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RD7200 Multimode Front End Reference Design

The RFMD RD7200 is a multimode (tri-band WCDMA + quad-band GSM/EDGE) cellular front end reference design that integrates all switching, filtering, and transmit power amplifier (PA) functionality into one complete platform that can be readily adopted by mobile device designers. The RD7200 is available in three different variants capable of supporting the following WCDMA band combinations: 2/5, 1/8, or 1/2/5.

The WCDMA transmit section of RD7200 consists of RFMD's highly efficient, linear PAs from the RF720x family, the RF1194 switch filter module (SFM), and widely implemented third-party WCDMA duplexers. Providing additional ease of use, a coupled output power port is also provided in each PA of the RF720x family for the purpose of monitoring transmit output power.

The RF7200's GSM/EDGE section consists of the RF3161 large signal polar modulation PA and receive SAW filters, which are integrated into the RF1194.

For ease of implementation the RD7200 layout is based on printed circuit board (PCB) specifications typically utilized in today's handset designs. The layout can be easily replicated on customer board designs and—as a result of the high level of integration offered by RD7200—the total board area of the tri-band WCDMA version is only 200 mm² while the dual-band WCDMA version occupies only 167 mm².

RF7201/7202 Dual-band WCDMA Linear PA Modules

- Ultra-small, ultra-thin 4 x 5 x 1 mm package size
- RF7201: Band 1/8, RF7202: Band 2/5
- V_{BATT} range: 3.0 V to 4.2 V
- High-efficiency operation, 41% for
 - Band 1 (7201) at P_{OUT} = +28.0 dBm
 - Band 8 (7201) at P_{OUT} = +28.5 dBm
 - Band 2 (7202) at P_{OUT} = +28.5 dBm
 - Band 5 (7202) at P_{OUT} = +28.0 dBm
- 3-mode power states with digital control interface
- Integrated output power coupler
- Integrated blocking and collector decoupling capacitors

RF7200 Band 1 WCDMA Linear PA Module

- Ultra-small, ultra-thin 3 x 3 x 1 mm package size
- V_{BATT} range: 3.0 V to 4.2 V
- High-efficiency operation, 41% at P_{OUT} = +28.0 dBm
- 3-mode power states with digital control interface
- Integrated power coupler
- Integrated blocking and collector decoupling capacitors

RF1194 (SP9T) Quad-band Multimode Antenna Switch Filter Module

- Compact footprint, 4.5 x 4.5 x 1.3 mm, 28-Pin QFN
- Integrated GSM Rx SAW filters
- Integrated GSM Tx LPFs
- Small solution size, no external DC blocking capacitors required
- Quad-band GSM/EDGE, tri-band WCDMA applications

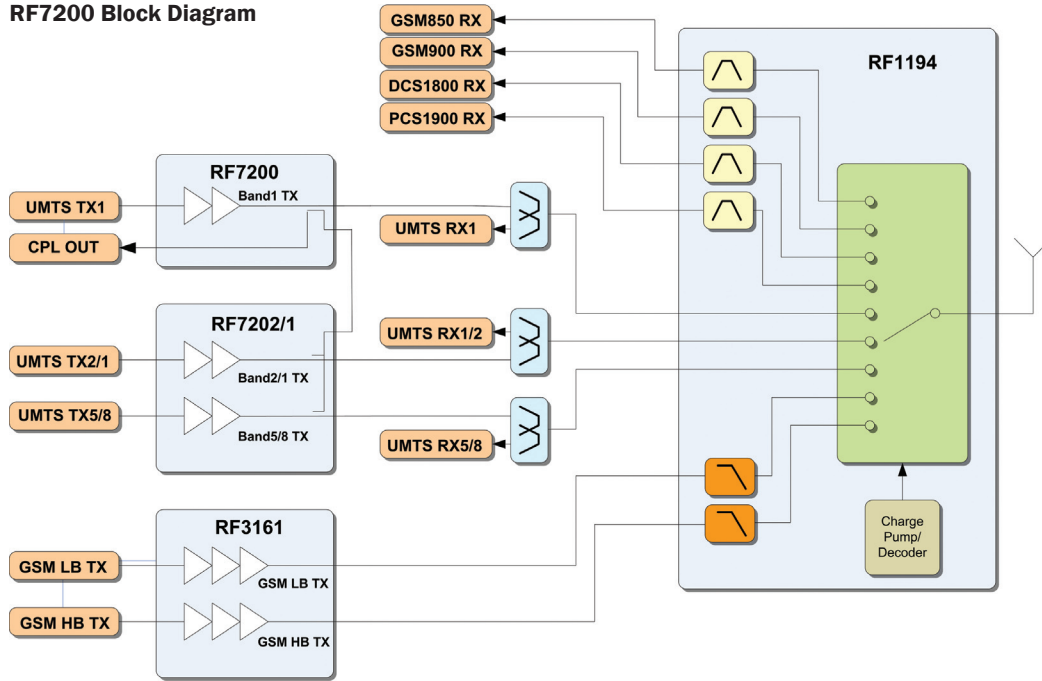
RF3161 Quad Band GSM/EDGE PA Module

- Ultra-small, ultra-thin 6 x 6 x 1 mm package size
- Large signal polar modulation (LSPM) EDGE compatible
- V_{BATT} range: 3.0 V to 4.6 V
- Improved power flatness through integrated current limiter



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RF7200 Block Diagram



RF 720x SPECIFICATIONS

Part Number	Maximum Output Power (dBm)	ACLR +/-5 MHz (dBc)	Peak Power PAE (%)	MPM 19 dBm PAE (%)	LPM Idle Current (mA)	HPM Gain (dB)	MPM Gain (dB)	Enable / Mode Interface	Coupling Factor (dB)	Coupling Directivity (dB)
RF7200	28	-40	41	22	15	28	18	GPIO	20	15
RF7201/02 BAND 1/2	28.5	-40	41	22	15	28	18	GPIO	20	15
RF7201/02 BAND 5/8	28	-40	41	22	15	28	18	GPIO	20	15

RF3161 SPECIFICATIONS

Part Number	Maximum Output Power GMSK (dBm)	Maximum Power Efficiency (%)	8-PSK Peak Output Power (dBm)	Second Harmonic (dBm Max)	Third Harmonic (dBm Max)	Vramp Loop BW (MHz Min)	Vramp Group Delay (ns)	Vramp Group Delay Variation (ns)	Power Control Range (dB Min)
RF3161									
824-915 MHz	34.5	51	32.5	-6	-11	2.5	35	+/-12	50
RF3161									
1710-1910 MHz	32.0	53	31.7	-7	-11	2.5	35	+/-12	50

RF1194 SPECIFICATIONS

Switch Type	Interface	Integrated Harmonic Rejection LPFs	Integrated Rx SAWs	DC Blocking Capacitors	Input Power			Insertion Loss				GSM Rx (LB/HB) (dB)	Second and Third Harmonics (dBc)	IIP2 (dBm)
					GSM LB (dBm)	GSM HB (dBm)	UMTS (dBm)	GSM LB Tx (dB)	GSM HB Tx (dB)	UMTS Tx (dB)	UMTS Rx (dB)			
2xGSM Tx, 4xGSM Rx, 3xUMTS,	GPIO	Yes	Yes	Not Required	35	33	26	1.05	1.15	0.50	0.55	3.0/3.2	<-78	110

For sales or technical support, contact RFMD at 336.678.5570 or sales-support@rfmd.com
7628 Thorndike Rd., Greensboro, NC 27409-9421 USA • Phone 336.664.1233 • Fax 336.931.7454



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