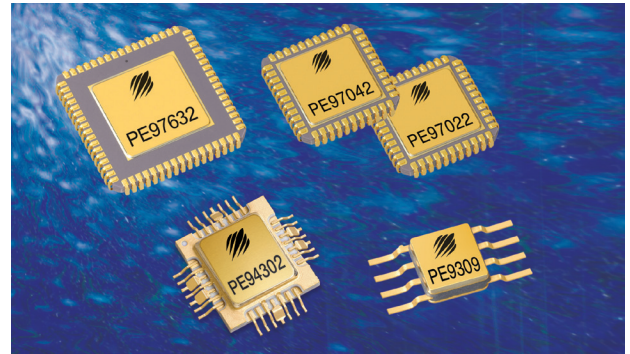


Peregrine's High-Reliability UltraCMOS™ RF IC Portfolio Expands

Ultra-low Phase Noise PLLs, SPDT Switch, DSA and Prescalers Lead the Industry

Peregrine Semiconductor's UltraCMOS™ silicon-on-sapphire technology has achieved significant performance milestones in reliability and RF performance, making them well suited for demanding High-Reliability (High-Rel) designs. UltraCMOS products are designed to meet stringent low-power requirements of telecom, infrastructure, microwave and VSAT military radios, radar and ECM space systems, and test instrumentation applications. Screening is available for commercial space designs. For quick-turn prototyping, we offer Multi-Project Runs (MPRs) on a scheduled basis.



HaRP™-ENHANCED TECHNOLOGY

The new PE95420 SPDT switch is the first High-Rel product to integrate HaRP-technology enhancements. These enhancements allow for excellent linearity, and minimize gate lag, insertion loss and phase drift. This 1 MHz – 8.5 GHz part has IIP3 of 60 dBm (8500 MHz), high ESD protection (2000V HBM), 1 dB compression point of +33 dBm (typ), and high isolation of 48 dB (3000 MHz).

LOWER POWER CONSUMPTION

The PE9309 divide-by-4 Prescaler has exceptional sensitivity and operates in the Ku-band with a range of 3.0-13.5 GHz. It offers low power, drawing only 16mA at a nominal 2.6V mode of operation. Ultra-low power utilization ensures that designs incorporating UltraCMOS RF ICs operate with the lowpower requirements. When compared to the higher-voltage GaAs, SiGe or bulk silicon devices, UltraCMOS technology delivers a cost-effective solution.

ULTRA-LOW PHASE NOISE

Peregrine's new Integer-N and Frac-N Phase Locked-Loop (PLL) Frequency Synthesizers deliver superior phase noise performance where ultra-low phase noise is critical. Drop-in compatible with their predecessors PE9702 and PE9704, the PE97022 and PE97042 offer:

- ▶ Exceptional phase noise (-216 dBc/Hz/Hz)
- ▶ 10/11 dual modulus prescaler
- ▶ Parallel, Serial or Direct Mode access

MONOLITHIC INTEGRATION

A fundamental benefit of UltraCMOS products for space applications is its inherent ability to integrate RF, mixed-signal analog, digital and EEPROM on the same device. Very high quality inductors and capacitors deliver QL>40 and QC>100 @ 2 GHz. UltraCMOS technology is a standard CMOS process, leveraging all the same low-cost, high-value benefits in manufacturing yields, scalability and ease-of-use.

HIGH-REL INTEGER-N PHASE LOCKED-LOOP (PLL) FREQUENCY SYNTHESIZERS

Product Description	Det Type	Programming Mode	Normalized Phase Noise (dBc/Hz)	Max Input Operating Freq (GHz) RF PLL	(MHz) Ref.	(MHz) Compare	Prescaler	Main Counters M, A	Reference Counters	Typical Idd (mA @ 3 V)	Vdd Range (V)	Package Types
PE97022	PD	Par, Ser, Hardwire	-216	3.5	100	50	10/11	9bit, 4bit	6bit	45 @ 3.3 V	2.85-3.45	44L CQFJ, DIE
PE97042	PD	Serial, Hardwire	-216	3.5	100	50	10/11	9bit, 4bit	6bit	45 @ 3.3 V	2.85-3.45	44L CQFJ, DIE
PE9702	PD	Par, Ser, Hardwire	-210	3.0	100	20	10/11	9bit, 4bit	6bit	24	2.85-3.15	44L CQFJ, DIE
PE9704	PD	Serial, Hardwire	-210	3.0	100	20	10/11	9bit, 4bit	6bit	24	2.85-3.15	44L CQFJ, DIE
PE9701	CP	Par, Ser, Hardwire	-210	3.0	100	20	10/11	9bit, 4bit	6bit	24	2.85-3.15	44L CQFJ, DIE
PE9601	CP	Par, Ser, Hardwire	-210	2.2	100	20	10/11	9bit, 4bit	6bit	24	2.85-3.15	44L CQFJ, DIE

