



For automotive
and broadband IoT
applications

BFU5xx and BFU6–9xx Wideband RF Transistors

The versatile NXP wideband RF transistor portfolio features a broad package variety for applications up to 20 GHz and provides robust, economical alternatives to its competitors. These energy-efficient high gain, low NF and high fT SiGe amplifiers are ideal for mass production solutions across automotive, IoT and broadband applications.

BFU5xx TRANSISTOR FAMILY

Features

- ▶ High gain, high linearity
- ▶ Low noise, high breakdown voltage
- ▶ AECQ101 qualified
- ▶ Best performance up to 2 GHz
- ▶ Easy-to-handle plastic 3- and 4-pin SOT packages

Target Applications

- ▶ Automotive:
 - Low noise amplifiers (LNAs) and power amplifiers (PAs)
 - Remote keyless entry (RKE)
 - Tire pressure monitoring system (TPMS)
 - Shark-fin antennas (FM, DAB/DMB)
- ▶ Broadband
 - LNAs for CATV, DVB-T, DAB/DMB, FM radio
- ▶ IoT
 - LNAs and PAs for smart home products, e-metering (mostly in ISM bands below 1 GHz)
 - Low-current, battery equipped applications

BFU6–9xx TRANSISTOR FAMILY

Features

- ▶ Low noise, high gain and linearity
- ▶ Optimized up to 20 GHz
- ▶ Easy-to-handle plastic 3- and 4-pin SOT packages
- ▶ NXP® QUBiC BiCMOS SiGe:C technology* for superior RF performance

Target Applications

- ▶ IoT
 - LNAs and PAs for smart home products, ZigBee® connectivity (mostly for use in ISM bands above 2 GHz)
- ▶ WLAN LNAs for 2.4 and 5 GHz bands
- ▶ Satellite communication
 - LNAs, oscillators, switch boxes, mixers, gain blocks
- ▶ Automotive
 - Shark-fin antennas (Satellite radio, GPS, LTE)

*Select products



RF WIDEBAND TRANSISTORS FUNCTIONAL OVERVIEW

Function	LNAs Mixers and Frequency Multipliers, Buffers				High-linearity, High-output Amplifiers and Drivers				Oscillators		
	<2 GHz	<6 GHz	6-10 GHz	12-18GHz	<2 GHz	<6 GHz	6-10 GHz	12-18GHz	<6 GHz	6-10 GHz	12-18GHz
Type\Band	ISM433, ISM866	L,S,C	X, Ku low	Ku high, Kz	ISM433, ISM866	L,S,C	X, Ku low	Ku high, Kz	L,S,C	X, Ku low	Ku high, Kz
BFU520*	x										
BFU530*	x										
BFU550*	x										
BFU580*					x						
BFU590*					x						
BFU610F		x	x								x
BFU630F		x	x			x			x		x
BFU660F		x				x			x	x	
BFU690F		x	x			x			x	x	
BFU725F/N1		x	x	x		x	x		x		x
BFU710F		x	x	x							x
BFU730F		x	x	x		x	x	x	x		x
BFU730LX		x	x			x	x		x	x	
BFU760F		x	x			x	x		x		
BFU768F		x			x	x			x		
BFU790F		x				x			x		
BFU910F		x	x	x					x		

