed up to 2400 MT/s
- Screening level up to NASA Level 1 (EEE-INST-002 PEMs)
- Radiation:
 - TID: > 100 krad
 - SEL: > 51MeV (highest level tested)
 - SEFI: LET 51 = 1.1E-5 cm²/device
 - Considerably better SEFI rates than most RT DDR4s currently available
 - Additional SEE testing is planned
- Temperature Range: -55°C to 125°C
- Compact 18x24mm BGA, 1mm pitch

D4B8G72, D4B8G80



Development Schedule

EM Units	Q4 2026
FM Units	Q2 2027

3U SOSA RT/RH Solid State Data Recorder (SSDR)

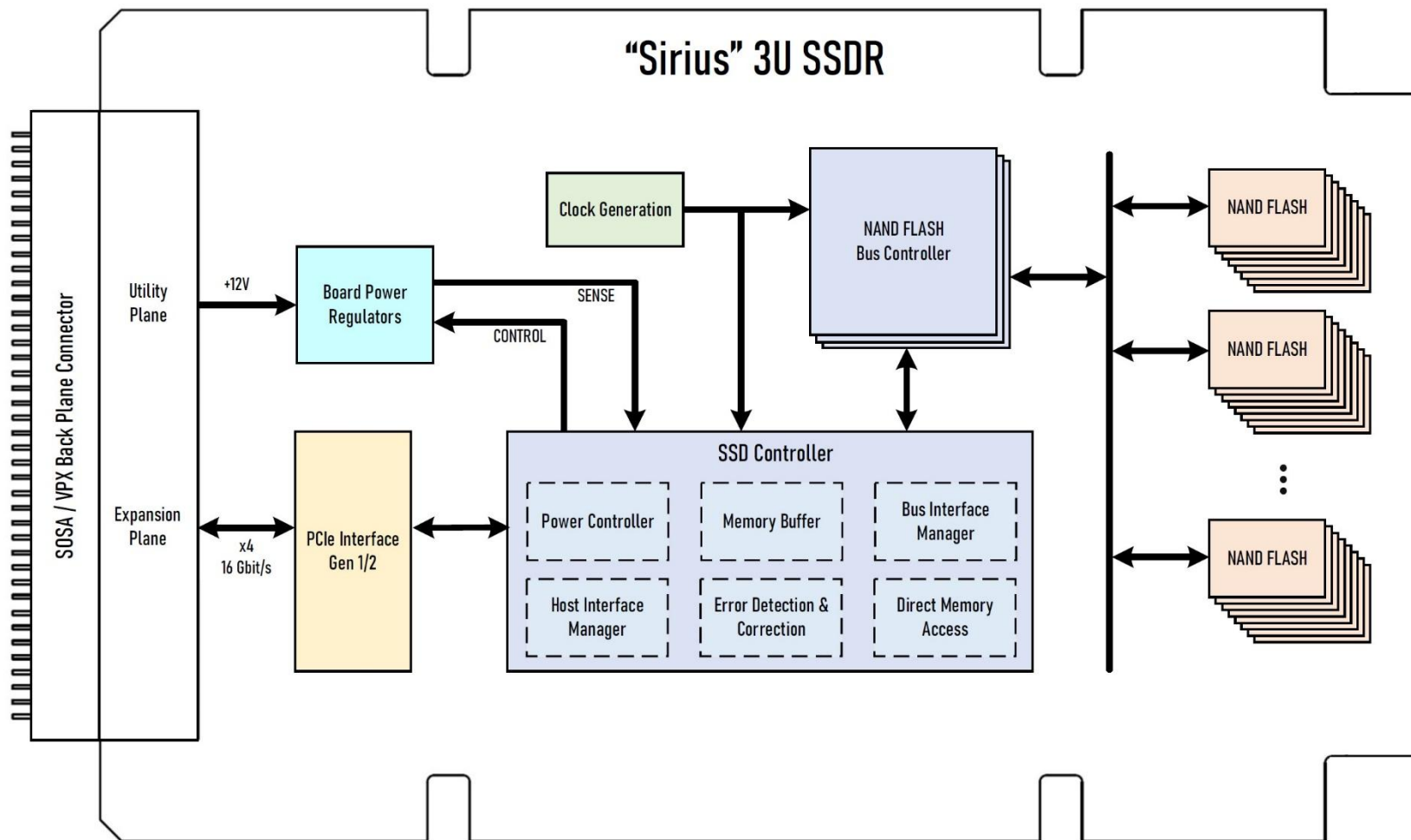
- 3U Space VPX form factor, SOSA-aligned
 - Capacities from 2.5TB to 10.0TB in SLC mode
- 2TB, 4TB, 6TB, 8TB Options
 - SLC (single-level cell) mode on TLC flash for maximum reliability and endurance
- PCIe 2.0 x4 backplane interface
 - 16Gbit/s bandwidth
- Rad-Tolerant Controller chips with advanced bit-level/device and SEFI correction
- Rad-Hard and Rad-Tolerant options:
 - Rad Tolerance up to 50krad (TBD)
 - Latchup > 60MeV

