Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

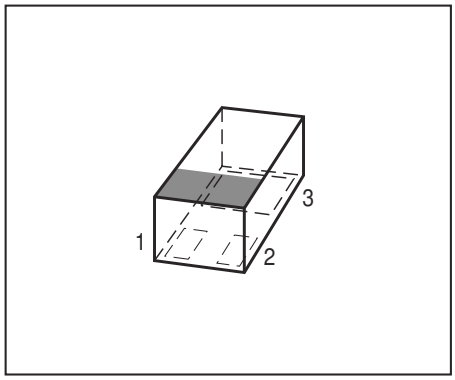
With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

NPN Silicon Germanium RF Transistor



- High gain ultra low noise RF transistor
- Provides outstanding performance for a wide range of wireless applications up to 10 GHz and more
- Ideal for CDMA and WLAN applications
- Outstanding noise figure F = 0.5 dB at 1.8 GHz
  Outstanding noise figure F = 0.8 dB at 6 GHz
- High maximum stable gain
  G_{ms} = 24 dB at 1.8 GHz
- Gold metallization for extra high reliability
- 150 GHz f_T-Silicon Germanium technology

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

Type	Marking	Pin Configuration			Package
BFR740L3	R7	1=B	2=C	3=E	TSLP-3-8

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}		V
T_A > 0°C		4	
T_A ≤ 0°C		3.5	
Collector-emitter voltage	V_{CES}	13	
Collector-base voltage	V_{CBO}	13	
Emitter-base voltage	V_{EBO}	1.2	
Collector current	I_C	30	mA
Base current	I_B	3	
Total power dissipation[1)] T_S ≤ 94°C	P_{tot}	160	mW
Junction temperature	T_j	150	°C
Ambient temperature	T_A	-65 ... 150	
Storage temperature	T_{stg}	-65 ... 150	

[1] T_S is measured on the collector lead at the soldering point to the pcb

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction - soldering point[1)]	R_{thJS}	≤ 350	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	4.7	-	V
Collector-emitter cutoff current V_{CE} = 13 V, V_{BE} = 0	I_{CES}	-	-	30	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 = 25 mA, V_{CE} = 3 V, pulse measured	h_{FE}	160	250	400	-

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

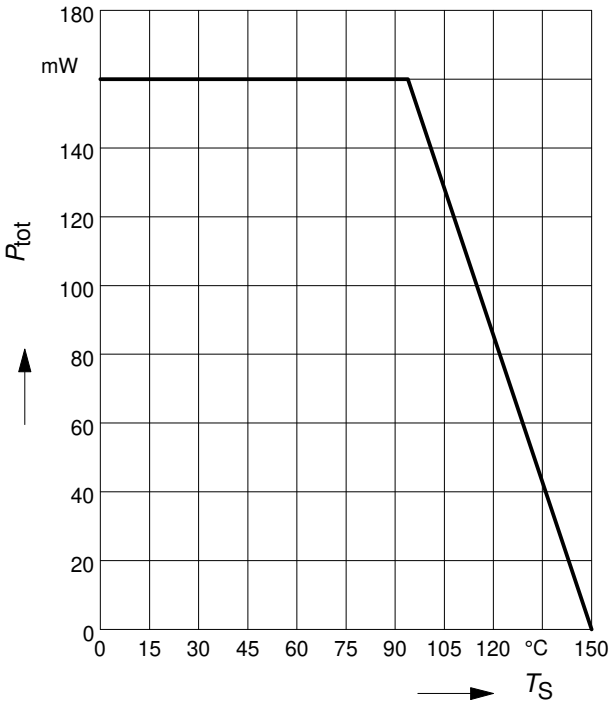
Electrical Characteristics at T_A = 25°C, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics (verified by random sampling)					
Transition frequency I_C = 25 mA, V_{CE} = 3 V, f = 2 GHz	f_T	-	42	-	GHz
Collector-base capacitance V_{CB} = 3 V, f = 1 MHz, V_{BE} = 0 , emitter grounded	C_{cb}	-	0.1	0.16	pF
Collector emitter capacitance V_{CE} = 3 V, f = 1 MHz, V_{BE} = 0 , base grounded	C_{ce}	-	0.18	-	
Emitter-base capacitance V_{EB} = 0.5 V, f = 1 MHz, V_{CB} = 0 , collector grounded	C_{eb}	-	0.38	-	
Noise figure I_C = 8 mA, V_{CE} = 3 V, f = 1.8 GHz, Z_S = Z_{Sopt} I_C = 8 mA, V_{CE} = 3 V, f = 6 GHz, Z_S = Z_{Sopt}	F	 - -	 0.5 0.8	 - -	dB
Power gain, maximum stable[1)] I_C = 25 mA, V_{CE} = 3 V, Z_S = Z_{Sopt}, Z_L = Z_{Lopt} , f = 1.8 GHz	G_{ms}	-	24	-	dB
Power gain, maximum available[1)] I_C = 25 mA, V_{CE} = 3 V, Z_S = Z_{Sopt}, Z_L = Z_{Lopt}, f = 6 GHz	G_{ma}	-	14.5	-	dB
Transducer gain I_C = 25 mA, V_{CE} = 3 V, Z_S = Z_L = 50 Ω, f = 1.8 GHz f = 6 GHz	$\lvert S_{21e}\rvert^2$	 - -	 21.5 12	 - -	dB
Third order intercept point at output[2)] V_{CE} = 3 V, I_C = 25 mA, Z_S=Z_L=50 Ω, f = 1.8 GHz	IP_3	-	25	-	dBm
1dB Compression point at output I_C = 25 mA, V_{CE} = 3 V, Z_S=Z_L=50 Ω, f = 1.8 GHz	P_{-1dB}	-	11	-	

