



# RF solutions for the connected world

Pocket guide 2022/23



[www.infineon.com/RF](http://www.infineon.com/RF)







Long battery lifetime



Fast data transmission

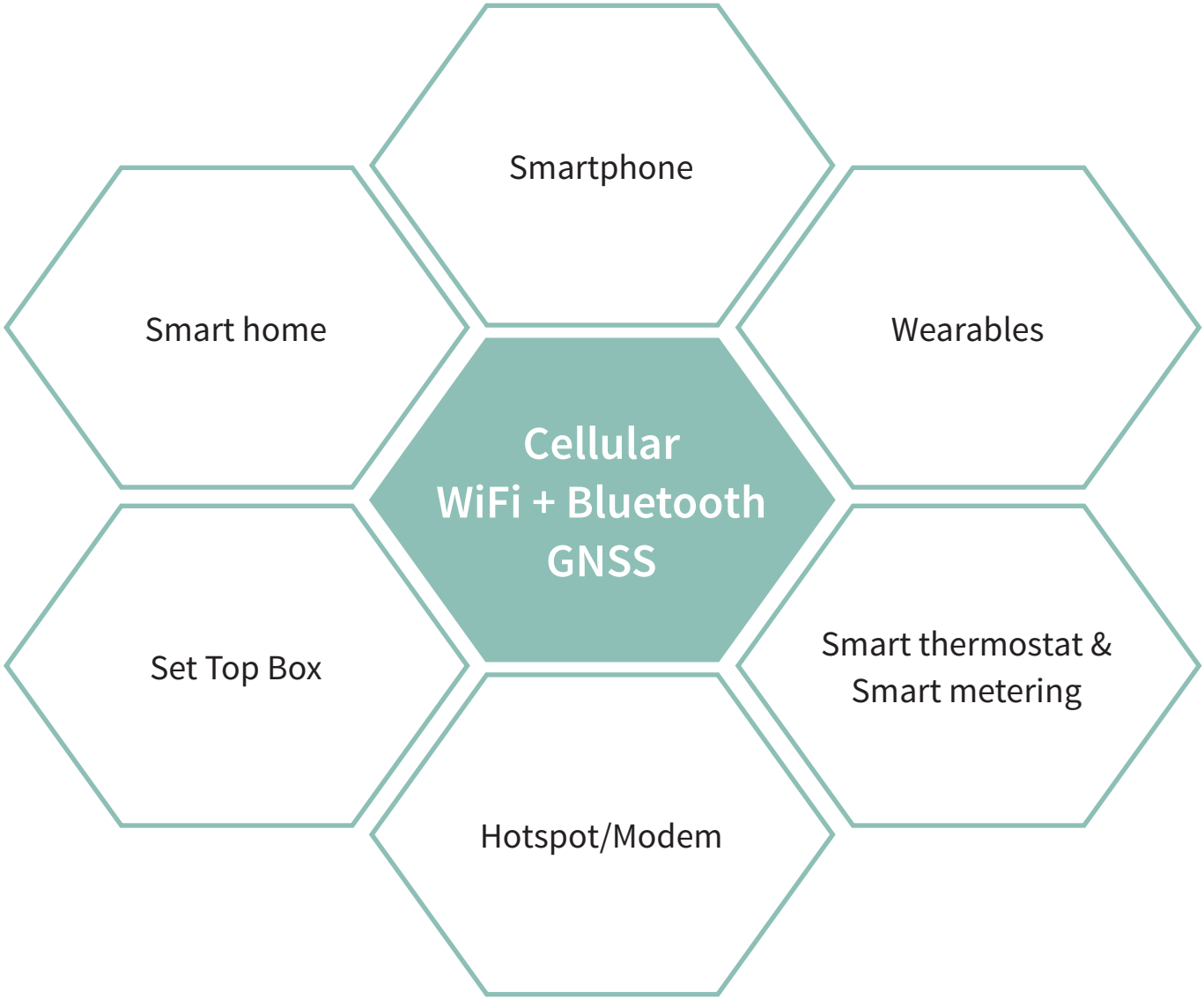
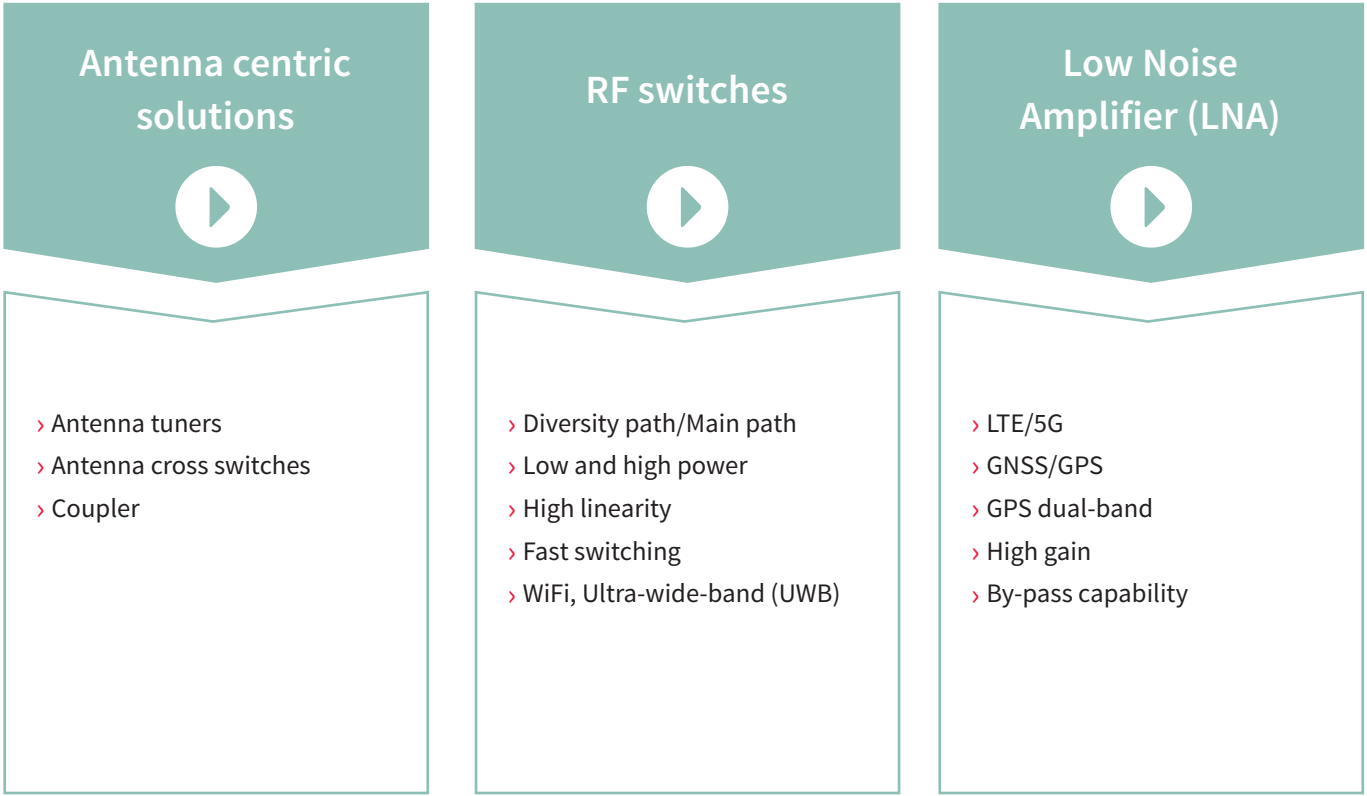


