

Highly Rugged UltraCMOS™ Switches Extend Performance to 7.5 GHz

High Linearity, 2 kV HBM ESD and CMOS Control Interface Ideal for Wireless Applications

The Peregrine UltraCMOS™ RF switches feature high ESD tolerance, high linearity, high isolation and low insertion loss, providing an exceptionally rugged high-performance solution for wireless applications. Developed on the patented UltraCMOS silicon-on-sapphire process, these multi-throw switches deliver an extraordinary combination of performance, price and monolithic integration. Simply stated, the new wireless RF switches from Peregrine are simply designed, and profoundly different.

- ▶ **Guaranteed ruggedness**
35 dBm into ∞:1 VSWR, any angle
- ▶ **High ESD Tolerance** 2.0 kV HBM
- ▶ **High Isolation** 64 dB @ 1 GHz
- ▶ **Low Insertion Loss** 0.35 dB @ 1 GHz
- ▶ **Integrated CMOS controller**
- ▶ **P1dB** 41 dBm
- ▶ **No blocking capacitors**
- ▶ **Low Current Drain** 8µA

HARP™-ENHANCED TECHNOLOGY IN HIGH-POWER AND TEST EQUIPMENT/ATE SWITCHES

Peregrine's new high-power switch product line features HaRP™ technology enhancements to deliver a 50 Watt 1dB compression point with high linearity and exceptional harmonics performance. Other highlights of the PE42510A and PE42650A switches include:

- ▶ **2fo and 3fo** < -84 dBc @ 42.5 dBm
- ▶ **10 Watts <8:1 VSWR (Normal Operation)**



Complementary devices ideal for TE/ATE applications use HaRP™ technology enhancements to eliminate gate lag and insertion loss drift while keeping high linearity and isolation. The PE42552 features:

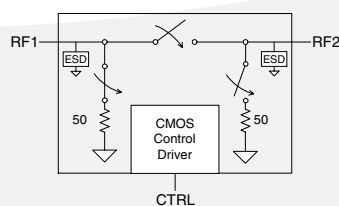
- ▶ **High Frequency Operation** DC-7.5 GHz
- ▶ **HaRP™-enhanced Technology for Unparalleled Linearity and Performance:**
 - ▶ No Gate Lag, Fast Settling Time
 - ▶ IIP3 of +65 dBm
- ▶ **Superb Low-Frequency Performance** down to 9 kHz
- ▶ **High Isolation** 47 dB @ 3.0 GHz, 35 dB @ 6.0 GHz

TECHNICAL SUPPORT AND ORDER INFORMATION

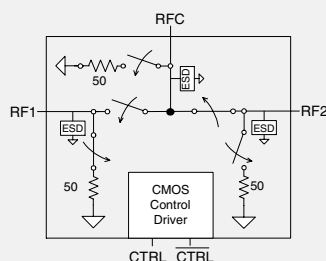
Products samples, unit pricing and volume production are available now through Peregrine and its worldwide distributors. Visit us online to find a sales office near you.