HIGH-REL DELTA-SIGMA MODULATED FRACTIONAL-N PHASE LOCKED-LOOP (PLL) FREQUENCY SYNTHESIZERS

Product Description	Programming Mode	Normalized Phase Noise (dBc/Hz)	Max Input Operating Freq (GHz) RF PLL	(MHz) Ref.	(MHz) Compare	Prescaler	Main Counters M, A, K	Reference Counters	Vdd Range (V)	Package Types
PE97632 Ultra Low Phase Noise 3rd order DSM	Serial, Hardwire	-216	3.5	100	50	10/11	9bit, 4bit, 18 bit	6bit	2.85-3.45	68L CQFJ, DIE
PE9763 Low Phase Noise 3rd order DSM	Serial, Hardwire	-210	3.2	100	50	10/11	9bit, 4bit, 18 bit	6bit	2.85-3.15	68L CQFJ, DIE

Note PE97632: Typical Idd = 40 mA @ 3.3 V

Note PE9763: Typical Idd = 30 mA @ 3 V

Note: The PE97632 is pin for pin compatible with the PE9763 in up/down mode.

HIGH-REL SWITCHES

Product Description	Operating Frequency (MHz)	IIP3 (dBm @ 2 GHz)	P1dB (dBm @ 2 GHz)	Insertion Loss (dB @ 1 GHz)	Isolation (dB @ 1 GHz)	Typical I _{dd} (μA @ 3 V)	V _{dd} Range (V)	Package
PE9354 - SPDT	10-3000	55	31	0.55	32	28	2.7-3.3	8L CSOIC
NEW PE95420 - SPDT	1-8500	60	33	0.85	55	100 @ 3.3 V	3.0-3.6	7L CSOIC, DIE

HIGH-REL DELTA-SIGMA MODULATED FRACTIONAL-N PHASE LOCKED-LOOP (PLL) FREQUENCY SYNTHESIZERS

Product Description	Programming Mode	Normalized Phase Noise (dBc/Hz)	Max Input Operating Freq (GHz) RF PLL	(MHz) Ref.	(MHz) Compare	Prescaler	Main Counters M, A, K	Reference Counters	Package Types
PE97632 Ultra Low Phase Noise 3rd order DSM	Serial, Hardwire	-216	3.5	100	50	10/11	9bit, 4bit, 18 bit	6bit	68L CQFJ, DIE
PE9763 Low Phase Noise 3rd order DSM	Serial, Hardwire	-210	3.2	100	50	10/11	9bit, 4bit, 18 bit	6bit	68L CQFJ, DIE

Note PE97632: V_{dd} Range = 2.85-3.45 V
Typical I_{dd} = 40 mA @ 3.3 V

Note PE9763: V_{dd} Range = 2.85-3.15 V
Typical I_{dd} = 30 mA @ 3 V

Note: The PE97632 is pin for pin compatible with the PE9763 in up/down mode.

HIGH-REL RF DIGITAL STEP ATTENUATORS (MONOLITHIC) - 50 Ω

Product Description	Attenuation (dB)	Programming Mode	Operating Freq. (MHz)	Insertion Loss (dB)	Input IP3 (dBm)	Attenuation Accuracy (1 GHz)	Switching Speed (μs)	Package
PE94302 - 6-bit, 50 Ω	31.5 range / 0.5 steps	Parallel, Serial	DC-4000	1.5	52	+/- (0.55dB+7% of setting)	1	28L 4CQFP

HIGH-REL PRESCALERS

Product Description	Input Operating Frequency (MHz)	Divide Ratio	Typical I _{dd} (mA @ 3 V)	V _{dd} Range (V)	Package
PE9301 - Divide-by-2	1500-3500	2	13	2.85-3.15	8L CSOIC
PE9303 - Divide-by-8	1500-3500	8	14	2.85-3.15	8L CSOIC
PE9309 - Divide-by-4	3000-13500	4	16 @ 2.6 V	2.45-2.75	8L CSOIC, DIE
PE9311 - Divide-by-2	DC-1500	2	6.5	2.85-3.15	8L CSOIC
PE9312 - Divide-by-4	DC-1500	4	6.5	2.85-3.15	8L CSOIC
PE9313 - Divide-by-8	DC-1500	8	6.5	2.85-3.15	8L CSOIC

About Peregrine Semiconductor

Peregrine Semiconductor is a fabless provider of high-performance RFICs. Our solutions leverage our proprietary UltraCMOS™ technology, which enables the design, manufacture, and integration of multiple RF, mixed-signal, and digital functions on a single chip. Our products deliver what we believe is an industry leading combination of performance and monolithic integration, and target a broad range of applications in the aerospace and defense, broadband, industrial, mobile wireless device, test and measurement equipment, and wireless infrastructure markets.



UltraCMOS technology combines the fundamental benefits of standard CMOS, the most widely used semiconductor process technology, with a synthetic

sapphire substrate that enables significant improvements in performance for RF applications. We have engineered design advancements, including our patented HaRP™ technology which significantly improves harmonic and linearity performance, and our patent-pending DuNE™ technology, a circuit design technique that we have used to develop our advanced digitally tunable capacitor (DTC) products.

We leverage our extensive RF design expertise and systems knowledge to develop RFIC solutions that meet the stringent performance, integration, and reliability requirements of the rapidly evolving wireless markets. We offer a broad portfolio of more than 120 high performance RFICs including switches, digital attenuators, frequency synthesizers, mixers, and prescalers, and are developing power amplifiers, DTCs, and DC-DC converters.

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