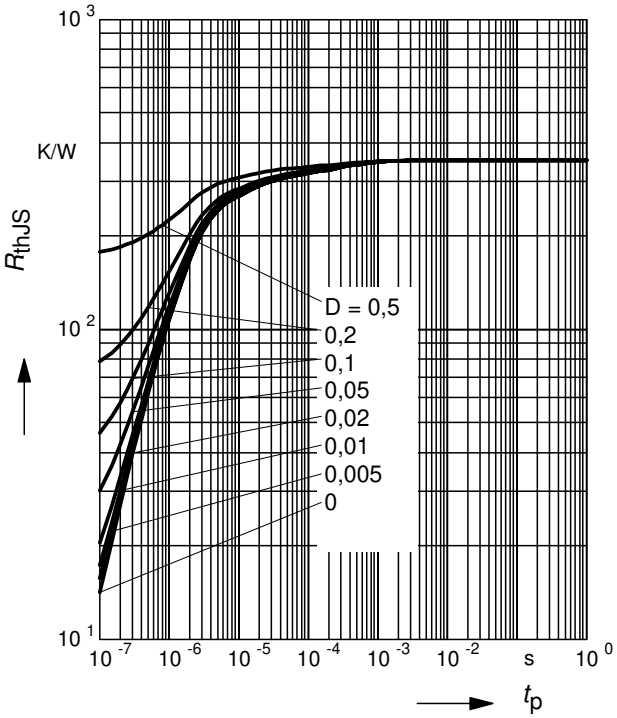
[1] $G_{ma} = |S_{21e} / S_{12e}| (k-(k^2-1)^{1/2})$, $G_{ms} = |S_{21e} / S_{12e}|$