PSR-D1B1C



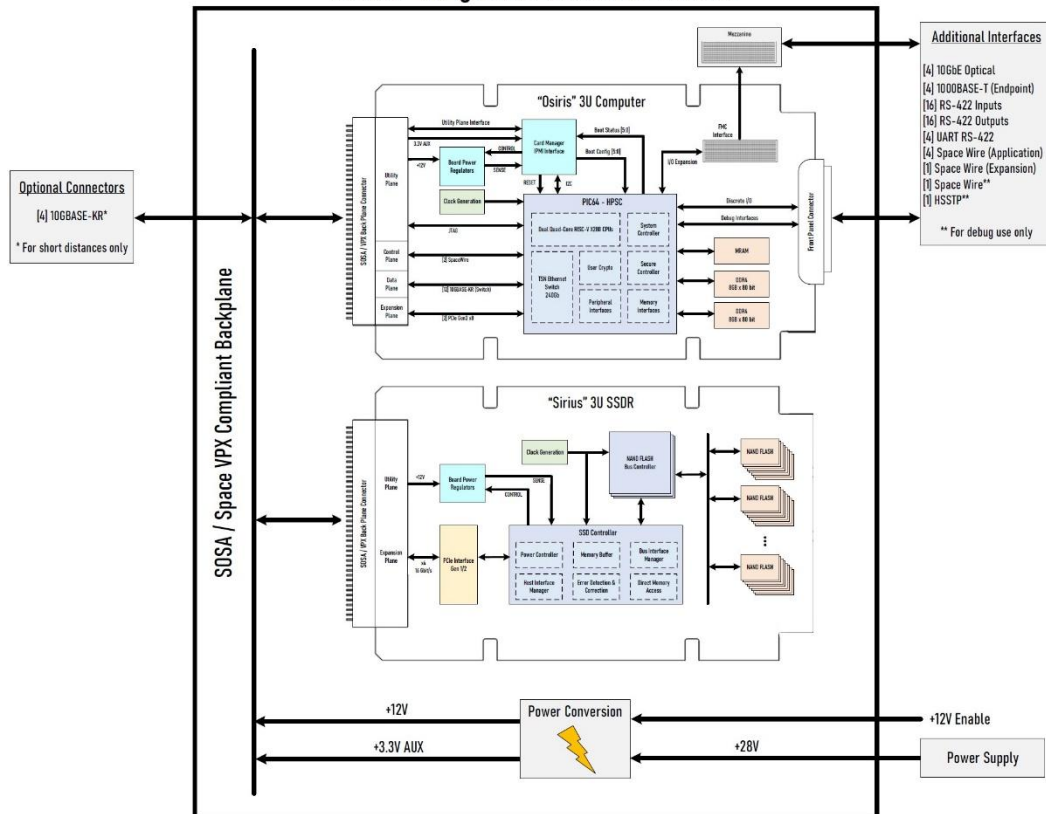
Development Schedule	
EM Units	Q4 2026
FM Units	Q4 2027

Sirius 3U SSDR Block Diagram



Integration Options for PDC's HPSC SBC

"Nebula" Integrated Electronics Chassis



NOTE: The number of backplane slots can be expanded to install multiple SSD boards in parallel and achieve higher throughput

■ HPSC SBC (3U, SOSA/VPX)

- Mezzanines to support Fiber or copper 1G, 10G Ethernet and misc. I/O
- Boards available in EM, RT, and RH to align with HPSC screening levels and price points
- All boards will be functionally similar with the same footprint, front-panel, and backplane I/O

■ DDR4 x80 bit wide, die selected with best rad performance and optimal packaging

- 18x24mm, 1mm pitch 391 BGA with built-in termination. 2 Used on HPSC SBC
- Full rad report by end of 2025 (TID/SEE).

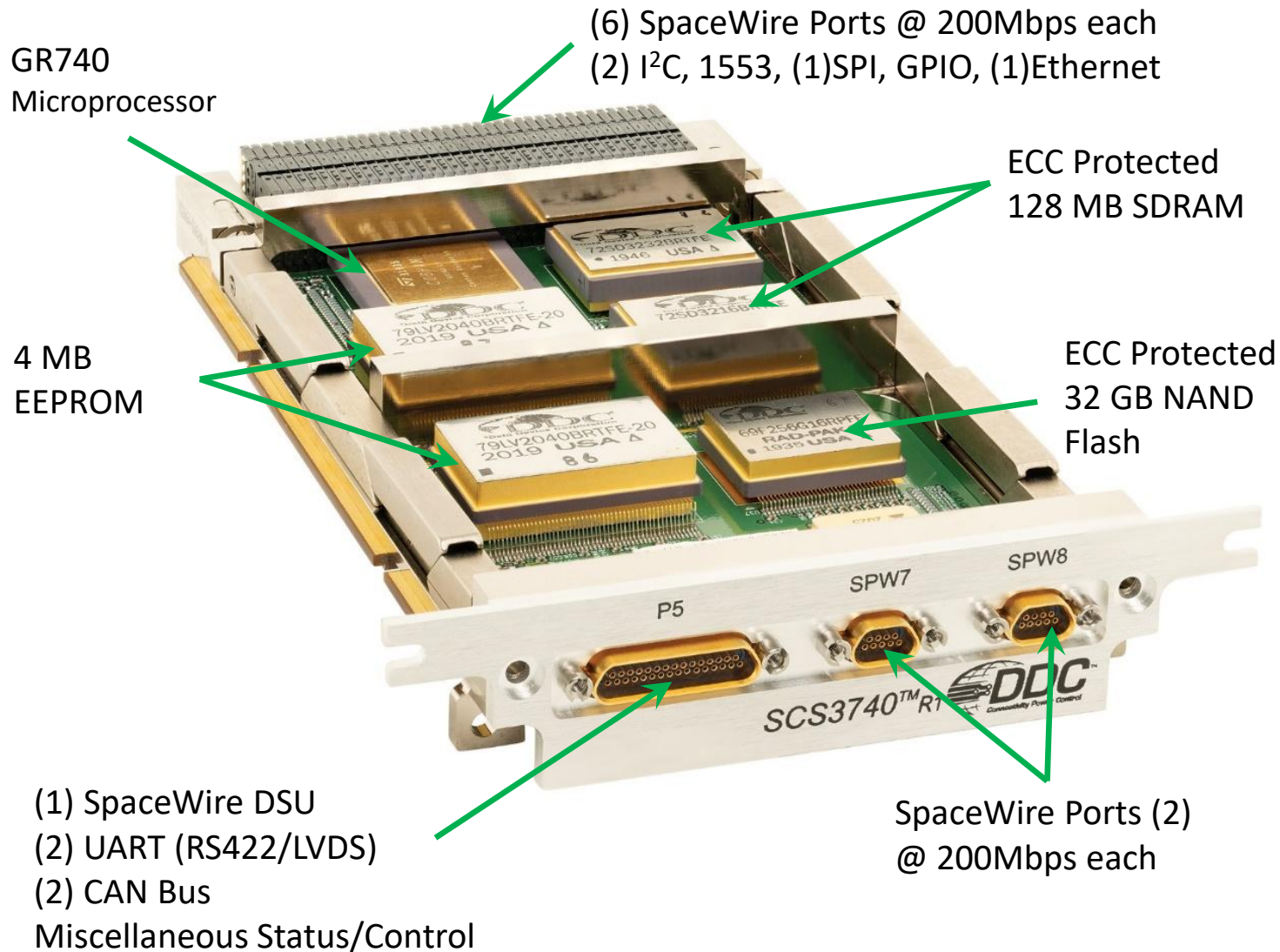
■ Solid State Drive (3U, SOSA/VPX) from 2.5 to 10.0 Terabytes SLC, high data throughput

- Screening levels aligned with HPSC
- Note: HPSC does not support the newer 1.2V I/O NAND interfaces, however PDC SSDR will