Strong signal everywhere



# Infiniteon RF Mobile devices for fast, efficient, and reliable wireless communication

RF mobile product portfolio





# Antenna centric solutions



## Infinion antenna tuners for best antenna efficiency

Part number	Type	V <sub>RFmax</sub> <sup>1)</sup> [V]	R <sub>on</sub> [Ω]	C <sub>off</sub> [pF]	Control interface	Frequency (max.) [GHz]	Size [mm²]
BGSA11GN10	2x SPST series	36	1.0	250	2 GPIO	6.0	1.1 x 1.5
BGSA12GN10	SPDT series	36	1.6	120	2 GPIO	6.0	1.1 x 1.5
BGSA12UGL8	SPDT series	40	0.6	270	2 GPIO	6.0	1.1 x 1.1
BGSA14GN10	SP4T series	36	1.6	120	2 GPIO	6.0	1.1 x 1.5
BGSA145GA10	SP4T series	42	0.8	230	3 GPIO	6.0	1.1 x 1.5
BGSA142GN12	SP4T series	72	1.75	110	3 GPIO	6.0	1.5 x 1.5
NEW! BGSA14M2N10	SP4T series	45	0.85	160	MIPI2.1	7.125	0.95 x 1.3
BGSA143GL10	SP4T series/shunt	42	1.15	140	3 GPIO	6.0	1.1 x 1.5
BGSA143ML10	SP4T series/shunt	42	1.15	140	MIPI 2.0	6.0	1.1 x 1.5
BGSA147ML10	SP4T series/shunt	45	0.8	155	MIPI2.1	7.125	1.1 x 1.5
NEW! BGSA144ML10	SP4T series/shunt	80	1.74	89	MIPI2.1	7.125	1.1 x 1.5
BGSA20VGL8	2x SPST shunt to ground	67	1.6	240	2 GPIO	6.0	1.1 x 1.1
BGSA20UGL8	2x SPST shunt to ground	80	2.3	200	2 GPIO	6.0	1.1 x 1.1
NEW! BGSA403ML10	4x SPST shunt to ground	48	0.98	205	MIPI 2.1	7.125	1.1 x 1.5
NEW! BGSA400ML10	4x SPST shunt to ground	85	2.0	165	MIPI 2.1	7.125	1.1 x 1.5

