



For automotive
and broadband IoT
applications

BFU5xx and BFU6–9xx Wideband RF Transistors

The versatile NXP wideband RF transistor portfolio features 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)



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 V _{CE} (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