■ Box-level solution with backplane and 28V input to support HPSC and SSDR

■ SBC, SSDR, and DDR4 available separately or integrated in a single product

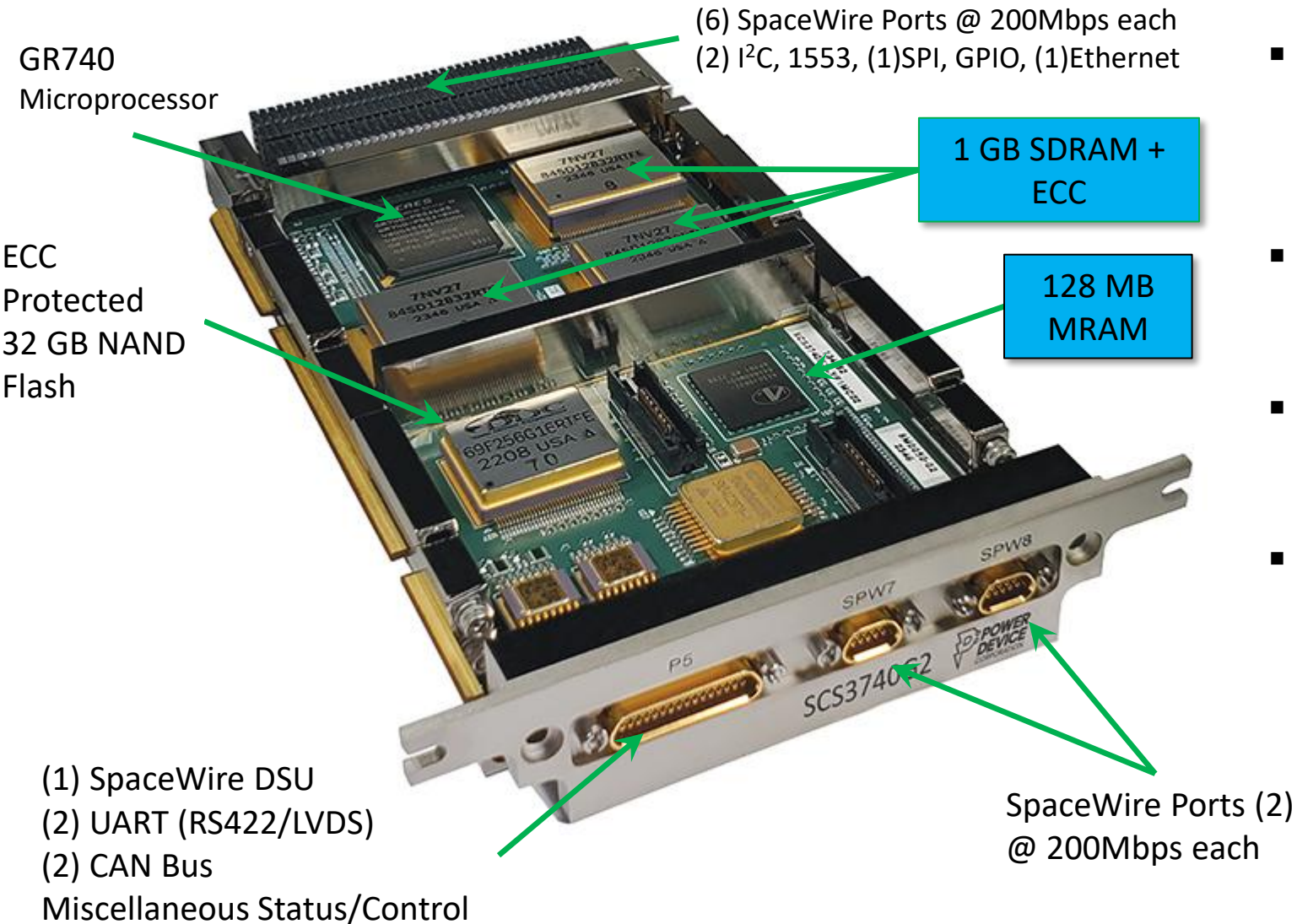
3U Rad Hard Space VPX SCS3740-R1



- GR740 Quad-Core LEON 4FT™
 - SPARC V8 Processor
 - 1700 Dhrystone MIPS
- 128 MB ECC SDRAM
- 32 GB ECC Flash
- 4 MB EEPROM
- 1553* (Requires external PHY)
- Debug via Ethernet, JTAG or SpaceWire
- Weight: 550g
- Fully Qualified and shipping flight
- **Low Power - 5W typical, 3.3V only**



EM Units	Available
FM Units	Available
TRL	9 – Flight Proven
Orbits	LEO



- Upgrades from R1 to G2:
 - Upgraded SDRAM to 1 GB
 - Upgraded boot memory to 128 MB
 - Increased flash file system speed 5x
- New ordering options
 - RT lower cost option: 30krad
 - RH for 100krad
- Operating System Options:
 - VxWorks 7.0
 - Linux, RTEMs
- Easy upgrade from existing SCS3740-R1
 - Same pinout/interfaces/architecture
 - SCS3740-G2 dev boards avail now

EM Units	Available
FM Units	Available
TRL	8 – Flight Builds/Acceptance Tested
Orbits	LEO (Planned) Interplanetary (Planned)

