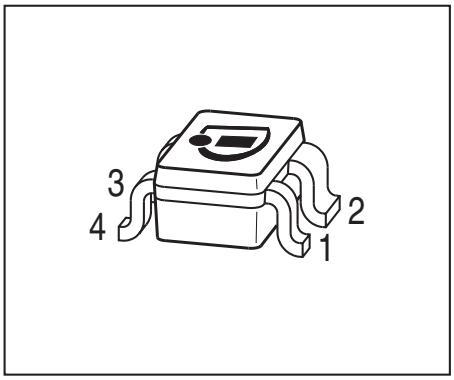
NPN Silicon RF Transistor



- For high gain low noise amplifiers
- For oscillators up to 10 GHz
- Noise figure F = 1.1 dB at 1.8 GHz
  outstanding G_{ms} = 21 dB at 1.8 GHz
- Transition frequency f_T = 25 GHz
- Gold metallization for high reliability
- SIEGET ® 25 GHz fT - Line
- Pb-free (RoHS compliant) package [1)]
- Qualified according AEC Q101

AEC Qualified RoHS

ESD (**E**lectro**s**tatic **d**ischarge) sensitive device, observe handling precaution!

Type	Marking	Pin Configuration						Package
BFP420	AMs	1=B	2=E	3=C	4=E	-	-	SOT343

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}		V
T_A > 0 °C		4.5	
T_A ≤ 0 °C		4.1	
Collector-emitter voltage	V_{CES}	15	
Collector-base voltage	V_{CBO}	15	
Emitter-base voltage	V_{EBO}	1.5	
Collector current	I_C	35	mA
Base current	I_B	3	
Total power dissipation[2)] T_S ≤ 107 °C	P_{tot}	160	mW
Junction temperature	T_j	150	°C
Ambient temperature	T_A	-65 ... 150	
Storage temperature	T_{stg}	-65 ... 150	

[1]Pb-containing package may be available upon special request
[2]T_S is measured on the collector lead at the soldering point to the pcb

2009-12-02

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point[1)]	R_{thJS}	≤ 260	K/W

Electrical Characteristics at T_A = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage I_C = 1 mA, I_B = 0	$V_{(BR)CEO}$	4.5	5	-	V
Collector-emitter cutoff current V_{CE} = 15 V, V_{BE} = 0	I_{CES}	-	-	10	µA
Collector-base cutoff current V_{CB} = 5 V, I_E = 0	I_{CBO}	-	-	100	nA
Emitter-base cutoff current V_{EB} = 0.5 V, I_C = 0	I_{EBO}	-	-	3	µA
DC current gain I_C = 20 mA, V_{CE} = 4 V, pulse measured	h_{FE}	60	95	130	-

[1]For calculation of R_{thJA} please refer to Application Note Thermal Resistance

Electrical Characteristics at T_A = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics (verified by random sampling)					
Transition frequency I_C = 30 mA, V_{CE} = 3 V, f = 2 GHz	f_T	18	25	-	GHz
Collector-base capacitance V_{CB} = 2 V, f = 1 MHz, V_{BE} = 0 , emitter grounded	C_{cb}	-	0.15	0.3	pF
Collector emitter capacitance V_{CE} = 2 V, f = 1 MHz, V_{BE} = 0 , base grounded	C_{ce}	-	0.37	-	
Emitter-base capacitance V_{EB} = 0.5 V, f = 1 MHz, V_{CB} = 0 , collector grounded	C_{eb}	-	0.55	-	
Noise figure I_C = 5 mA, V_{CE} = 2 V, f = 1.8 GHz, $Z_S = Z_{Sopt}$	F	-	1.1	-	dB
Power gain, maximum stable[1)] I_C = 20 mA, V_{CE} = 2 V, $Z_S = Z_{Sopt}$, $Z_L = Z_{Lopt}$, f = 1.8 GHz	G_{ms}	-	21	-	dB
Insertion power gain V_{CE} = 2 V, I_C = 20 mA, f = 1.8 GHz, $Z_S = Z_L$ = 50 Ω	$\lvert S_{21}\rvert^2$	14	17	-	
Third order intercept point at output[2)] V_{CE} = 2 V, I_C = 20 mA, f = 1.8 GHz, $Z_S = Z_L$ = 50 Ω	IP_3	-	22	-	dBm
1dB Compression point at output I_C = 20 mA, V_{CE} = 2 V, $Z_S = Z_L$ = 50 Ω, f = 1.8 GHz	P_{-1dB}	-	12	-	

