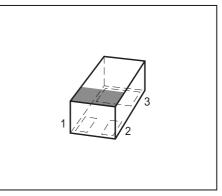


BFR949L3

NPN Silicon RF Transistor*

- For low noise, high-gain broadband amplifiers at collector currents from 1 mA to 20 mA
- $f_{\rm T}$ = 9 GHz, F = 1 dB at 1 GHz
- Pb-free (RoHS compliant) package¹⁾
- Qualified according AEC Q101
- * Short term description





ESD (Electrostatic discharge) sensitive device, observe handling precaution!

Туре	Marking		Pin Configuration			Package	
BFR949L3	RK	RK 1 = B 2 = E		E	3 = C	TSLP-3-1	
Maximum Ratings							
Parameter			Symbol		Value	Unit	
Collector-emitter voltage			V _{CEO}	10		V	
Collector-emitter voltage			V _{CES}		20		
Collector-base voltage			V _{CBO}		20		
Emitter-base voltage			V _{EBO}		1.5		
Collector current			I _C		50	mA	
Base current			/ _B		5		
Total power dissipation ²⁾			P _{tot}		250	mW	
<i>T</i> _S ≤ 101 °C							
Junction temperature			T _i		150	°C	
Ambient temperature			T _A		-65 150		
Storage temperature			<i>T</i> _{stg} -65 150				
Thermal Resistance				F			
Parameter			Symbol		Value	Unit	

Parameter	Symbol	Value	Unit
Junction - soldering point ³⁾	R _{thJS}	≤ 195	K/W

¹Pb-containing package may be available upon special request

 $^2 T_{\mbox{S}}$ is measured on the collector lead at the soldering point to the pcb

³For calculation of R_{thJA} please refer to Application Note Thermal Resistance



Parameter	Symbol	Values			Unit
		min.	typ.	max.	1
DC Characteristics	•				•
Collector-emitter breakdown voltage	V _{(BR)CEO}	10	-	-	V
$I_{\rm C} = 1 {\rm mA}, I_{\rm B} = 0$					
Collector-emitter cutoff current	I _{CES}	-	-	100	μA
$V_{\rm CE} = 20 \text{ V}, \ V_{\rm BE} = 0$					
Collector-base cutoff current	I _{CBO}	-	-	100	nA
$V_{\rm CB} = 10 \text{ V}, I_{\rm E} = 0$					
Emitter-base cutoff current	I _{EBO}	-	-	0.1	μA
$V_{\rm EB} = 1 \text{V}, I_{\rm C} = 0$					
DC current gain-	h _{FE}	100	140	180	-
$I_{\rm C}$ = 5 mA, $V_{\rm CE}$ = 6 V, pulse measured					

Electrical Characteristics at $T_A = 25^{\circ}$ C, unless otherwise specified



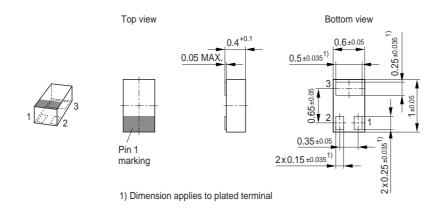
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics (verified by random sam	pling)		1	1	1
Transition frequency	f _T	7	9	-	GHz
$I_{\rm C}$ = 15 mA, $V_{\rm CE}$ = 6 V, f = 1 GHz					
Collector-base capacitance	C _{cb}	-	0.25	0.4	pF
$V_{CB} = 10 \text{ V}, f = 1 \text{ MHz}, V_{BE} = 0$,					
emitter grounded					
Collector emitter capacitance	C _{ce}	-	0.15	-	
$V_{CE} = 10 \text{ V}, f = 1 \text{ MHz}, V_{BE} = 0$,					
base grounded					
Emitter-base capacitance	C _{eb}	-	0.7	-	
$V_{\text{EB}} = 0.5 \text{ V}, f = 1 \text{ MHz}, V_{\text{CB}} = 0$,					
collector grounded					
Noise figure	F				dB
$I_{\rm C}$ = 5 mA, $V_{\rm CE}$ = 6 V, $Z_{\rm S}$ = $Z_{\rm Sopt}$,					
f = 1 GHz		-	1	2.5	
$I_{\rm C}$ = 3 mA, $V_{\rm CE}$ = 8 V, $Z_{\rm S}$ = $Z_{\rm Sopt}$,					
<i>f</i> = 1.8 GHz		-	1.3	-	
Power gain ¹⁾	G _{ms}	-	21.5	-	-
$I_{\rm C}$ = 10 mA, $V_{\rm CE}$ = 8 V, $Z_{\rm S}$ = $Z_{\rm Sopt}$,					
$Z_{\rm L} = Z_{\rm Lopt}, f = 900 \text{ MHz}$					
Power gain, maximum available ¹⁾	G _{ma}	-	15.5	-	dB
$I_{\rm C}$ = 10 mA, $V_{\rm CE}$ = 8 V, $Z_{\rm S}$ = $Z_{\rm Sopt}$,					
$Z_{\rm L} = Z_{\rm Lopt}$, $f = 1.8 \rm GHz$					
Transducer gain	S _{21e} ²				dB
$I_{\rm C}$ = 15 mA, $V_{\rm CE}$ = 6 V, $Z_{\rm S}$ = $Z_{\rm L}$ = 50 Ω ,					
f = 1 GHz		14	17	-	
$I_{\rm C}$ = 10 mA, $V_{\rm CE}$ = 8 V, $Z_{\rm S}$ = $Z_{\rm L}$ = 50 Ω ,					
<i>f</i> = 1.8 GHz		-	12	-	

Electrical Characteristics at $T_A = 25^{\circ}$ C, unless otherwise specified

 ${}^{1}G_{\mathsf{ma}} = |S_{21} / S_{12}| \; (\mathsf{k}\text{-}(\mathsf{k}^{2}\text{-}1)^{1/2}), \; G_{\mathsf{ms}} = |S_{21} / S_{12}|$

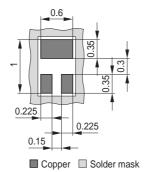


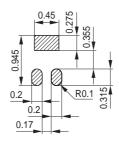
Package Outline



Foot Print

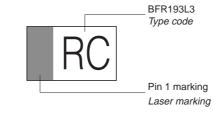
For board assembly information please refer to Infineon website "Packages"





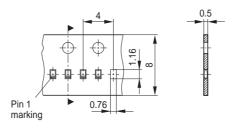
Stencil apertures

Marking Layout (Example)



Standard Packing

Reel ø180 mm = 15.000 Pieces/Reel





Edition 2006-02-01 Published by Infineon Technologies AG 81726 München, Germany © Infineon Technologies AG 2007. All Rights Reserved.

Attention please!

The information given in this dokument 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 any 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.