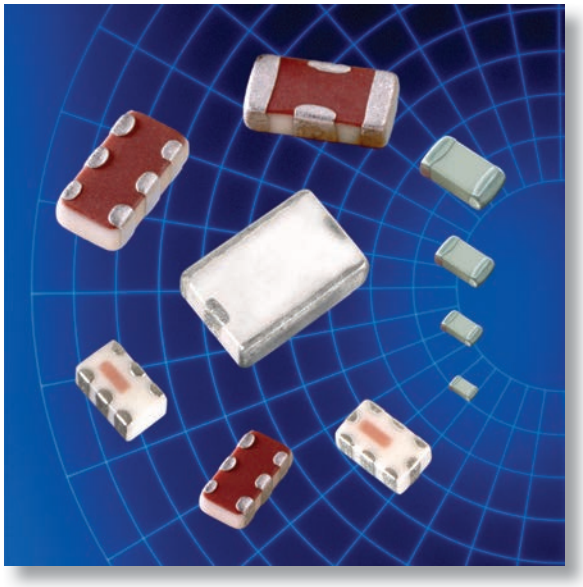
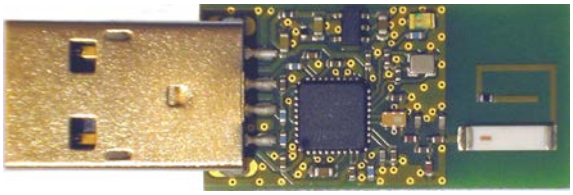
Integrated Passive Components





Johanson Technology has developed a line of small, highly reliable RF ceramic components manufactured with a proprietary LTCC (low temperature co-fired ceramic) process. These components operate over several bands from 900MHz to 6 GHz covering Cellular, DECT, WLAN, Bluetooth, 802.11 (a,b and g) and GPS applications.

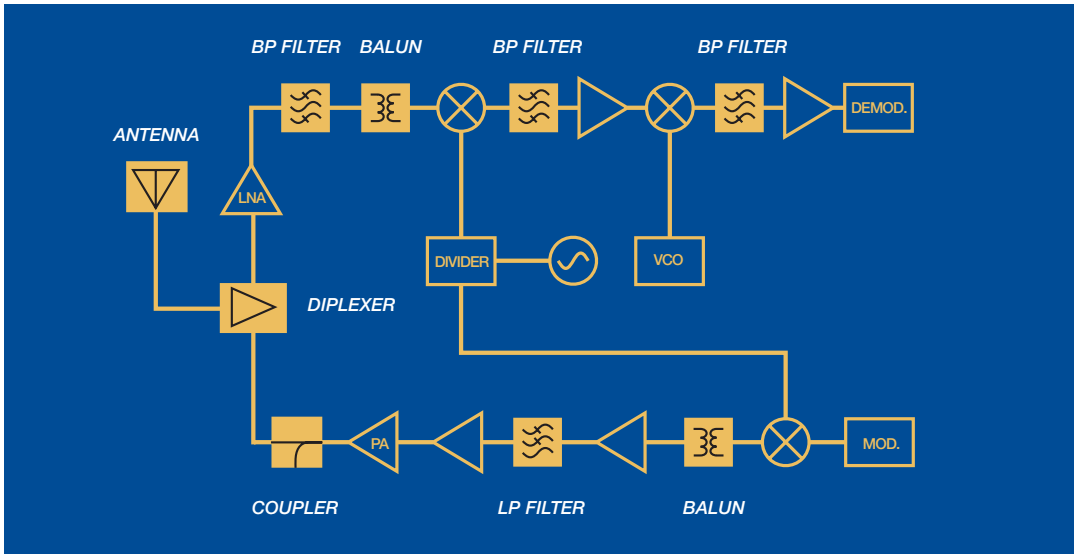
In addition to the array of listed components we can support custom solutions for high volume applications with design flexibility and short development times. Contact us today with your specific technical requirements.

Key Features

- Custom Solutions
- LTCC Based Designs
- Low Insertion Loss
- Miniature Size / Low Profile
- Temperature Stable
- Surface Mount
- RoHS Compliant, Standard, Use No Suffix
- Tin / Lead Term. Option, Add "/Pb" Suffix

Supported Application Bands

- Wireless LAN, Bluetooth, Home RF
- GSM/EDGE/GPRS/DCS/PCS/WCDMA
- WiMAX 802.16 d/e
- 2.4 GHz & 5.5 GHz ISM Band
- Zigbee
- MIMO
- GPS
- UNII
- UWB