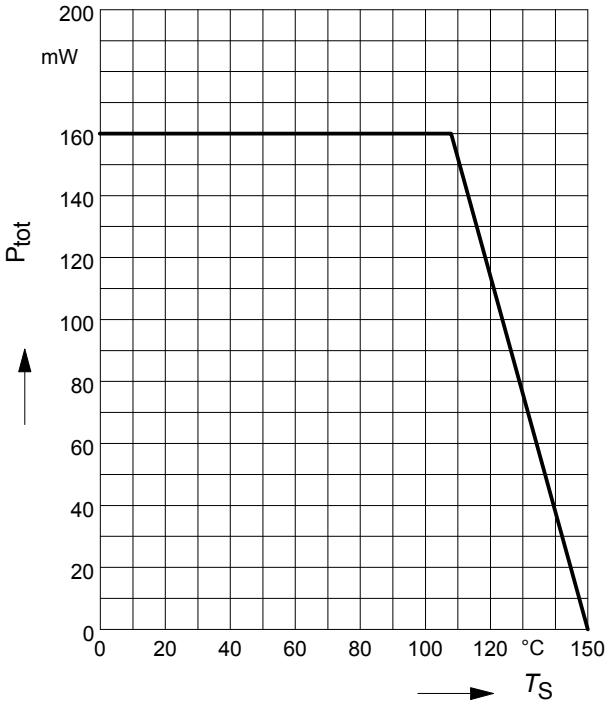
[1] $G_{ms} = |S_{21} / S_{12}|$

[2] IP3 value depends on termination of all intermodulation frequency components.
Termination used for this measurement is 50Ω from 0.1 MHz to 6 GHz

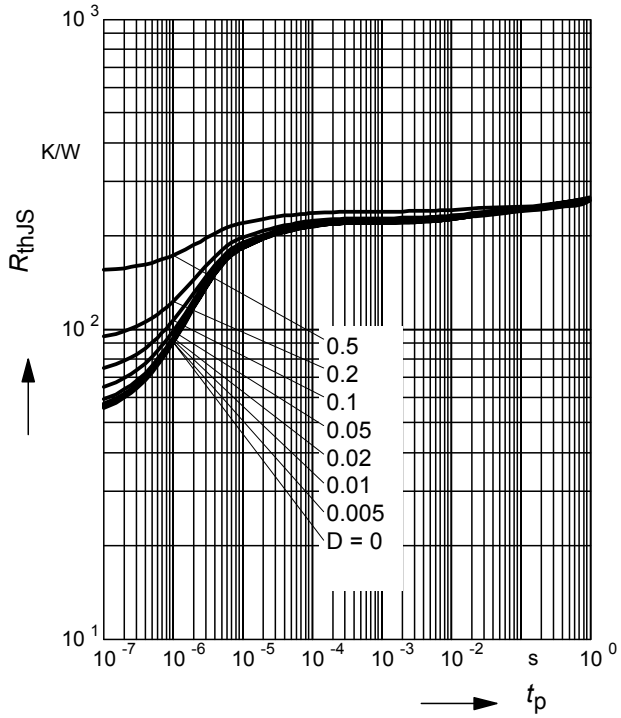
Simulation Data

For SPICE-model as well as for S-parameters including noise parameters refer to our internet website: **www.infineon.com/rf.models**. Please consult our website and download the latest version before actually starting your design.
The simulation data have been generated and verified up to 10 GHz using typical devices. The BFP420 nonlinear SPICE-model reflects the typical DC- and RF-device performance with high accuracy.