PDC Space SBC Portfolio Summary

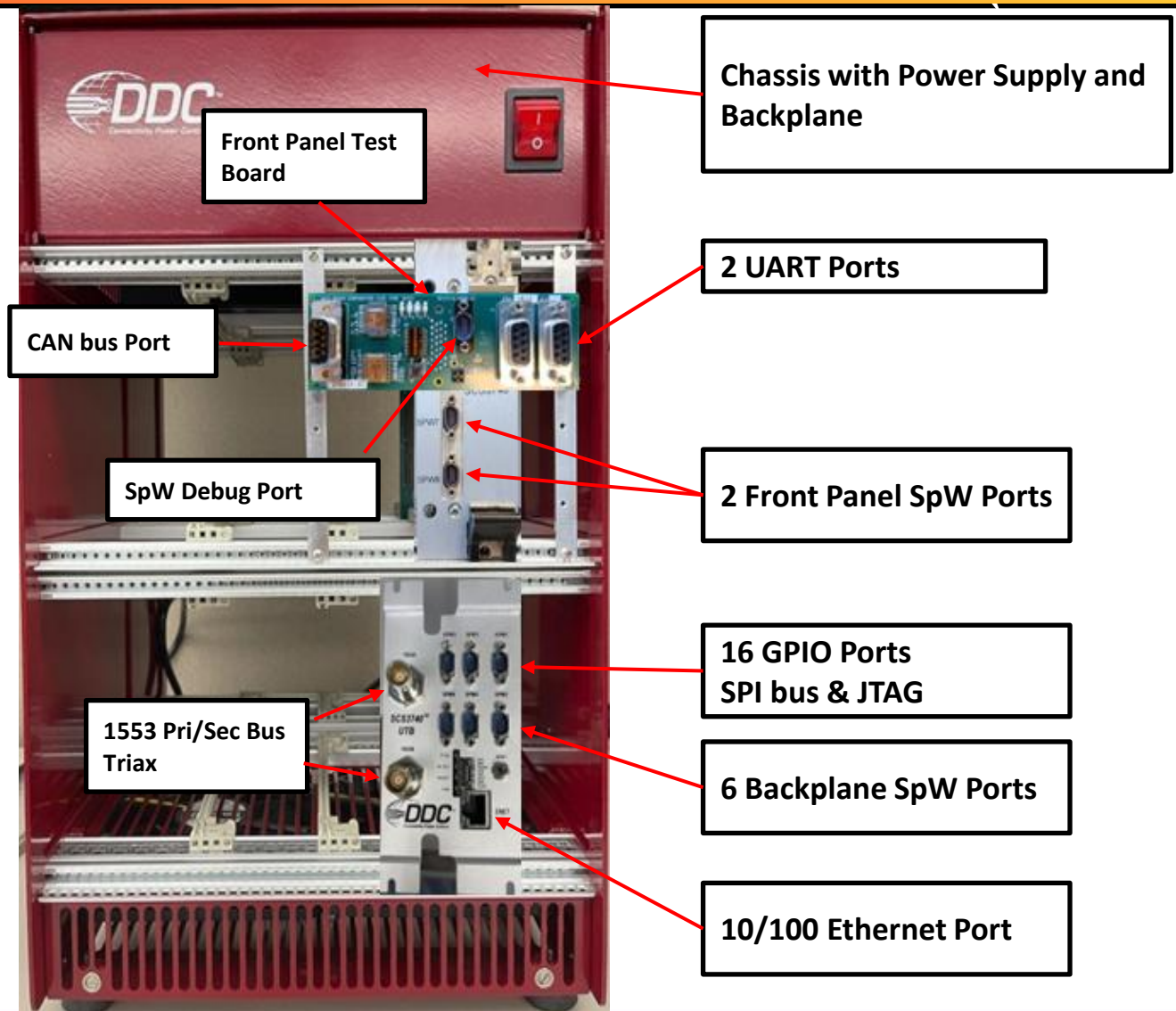
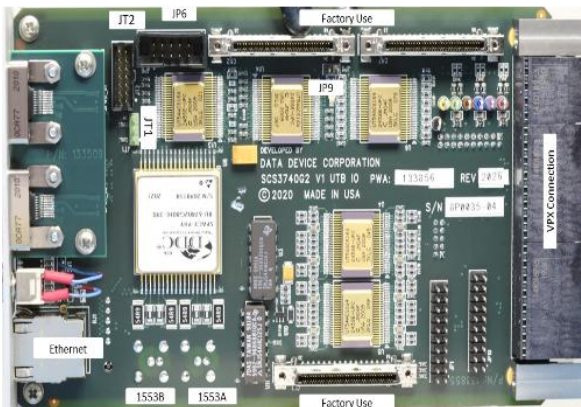
	SCS3740-R1	SCS3740-G2RT	SCS3740-G2 RH	POC-DXM1B1X-A	POC-DXM1B1X-A
Cores / MIPs	Quad-Core LEON 4FT 1,700 DMIPS			Eight 64-bit RISC-V cores, 1 GHz 26,000 DMIPS	
SDRAM	128 MB	1 GB		8–16 GB	8-16 GB
Boot Memory	4 MB PDC EEPROM	128 MB MRAM		128 MB MRAM	128 MB MRAM
Mass Memory	32 GB on-board PDC NAND Flash			Compatible with PDC SSDR up to 8 TB SLC	
Interfaces	10/100 Ethernet (GbE option for G2), UART, CAN, I2C, SPI, GPIO, 1553, 8 SpWire (200Mb)			10GbE TSN Ethernet (up to 10), PCIe Gen 3, UART , I2C, SPI, GPIO, SpWire	
Total Dose (krad)	100	50	100	50	100
Years to uncorrected SEE	~ 100	~ 100	~ 100	~ 3	~ 3
Power (W)	5W typ. (7W max)	7W typ. (12W max)	7W typ. (12W max)	>20W typ. (TBD)	>20W typ. (TBD)
Backplane	3U SpaceVPX			3U SpaceVPX. Aligned with SOSA Standards.	
Status	TRL-9 (SDA Tranche 0)	TRL-8 (Acceptance Tested, Qual Completion Q2CY26)		TRL-3 (Tech Research Phase) Microchip Early Adopter Program	

POWER DEVICE CORPORATION SCS3740 + Dev Kit (For SCS3740R1 and SCS3740G2)

SCS3740 SBC



User Test Board (UTB)



- **VxWorks:** Hard Real-Time Software Solution
 - Includes:
 - PDC RTAX BSP
 - Drivers for all RTAX Functionality
 - EEPROM (R1) and MRAM (G2) drivers
 - MRAM DOSFS filesystem
 - High Reliability Filesystem Binaries for Flash
 - PDC Supplied SUROM and U-Boot
 - Requires VxWorks 7 from WindRiver.
 - Requires GR740 BSP from Gaisler.
 - Gaisler BSP supports all GR740 functionality.
 - Optional Reliance Filesystem source code available from Tuxera.
 - Available for both SCS3740-R1 and SCS3740-G2
- **Linux:** GPL Solution (**SCS3740G2 Only**)
 - Includes:
 - PDC RTAX BSP
 - Drivers for all RTAX Functionality
 - MRAM (G2) drivers
 - MRAM EXT2 filesystem
 - Flash JFFS2 Filesystem
 - PDC Supplied SUROM and U-Boot
 - 5.10.226 Linux Kernel and Busybox 1.36.1
 - Includes Gaisler Buildroot Development Environment with Gaisler GPL Linux BSP
 - Currently lacks 1553 support
 - Only available for the SCS3740 G2

- **Engineering-grade and Flight Board Deliverables:**

- Hardware manual
- Software manual
- Interface Control Drawing (ICD)