Ceramic Chip Antennas

Part Number	Frequency (MHz)	Peak Gain	Ave. Gain	Return Loss (min)	Case Size
0433AT62A0020	423 - 443	-4 dBi typ. (XZ-total)	-4 dBi typ. (XZ-total)	9.5 dB	See Spec Sheet
0490AT62A0040	423-443	-3.0 dBi typ. (XZ-total)	-6.0 dBi typ. (XZ-total)	4.4 dB	See Spec Sheet
0783AT43A0008	779 - 787	-2.0 dBi typ. (XZ-total)	-5.0 dBi typ. (XZ-total)	9.5 dB	43-1
0868AT43A0020	858 - 878	-1.0 dBi typ (XZ-total)	-4.0 dBi typ (XZ-total)	9.5 dB	43-1
0830AT54A2200	700-800 1700-2100 824-960 1710-2690	2.0 -1.6	2.0 -1.0	3.5 4.5	See Spec Sheet
0915AT43A0026	902 - 928	-1.0 dBi typ (XZ-total)	-4.0 dBi typ (XZ-total)	8.5 dB	43-1
0953AT43A0006	950 - 956	-1.0 dBi typ.(XZ-total)	-1.0 dBi typ.(XZ-total)	9.5 dB	43-1
1575AT43A0040	1555 - 1595	- 1.5 dBi typ (XZ-V)	-2.5 dBi typ (XZ-V)	9.5 dB	43-1
1575AT44A0010	1570 - 1580	0.5 dBi typ (XZ-V)	-2.0 dBi typ (XZ-V)	9.5 dB	See Spec Sheet
1575AT54A0010	1570 - 1580	1.3 dBi typ (YZ-Total)	-0.7 dBi typ (YZ-Total)	9.5 dB	See Spec Sheet
1600AT45A0040	1580 - 1620	0.0 dBi typ (XZ-Total)	-1.0 dBi typ (XZ-Total)	9.5 dB	45-1
1905AT45A0050	1880 - 1930	0.5 dBi typ (XZ-Total)	-1.1 dBi typ (XZ-Total)	9.5 dB	See Spec Sheet
2000AT18A0075	1965 - 2040	0.3 dBi typ (XZ-V)	-3 dBi typ (XZ-V)	9.5 dB	18-4
2450AD14A5500	2400 - 2480 5150 - 5850	1.0 dBi typ (YZ-Total) 4.0 dBi typ (YZ-Total)	3.5 dBi typ (XZ-Total) 2.5 dBi typ (XZ-Total)	6.0 dB 6.0 dB	See Spec Sheet
2450AD18A7250	2400-2480 6000-8500	+3.0 (YZ-cut) +5.5 (YZ-cut)	+0.4 (YZ-cut) +1.0 (YZ-cut)	6.5 min.	See Spec Sheet
2450AT07A0100	2400 - 2500	1.0 dBi typ (XZ-Total)	1.5 dBi typ (XZ-Total)	6.5 dB	See Spec Sheet
2450AT18A100	2400 - 2500	0.5 dBi typ (XZ-V)	-0.5 dBi typ (XZ-V)	9.5 dB	18-4
2450AT18B100	2400 - 2500	0.5 dBi typ (XZ-V)	-0.5 dBi typ (XZ-V)	9.5 dB	18-4
2450AT18D0100	2400 - 2500	1.5 dBi typ.(XZ-V)	-1.0 dBi typ.(XZ-V)	6.0 dB	18-5
2450AT42A100	2400 - 2500	0 dBi typ (XZ-V)	-1 dBi typ (XZ-V)	9.5 dB	42-1
2450AT42B100	2400 - 2500	0 dBi typ (XZ-V)	-1.5 dBi typ (XZ-V)	9.5 dB	42-1
2450AT42D0100	2400 - 2500	0.5 dBi typ (XZ-total)	-2.0 dBi typ (XZ-V)	6.0 dB	42-1
2450AT42E0100	2400 - 2480	-2.0 dBi typ (YZ-V)	-	-5.0 dB	See Spec Sheet
2450AT43A100	2400 - 2500	2.0 dBi typ (XZ-V)	0.5 dBi typ (XZ-V)	9.5 dB	43-1
2450AT43B100	2400 - 2500	1.3 dBi typ (XZ-V)	-0.5 dBi typ (XZ-V)	9.5 dB	43-2
2450AT43F0100	2400 - 2500	2.1 dBi typ (XZ-total)	1.0 dBi typ (XZ-total)	---	See Spec Sheet
2450AT45A100	2400 - 2500	3.0 dBi typ (XZ-V)	1.0 dBi typ (XZ-V)	9.5 dB	45-1
2450AD46A5400 (Dual Band)	LB: 2400 - 2500 HB: 4900 - 5900	1.0 dBi typ (XZ-V) -1.5 dBi typ (XZ-V)	-2.5 dBi typ (YZ-V) -2.5 dBi typ (YZ-V)	8.5 dB 8.5 dB	46-1
2500AT43A0100	2450 - 2550	0.6 dBi typ (YZ-total)	-2.1 dBi typ (XZ-total)	3.0 dB	43-1
2500AT44M0400	2300 - 2700	2.5 dBi typ	0.5 dBi typ	9.5 dB	44-2
2600AT44A0600	2300 - 2900	2.0 dBi	0.0 dBi typ.	9.5 dB	42-2
2650AT43A0100	2600 - 2700	0.5 dBi typ (YZ-total)	-1.7 dBi typ (XZ-total)	3.0 dB	50
3100AT51A7200	3100 - 10300	1.5 dBi typ	-3.5 dBi typ	9.5 dB	51-1
4000AT44A1800	3100 - 4900	2.7 dBi typ	-3.5 dBi typ	7.4 dB	See Spec Sheet
5400AT18A1000	4900 - 5900	2.0 dBi typ (XZ-V)	-2.5 dBi typ (XZ-V)	8.5 dB	18-4
5500AT18A0725	5150 - 5875	2.0 dBi typ. (XZ-V)	-2.5 dBi typ. (XZ-V)	9.5 dB	18-4
5500AT07A0900	5725 - 5825	3.9 dBi typ (XZ-V)	-1.5 dBi typ (XZ-V)	9.5 dB	43-1
7000AT18A1600	6200 - 7800	2.0 dBi typ	-0.5 dBi typ	10 dB	See Spec Sheet

Detailed specifications and performance curves for the RF Ceramic Component line are located on our website.