Total power dissipation $P_{tot} = f(T_S)$

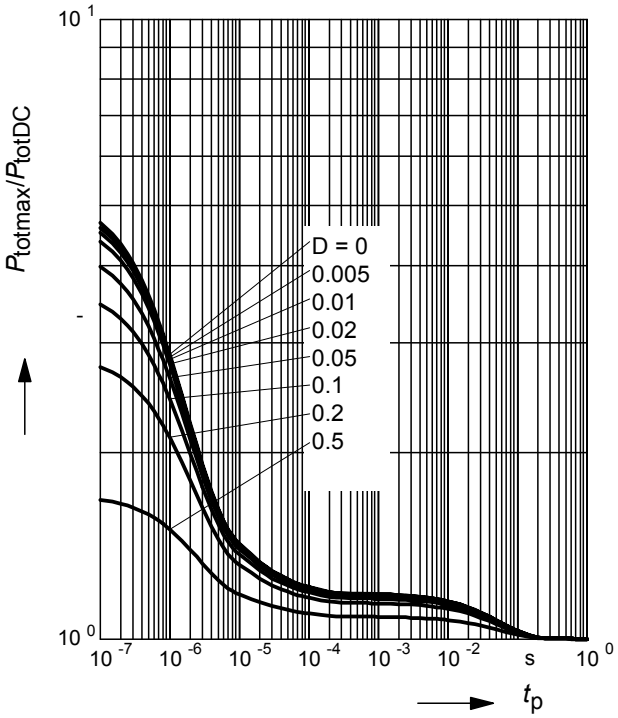


Permissible Pulse Load $R_{thJS} = f(t_p)$



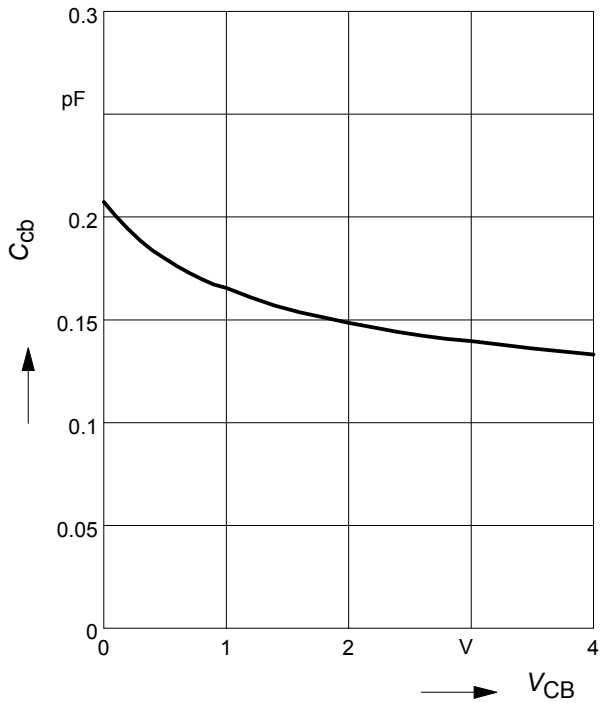
Permissible Pulse Load

$P_{totmax}/P_{totDC} = f(t_p)$



Collector-base capacitance $C_{cb} = f(V_{CB})$

f = 1MHz

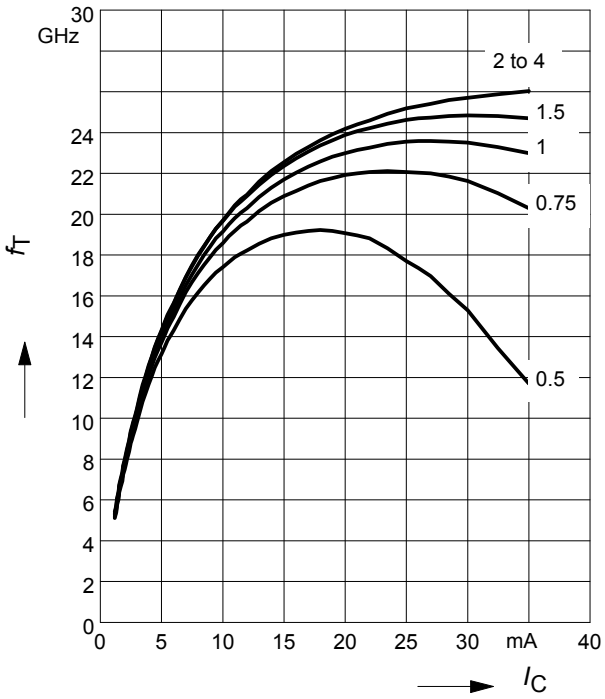


2009-12-02

Transition frequency $f_T = f(I_C)$

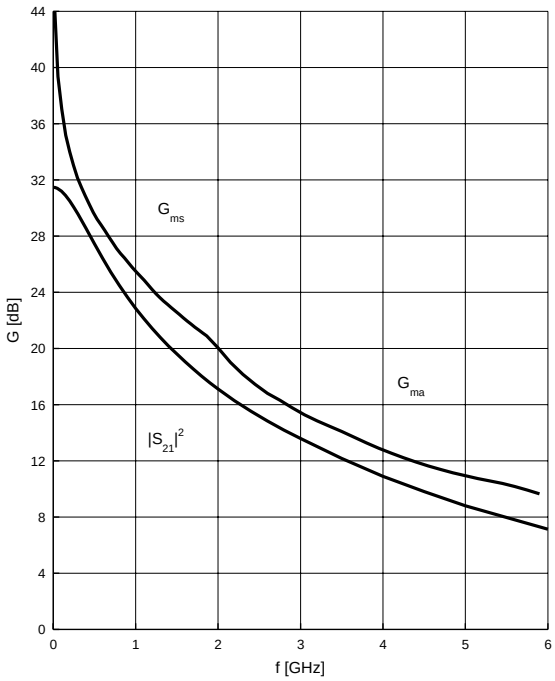
f = 2 GHz

V_{CE} = parameter in V



Power gain G_{ma}, G_{ms}, $|S_{21}|^2 = f(f)$

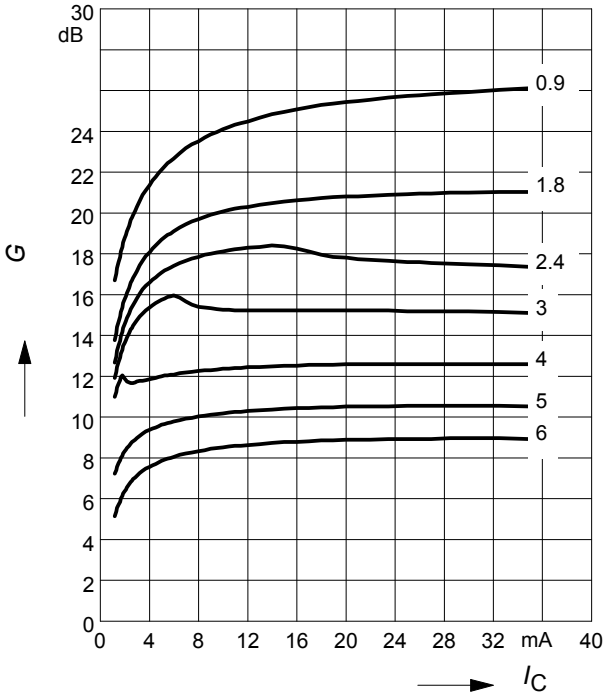
V_{CE} = 2 V, I_C = 20 mA



Power gain G_{ma}, $G_{ms} = f(I_C)$

V_{CE} = 2V

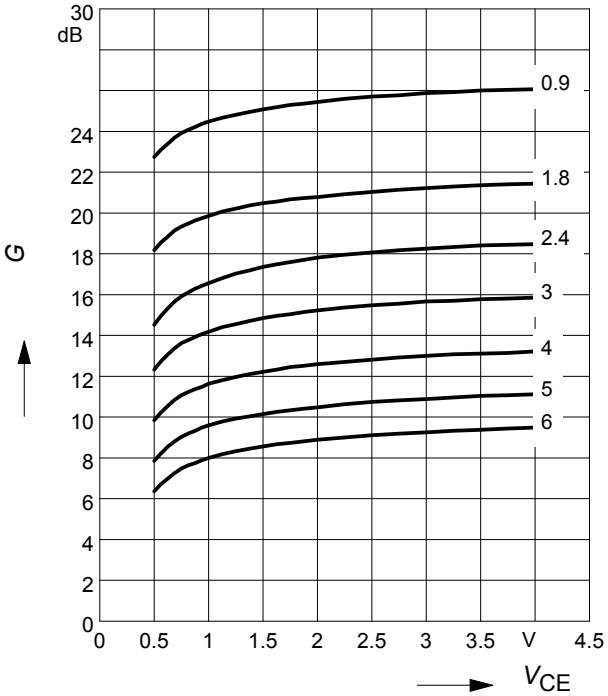
f = parameter in GHz



Power gain G_{ma}, $G_{ms} = f(V_{CE})$