[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

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

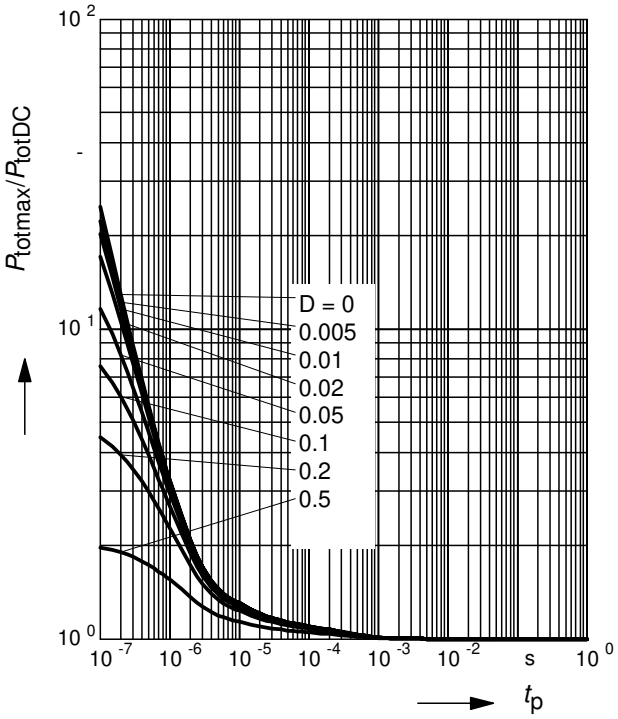


Permissible Pulse Load $R_{thJS} = f(t_p)$



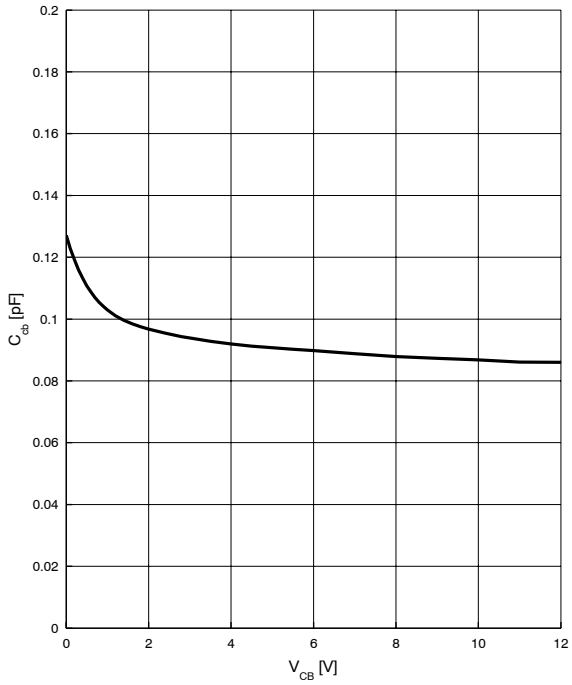
Permissible Pulse Load

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



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

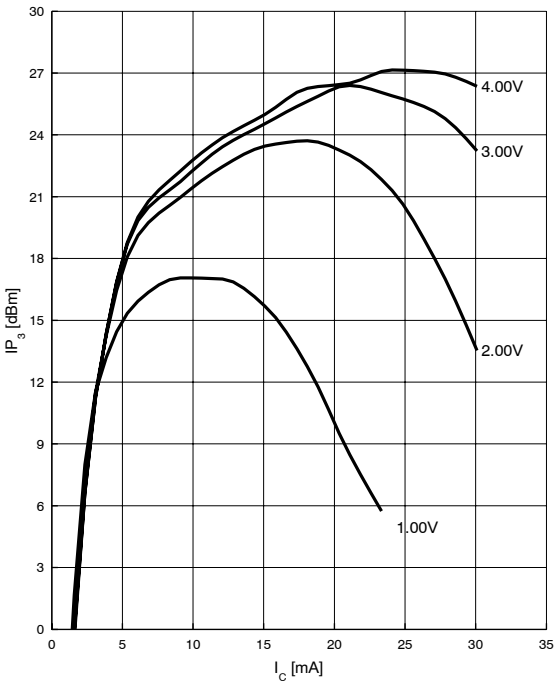
$f = 1$ MHz



Third order Intercept Point $IP_3 = f\ (I_C)$

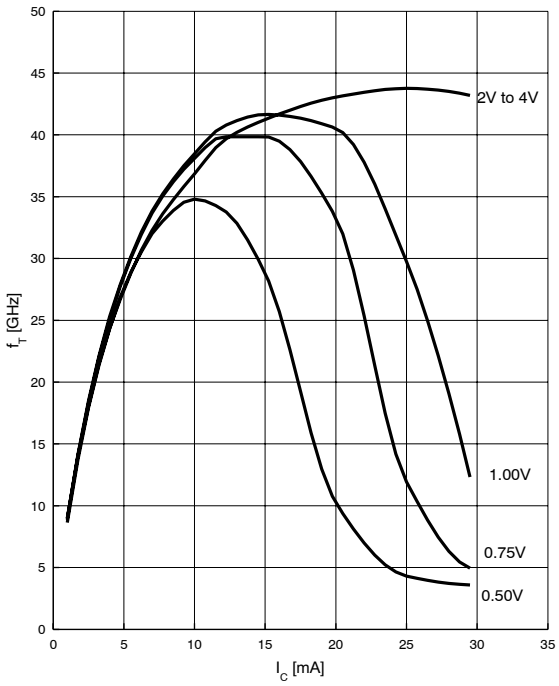
(Output, $Z_S = Z_L = 50\ \Omega$)