Band-Pass Filters: 2.45 GHz

Part Number	Frequency (MHz)	Insertion Loss (max.)	Attenuation (min)	Return Loss (min)	Case Size (EIA)
1905BP18A0050	1880 - 1930	1.65 dB	20dB @ 100-1500MHz 15dB @ 2300-6000MHz 25dB @ 1250-1290MHz 30dB @ 2400-2500MHz 25dB @ 2500-2570MHz	9.5 dB	1206
2450BP07A0100	2400 - 2500	2.5 dB	25 dB @ 824 - 960 MHz 25 dB @ 1710 - 1910 MHz 25 dB @ 4800 - 5000 MHz 15 dB @ 7200 - 7500 MHz	9.5 dB	0402
2450BP08A0100	2400 - 2500	1.0 max@ 25°C	15 min@5-960MHz 10 min@1710-1990MHz 25 min@4800-7200MHz	9.0 dB	0504
2450BP14D0100	2400 - 2500	1.7 dB	30 dB @ 880 - 915 MHz 30 dB @ 1710 - 1785 MHz 25 dB @ 1850 - 1910 MHz 25 dB @ 4800 - 5000 MHz 15 dB @ 7200 - 7500 MHz	9.5 dB	0603
2450BP14E0100	2400 - 2500	2.5 dB	35 dB @ 824 - 960 MHz 38 dB @ 1710 - 1910 MHz 25 dB @ 4800 - 5000 MHz 20 dB @ 7200 - 7500 MHz	9.5 dB	0603
2450BP14F0100	2400-2500	2.5 max (25°C) 2.8 max (-40 to +85)	40dB @ 880-915MHz 40dB @ 1710-1850MHz 40dB @ 1850-1910MHz 40dB @ 1920-1990MHz 25dB @ 2100-2170MHz	10 dB	0603
2450BP15B100	2400 - 2500	2.2 dB	25 @ 1200 - 1300 MHz 10 @ 2000 MHz 12 @ 3000 MHz 30 @ 3600 - 3800 MHz 34 @ 4800 - 5000 MHz	9.5 dB	0805
2450BP15C100	2400 - 2500	2.2 dB	30 dB @ 1200 - 1300 MHz 15 dB @ 2000 MHz 25 dB @ 3000 MHz 20 dB @ 3600 - 3800 MHz 20 dB @ 4800 - 5000 MHz	9.5 dB	0805
2450BP15E0100	2400 - 2500	1.5 dB	30 dB @ 880 - 915 MHz 30 dB @ 1710 - 1785 MHz 25 dB @ 1850 - 1910 MHz 25 dB @ 4800 - 5000 MHz 15 dB @ 7200 - 7500 MHz	9.5 dB	0805
2450BP15F0100	2400 - 2500	2.5 dB	35 dB @ 824 - 960 MHz 38 dB @ 1710 - 1910 MHz 25 dB @ 4800 - 5000 MHz 20 dB @ 7200 - 7500 MHz	9.5 dB	0805
2450BP15H0100	2400 - 2500	1.5 max.@ 25°C 1.8 max. @ -40 - 85°C	25 dB @ 1200 - 1300 MHz 10 dB @ 2000 MHz 12 dB @ 3000 MHz 30 dB @ 3600 - 3800 MH 34 dB @ 4800 - 5000 MHz	9.5 dB	0805
2450BP18C100E	2400 - 2500	2.5 dB	40 dB @ 1200 - 1800 MHz 25 dB @ 2100 MHz 35 dB @ 4800 - 5000 MHz 25 dB @ 7200 - 7500 MHz	9.5 dB	1206
2450BP39C100A	2400 - 2500	2.5 dB	42 dB @ 1710 - 1990 MHz 30 dB @ 2100 MHz 30 dB @ 4800 - 5000 MHz	9.5 dB	2520

Detailed specifications and performance curves for the RF Ceramic Component line are located on our website.

Band-Pass Filters: 2.45 GHz

Part Number	Frequency (MHz)	Insertion Loss (max.)	Attenuation (min)	Return Loss (min)	Case Size (EIA)
2450BP39C100C	2400 - 2500	1.5 dB	30 dB @ 800 - 915 MHz 30 dB @ 1710 - 1785 MHz 25 dB @ 1850 - 1910 MHz 25 dB @ 4800 - 5000 MHz 15 dB @ 7200 - 7500 MHz	9.5 dB	2520
2450BP39C100D	2450 ± 50	2.2 dB	30 dB @ 880 - 915MHz 30 dB @ 1710 - 1785MHz 25 dB @ 1850 - 1910MHz 25 dB @ 2100MHz 25 dB @ 4800 - 5000MHz 15 dB @ 7200 - 7500MHz	9.5 dB	2520
2450BP39D100B	2400 - 2500	2.5 dB	35 dB @ 880 - 915 MHz 18 dB @ 1710 - 1990 MHz 12 dB @ 2100 MHz 35 dB @ 3200 MHz 22 dB @ 4800 - 5000 MHz 22 dB @ 7200 - 7500 MHz	9.5 dB	2520
2450BP39D100C	2400 - 2500	1.2 dB	30 dB @ 880 - 915 MHz 30 dB @ 1710 - 1785 MHz 25 dB @ 1850 - 1910 MHz 25 dB @ 4800 - 5000 MHz 15 dB @ 7200 - 7500 MHz	9.5 dB	2520
3350BP39A0500	3100 - 3600	2.0 dB	35dB @ 500-2000MHz 30dB @ 2500MHz 5dB @ 2950MHz 10dB @ 4000MHz 28dB @ 5000MHz	9.5 dB	1008
2450BP39D100E	2400 - 2500	1.2 dB	30 @ 880 - 915 MHz 30 @ 1710 - 1785 MHz 25 @ 1850 - 1910 MHz 2 @ 2700 MHz 25 @ 4800 - 5000 MHz 15 @ 7200 - 7500 MHz	9.5 dB	2520
2450BP39F100A	2400 - 2500	2.4 dB	45 dB @ 880 - 915 MHz 48 dB @ 1710 - 1990 MHz 20 dB @ 2110 - 2170 MHz 30 dB @ 4800 - 5000 MHz 36 dB @ 7200 - 7500 MHz	9.5 dB	2520
2450BP41D100A	2400 - 2500	2.3 dB	40 dB @ 1200 - 1800 GHz 30 dB @ 2100 GHz 12 dB @ 2200 GHz 35 dB @ 4800 - 5000 GHz	9.5 dB	See Spec Sheet