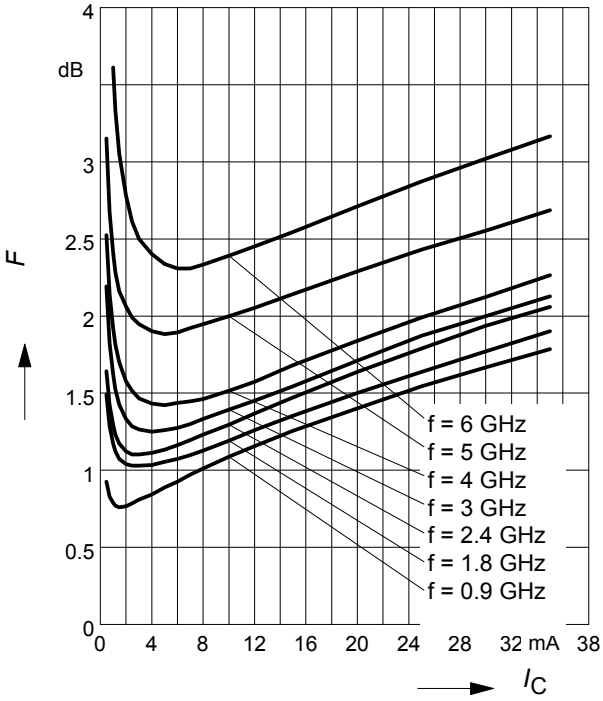
I_C = 20 mA

f = parameter in GHz



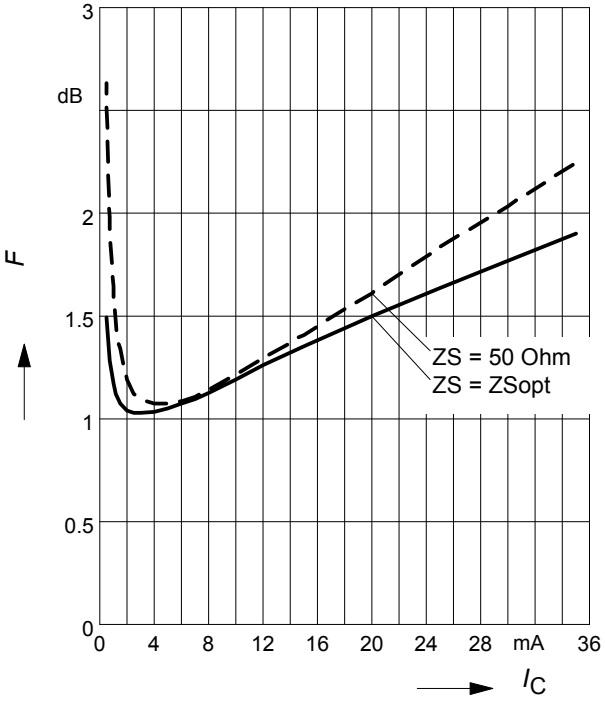
Noise figure $F = f(I_C)$

V_{CE} = 2 V, $Z_S = Z_{Sopt}$



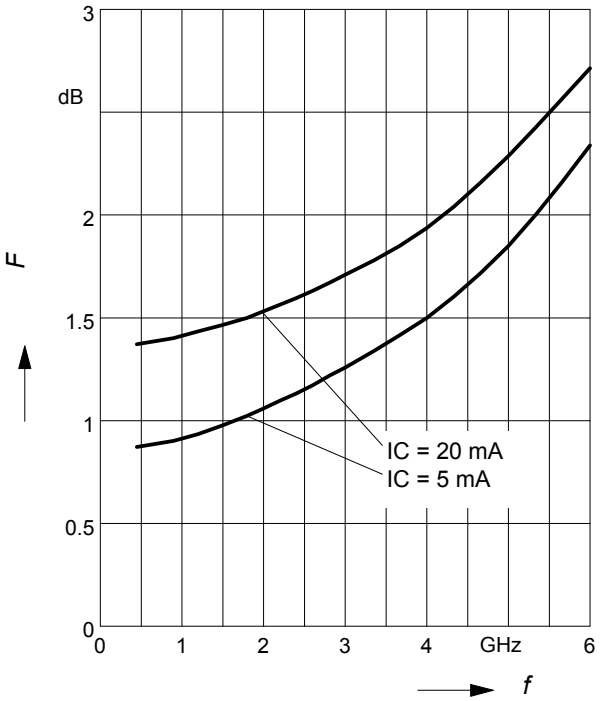
Noise figure $F = f(I_C)$

V_{CE} = 2 V, f = 1.8 GHz



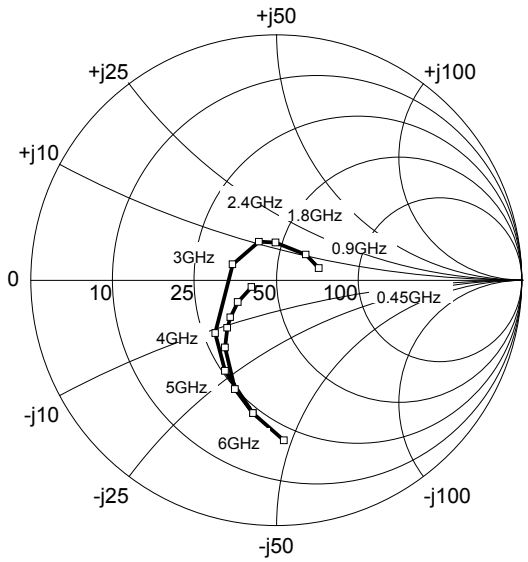
Noise figure $F = f(f)$

V_{CE} = 2 V, $Z_S = Z_{Sopt}$

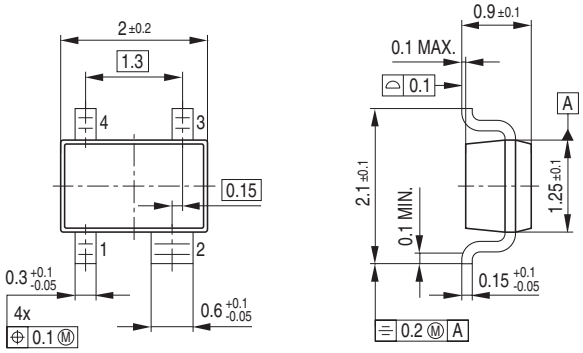


Source impedance for min. noise figure vs. frequency

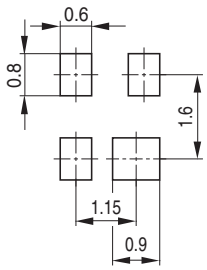
V_{CE} = 2 V, I_C = 5 mA / 20 mA



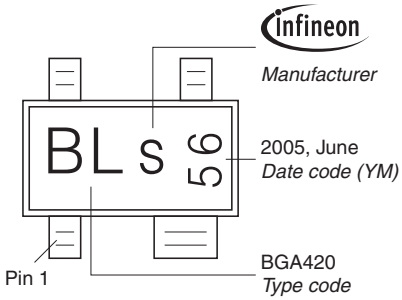
Package Outline



Foot Print

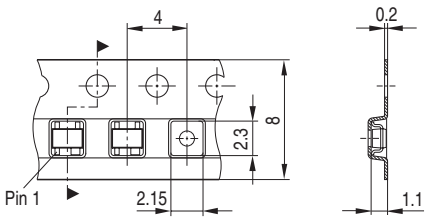


Marking Layout (Example)



Standard Packing

Reel ø180 mm = 3.000 Pieces/Reel
Reel ø330 mm = 10.000 Pieces/Reel