FUNCTIONAL BLOCK DIAGRAMS

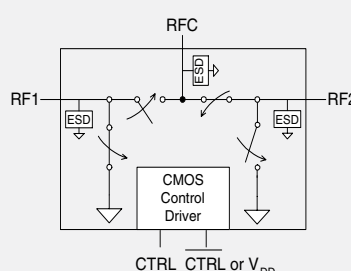
PE4246



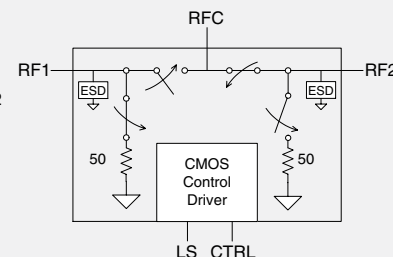
PE4257



PE4259/PE4283



PE42552*



*Implements HaRP™ technology enhancements

RF SWITCHES - 50 Ω

Product Description	Operating Frequency (MHz)	IIP3 (dBm @ 2 GHz)	P1dB ¹ (dBm @ 2 GHz)	Insertion Loss (dB @ 1 GHz)	Isolation (dB @ 1 GHz)	Typical I _{dd} (μA @ 3 V)	V _{dd} Range (V)	Package
SPDT, Absorptive: PE4246	DC-5000	53	33	0.80	55	33	2.7-3.3	6L 3x3 DFN
SPDT, Absorptive: PE4257	DC-3000	55	31 ³	0.75	64	8	2.7-3.3	20L 4x4 QFN
SPDT, Reflective: PE4210	DC-3000	34	15	0.30	36	0.25	2.7-3.3	8L MSOP
SPDT, Reflective: PE4230	DC-3000	55	32	0.35	39	29	2.7-3.3	8L MSOP
SPDT, Reflective: PE4237	DC-4000	55	32	0.35	43	29	2.7-3.3	6L 3x3 DFN
SPDT, Reflective: PE4239	DC-3000 ²	45	27	0.70	32	0.25	2.7-3.3	6L SC70
SPDT, Reflective: PE4242	DC-3000	45	27	0.70	32	0.25	2.7-3.3	6L SC70
SPDT, Reflective: PE4244	DC-3000 ²	45	26	0.60	39	0.25	2.7-3.3	8L MSOP
SPDT, Reflective: PE4245	DC-4000 ²	45	27	0.60	42	0.25	2.7-3.3	6L 3x3 DFN
SPDT, Reflective: PE4259 ¹	DC-3000 ²	55	33 ³	0.35	30	9	2.3-3.3	6L SC70
SPDT, Reflective: PE4283	DC-4000 ²	57	32	0.65	33.5	8	2.0-3.3	6L SC70

Note 1: Power handling varies over frequency. See datasheet.

Note 2: Can be used in a 75 ohm environment.

Note 3: Measured at 1 GHz.

Note: To view S-parameter data for 50 Ω switches, visit our website at: www.psemi.com.

TEST EQUIPMENT/ATE SWITCHES - 50 Ω

Product Description	Operating Frequency (MHz)	IIP3 (dBm @ 7.5 GHz)	P1dB (dBm @ 7.5 GHz)	Insertion Loss (dB @ 3 GHz)	Isolation (dB @ 1 GHz)	Typical I _{dd} (μA @ 3.3 V)	V _{dd} Range (V)	Package
NEW SPDT, Absorptive: PE42552 ^{1,2}	DC-7500	65	34.5	0.65	47	15	3.0-3.6	16L 3x3 QFN

Note 1: Market restrictions apply

Note 2: See also the PE43703 Digital Step Attenuator for TE/ATE designs

HIGH-POWER RF SWITCHES - 50 Ω

Product Description	Operating Frequency (MHz)	P0.1dB (dBm @ 0.8 GHz)	Insertion Loss (dB @ 0.8 GHz)	Isolation (dB @ 0.8 GHz)	Typical I _{dd} (μA @ 3.4 V)	V _{dd} Range (V)	Package
NEW SPDT, Reflective: PE42510A	30-2000	45.4	0.4	29	90	3.2-3.4	32L 5x5 QFN
NEW SP3T, Reflective: PE42650A	30-1000	45.4	0.3	38	90	3.2-3.4	32L 5x5 QFN

About UltraCMOS™ Technology

UltraCMOS™ mixed-signal process technology is a patented variation of silicon-on-insulator (SOI) technology. It is the first commercially qualified use of Ultra-Thin-Silicon (UTSi®) on sapphire substrates with high yields and competitive costs. Since sapphire is a near perfect insulator, UltraCMOS products can integrate high-quality passive devices directly into the IC, combining high-performance RF, mixed-signal, passive elements, nonvolatile memory and digital functions in a single device. UltraCMOS products are fabricated in standard high-volume CMOS facilities, achieving the economy, scalability and integration of CMOS, while enabling significant performance advantages over competing mixed-signal processes such as GaAs, SiGe BiCMOS and bulk silicon CMOS in applications where RF performance, low power and integration are paramount.

About Peregrine Semiconductor

Peregrine Semiconductor designs, manufactures, and markets high-performance communications RFICs. Manufactured on the Company's proprietary UltraCMOS™ mixed-signal process technology, Peregrine products are ideally suited for high-growth RF/Wireless applications such as WCDMA, EDGE and GSM digital cellular and mobile TV; broadband communications such as DTV/PCTV/DVR; and in high-reliability applications such as telecom infrastructure, industrial, automotive, military and satellite systems. Peregrine UltraCMOS devices are manufactured in world-class CMOS foundries located in Australia, Asia and Japan. The Company, headquartered in San Diego, California, maintains global sales support and a worldwide technical distribution network.



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