We design, develop, and manufacture passive RF Diplexers/Triplexer for GPS/GLNSS+BLE/WiFi + WLAN for portable applications. Small EIA 0603 or 0805 are achievable using LTCC technology integrated to receive and filter, and split 1.5, 2.45, and 5.5GHz signals for various RF chipsets who offer combined functionality. These components are also used in wideband antenna systems where diplexing/triplexing RF signals is required

Detailed specifications and performance curves for the RF Ceramic Component line are located on our website.

Band-Pass Filters: 2.45 GHz

Part Number	Frequency (MHz)	Insertion Loss (max.)	Attenuation (min)	Return Loss (min)	Case Size (EIA)
2450BP41D100B	2400 - 2500	1.3 dB	30 dB @ 880 - 915 MHz 30 dB @ 1710 - 1785 MHz 20 dB @ 1850 - 1910 MHz 25 dB @ 4800 - 5000 MHz 20 dB @ 7200 - 7500 MHz	9.5 dB	See Spec Sheet
2500BP15M400	2300 - 2700	2.0 dB	15 dB @ 100 - 1800 MHz 20 dB @ 3400 - 11700 MHz	9.5 dB	2520

Band-Pass Filters: 5.5 GHz

Part Number	Frequency (MHz)	Insertion Loss (max.)	Attenuation (min)	Return Loss (min)	Case Size
5130BP18U4060	3100-7160	1.6 dB	25dB @ 824 -960MHz 25dB @ 1710-1990MHz 15dB @ 2400 -2500MHz 20dB @ 10100-10600MHz	9.5 dB	1206
5400BP14A0950	4900-5850	1.5max @25°C 1.7max @-40°C to 85C	33dB @ 100-2170MHz 29dB @ 2170-2500MHz 32dB @ 9800-12000MHz	9.5 dB	0603
5515BP15B725	5150-5875	1.5 dB	30dB @ 3500MHz 25dB @ 9800 - 11840MHz 5dB @ 14700 - 17760MHz	9.5 dB	0805
5515BP15B975	4900 - 5875	1.5 dB	30 dB @ 3500 MHz	9.5 dB	0805
5515BP15C725	5150 - 5875	2.0 dB	30 dB @ 500 - 4000 MHz 20 dB @ 4600 MHz 15 dB @ 10300 - 11800 MHz	9.5 dB	0805
5515BP15C975	4900 - 5875	1.8 dB	30 dB @ 500 - 4000MHz 20 dB @ 4200MHz 15 dB @ 9800 - 11750MHz	8.5 dB	0805
5515BP15C1020	4900 - 5920	1.5 dB	30 dB @ 3500 MHz	9.5 dB	0805
5525BP15B0750	5150-5900	3.5 dB	35min.@ 4000MHz 35min.@ 4500MHz 40min.@ 4600MHz	7.4 dB	0805
5550BP14A0800	5150-5950	0.7 typ.@25°C 0.9 max.@-40C~ 85°C	35min.@ 700-2690MHz 30min.@ 3400-3800MHz 12min.@ 7250-7800MHz 20min.@10300-11700MHz	9.5 dB	0805
5697BP44A0360	5490 - 5835	2.2 typ. /2.5 max	30min. @2400-2500MHz 40min. @5170-5330MHz 25min. @10980-11670MHz	9.5 dB	See Spec Sheet
5235BP44A0180	5170-5330	2.2 typ./2.5 max	30min. @2400-2500MHz 40min. @5490-5835MHz 25min. @10340-10660MHz	9.5 dB	See Spec Sheet

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Compact SMD filters developed with "easy RF" in mind provide passive >35dB attenuation levels very close to passband without compromising insertion loss. The recommended application is MoCA D-Band. This cost effective filter was designed to use a small effective footprint and easily matched to 75ohm systems. p/n 1400BP41A0550

Detailed specifications and performance curves for the RF Ceramic Component line are located on our website.