- **Engineering-grade board deliverables:**

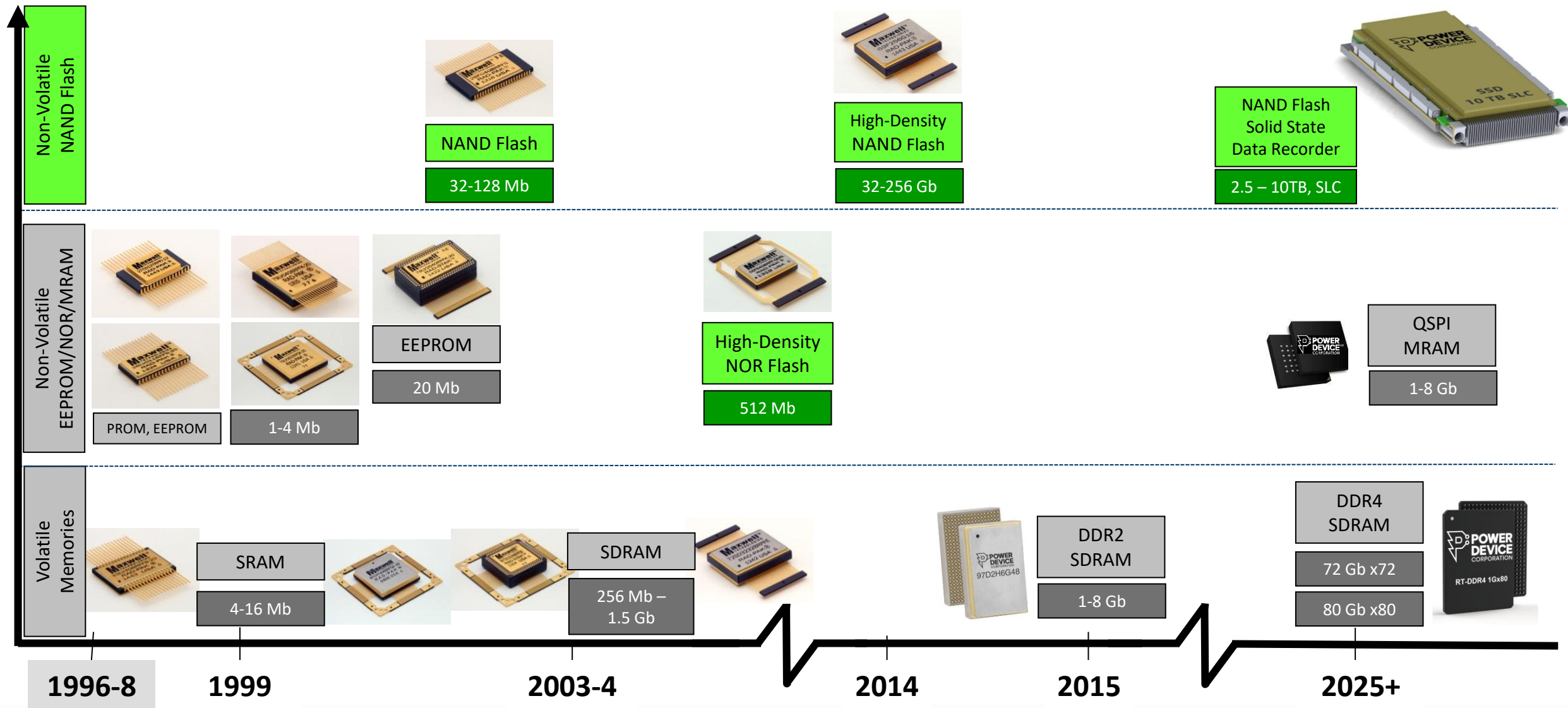
- Certificate of Compliance (CoC)
 - Identifies the board by serial number or lot date code
- Statement of the level to which they are certified and the relevant documents
- No deliverable test data or pass-fail on the flow of the screening of the board

- **Flight Board Deliverables:**

- Certificate of Conformance
- Analysis documentation including:
 - Radiation Analysis
 - Thermal Analysis
 - Worst-Case Analysis
- End Item Data Package (EIDP) – XLS w/ hyperlinks
 - Functional test data
 - Process flows and board run times
 - Failure analysis
 - Customer waivers/authorizations
 - As built parts list
 - Operating time log
 - Mate and De-mate log
 - As-designed versus As-Built component substitutions
 - Other review requirements that can be verified by PDC QA or Customer Quality Representative(s)

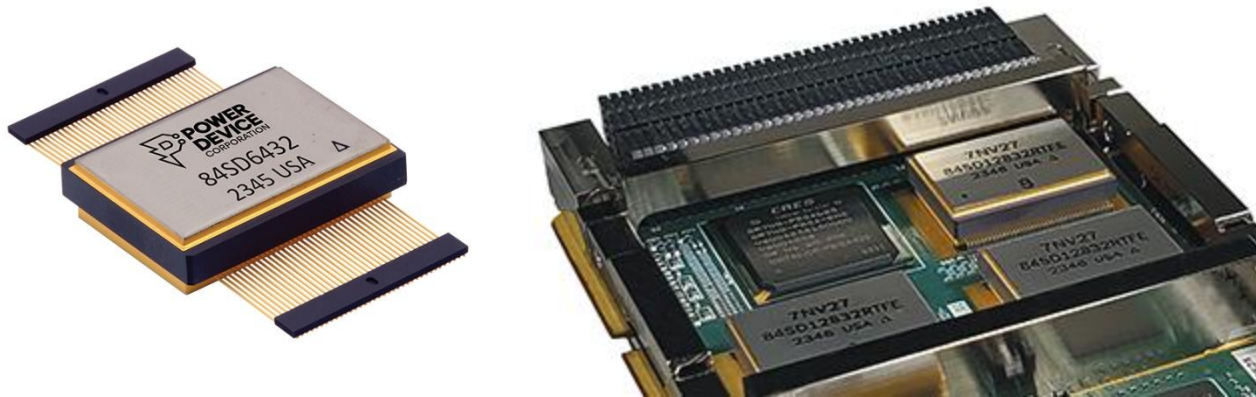
- **100 krad(Si) TID for entire Single Board Computer (orbit dependent)**
- **Uncorrectable upset rate better than 1 in 120 years (GEO)**
 - PDC's SCS3740R1 and SCS3740G2 SBCs both have industry-leading upset rates
- **GR740 LEON 4FT™ Processor**
 - STMicro C65SPACE RHBD Library – 300Krad(Si), SEL immune
 - Architecture implements a combination of RHBD FFs, TMR, Parity, and ECC
- **Memory ECC**
 - Reed Solomon SDRAM error correction (multi-nibble correction)
 - NAND Flash advanced BCH correction (16-bit correction)
- **Rad Hard Microchip RTAX FPGA**
- **Rad Hard POL, Clocks, etc.**

