



Product Brief

RF transistors 8th generation

Best in class performance for WiFi® connectivity

The BFx840x product family is a series of discrete Hetero-junction Bipolar Transistors (HBT) addressing dual and fixed frequency Low Noise Amplifier (LNA) solutions for high performance WiFi® connectivity applications.

It combines 80 GHz f_T silicon-germanium:carbide (SiGe:C) B9HFM process and adopts dedicated device geometry reducing the parasitic capacitance between substrate and transistor degrades high-frequency characteristics and ultimately improved.

RF transistor 8th generation allow engineers to increase the RF link budget and Signal-to-Noise Ratio (SNR) of their AP routers and mobile stations when wider coverage areas are needed and especially when a higher order modulation scheme is used as in emerging very high throughput wireless specifications such as 256 Quadrature Amplitude Modulation (QAM) in IEEE 802.11ac with more stringent SNR requirements for both the AP and the client.

RF Transistors 8th generation Best-in-Class NF and Gmax SiGe competitor comparison



› 8th generation RF Transistors come with an improved BiC in point of NF and Power Gain Gmax vs previous generation and vs closest SiGe competitor

Key features

Best-in-class RF performance

- › High transition frequency $f_T = 80$ GHz
- › High maximum RF input power
- › 1.5 kV HBM ESD robustness
- › High gain (18 dB) and best-in-class noise figure level (0.6 dB) with only 8 external passives
- › Low voltage supply capability e.g. $V_{cc} = 1.2$ V and 1.8 V

Key benefits

- › Broad range of frequency coverage
- › Reduced power consumption within battery powered devices
- › Robustness
- › High tunability and consequent ease of use
- › Device suitability under input signal power-stress

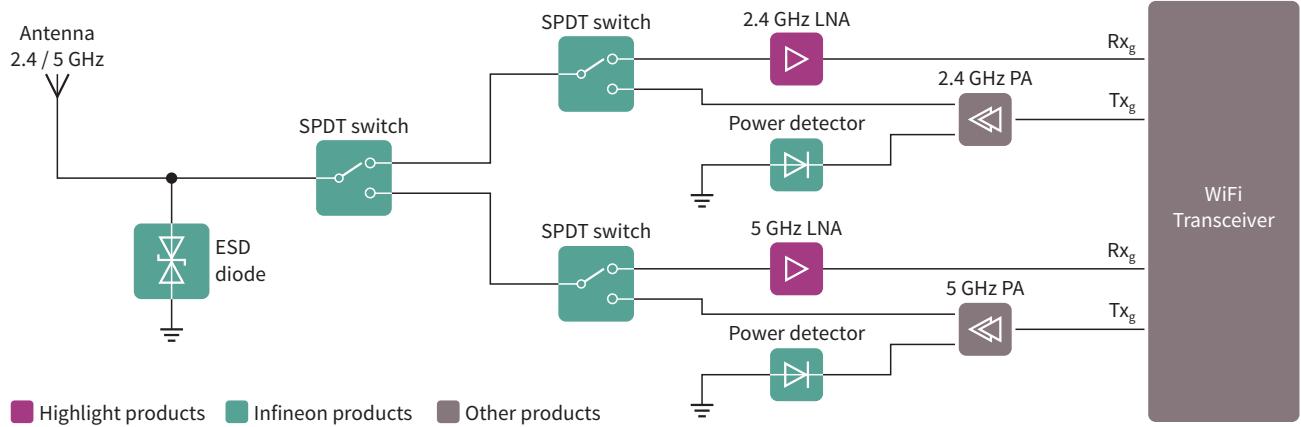
Applications

- › WiFi® Access Point (AP) routers and WiFi® modules
- › WiMAX and UWB
- › Satellite communication systems (SDARs, DAB)
- › Navigation systems (e.g. GPS, glonass)
- › Ka-band oscillators (DROs)
- › Remote control for multicopters

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Block diagram



Low Noise Amplifiers (LNA) are key components required to increase the system sensitivity and to extend the max. connecting distance for WiFi® applications. It is mostly important to achieve with superior performance where losses of the whole RF frontend become critical due to long routing paths for instance in WiFi® architectures with 4x4 MIMO or 8x8 MIMO functions.

Infineon 8th generation RF SiGe Bipolar transistors working as LNA deliver the lowest noise figure (NF) of 0.6 dB at 5.5 GHz, highest gain with its high frequency (f_T) and superior linearity in comparison to other solutions available in the market. This outstanding performance delivers system sensitivity improvement and interference immunity enhancement and helps engineers to design high-performance WiFi® applications while being price attractive.

Orderable part No.

Product type	OPN	NF _{min} (typ) [dB]	G _{max} (typ) [dB]	OIP3 [dBm]	OP1dB [dBm]	Package
BFP843	BFP843H6327XTSA1	0.95	22.5	24.0	7.0	SOT343
BFP843F	BFP843FH6327XTSA1	0.90	23.5	23.5	7.0	TSFP
BFR843EL3	BFR843EL3E6327XTSA1	0.95	24.0	21.0	7.0	TSLP-3-9
BFP840ESD	BFP840ESDH6327XTSA1	0.60	27.0	21.0	4.5	SOT343
BFP840FESD	BFP840FESDH6327XTSA1	0.55	27.5	21.0	4.5	TSFP
BFP842ESD	BFP842ESDH6327XTSA1	0.40	23.5	24.5	8.0	SOT343
BFR840L3RHESD	BFR840L3RHESDE6327XTSA1	0.50	26.5	17.0	4.0	TSLP-3-9

In addition to RF SiGe transistor LNAs, Infineon offers a broad portfolio of RF frontend products for WiFi® applications such as transmitters/receivers or high-/low-band switches, ESD protection and power detection devices.

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