Band-Pass Filters: Other

Part Number	Frequency (MHz)	Insertion Loss (max)	Attenuation (min)	Return Loss (min)	Case Size (EIA)
1200BP44A575	950 - 1525	2.8 dB	25 dB @ 100 - 480 MHz 25 dB @ 1900 - 3050 MHz	7.0 dB	1812
1810BP07B200	1700 - 1900	1.8 dB	20 dB @ 855-955 (Prelim.) 10 dB @ 2565-2865 (Prelim.)	TBD	0402
2600BP14M0200	2500 - 2700	2.2 dB max @ 25°C 2.5 dB max @ -40 - 85°C	30 dB @ 806 - 915MHz 30 dB @ 1710 - 1785MHz 30 dB @ 1850 - 1910MHz 30 dB @ 1920 - 1980MHz 13 dB @ 3300 - 3900MHz 20 dB @ 4900 - 5900MHz	9.5 dB	See Spec Sheet
3600BP14M0600	3300 - 3700	1.8 dB max @ 25°C 2.0 dB max @ -40 - 85°C	30 dB @ 806 - 915MHz 30 dB @ 1710 - 1785MHz 30 dB @ 1850 - 1910MHz 30 dB @ 1920 - 1980MHz 31 dB @ 2400 - 2500MHz 18 dB @ 4900 - 5900MHz	12 dB	See Spec Sheet
3600BP15M600	3300 - 3900	1.8 dB	15 dB @ 100 - 2600 MHz 9 dB @ 4400 MHz 20 dB @ 6000 - 9900 MHz	9.5 dB	0805
3750BP14A0900	3300-4200	2.3 typ. (2.7 max.)	44 typ. (40 min.)@DC - 2170 MHz 41 typ. (30 min.)@2300 - 2700 MHz 22 typ. (20 min.)@5500 - 5850 MHz	10 dB	0603
3960BP39A1584	3168 - 4752	2.5 dB	30 dB @ 2400 - 2500 MHz 12 dB @ 5150 MHz 25 dB @ 5950 MHz	9.5 dB	See Spec Sheet
4000BP15U1800	3100 - 4900	2.0 dB	25 dB @ 1.75 GHz 13 dB @ 2.10 GHz	8.5 dB	0805
4560BP39A0180	4470 - 4650	2.97 dB	48.3 dB @ < 2540 MHz 19.1 dB @ 4020 MHz 19 dB @ 5150 - 5350 MHz 35.9 dB @ 5725 - 7000 MHz	17.5 dB	See Spec Sheet
4700BP14A0600	4400-5000	1.9 typ. (2.5 max.)	42 typ. (38 min.)@DC - 2170 MHz 42 typ. (30 min.)@2300 - 2700 MHz 23 typ. (20 min.)@5500 - 5850 MHz	10 dB	0603
4700BP15A0600	4400-5000	0.7 typ. (0.9 max.)	36 typ. (30 min.)@500 - 2690 MHz 18 typ. (15 min.)@2700 - 3800 MHz 30 typ. (15 min.)@8800 - 10000 MHz 30 typ. (15 min.)@13200 - 15000 MHz	10 dB	0805
7000BP15A1600	6200-7800	1.75 typ. / 2.0 max.	30min. @3000-3400GHz 35min. @3400-3800GHz 30min. @3800-5600GHz 5min. @4900-5850GHz 25min. @8500-16000GHz	12 typ. / 10 min.	See Spec Sheet

Continuing the mobile network evolution, Johanson has developed its first series of n77, n78, and n79 bands band pass filters for 5G networks. These small case size (EIA 0603/0805) BPFs with low profile are optimized for small cell systems, IoT (industrial, medical, AR/VR), automotive, among other applications. These 3.5GHz, 3.7GHz, and 4.7GHz SMD/SMT ceramic filters are cost effective, low insertion loss, and offer formidable attenuation for their size and price. P/N's:

3600BP15M600

3750BP14A0900

4700BP14A0600

4700BP15A0600

Detailed specifications and performance curves for the RF Ceramic Component line are located on our website.

Ceramic Coaxial Resonator Band Pass Filter

Part Number	Frequency (MHz)	Insertion Loss (max)	Return Loss (min)	Attenuation	Case Size (EIA)
5235CR45A0180	5150 - 5330	1.8 dB	10 typ.	25dB @ 100-48055 typ. (45 min.) @ 30 - 2700 MHz 48 typ. (42 min.) @ 3453 - 3547 MHz 45 typ. (40 min.) @ 3667 - 3883 MHz 52 typ. (50 min.) @ 5490 - 5850 MHz	3312
5697CR45A0360	5490 - 5850	1.7 dB	10 typ.	48 typ. (43 min.) @ 30-2700 MHz 45 typ. (42 min.) @ 3453-3547 MHz 45 typ. (40 min.) @ 3667-3883 MHz 52 typ. (50 min.)@ 5150 - 5330 MHz	3315

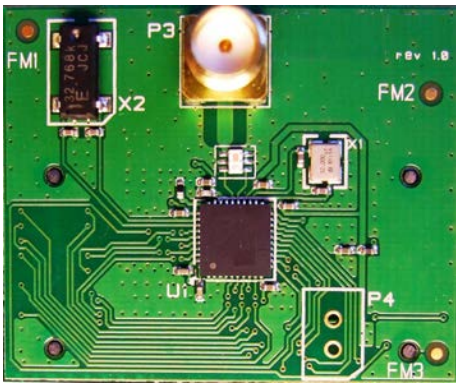
High-Pass Filters

Part Number	Frequency (MHz)	Insertion Loss (max)	Attenuation (min)	Return Loss (min)	Case Size (EIA)
1900HP41B500	1650 - 2150	2.0 dB (Prelim)	27 dB @ 950 - 1450 MHz (Prelim)	8.5 dB	1210
1900HP41C0500	1650 - 2150	2.0 dB	27 dB @ 950 - 1450 MHz	8.5 dB	1210
2450HP14A100	2400 - 2500	1.0 dB	9 dB @ 824 - 960 MHz 20 dB @ 1917 MHz	9.5 dB	1210
2450HP15A100	2400 - 2500	0.85 dB	25 dB @ 875 - 920 MHz 20 dB @ 1705 - 1790 MHz 19 dB @ 1845 - 1915 MHz	9.5 dB	See Spec Sheet
3550HP15A0500	3300 - 3800	0.6 dB max. @ 25°C 0.8 dB max. @ -40-85°C	40 dB @ 1710-1910 MHz	9.5 dB	See Spec Sheet
5200HP15A4200	3100 - 7300	2.5 dB	30 dB @ < 2540 MHz 12 dB @ 2800 MHz	9.5 dB	See Spec Sheet