1) Maximum operating RF Voltage with electrical performances guaranteed over the lifetime of the product

Part number	Type	R <sub>on</sub> [Ω]	Capacitance steps	Capacitance range [fF] @1.8 GHz	Control interface	Frequency (max.) [GHz]	Size [mm²]
BGSC2341ML10	SPDT+ RF C-tuner	0.8	8	0.27 – 2.00	MIPI 2.1	3.8	1.1 x 1.5



## Infinion coupler for RF calibration and power control

Part number	Type	IL@2.7 GHz [dB]	Max RF Input Power [dBm]	Control interface	Frequency (max.) [GHz]	Size [mm²]
BGC100GN6	Coupler	0.2	36	GPIO	2.7	1.1 x 0.7



## Infinion high power cross switches for antenna swapping

Part number	Type	Power (max.) [dBm]	Frequency (max.) [GHz]	Size [mm²]
BGSX22G5A10	DPDT	>36	6.0	1.1 x 1.5
NEW! BGSX22G6U10	DPDT	>36	7.125	1.1 x 1.5
BGSX24MU16	DP4T	>36	5.0	2.0 x 2.0
NEW! BGSX33M5U16	3P3T	>36	7.125	2.0 x 2.0
NEW! BGSX44MU18	4P4T	>36	7.125	2.0 x 2.4





# RF switches



## Infinion RF switches with MIPI control interface

Part number	Type	Frequency (max.) [GHz]	Power (max.) [dBm]	Size [mm²]
BGS16MA12	SP6T	6.0	35	1.1 x 1.9
BGS18MA12	SP8T	6.0	35	1.1 x 1.9
BGS14MA11	SP4T	6.0	35	1.1 x 1.5
BGS15MU14	SP5T	6.0	20	1.5 x 1.9

## Infinion high power/high linearity RF switches

Part number	Type	Control interface	Frequency (max.) [GHz]	Power (max.) [dBm]	Size [mm²]
BGS12PN10	SPDT	GPIO	6.0	38	1.1 x 1.5
BGS14PN10	SP4T	GPIO	6.0	38	1.1 x 1.5
BGS12P2L6	SPDT	GPIO	6.0	38	0.7 x 1.1
BGS14MPA9	SP4T	MIPI	6.0	38	1.1 x 1.1

## Infinion fast speed RF switches <500 ns

Part number	Type	Control interface	Frequency (max.) [GHz]	Power (max.) [dBm]	Size [mm²]
BGS12WN6	SPDT	GPIO	9.0	28	0.7 x 1.1
BGS13SN8	SP3T	GPIO	6.0	32	1.1 x 1.1
BGS14WMA9	SP4T	MIPI	6.0	28	1.1 x 1.1



# Low Noise Amplifier (LNA)



## Infineon GNSS LNA<sup>1)</sup>

Part number	Type	Gain [dB]	NF [dB]	Frequency [MHz]	Size [mm²]
<b>NEW!</b> BGA525N6	Dual-band	18.8/21.0 <sup>2)</sup>	0.60 <sup>2)</sup>	1.1 – 1.6	0.7 x 1.1
BGA524N6	Low power	19.6	0.55	1.5 – 1.6	0.7 x 1.1
BGA824N6	High linearity	17.0	0.55	1.5 – 1.6	0.7 x 1.1
BGA123L4	Ultra low power	18.2	0.75	1.5 – 1.6	0.7 x 0.7
BGA855N6	High linearity	17.8	0.60	1.1 – 1.3	0.7 x 1.1
BGA123N6	Ultra low power	19.0	0.80	1.1 – 1.3	0.7 x 1.1
BGA125N6	Ultra low power	19.5	0.85	1.1 – 1.3	0.7 x 1.1