Radiation-Hardened Memory Roadmap



SDRAM: Synchronous Dynamic Random Access Memory

84SD6432 & 84SD12832



Ordering Information

SDRAM Density	Base P/N	Screening Flow (Last digit suffix)
2Gbit	84SD6432RTF_	MCM ¹ K = PDC Self-Defined Class K H = PDC Self-Defined Class H I = Industrial (testing @ -55°C, +25°C, +125°C) E = Engineering (testing @ +25°C)
4Gbit	84SD12832RTF_	

¹ Products are manufactured and screened to PDC's self-defined Class H and Class K flow

A/N available: Integrating 84SD SDRAM Memories with FrontGrade/Gaisler LEON Processors Application Note (AN/ME-6)

- 2-4Gbit Single Data Rate SDRAM
- Total Dose Hardness: >100 krad (Si)
- Excellent Single Event Effects:
 - SELTH > 80 MeV/mg/cm² @ 85°C
- JEDEC Standard 3.3V Power Supply
- Clock Frequency: 100 MHz Operation
- Auto Refresh
- Single-pulsed RAS
- 2 Burst Sequence variations
 - Sequential (BL = 1/2/4/8)
 - Full page Interleave (BL = 1/2/4/8) and full page
- Programmable CAS latency: 2/3
- Power Down and Clock Suspend Modes
- LVTTTL Compatible Inputs and Outputs
- Package: 84-pin Ceramic/Hermetic package
- Operating temperature: -55°C to +125°C

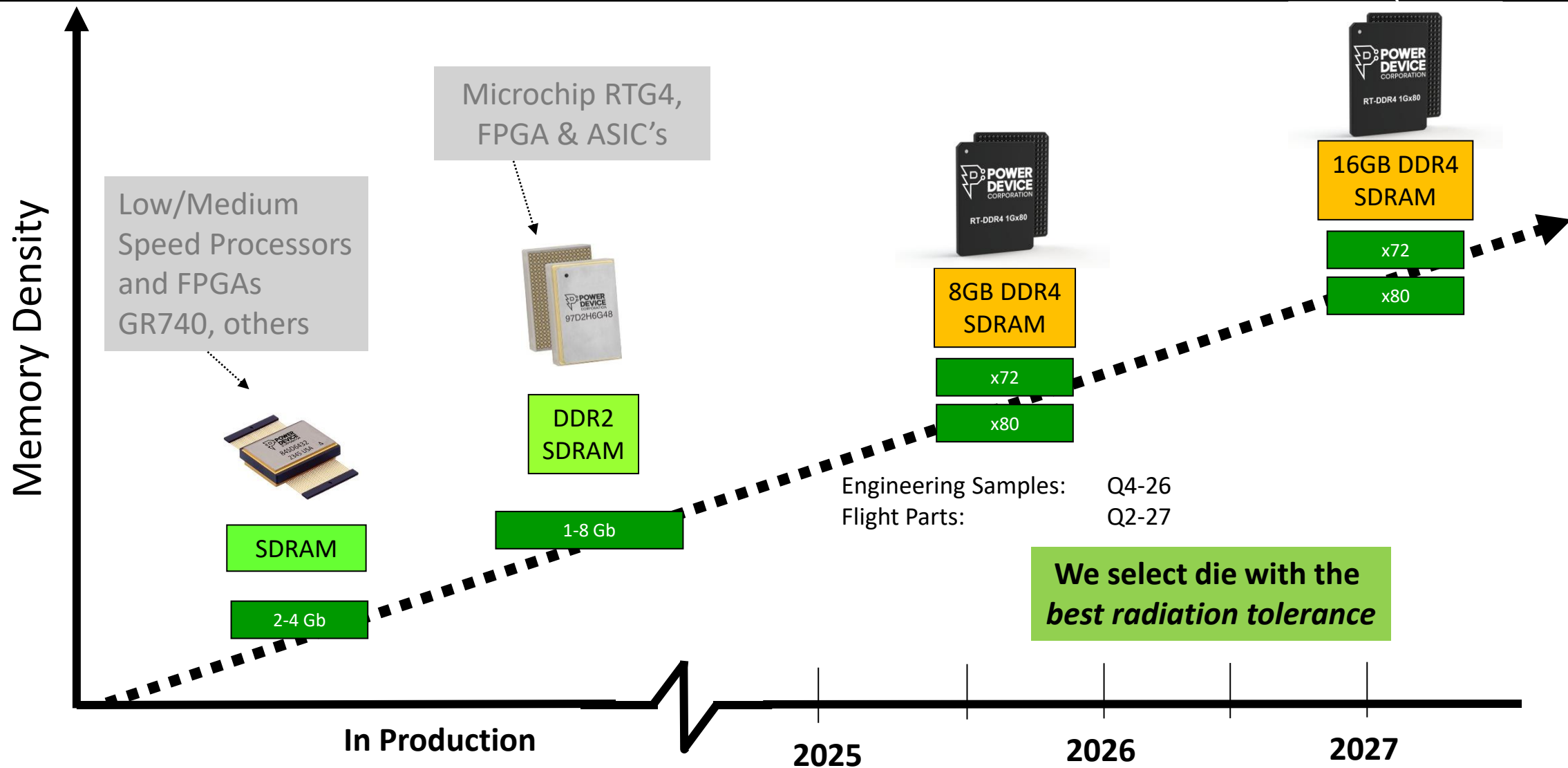


Ordering Information: 97D2HxGxxRxxx

Base P/N	V	Density	Config (Bit Width)	Speed	Pkg	Screening Flow
97D2H2G16	1.8V	2Gb	128M x 16	400 MHz	17x24 408 BGA or CGA 26.4m m x 18.2m m	K = PDC Microelectronics Class K H = PDC Microelectronics Class H A = PDC Microelectronics Class A I = Industrial (-55°C, +25°C, 115°C) E = Engineering (+25°C)
97D2H4G32	1.8V	4Gb	128M x 32	400 MHz		
97D2H5G80	1.8V	5Gb	64M x 80	400 MHz		
97D2H5G40	1.8V	5Gb	128M x 40	400 MHz		
97D2H6G48	1.8V	6Gb	128M x 48	400 MHz		
97D2H8G64	1.8V	8Gb	128M x 64	400 MHz		