EMI Filter

Part Number	No. of Sections	Cutoff Freq (MHz)	Attenuation (min)	Case Size
0400FA15A0400	4	400	20 dB @ 800 - 1000 MHz	See Spec Sheet

Johanson-Texas Instruments Reference Design - CC2530



T.I. CC2530 Reference Design using Johanson

Complete passive component integration for RF Chipsets layout and design.

Johanson matched-impedance balun-filter integrated passive with TI CC2530 RF chipset.

Note: Only one component between chip and antenna SMA

Johanson p/n: 2450BM15A0002

Detailed specifications and performance curves for the RF Ceramic Component line are located on our website.

Low-Pass Filters

Part Number	Frequency (MHz)	Insertion Loss (max)	Attenuation (min)	Return Loss (min)	Case Size (EIA)
0500LP15A500	0 - 500	0.7 dB	9 dB @ 824 - 960 MHz 25 dB @ 1710 - 1990 MHz 25 dB @ 2400 - 4000 MHz	9.5 dB	See Spec Sheet
0868LP15A020	858 - 878	0.5 dB	30 dB @ 2 x Fo 40 dB @ 3 x Fo	14.0 dB	0805
0869LD14D1810	824 - 915 1710 - 1910	0.6 dB 0.6 dB	25 dB @ 1648-1830 - 25 dB @ 3420-3820 25 dB @ 2472 - 2745 - 25 dB @ 5130-5730	14 dB	0603
0869LP14A090	824 - 915	0.6 dB	20 dB @ 2xFo 15 dB @ 3xFo	10.9 dB	0603
0892LP07A136	824 - 960	0.7 dB	18 dB @ 1648 - 1920 MHz 25 dB @ 2472 - 2880 MHz 25 dB @ 3296 - 3840 MHz	9.5 dB	See Spec Sheet
0898LP18A035	880 - 915	0.6 dB	30 dB @ 2xFo 18 dB @ 3xFo	10.9 dB	1206
0915LP15A026	902 - 928	0.65 dB	25 dB @ 2xFo 25 dB @ 3xFo	9.5 dB	0805
0915LP15B026	902 - 928	0.5 dB	30 dB @ 2xFo 30 dB @ 3xFo	14.0 dB	0805
1175LP15A0550	900 - 1450	2.5 dB	25 dB @ 1650 - 2200 MHz	9.5 dB	0805
1200LP41B0500	950 - 1450	2.0 dB	24 dB @ 1650-2150 (+25°C)	8.5 dB	See Spec Sheet
1200LP41C0500	950 - 1450	2.0 dB	24 dB @ 1650-2150 (+25°C)	8.5 dB	See Spec Sheet
1748LP18A075	1710 - 1785	0.6 dB	30 dB @ 3500 MHz 20 dB @ 5240 MHz	10.9 dB	1206
1810LP07A200	1710 - 1910	0.5 dB	20 dB @ 2xFo 20 dB @ 3xFo	10.9 dB	0402
1810LP07B200	1710 - 1910	0.6 dB	26 dB @ 3420 - 3570 MHz 21 dB @ 3700 - 3820 MHz 21 dB @ 5130 - 5730 MHz	9.5 dB	0402
1810LP14A200	1710 - 1910	0.6 dB	30 dB @ 3420 - 3570 MHz 25 dB @ 3700 - 3820 MHz 20 dB @ 5130 - 5730 MHz	11.7 dB	0603
1880LP14A060	1850 - 1910	0.6 dB	27 dB @ 2xFo 19 dB @ 3xFo	11.7 dB	0603
2450LP15B050	2400 - 2500	0.5 dB	32 dB @ 2 x Fo 30 dB @ 3 x Fo 30 dB @ 4 x Fo	10.9 dB	See Spec Sheet
2400LP18A0200	2300 - 2500	0.6 dB	27 dB @ 2 x Fo 18 dB @ 3 x Fo	10.9 dB	See Spec Sheet
2450LP07A0100	2400 - 2500	0.45 dB max @ 25°C 0.55 dB max @ -40-85°C	21 dB @ 4800 - 5000 MHz 21 dB @ 7200 - 7500 MHz	11.7 dB	0402
2450LP14A100	2400 - 2500	0.5 dB	25 dB @ 2xFo 18 dB @ 3xFo	14.0 dB	0603
2450LP14B100	2400 - 2500	0.5 dB	35 dB @ 2xFo 25 dB @ 3xFo	14.0 dB	0603
2450LP15A050	2400 - 2500	0.5 dB	27 dB @ 2xFo 25 dB @ 3xFo	10.9 dB	0805
2500LP14A0400	2300 - 2700	0.55 dB	35 dB @ 2 x Fo 25 dB @ 3 x Fo	11.7 dB	0603
3550LP14A300	3400 - 3700	0.65 dB	25 dB @ 3xFo	14.0 dB	0603
5515LP15A730	5150 - 5875	0.5 dB	25 dB @ 2xFo 18 dB @ 3xFo	10.9 dB	0805