1) Please visit [www.infineon.com/gnsslina](http://www.infineon.com/gnsslina) for alternative devices      2) Preliminary data (L1/L5 values, respectively)

## Single-band 5G/4G MMIC LNAs with bypass function<sup>1)</sup>

Part number	Gain <sup>3)</sup> [dB]	NF <sup>3)</sup> [dB]	IP <sup>3)</sup> <sub>-1dB</sub> [dBm]	IIP <sup>3)</sup> <sub>3</sub> [dBm]	Supply [V]	Current <sup>3)</sup> [mA]	Freq. range [MHz]	Package
BGA9H1BN6 <sup>2)</sup>	20.3/-4.5	0.60/4.6	-17/+5	-7/+22	1.1 ... 3.3	5.5/0.0006	2300 – 2690	TSNP-6-2
BGA5L1BN6 <sup>2)</sup>	18.5/-2.7	0.70/2.7	-20/+2	-7/+11	1.5 ... 3.6	8.2/0.085	600 – 1000	TSNP-6-2
BGA5M1BN6 <sup>2)</sup>	19.3/-4.7	0.65/4.7	-17/-2	-7/+6	1.5 ... 3.6	9.5/0.085	1805 – 2200	TSNP-6-2
BGA5H1BN6 <sup>2)</sup>	18.1/-5.2	0.70/5.2	-17/-3	-7/+6	1.5 ... 3.6	8.5/0.085	2300 – 2690	TSNP-6-2
BGA7L1BN6 <sup>2)</sup>	13.6/-2.2	0.75/1.8	-1/+6	+5/+18	1.5 ... 3.3	4.9/0.09	716 – 960	TSNP-6-2
BGA7H1BN6 <sup>2)</sup>	11.0/-3.5	0.85/2.7	-1/+5	+5/+16	1.5 ... 3.3	4.3/0.09	1805 – 2690	TSNP-6-2
BGA729N6	16.0/-4.0	1.05/4.3	-15/4	-6/20	1.5 ... 3.3	6.3/0.55	70 – 600	TSNP-6-2

1) Please visit [www.infineon.com/5GLNA](http://www.infineon.com/5GLNA) for alternative devices      2) ) LNA with two gain modes (high-gain/low-gain)      3) Values in High-Gain (HG)/Low-Gain (LG) mode

## Single-band 5G/LTE-A MMIC LNAs<sup>1)</sup>

Part number	Gain [dB]	NF [dB]	IP <sub>-1dB</sub> [dBm]	IIP <sub>3</sub> [dBm]	Supply [V]	Current [mA]	Freq. range [MHz]	Package
BGA7L1N6	13.0	0.9	-6	-1	1.5 ... 3.3	4.5	728 – 960	TSNP-6-2
BGA7M1N6	13.0	0.7	-3	7	1.5 ... 3.3	4.5	1805 – 2200	TSNP-6-2
BGA7H1N6	13.0	0.7	-4	6	1.5 ... 3.3	4.7	2300 – 2690	TSNP-6-2

1) Please visit [www.infineon.com/5GLNA](http://www.infineon.com/5GLNA) for alternative devices      2) ) LNA with two gain modes (high-gain/low-gain)      3) Values in High-Gain (HG)/Low-Gain (LG) mode