* Different packages

BFU5xx WIDEBAND TRANSISTOR SPECIFICATIONS

Type	Package	F_t (typ) (GHz)	V_{ce0} (max) (V)	H_{FE} (typ)	V_{ces} (max) (V)	V_{ebo} (max) (V)	I_c (max) (mA)	P_{tot} (max) (mW)	$G_{p,max}$ (typ) (dB)	at f (MHz)	at I_c (mA)	at V_{ce} (V)	$G_{p,max}$ (typ) (dB)	at f (MHz)	at I_c (mA)
BFU520W	SOT323	10	12	95	24	2	30	450	23	433	5	8	19	900	5
BFU530W	SOT323	11	12	95	24	2	40	450	24	433	10	8	19	900	10
BFU550W	SOT323	11	12	95	24	2	50	450	24	433	15	8	18	900	15
BFU520A	SOT23	10	12	95	24	2	30	450	23	433	5	8	18	900	5
BFU530A	SOT23	11	12	95	24	2	40	450	23	433	10	8	18	900	10
BFU550A	SOT23	11	12	95	24	2	50	450	24	433	15	8	18	900	15
BFU520	SOT143	11	12	95	24	2	30	450	20	900	5	8	17	1800	5
BFU530	SOT143	11	12	95	24	2	40	450	21	900	10	8	17	1800	10
BFU550	SOT143	11	12	95	24	2	50	450	21	900	15	8	15	1800	15
BFU520X	SOT143X	11	12	95	24	2	30	450	20	900	5	8	17	1800	5
BFU530X	SOT143X	11	12	95	24	2	40	450	21	900	10	8	17	1800	10
BFU550X	SOT143X	11	12	95	24	2	50	450	22	900	15	8	16	1800	15
BFU520XR	SOT143XR	11	12	95	24	2	30	450	20	900	5	8	17	1800	5
BFU530XR	SOT143XR	11	12	95	24	2	40	450	21	900	10	8	17	1800	10
BFU550XR	SOT143XR	11	12	95	24	2	50	450	22	900	15	8	16	1800	15
BFU580Q	SOT89	11	12	95	24	2	60	1000	20	433	20	8	14	900	20
BFU590Q	SOT90	8	12	95	24	2	200	2000	18	433	50	8	11	900	50
BFU580G	SOT223	11	12	95	24	2	60	1000	22	433	20	8	16	900	20
BFU590G	SOT223	9	12	95	24	2	200	2000	20	433	50	8	13	900	50
BFU520Y	SOT363	10	12	95	24	2	30	450	23	433	5	8	19	900	5

* Different packages

BFU5xx WIDEBAND TRANSISTOR SPECIFICATIONS (Cont.)

Type	at Vce (V)	NF _{min} (typ) (dB)	at f (MHz)	at Ic (mA)	at Vce (V)	NF _{min} (typ) (dB)	at f (MHz)	at Ic (mA)	at Vce (V)	PL _{1dB, 50 ohm} (typ) (dBm)	at f (MHz)	at Ic (mA)	at Vce (V)	IP _{350 ohm} (typ) (dBm)	at f (MHz)	at Ic (mA)	at Vce (V)
BFU520W	8	0.7	433	5	8	0.8	900	5	8	7	900	10	8	17	900	10	8
BFU530W	8	0.8	433	10	8	0.9	900	10	8	10	900	15	8	20	900	15	8
BFU550W	8	0.9	433	15	8	0.9	900	15	8	14	900	25	8	23	900	25	8
BFU520A	8	0.7	433	5	8	0.8	900	5	8	7	900	10	8	17	900	10	8
BFU530A	8	0.8	433	10	8	0.9	900	10	8	10	900	15	8	20	900	15	8
BFU550A	8	0.9	433	15	8	1.0	900	15	8	14	900	25	8	23	900	25	8
BFU520	8	0.8	900	5	8	0.9	1800	5	8	7	1800	10	8	17	1800	10	8
BFU530	8	0.9	900	10	8	1.0	1800	10	8	10	1800	15	8	19	1800	15	8
BFU550	8	1.0	900	15	8	1.1	1800	15	8	13	1800	25	8	23	1800	25	8
BFU520X	8	0.8	900	5	8	0.9	1800	5	8	10	1800	10	8	20	1800	10	8
BFU530X	8	0.9	900	10	8	1.0	1800	10	8	10	1800	15	8	20	1800	15	8
BFU550X	8	1.0	900	15	8	1.1	1800	15	8	14	1800	25	8	23	1800	25	8
BFU520XR	8	0.8	900	5	8	0.9	1800	5	8	7	1800	10	8	17	1800	10	8
BFU530XR	8	0.9	900	10	8	1.0	1800	10	8	10	1800	15	8	19	1800	15	8
BFU550XR	8	1.0	900	15	8	1.1	1800	15	8	13	1800	25	8	23	1800	25	8
BFU580Q	8	1.0	433	20	8	1.1	900	20	8	15	900	30	8	25	900	30	8
BFU590Q	8	-	433	50	8	-	900	50	8	22	900	80	8	32	900	80	8
BFU580G	8	1.0	433	20	8	1.1	900	20	8	15	900	30	8	24	900	30	8
BFU590G	8	-	433	50	8	-	900	50	8	22	900	80	8	31	900	80	8
BFU520Y	8	0.7	433	5	8	0.8	900	5	8	7	900	10	8	17	900	10	8