Couplers, Directional

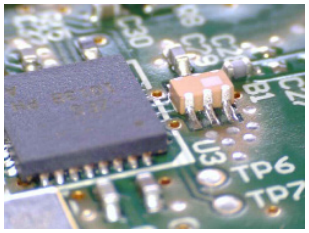
Part Number	Frequency (MHz)	Insertion Loss (max)	Return Loss (min)	Coupling (dB)	Isolation (min.)	Case Size (EIA)
0898CP14A035	880 - 915	0.28 dB	15.6 dB	18 ± 1.0 dB	26.0 dB	0603
1810CP14A200	1710 - 1910	0.30 dB	15.6 dB	20 ± 1.0 dB	25.0 dB	0603
2450CP14B100	2400 - 2500	0.34 dB	TBD dB	17.65 ± 1.0 dB	25.0 dB	0603

Coupler, Directional with Low Pass Filter

Part Number	Frequency (MHz)	Insertion Loss (max)	Return Loss (min)	Coupling (dB)	Isolation (min.)	Attenuation (min.) 2 x Fo 3 x Fo	Case Size (EIA)
0898CF15A035	880 - 915	0.7 dB	14 dB	20 ± 1.0	25.0 dB	22.0 dB 17.0 dB	0805
0910CF15B0100	860 - 960	1.2 dB	20 dB	10 ± 1.0	30.0 dB	27 dB @ 2 x Fo 30 dB @ 3 x Fo 30 dB @ 4 x Fo 30 dB @ 5 x Fo	See Spec Sheet
2450CF15A0100	2400 - 2500	0.8 dB	20 dB	15 ± 1.0	22.0 dB	20.0 dB	0805
5300CF15A0950	4900 - 5850	0.8 dB	20 dB	15 ± 1.0	22.0 dB	20.0 dB	0805

Coupler, Directional 3dB Hybrid

Part Number	Frequency (MHz)	Insertion Loss (max)	Return Loss (min)	Isolation (min.)	Case Size (EIA)
0880CH15A060	850 - 910	3.3 ± 0.5 dB	14.0 dB	20.0 dB	0805
1575CH15A0030	1560 - 1590	3.3 ± 0.5 dB max.	10.0 dB	16	0603
1585CH15A0070	1550-1620	3.3 ± 0.5 dB	10 min. typ.	16	0805
1950CH15A100	1900 - 2000	3.3 ± 0.5 dB	14.0 dB	16.0 dB	0805



Reference design Co-development solutions with full RF Chipset impedance characterizations in all modes to design conjugate impedance balun, add a low pass, band pass or high pass filter. Integrating 25+ passives in small case size (i.e.EIA0402 -1206)

Detailed specifications and performance curves for the RF Ceramic Component line are located on our website.

Baluns, Ceramic Chip

Part Number	Frequency (MHz)	Impedance Unbal./Bal.	Insertion Loss (max)	Return Loss (min)	Phase Difference	Amplitude Difference (max)	Case Size (EIA)
0430BL15A0100	400 - 460	50/100	1.0 dB	9.5 dB	180°±10°	2.0 dB	0805
0465BL15B100	460 - 470	50/100	1.0 dB	9.5 dB	180°±10°	1.5 dB	0805
0896BL14B050	851 - 941	50/50	1.5 dB	9.5 dB	180°±10°	0.7 dB	0603
0900BL15C050	800 - 1000	50/50	1.2 dB	9.5 dB	180°±10°	2.0 dB	0805
0900BL18B100	800 - 1000	50/100	1.0 dB	9.5 dB	180°±10°	2.0 dB	1206
0900BL18B200	800 - 1000	50/200	1.0 dB	9.5 dB	180°±10°	2.0 dB	1206
0900BL15A100	900 - 1000	50/100	1.2 dB	9.5 dB	180°±10°	2.0 dB	0805
0917BL18B100	889 - 945	50/100	1.0 dB	9.5 dB	180°±10°	2.0 dB	1206
1600BL15B050	1500 - 1700	50/50	1.0 dB	9.5 dB	180°±10°	2.0 dB	0805
1600BL15B100	1500 - 1700	50/100	1.0 dB	9.5 dB	180°±10°	2.0 dB	0805
1850BL15B050	1700 - 2000	50/50	1.0 dB	9.5 dB	180°±10°	2.0 dB	0805
1850BL15B100	1700 - 2000	50/100	1.0 dB	9.5 dB	180°±10°	2.0 dB	0805
1850BL15B200	1700 - 2000	50/200	1.0 dB	9.5 dB	180°±10°	2.0 dB	0805
2100BL15A100	2100 - 2200	50/100	1.0 dB	9.5 dB	180°±10°	2.0 dB	0805
2450BL07A0100	2400 - 2500	50/100	1.3 dB	9.5 dB	180°±10°	2.0 dB	See Spec Sheet
2450BL14C050	2400 - 2500	50/50	1.2 dB	9.5 dB	180°±10°	2.0 dB	0603
2450BL14C100	2400 - 2500	50/100	1.2 dB	9.5 dB	180°±10°	1.5 dB	0603
2450BL14C200	2400 - 2500	50/200	1.3 dB	9.5 dB	180°±10°	2.0 dB	0603
2450BL15B050	2400 - 2500	50/50	1.0 dB	9.5 dB	180°±10°	2.0 dB	0805
2450BL15B100	2400 - 2500	50/100	1.0 dB	9.5 dB	180°±10°	2.0 dB	0805
2450BL15B200	2400 - 2500	50/200	1.0 dB	9.5 dB	180°±10°	2.0 dB	0805
2450BL15K100	2400 - 2500	50/100	1.0 dB	9.5 dB	180°±10°	2.0 dB	0805
2500BL14M050	2300 - 2700	50/50	1.2 dB	9.5 dB	180°±15°	1.5 dB	0603
2500BL14M100	2300 - 2700	50/100	1.2 dB	9.5 dB	180°±15°	1.5 dB	0603
3600BL14M050	3300 - 3900	50/50	1.2 dB	9.5 dB	180°±15°	1.5 dB	14-1A
3600BL14M100	3300 - 3900	50/100	1.2 dB	9.5 dB	180°±15°	1.5 dB	0603
3700BL15B100	3400 - 4000	50/100	1.0 dB	9.5 dB	180°±20°	1.0 dB	0805
3700BL15B200	3400 - 4000	50/200	1.2 dB	9.5 dB	180°±20°	1.0 dB	0805
4000BL14U100	3100 - 4800	50/100	1.2 dB	9.5 dB	180°±20°	1.5 dB	0603
5425BL07A0200	4900 - 5950	50/200	1.2 dB	9.5 dB	180°±15°	2.0 dB	0402
5400BL14B100	4900 - 5875	50/100	1.0 dB	9.5 dB	180°±10°	1.5 dB	0603
5400BL15B050	4900 - 5900	50/50	1.0 dB	9.5 dB	180°±10°	2.0 dB	0805
5400BL15B100	4900 - 5900	50/100	1.0 dB	9.5 dB	180°±10°	2.0 dB	0805
5400BL15B200	4900 - 5875	50/200	1.0 dB	9.5 dB	180°±10°	2.0 dB	0805
5400BL15K050	4900 - 5875	50/50	1.2 dB	8.5 dB	180°±10°	2.0 dB	0805
5500BL15U0100	3000 - 8000	50/100	1.8 dB	9.5 dB	180°±20°	2.0 dB	0805
5400BL14B100	5150 - 5875	50/100	1.0 dB	11.7 dB	180°±10°	2.0 dB	0805

