



## NXP wideband transistors BFU6x0F & BFU7x0F

# QUBiC4 Si and SiGe:C transistors for any RF function

These next generation devices offer the best RF noise figure versus gain performance, drawing the lowest current. This performance allows for better signal reception at low power and enables RF receivers to operate more robustly in noisy environments.

### Key features

- ▶ 40/110 GHz transition frequency allows for applications up to 18 GHz and beyond
- ▶ High gain of 13.5 dB at 12 GHz with a low noise figure of 1.45 dB
- ▶ High linearity of 34 dBm (OIP3) at 1.8 GHz
- ▶ Consuming only 3 mA to generate 13.5 dB gain at 12 GHz
- ▶ Plastic surface-mount SOT343F package for high performance and easy manufacturing

### Applications

- ▶ Wideband applications that require
  - Low noise amplifiers
  - High linearity and high output amplifiers
  - Buffer amplifiers
  - Mixers
  - Oscillators

The devices in this family of 6<sup>th</sup> (Si) and 7<sup>th</sup> (SiGe:C) generation RF transistors can be used to perform nearly any RF function. For example, the BFUx10F, BFUx30F, BFU725/N1 can be used as low noise amplifiers, while the BFUx60F and BFUx90F can be used as high linearity and high output amplifiers. Other options include using these transistors as buffer amplifiers, mixers, and oscillators.

Higher transition frequencies (40 to 110 GHz) enable higher application frequencies (24/77 GHz car radar, 18 GHz Ka band, 3.5-3.7 WiMas, etc.), and the devices meet the low current requirements of wideband applications.

As a result, these devices are ideal for use in a very wide range of applications: 2<sup>nd</sup> and 3<sup>rd</sup> LNA stage and mixer stage in DBS LNAs, Ka/Ku band DROs, satellite radio (SDARS) LNA, C-band/X-band high output buffer amplifiers, AMR, WLAN/WiFi, ZigBee, Bluetooth, FM radio, GPS, cellular (LTE, UMTS), mobile TV, RKE, high linearity applications, low current battery-equipped applications, low noise amplifiers for microwave communications systems, medium output power applications, microwave driver/buffer applications, and more.



## Selection guide – function

Function	LNAs, Mixers, Frequency Multipliers, Buffers			High Linearity, High Output amplifiers, Drivers			Oscillators		
Frequency range	<6 GHz	6 GHz – 12 GHz	12 GHz – +18 GHz	<6 GHz	6 GHz – 12 GHz	12 GHz – 18 GHz	<6 GHz	6 GHz – 12 GHz	12 GHz – +18 GHz
Type / Band	L,S,C	X, Ku low	Ku high, Ka	L,S,C	X, Ku low	Ku high	L,S,C	X, Ku low	Ku high, Ka
BFU610F	•	•							•
BFU630F	•	•		•			•		•
BFU660F	•			•			•	•	
BFU690F	•			•			•	•	
BFU725F/N1	•	•	•	•	•		•		•
BFU710F	•	•	•						•
BFU730F	•	•	•	•	•	•	•		•
BFU760F	•	•		•	•		•		
BFU790F	•			•			•		

Red = Application note available on NXP.com

## Selection guide – specification

Typenumber	Package	Package name	generation	$f_t$ [typ] (GHz)	$V_{CE0}$ [max] (V)	$I_C$ [max] (mA)	$P_{tot}$ [max] (mW)	Polarity	NF (dB)	@f (GHz)	@ $I_C$ (mA)	@ $V_{CE}$ (V)	NF (dB)	@f (GHz)	@ $I_C$ (mA)	@ $V_{CE}$ (V)	$PL_{1(dB)}$ [typ] (dBm)	@f (GHz)	@ $I_C$ (mA)	@ $V_{CE}$ (V)	IP3 [typ] (dBm)	@f (GHz)	@ $I_C$ (mA)	@ $V_{CE}$ (V)
BFU610F	SOT343F	DFP4	6 <sup>th</sup>	15	5.5	10	136	NPN	1.1	2.4	2	2	1.7	5.8	2	2	3	5.8	10	1.5	18	5.8	10	1.5
BFU630F	SOT343F	DFP4	6 <sup>th</sup>	21	5.5	30	200	NPN	0.85	2.4	3	2	1.3	5.8	3	2	12.5	5.8	30	2.5	27.5	5.8	30	2.5
BFU660F	SOT343F	DFP4	6 <sup>th</sup>	21	5.5	60	225	NPN	0.6	1.5	6	2	1.2	5.8	6	2	18.5	5.8	60	4	28	5.8	40	4
BFU690F	SOT343F	DFP4	6 <sup>th</sup>	18	5.5	100	230	NPN	0.6	1.5	15	2	0.7	2.4	15	2	20	2.4	70	4	33	2.4	70	4
BFU710F	SOT343F	DFP4	7 <sup>th</sup>	43	2.8	10	136	NPN	0.85	5.8	2	2	1.45	12	2	2	4.5	5.8	5	2.5	19.5	5.8	10	1.5
BFU725F/N1	SOT343F	DFP4	7 <sup>th</sup>	55	2.8	40	136	NPN	0.7	5.8	5	2	1.1	12	5	2	8	5.8	25	2	19	5.8	25	2
BFU730F	SOT343F	DFP4	7 <sup>th</sup>	55	2.8	30	197	NPN	0.8	5.8	5	2	1.3	12	5	2	12.5	5.8	15	2.5	29	5.8	20	2.5
BFU760F	SOT343F	DFP4	7 <sup>th</sup>	45	2.8	70	220	NPN	0.4	1.5	12	2	0.5	2.4	12	2	18.5	5.8	30	2.5	33	5.8	30	2.5
BFU790F	SOT343F	DFP4	7 <sup>th</sup>	25	2.8	100	234	NPN	0.4	1.5	20	2	0.5	2.4	20	2	19	2.4	60	2.5	34	2.4	30	2.5