## MIPI LNA with gain control for 5G

Part number	Gain [dB]	NF [dB]	IP <sub>-1dB</sub> [dBm]	IIP <sub>3</sub> [dBm]	Supply [V]	Current [mA]	Freq. range [MHz]	Package
BGA9H1MN9 <sup>1)</sup>	17.1 <sup>2)</sup>	1.01 <sup>2)</sup>	-14.6 <sup>2)</sup>	-7.3 <sup>2)</sup>	1.2 ... 1.8	1400 – 2700	3.5 <sup>2)3)4)5)6)7)8)</sup>     3.2 <sup>9)</sup>  0.001 <sup>10)</sup>	TSNP-9-2
	14.6 <sup>3)</sup>	1.01 <sup>3)</sup>	-13.9 <sup>3)</sup>	-7.1 <sup>3)</sup>				
	13.0 <sup>4)</sup>	1.34 <sup>4)</sup>	-12.3 <sup>4)</sup>	-4.9 <sup>4)</sup>				
	10.5 <sup>5)</sup>	1.53 <sup>5)</sup>	-12.1 <sup>5)</sup>	-4.9 <sup>5)</sup>				
	7.3 <sup>6)</sup>	1.92 <sup>6)</sup>	-12.1 <sup>6)</sup>	-5.1 <sup>6)</sup>				
	-1.6 <sup>7)</sup>	10.47 <sup>7)</sup>	-0.4 <sup>7)</sup>	9.7 <sup>7)</sup>				
	-2.8 <sup>8)</sup>	4.10 <sup>8)</sup>	5.3 <sup>8)</sup>	20.3 <sup>8)</sup>				
BGA9U1MN9 <sup>1)</sup>	17.9 <sup>2)</sup>	1.2 <sup>2)</sup>	-19.0 <sup>2)</sup>	-8.0 <sup>2)</sup>	1.2 ... 1.8	5150 – 5850	4.5 <sup>2)3)4)5)6)7)8)</sup>     3.5 <sup>9)</sup>  0.002 <sup>10)</sup>	TSNP-9-2
	15.1 <sup>3)</sup>	1.2 <sup>3)</sup>	-18.0 <sup>3)</sup>	-7.0 <sup>3)</sup>				
	12.2 <sup>4)</sup>	1.35 <sup>4)</sup>	-13.0 <sup>4)</sup>	-2.0 <sup>4)</sup>				
	9.3 <sup>5)</sup>	1.45 <sup>5)</sup>	-12.0 <sup>5)</sup>	-1.0 <sup>5)</sup>				
	5.9 <sup>6)</sup>	1.8 <sup>6)</sup>	-12.0 <sup>6)</sup>	-1.0 <sup>6)</sup>				
	-1.9 <sup>7)</sup>	10.7 <sup>7)</sup>	-1.0 <sup>7)</sup>	9.0 <sup>7)</sup>				
	-5.4 <sup>8)</sup>	4.4 <sup>8)</sup>	2.0 <sup>8)</sup>	19.0 <sup>8)</sup>				
BGA9V1MN9 <sup>1)</sup>	21.0 <sup>2)</sup>	0.75 <sup>2)</sup>	-18.0 <sup>2)</sup>	-6.0 <sup>2)</sup>	1.1 ... 2.0	3300 – 4200	3.5 <sup>2)3)4)5)6)7)8)9)</sup>       0.002 <sup>10)</sup>	TSNP-9-2
	18.0 <sup>3)</sup>	0.8 <sup>3)</sup>	-17.0 <sup>3)</sup>	-3.0 <sup>3)</sup>				
	14.9 <sup>4)</sup>	1.0 <sup>4)</sup>	-16.0 <sup>4)</sup>	-3.0 <sup>4)</sup>				
	11.9 <sup>5)</sup>	1.15 <sup>5)</sup>	-16.0 <sup>5)</sup>	-3.0 <sup>5)</sup>				
	8.5 <sup>6)</sup>	1.4 <sup>6)</sup>	-16.0 <sup>6)</sup>	-3.0 <sup>6)</sup>				
	-2.7 <sup>7)</sup>	11.0 <sup>7)</sup>	1.0 <sup>7)</sup>	8.0 <sup>7)</sup>				
	-3.0 <sup>8)</sup>	3.0 <sup>8)</sup>	–	–				
BGA9C1MN9 <sup>1)</sup>	19.0 <sup>2)</sup>	0.9 <sup>2)</sup>	-17.0 <sup>2) 10)</sup>	-5.0 <sup>2)</sup>	1.1 ... 2.0	4400 – 5500	3.5 <sup>2)3)4)5)6)7)8)9)</sup>       0.002 <sup>10)</sup>	TSNP-9-2
	16.0 <sup>3)</sup>	0.95 <sup>3)</sup>	-17.0 <sup>3) 10)</sup>	-5.0 <sup>3)</sup>				
	12.5 <sup>4)</sup>	1.3 <sup>4)</sup>	-12.0 <sup>4) 10)</sup>	-1.0 <sup>4)</sup>				
	9.6 <sup>5)</sup>	1.45 <sup>5)</sup>	-12.0 <sup>5) 10)</sup>	0.0 <sup>5)</sup>				
	6.1 <sup>6)</sup>	1.85 <sup>6)</sup>	-12.0 <sup>6) 10)</sup>	0.0 <sup>6)</sup>				
	-2.9 <sup>7)</sup>	11.0 <sup>7)</sup>	0.0 <sup>7) 10)</sup>	13.0 <sup>7)</sup>				
	-3.1 <sup>8)</sup>	3.1 <sup>8)</sup>	8.0 <sup>7) 10)</sup>	–				