- 2-8 Gb of SDRAM memory in a single, small footprint and low-profile CCGA package
- High Speed Operation – Clock frequency up to 400MHz
 - 8 internal banks for concurrent operation
 - 4-bit pre-fetch architecture
- Refresh interval: 7.8 μ s (8192 cycles/64 ms)
- Programmable access parameters
 - CAS latency: 3, 4, 5, 6, and 7
 - Write latency = read latency -1
 - Additive latency: 0, 1, 2, 3, 4, 5, and 6
 - Burst sequence: sequential or interleaved
 - Burst length: 4 and 8
- A variety of data interfaces for FPGAs and processors: x8, x16, x32, x48, x64 and x80
- 100 krad(SI) Total Ionizing Dose (TID) Tolerance
- Excellent SEU tolerance (report available)
- Latch up threshold > 57 MeV cm²/mg
- Radiation screening available up to self-defined PDC Microelectronics space grade
- Temperature range: -55°C to +115°C

SDRAM/DDR4 Memory Roadmap



- 8GByte DDR4, data width options of x72 or x80 (HPSC)
 - x80 to support multi-bit error correction for PIC64-HPSC
- High speed up to 2400 MT/s
- Screening level up to NASA Level 1 (EEE-INST-002 PEMs)
- Radiation:
 - TID: > 100 krad
 - SEL: > 51MeV (highest level tested)
 - SEFI: LET 51 = 1.1E-5 cm²/device
 - Considerably better SEFI rates than most RT DDR4s currently available
 - Additional SEE testing is planned
- Temperature Range: -55°C to 125°C
- Compact 18x24mm BGA, 1mm pitch

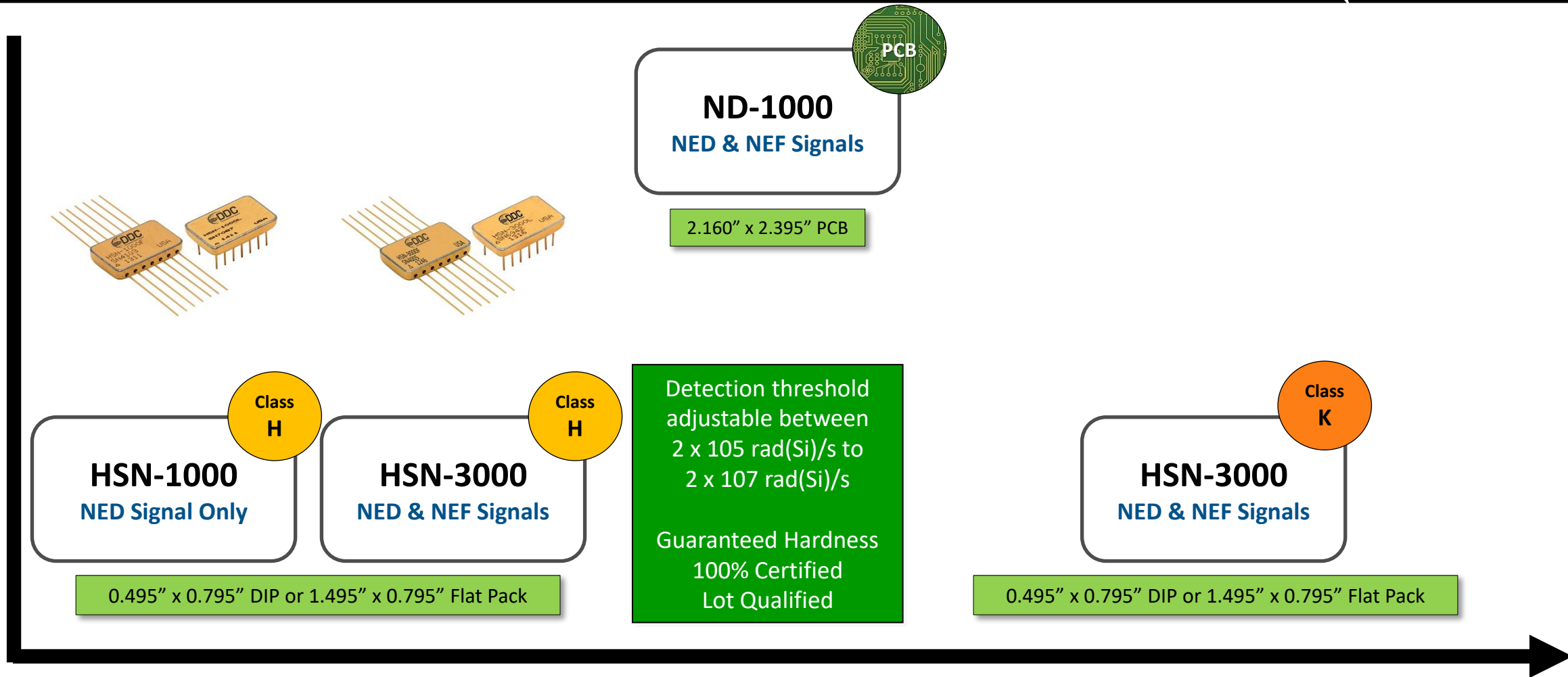
D4B8G72, D4B8G80



Development Schedule

EM Units	Q4 2026
FM Units	Q2 2027

Nuclear Event Detector (NED) Roadmap

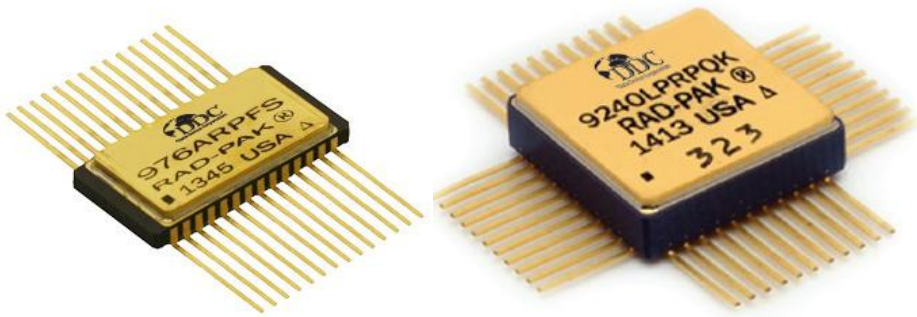


In Production Since 1985
>10,000 units fielded

NED Model Comparison

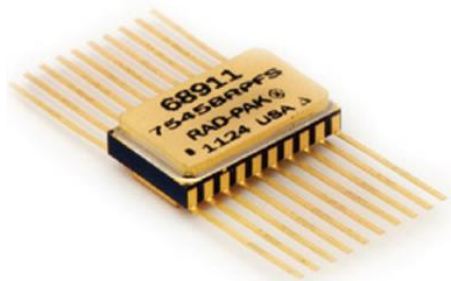
Product Feature	HSN-3000	HSN-1000	ND-1000
Product Form Factor	Hybrid Microelectronic Component	Hybrid Microelectronic Component	Printed Circuit Board
NED Signal	Yes	Yes	Yes
Adjustable NED Pulsewidth	Yes	Yes	Yes
NEF Signal w/Reset	Yes	No	Yes
100% Built-in-test	Yes	Yes	Yes
Radiation Hardness	Guaranteed	Guaranteed	TBD
Dose rate Trip Level Screening	100%	100%	TBD
Galvanically isolated primary and secondary circuitry	No	No	Yes
MIL-PRF-38534, Class H, Option 1	Yes	Yes	No
MIL-PRF-38534, Class K	Yes – Future	No	No
Dual In-line Package	Yes	Yes	No
Flatpack Package	Yes	Yes	No
Board-Level Product	No	No	Yes