BFU6-9xx WIDEBAND TRANSISTOR SPECIFICATIONS

Type	Package	f _T (typ)(GHz)	Vceo(max) (V)	Ic (max) (mA)	Ptot (max) (mW)	polarity	GUM(typ) (dB)	at f(MHz)	at Ic (mA)	at Vce = (V)	NF(typ) (dB)	at f(MHz)
BFU610F	SOT343F	40	5	10	50	NPN	21	5800	8	2	0.75	2400
BFU630F	SOT343F	40	5	30	130	NPN	28	2400	25	2	0.58	1500
BFU660F	SOT343F	40	5	70	200	NPN	28.5	1500	60	2	0.6	1500
BFU690F	SOT343F	40	5	100	300	NPN	25.6	1500	90	2	0.7	1500
BFU710F	SOT343F	70	2.8	10	30	NPN	16.5	12000	8	2	0.9	5800
BFU725F/N1	SOT343F	70	2.8	40	136	NPN	18	5800	25	2	0.47	2400
BFU730F	SOT343F	70	2.8	30	130	NPN	18.5	5800	25	2	0.56	2400
BFU730LX	SOT883C	53	3.0	30	160	NPN	13.3	5800	25	2	0.55	2400
BFU760F	SOT343F	70	2.8	70	220	NPN	25	2400	60	2	0.5	1500
BFU790F	SOT343F	70	2.8	100	250	NPN	20.4	2400	90	2	0.56	1500
BFU768F	SOT343F	70	2.8	70	220	NPN	13	5800	10.8	2.1	0.5	2400
BFU910F	SOT343F	90	2.0	15	300	NPN	15.5	10700	10	2	0.6	10700

BFU6-9xx WIDEBAND TRANSISTOR SPECIFICATIONS (Cont.)

Type	at I _c (mA)	at V _{ce} =(V)	NF(typ) (dB)	at f(MHz)	at I _c (mA)	at V _{ce} =(V)	PL (1DB) (typ) (dBmW)	at V _{ce} =(V)	at f(MHz)	at I _c (mA)	IP3(typ_ (dBm)	at I _C (mA)	at VCE (V)
BFU610F	1	2	1.4	5800	1	2	-	-	-	-	14	8	5
BFU630F	5	2	0.73	2400	5	2	-	-	-	-	23	25	5
BFU660F	20	2	0.75	2400	20	2	-	-	-	-	30	60	5
BFU690F	50	2	0.9	2400	50	2	-	-	-	-	35	90	5
BFU710F	2	2	1.5	12000	2	2	-	-	-	-	14.5	8	2
BFU725F/N1	5	2	0.7	5800	5	2	8	2	5800	25	19	25	2
BFU730F	5	2	0.8	5800	5	2	-	-	-	-	20.5	25	2
BFU730LX	5	2	0.8	5800	5	2	-	-	-	-	26	12.4	2.3
BFU760F	20	2	0.6	2400	20	2	-	-	-	-	23	60	2
BFU790F	50	2	0.7	2400	50	2	-	-	-	-	24	90	2
BFU768F	10.8	2.1	0.7	5800	10.8	2.1	5	2.1	5800	10.8	19	10.8	2.1
BFU910F	6	2	0.65	12700	6	2	2	2	12000	10	12.5	10	2

SUPPORT TOOLS

Evaluation kits and demo boards are available for most members of the BFU5xxx and BFU6-9xxx transistor families.

For a complete list of demo boards and evaluation kits, visit www.nxp.com.

Kits typically include:

- ▶ Application boards tuned for ISM bands
- ▶ Loose transistor type samples
- ▶ Specification and application notes
- ▶ Simulation models

AMPLIFICATION DIAGRAM

