



# High reliability microwave components for space use

Selection guide



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



# High reliability RF components for space



As a key supplier of discrete semiconductor devices for the high-reliability community, Infineon Technologies has built an excellent reputation in space community for over 40 years. From silicon to backend and screening, Infineon's RF capabilities include space-qualified silicon microwave transistors and foundry services.

Unlike the high-volume markets where low-cost plastic packages are used, the semiconductor dies for Infineon's space components are assembled in hermetically sealed packages to create HiRel standard products for professional applications. It should be stressed, however, that these HiRel components take full advantage of the stabilized mass production of wafers for the consumer and commercial markets.

All HiRel devices, are also available as qualified chip (bare die) from specially released wafers. Infineon HiRel components are supplied in different quality levels:

- > "P" for professional level used in Engineering Modules (EM)
- > "ES" for ESA space level for Flight Modules (FM)

## Key features

- > Supply voltage from 4 V to 12 V
- > Transition frequency from 8 GHz up to 42 GHz
- > Output power from 20 mA to 100 mA
- > Ideal for high frequency applications like LNA or oscillator circuits
- > TID and SEE radiation hardened

## HiRel silicon diodes

Product type	Package	V <sub>BR</sub> (min) [V]	I <sub>F</sub> (max) [mA]	R <sub>F</sub> (typ) [mΩ]	τ (typ) [ns]	CT (typ) [pF]	ESA QPL number
BAS40-05 (ql)	T1	40	120	10.0	–	3.10	5512 020 05
BAS70-04 (ql)	T1	70	70	20.0	–	1.50	5512 020 04
BXY42-03 (ql)	T1	50	5000	1.2	50	0.26	5513 017 03
BXY43-09 (ql)	T1	150	400	1.2	950	0.30	5513 030 09
BXY44-10 (ql)	T1	200	400	2.2	1100	0.20	5513 030 10
chip D0337E (ql)	die (BAS40-05)	–	–	–	–	–	N.A.
chip D0336E (ql)	die (BAS70-04)	–	–	–	–	–	N.A.
chip D0310G (ql)	die (BXY42-03)	–	–	–	–	–	N.A.
chip D0309G (ql)	die (BXY43-09)	–	–	–	–	–	N.A.
chip D0360C (ql)	die (BXY44-10)	–	–	–	–	–	N.A.

## HiRel silicon bipolar transistors

Product type	Package	V <sub>CEO</sub> (max) [V]	I <sub>C</sub> (max) [mA]	P <sub>tot</sub> (max) [mW]	f <sub>T</sub> [GHz]	NF (typ) [dB]	ESA QPL number
BFY181 (ql)	Micro-X1	12.0	20	175	8.0	2.5 @ 2.0 GHz	5611 006 03
BFY182 (ql)	Micro-X1	12.0	35	250	8.0	2.5 @ 2.0 GHz	5611 006 04
BFY183 (ql)	Micro-X1	12.0	65	450	8.0	2.5 @ 2.0 GHz	5611 006 05
BFY193F (ql)	Micro-X1	12.0	80	580	8.0	1.75 @ 2.0 GHz	5611 006 09
BFY196 (ql)	Micro-X1	12.0	100	700	6.5	3.2 @ 2.0 GHz	5611 006 07
BFY405 (ql)	Micro-X1	4.5	12	55	22.0	1.2 @ 1.8 GHz	5611 008 01
BFY420 (ql)	Micro-X1	4.5	35	160	22.0	1.2 @ 1.8 GHz	5611 008 02
BFY450 (ql)	Micro-X1	4.5	100	450	22.0	1.4 @ 1.8 GHz	5611 008 03
BFY650B-12 (ql)	Micro-X1	4.0	150	600	40.0	0.7 @ 1.8 GHz	5611 010 05
BFY740B-02 (ql)	Micro-X1	4.0	30	120	45.0	1.05 @ 6.0 GHz	5611 011 02
chip T0349B (ql)	die (BFY181)	–	–	–	–	–	N.A.
chip T0341 (ql)	die (BFY182)	–	–	–	–	–	N.A.
chip T0351 (ql)	die (BFY183)	–	–	–	–	–	N.A.
chip T0359E (ql)	die (BFY193F)	–	–	–	–	–	N.A.
chip T0395 (ql)	die (BFY196)	–	–	–	–	–	N.A.
chip T0501 (ql)	die (BFY405)	–	–	–	–	–	N.A.
chip T0502 (ql)	die (BFY420)	–	–	–	–	–	N.A.
chip T0503 (ql)	die (BFY450)	–	–	–	–	–	N.A.
chip T1581C (ql)	die (BFY650B-12)	–	–	–	–	–	N.A.
chip T1592D (ql)	die (BFY740B-02)	–	–	–	–	–	N.A.

ql (quality level): P – for professional level used in Engineering Modules (EM)

ES – for ESA space level for ESA satellites Flight Modules (FM)

# RF silicon foundry services

Infineon is a market leader in radar technology, especially leading in automotive applications and offers its high volume production radar technology with stable process for foundry business. With a low power consumption, a superior low noise performance, a high integration layout due to 130 nm SiGe BiCMOS technology and a high RF amplification output, the Infineon B11HFC technology sets a benchmark.

Infineon's RF foundry service enables the customer to use this superior, mature radar technology for customized designs, developing markets or low-volume applications. Services include wafer and mask set production of the customer designed IC. Infineon can also recommend experienced partners for design and test of B11HFC silicon.

Typical applications include phased array antennas, (RF-) test equipment, satellite ground equipment or any other RF based application.

For further information, please contact the RF foundry team: [rf-foundry@infineon.com](mailto:rf-foundry@infineon.com)

## Key features

- > Frequency up to  $f_T = 250$  GHz and  $f_{max} = 390$  GHz
- > 130 nm SiGe BiCMOS

## RF foundry service includes

- > Engineering mask set production
- > Engineering wafer run



1) Cooperation with design and test house partner possible

## Other services

Infineon also offers the possibility to order Infineon standard components (COTS) with full traceability of wafer lot and production lot. This service is available for packaged components as well as bare die.

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## Services include

- > COTS parts with traceability
- > COTS chips in small quantity

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