1) AN on request;      2) Gain State: G0      3) Gain State: G1      4) Gain State: G2      5) Gain State: G3      6) Gain G4  
7) Gain State: G5      8) Gain State: G6      9) Gain State: Bypass      10) Based on Preliminary datasheet



# Support material

More detailed information on RF devices



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Datasheets/Application notes/Technical documents



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Component libraries for RF devices

Infineon Technologies provides Component Libraries for part of its product portfolio. This ensures convenient customer access to the latest model versions and a seamless integration into our customer's circuit and system simulators.



[www.infineon.com/rfcomponentlibraries](http://www.infineon.com/rfcomponentlibraries)

Evaluation boards

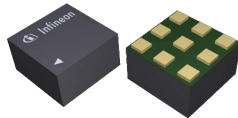
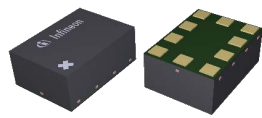
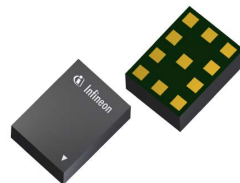
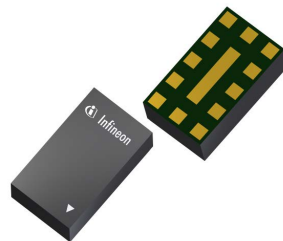
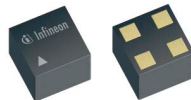
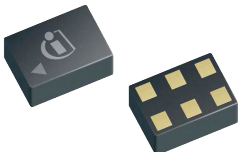
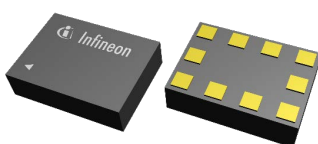
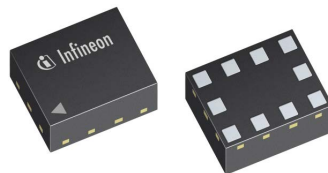

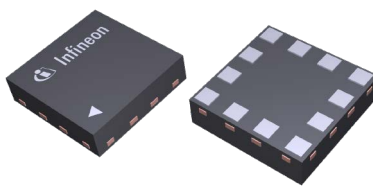
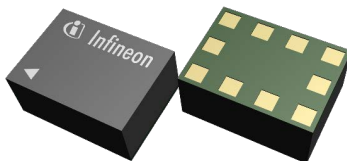

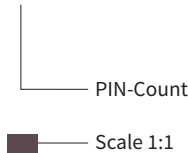


[www.infineon.com/rfevalboards](http://www.infineon.com/rfevalboards)





# Package information

ATSLP-9		ATSLP-10		ATSLP-11		ATSLP-12		TSLP-4	
9	1.1 x 1.1 x 0.6	10	1.1 x 1.5 x 0.6	11	1.15 x 1.55 x 0.6	12	1.1 x 1.9 x 0.6	4	0.7 x 0.7 x 0.31
									
7:1		7:1		7:1		7:1		7:1	
TSLP-6		TSLP-8		TSLP-10-2/-3		TSNP-6-2/-10		TSNP-8	
6	1.1 x 0.7 x 0.31	8	1.1 x 1.1 x 0.39	10	1.1 x 1.5 x 0.39	6	1.1 x 0.7 x 0.38	8	1.1 x 1.1 x 0.38
									
7:1		7:1		7:1		7:1		7:1	
TSNP-9-2/-6		TSNP-10-1		TSNP-10-9		TSNP-12		ULGA-10	
9	1.1 x 1.1 x 0.38	10	1.1 x 1.5 x 0.38	10	0.95 x 1.3 x 0.35	12	1.5 x 1.5 x 0.38	10	1.1 x 1.5 x 0.60
									
7:1		7:1		7:1		7:1		7:1	
ULGA-14		ULGA-16		Package (JEITA-code)					
14	1.9 x 1.5 x 0.6	16	2.0 x 2.0 x 0.6	X	L x W x H				
									
7:1		6:1		All dimensions in mm					



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- › India .....000 800 4402 951 (English)
- › USA .....1-866 951 9519 (English/German)
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