Detailed specifications and performance curves for the RF Ceramic Component line are located on our website.

Specific RF Chipset Impedeance-Matched Balun/Filters Integrated Passives; Reference Designs

Part Number	Frequency (MHz)	Unbalanced Impedance	Differential Balanced Imp.	Insertion Loss (max)	Return Loss (min)	Phase Difference
0896BM15A0001	863 - 928	50	Conj match to T.I. CC11XX and CC430	1.5 dB	9.5 dB	180°±10°
0896FB15A0100	863 - 928	50	Conj match to AT86RF212	1.5 dB	9.5 dB	180°±10°
0953BM15A0001	950 - 956	50	Conj. match to T.I. CC11XX	2.1 dB	9.5 dB	180°±10°
2450BM15B0009	2400 - 2500	50	Conj match to ZIC2410	1.5 dB	9.5 dB	180°±10°
2450FB15K0002	2400 - 2500	50	Conj match to CSR BC03, BC04(16-j40)	3 dB	9.54 dB	180°±10°
2450FB15K0005	2400 - 2500	50	Conj match to BC series of CSR	3.5 dB	9.5 dB	180°±10°
2450FB15K0008	2400 - 2500	50	Conj match to BC series of CSR	3.5 dB	9.5 dB	180°±10°
2450FB15L0001	2400 - 2500	50	Imp. match to AT86RF230/231 & ATmega128RFA1	1.5 dB	9.5 dB	180°±10°
2450BM14A0002	2400 - 2500	50	Conj match to nRF24L01/ nRF24L01	2.0 dB	9.5 dB	160°±15°
2450BM15A0001	2400 - 2500	50	Conj match to T.I. Chipsets CC2430 and CC2480	1.0 dB	10.0 dB	180°±15°
2450BM15B0003	2400 - 2500	50	Conj match to T.I. Chipset 2500	2.2 dB	10.0 dB	180°±12°
2450BM15B0002	2400 - 2500	50	Conjugate match to TI Chipset 2520	1.5 dB	10.0 dB	180°±15°
2450BM15A0002	2400 - 2500	50	Conjugate match to T.I. CC253X and CC2540	1.5 dB	10.0 dB	180°±15°

Balun-Filter, Ceramic Chip

Part Number	Frequency (MHz)	Impedance Unbal./Bal.	Insertion Loss (max)	Return Loss (min)	Phase Difference	Case Size (EIA)
0783FB15A0100	779 - 787	50/100	1.5 dB	9.5 dB	180°±15°	0805
0896FB15A0100	868 - 915	50/100	1.5 dB	11.7 dB	180°±15°	0805
2345FB39A0050	2300 - 2390	50/50	3.2 dB	11.7 dB	180°±10°	1008
2450FB15A0100	2400 - 2500	50/100	1.5 dB	9.5 dB	180°±10	0805
2450FB39B100	2400 - 2500	50/100	2.0 dB	9.5 dB	180°±10°	2025
2500FB16A0400	2300 - 2690	50/50+2.4nH	3.8 dB	9.5 dB	180°± 10°	See Spec Sheet
3500FB39A0050	3400 - 3600	50/50	2.9 dB	9.5 dB	180°± 12°	See Spec Sheet

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