2009-12-02

Edition 2009-12-02
Published by
Infineon Technologies AG
85579 Neubiberg, Germany

Attention please!

The information herein is given to describe certain components and shall not be considered as a guarantee of characteristics.
Terms of delivery and rights to technical change reserved.
We hereby disclaim any and all warranties, including but not limited to warranties of non-infringement, regarding circuits, descriptions and charts stated herein.

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.

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for RF Bipolar Transistors ***category:***

Click to view products by Infineon ***manufacturer:***

Other Similar products are found below :

MAPRST0912-50 MCH4016-TL-H MMBT5551-G MRF10120 15GN01CA-TB-E PH1214-25M MAPRST0912-350 MMBTH10-TP BFP 640F H6327 BFR 360F H6765 MRF10031 NSVF4009SG4T1G BFP 182R E7764 BFP405H6740XTSA1 MRF10350 ASMA201 BFR360FH6765XTSA1 BFP410H6327XTSA1 BFP620FH7764XTSA1 BFP720ESDH6327XTSA1 BFP720FH6327XTSA1 BFR360L3E6765XTMA1 BFP420H6433XTMA1 BFP420H6740XTSA1 BFP420H6801XTSA1 MCH4015-TL-H BF888H6327XTSA1 MMBT2222A-G BFP196WH6327XTSA1 BFP405FH6327XTSA1 BFP640ESDH6327XTSA1 BFR193L3E6327XTMA1 BFS483H6327XTSA1 NSVF4020SG4T1G NSVF6003SB6T1G MRF10005 BFP420FH6327XTSA1 BFP740FESDH6327XTSA1 BFR181E6327HTSA1 BFR181WH6327XTSA1 BFR182E6327HTSA1 BFR193E6327HTSA1 BFP181E7764HTSA1 BFP183WH6327XTSA1 BFP720H6327XTSA1 BFR182WH6327XTSA1 BFU590GX MAPR-000912-500S00 BFR340FH6327XTSA1 STGWT30HP65FB