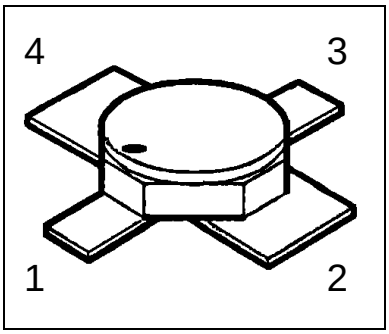
HiRel NPN Silicon RF Transistor



- ***HiRel* Discrete and Microwave Semiconductor**
- For High Gain Low Noise Amplifiers
- For Oscillators up to 10 GHz
- Noise Figure F = 1.1 dB at 1.8 GHz
  Outstanding Gms = 21dB at 1.8 GHz
- Hermetically sealed microwave package
- Transition Frequency f_T = 22 GHz
- **SIEGET®25-Line**
  Infineon Technologies Grounded **E**mitter **T**ransistor-
  25 GHz f_T-**Line**

esa Space Qualified
ESA/SCC Detail Spec. No.: 5611/008
Type Variant No. 02

ESD: **E**lectro**s**tatic **d**ischarge sensitive device,
observe handling precautions!

Type	Marking	Ordering Code	Pin Configuration 1	2	3	4	Package
BFY420 (ql)	-	see below	C	E	B	E	Micro-X

(ql) Quality Level: P: Professional Quality
H: High Rel Quality
S: Space Quality
ES: ESA Space Quality

(see order instructions for ordering example)

Maximum Ratings

Parameter	Symbol	Values	Unit
Collector-emitter voltage	V_{CEO}	4.5	V
Collector-base voltage	V_{CBO}	15	V
Emitter-base voltage	V_{EBO}	1.5	V
Collector current	I_C	35	mA
Base current	I_B	3.0	mA
Total power dissipation, $T_S \leq 129°C$ [1), 2)]	P_{tot}	160	mW
Junction temperature	T_j	175	°C
Operating temperature range	T_{op}	-65...+175	°C
Storage temperature range	T_{stg}	-65...+175	°C
Thermal Resistance			
Junction-soldering point [2)]	$R_{th\ JS}$	< 285	K/W

Notes.:
1) At T_S = + 129 °C. For T_S > + 129 °C derating is required.
2) T_S is measured on the collector lead at the soldering point to the pcb.

Electrical Characteristics

at T_A=25°C; unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-base cutoff current V_{CB} = 5 V, I_E = 0	I_{CBO}	-	-	30	nA
Collector-emitter cutoff current [1.)] V_{CE} = 4.5 V, I_B = 1.0µA	I_{CEX}	-	-	200 (t.b.d.)	µA
Emitter-base cuttoff current V_{EB} = 1.5 V, I_C = 0	I_{EBO}	-	-	20	µA
DC current gain I_C = 5 mA, V_{CE} = 1 V	h_{FE}	50	90	150	-

Notes:

1.) This Test assures $V_{(BR)CE0}$ > 4.5V

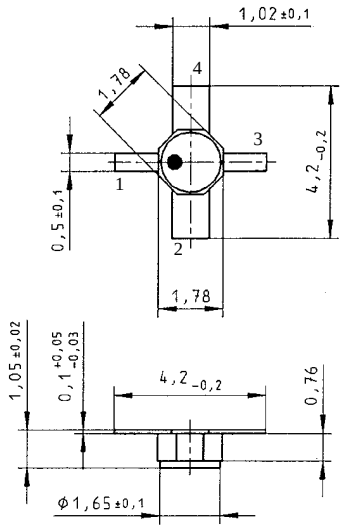
Electrical Characteristics (continued)

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics					
Transition frequency I_C = 30mA, V_{CE} = 3 V, f = 2.0 GHz	f_T	20	22	-	GHz
Collector-base capacitance V_{CB} = 2 V, V_{BE} = vbe = 0, f = 1 MHz	C_{CB}	-	0.14	0.9	pF
Collector-emitter capacitance V_{CE} = 2 V, V_{BE} = vbe = 0, f = 1 MHz	C_{CE}	-	0.46	0.85	pF
Emitter-base capacitance V_{EB} = 0.5V, V_{CB} = vcb = 0, f = 1 MHz	C_{EB}	-	0.67	3.0	pF
Noise Figure I_C = 5 mA, V_{CE} = 2 V, f = 1.8 GHz, $Z_S = Z_{sopt}$	F	-	1.1	1.7	dB
Insertion power gain I_C = 20 mA, V_{CE} = 2 V, f = 1.8 GHz $Z_S = Z_L$ = 50 Ω	$\|S_{21e}\|^2$	14	18	-	dB
Power gain I_C = 20 mA, V_{CE} = 2 V, f = 1.8 GHz $Z_S = Z_{Sopt}$, $Z_L = Z_{Lopt}$	Gms [1.)]	-	21	-	dB
1dB Compression point I_C = 20 mA, V_{CE} = 2 V, f = 1.8 GHz $Z_S = Z_{Sopt}$, $Z_L = Z_{Lopt}$	P_{-1dB}	-	12	-	dBm

Notes.:

1) $G_{ms} = \left|\frac{S21}{S12}\right|$

Micro-X Package



Edition 2011-02

Published by

Infineon Technologies AG

85579 Neubiberg, Germany

© Infineon Technologies AG 2011

All Rights Reserved.

Attention please!

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics (“Beschaffenheitsgarantie“). With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation warranties of non-infringement of intellectual property rights of an third party.

Information

For further information on technology, delivery terms and conditions and prices please contact your nearest Infineon Technologies Office (www.infineon.com).

Warnings

Due to technical requirements components may contain dangerous substances. For information on the types in question please contact your nearest Infineon Technologies Office.

Infineon Technologies Components may only be used in life-support devices or systems with the express written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support device or system, or to affect the safety or effectiveness of that device or system.

Life support devices or systems are intended to be implanted in the human body, or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.