



NXP satellite LNB devices BFU725F and BGA28xx

Complete satellite portfolio for all LNB architectures

Designed for use in LNAs, mixers, and IF amplifiers, these robust, small-footprint products are manufactured in NXP's groundbreaking QUBiC4X SiGe:C and QUBiC4+ process technology and are the latest additions to NXP's leading portfolio for satellite LNB.

BFU725F RF transistor

The BFU725F is an RF transistor that can be used in the LNA part and as a mixer for a DBS LNB. In either application, it delivers low power consumption, good noise and linearity, and the lowest cost compared to GaAs pHEMT solution.

BFU725F as mixer in Ku-band LNB

- ▶ Power consumption: 2 mA at 5 V
- ▶ Single supply: 3, 5, or 6 V
- ▶ Noise, Single Side Band: 7 dB (including BPF)
- ▶ Linearity: better than 0 dBm OIP3
- ▶ Gain, SSB: 2 dB (including BPF)
- ▶ RF/LO/IF Match: better than 12/15/18 dB
- ▶ Broadband unconditionally stable
- ▶ LO-RF isolation better than 18 dB

BFU725F as 2nd or 3rd stage LNA in Ku-band LNB

- ▶ Power consumption: 11 mA at 5 V
- ▶ Single supply: 3, 5, or 6 V
- ▶ Noise, SSB: typically 1.3 dB
- ▶ Linearity: better than 10 dBm OIP3
- ▶ Gain, SSB: typically 10.5 dB
- ▶ In/Out match: better than 7/12 dB
- ▶ Broadband unconditionally stable

BFU725F as LNA for C-band LNB

- ▶ Power consumption: 7 mA at 5 V
- ▶ Single supply: 5 or 6 V
- ▶ Noise: 0.65 dB
- ▶ Linearity: better than 10 dBm OIP3
- ▶ Gain: 15 dB
- ▶ In/Out Match: better than 10 dB
- ▶ Broadband unconditionally stable



BGA28xx MMICs as IF amplifiers (1st stage & output stage)

For compatibility with existing designs, the series uses a market standard package, the SOT363 and the pin-compliant SOT363F package. The pinning is identical to NXP's current gain block family, and the blocks deliver similar noise figures. New features include flatter gain, a gain slope of 0.5 dB, improved P1dB vs. I_{cc}, and no necessity of an output inductor (also not at high P1dB models).

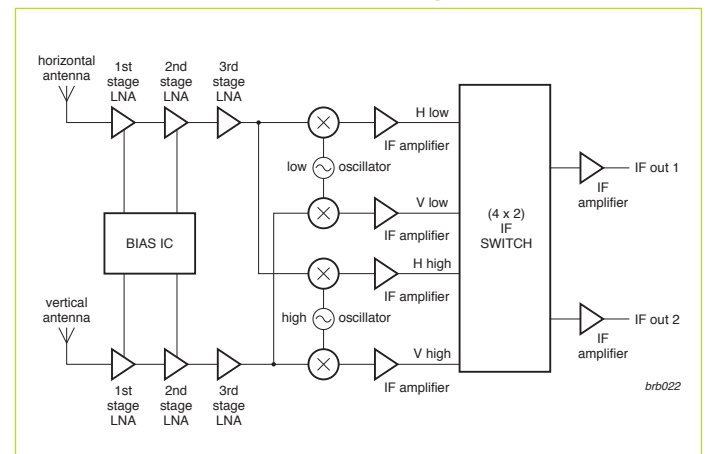
- ▶ Internally matched at 50 Ω
- ▶ Flexible gain
 - At 250 MHz: 19 dB to 32 dB
 - At 2150 MHz: 20 dB to 33 dB
- ▶ Output power at 1 dB gain compression: 0, 5, or 8 dB
- ▶ Single supply current
 - At 3.3 V: 12 to 20 mA
 - At 5 V: 6 to 27 mA
- ▶ Reverse isolation: >30 dB up to 2 GHz
- ▶ Best-in-class linearity vs current consumption
- ▶ Noise figure: 4 to 6 dB at 1 GHz
- ▶ Unconditionally stable (K > 1)
- ▶ High compression point models work without output inductor
- ▶ 6-pin SOT363 plastic SMD package



These products – the BFU725F transistor for LNA and mixer applications, and the BGA28xx series of MMICs for IF amplifiers – are the most recent additions to NXP's leading portfolio for satellite LNB. They join the other discrete products, including oscillators, amplifiers, switches, and biasing, to provide complete coverage for all LNB architectures.

Since the transistor and the MMICs are manufactured in NXP's industry-leading QUBiC4X SiGe:C and QuBiC4+ process, they offer better overall RF performance and are more robust than their GaAs equivalents for the lowest cost. The process technology also enables higher integration, for added features. NXP owns the industrial base for production (wafer fab, test, assembly), so volume supplies can be assured.

Satellite outdoor unit, LNB for multiple users



Quick reference satellite IF gain MMICs

Type	Package	@		F _u	@ 1 GHz			Gain (dB) @			
		V _s	I _s		NF	Gain	OIP3	250	950	1550	2150
		(V)	(mA)		(dB)	(dB)	(dBm)	(MHz)	(MHz)	(MHz)	(MHz)
BGA2800	SOT363	3.3	9.7	>3	3.4	20.2	11.5	20.0	20.2	20.6	20.6
BGA2801	SOT363	3.3	12.4	3.0	3.6	22.1	13.6	22.3	22.1	23.0	23.8
BGA2815	SOT363	3.3	16.4	>3	3.4	25.4	18.2	26.2	25.4	25.5	25.8
BGA2816	SOT363	3.3	19.6	2.3	2.8	31.2	16.1	32.0	31.2	30.6	28.7
BGA2850	SOT363	5.0	7.7	>3	3.9	23.3	8.7	22.9	23.2	23.9	24.0
BGA2865	SOT363	5.0	22.7	2.6	3.7	31.9	20.9	31.2	31.8	32.6	31.4
BGA2866	SOT363	5.0	15.4	>3	3.6	23.4	17.7	23.0	23.3	24.0	24.3

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