Analog-to-Digital Converters



Part Number	Resolution	Speed	Bus Type	Supplies	Supply Voltage
7820RP	8-bit	100 kSPS	Parallel	1	+5V
7672RP	12-bit	200 kSPS	Parallel	2	+5V & -12V
9042RP	12-bit	41 MSPS	Parallel	1	+5V
7872ARP	14-bit	100 kSPS	Serial	2	+/-5V
9240LPRP	14-bit	10 MSPS	Parallel	1	+5V
7809CRP	16-bit	100 kSPS	Serial	1	+5V
976ARP	16-bit	200 kSPS	Parallel	1	+5V

Digital-to-Analog Converters



Part Number	Resolution	Speed	Bus Type	Supplies	Supply Voltage
8408RP	8-bit	2 MSPS	Serial	1	+5V
8143RP	12-bit	2 MSPS	Serial	1	+5V
7545BRP	12-bit	500 kSPS	Parallel	2	+5V to +15V
7846BRP	16-bit	110 kSPS	Parallel	2	±12V
768ARP	16-bit	30 MSPS	Serial	1	+5V



POWER

DEVICE

CORPORATION

Analog Products:

Op Amps Comparators, Multiplexers & Buffers

DDC P/N	Description	Die
54BCT244RP	Octal Buffer/Line Driver	TI 74BCT244
54BCT245RP	Octal Buffer Transceiver	TI 74BCT245
54LVTH244ARP	Octal Buffer/Driver, 8 bit	TI 74LVTH244A
54LVTH245ARP	ABT Octal Buss Transceiver	TI 74LVTH245A
54LVTH162244RP	Octal Driver/Buffer	TI 74LVTH162244
54LVTH162373RP	D-Type Latch, 16 bit	TI 74LVTH162373
7B991	Programmable Skew Clock Buffer	Cypress CY7B991

DDC P/N	Description	Die
903RP	Comparator, High Speed	Maxim 903
OP220RP	Dual Op Amp	Analog Devices OP220
OP284BRP	Dual Op Amp, Single Supply	Analog Devices OP284
OP400ARP	Quad Op Amp	Analog Devices OP400
OP490RP	Quad Op Amp, Low Power	Analog Devices OP490
6484RP	Op Amp, Rail to Rail I/O	National/TI LMC6484

DDC P/N	Description	Die
306RP	Analog MUX, 16 Channel	Maxim 306
338RP	Analog MUX, 8 Channel	Maxim 338
358RP	Analog MUX, 16 Channel, Fault Prot.	Maxim 358
81840RP	Analog MUX, 128 Channel	DDC MCM



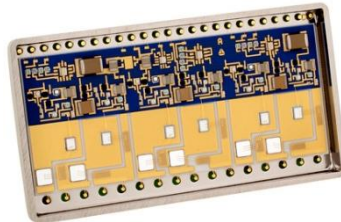
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Radiation Tolerant Motor Controllers/Drives



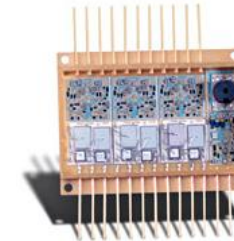
PW-82540R0

- Self-Contained 3-Phase Motor Controller
- Operates as Current or Voltage Controller
- 1-, 3-, or 10-Amp Output Current
- 1.5% Linearity
- 3% Current Regulating Accuracy
- User-Programmable Compensation
- 10 KHz - 100 KHz PWM Frequency
- Complementary Four Quadrant Operation
- Holding Torque Through Zero Current
- Cycle-by-Cycle Current Limit
- Designed to Meet 100 kRad Total Dose, 36MeV SEU Radiation Levels
- Package Size: 3.11" x 2.60" x 0.255"



PW-82336

- 100VDC Rating
- 5A Continuous, 10A Peak Current Capability
- High-Efficiency MOSFET Drive Stage
- Direct Drive from Commutation Control Logic
- Six Step Trapezoidal or Sinusoidal Drive
- Four Quadrant Operation
- Bootstrap Design
- Shoot Through Protection
- CMOS Schmitt Trigger Inputs for High Noise Immunity
- Designed to Meet 100 kRad Total Dose, 36MeV SEU Radiation Levels
- Package Size: 2.6" x 1.4" x 0.25"



PWR-82332

- 400 VDC Rating
- 19A Continuous Current Capability
- High-Efficiency MOSFET Drive Stage
- Direct Drive for Commutation Logic
- 6 Step Trapezoidal or Sinusoidal Drive
- Four Quadrant Operation
- Class K Processing
- Designed to Meet 10 kRad (Si) Total Dose Radiation, 36MeV SEU Radiation Levels
- Package Size: 3.0" x 2.3" x 0.40"



RDC-19220/2S

- Accuracy to 1.3 Arc Minutes
- Internal Synthesized Reference Option (S Version)
 - Up to 45 Degree Phase Shift Correction
- +5 Volt Only Option
- Programmable:
 - Resolution 10, 12, 14 or 16 bit
 - Bandwidth
 - Tracking
- Standard MIL-PRF Selections Available
- -55° to +125° C Operation Temperature Option
- Available in DDIP and J-LEAD Packages



OSC-15803

- Quadrature power oscillator with two outputs that are 90° out of phase.
- Provide both the reference and quadrature signals, simultaneously
- Ideal for Inductosyn, Synchro, Resolver, LVDT and RVDT applications.
- Programmable Output Frequency from 400 Hz to 20 kHz
- Scalable Reference Output
- -55°C to 125°C Operating Temperature Range
- 18-Pin DDIP (1.0 x 0.8 x 0.2 inches)