V_{CE} = parameter, f = 1.8 GHz



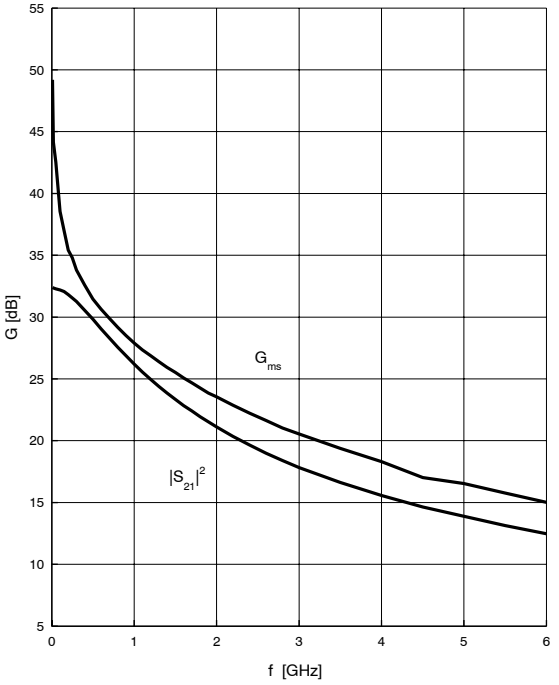
Transition frequency $f_T = f(I_C)$

V_{CE} = parameter, f = 2 GHz



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

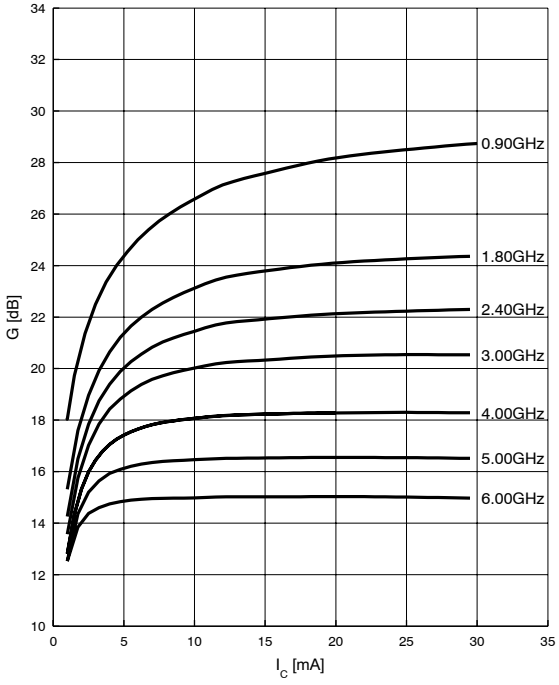
V_{CE} = 3 V, I_C = 25 mA



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

V_{CE} = 3 V

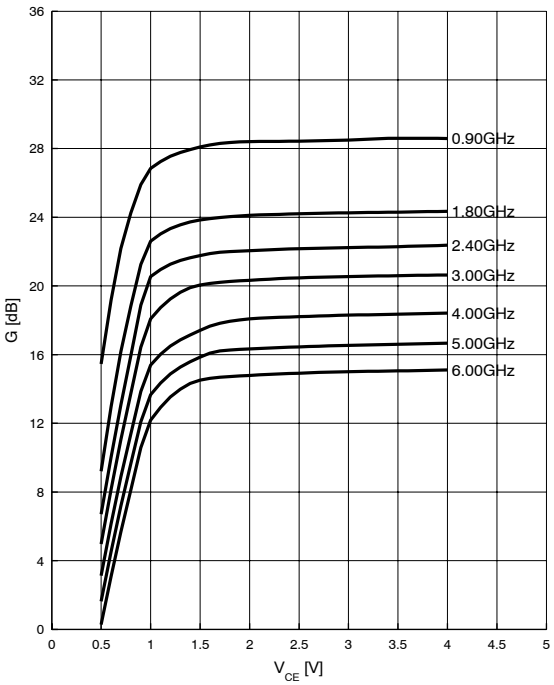
f = parameter



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

I_C = 25 mA

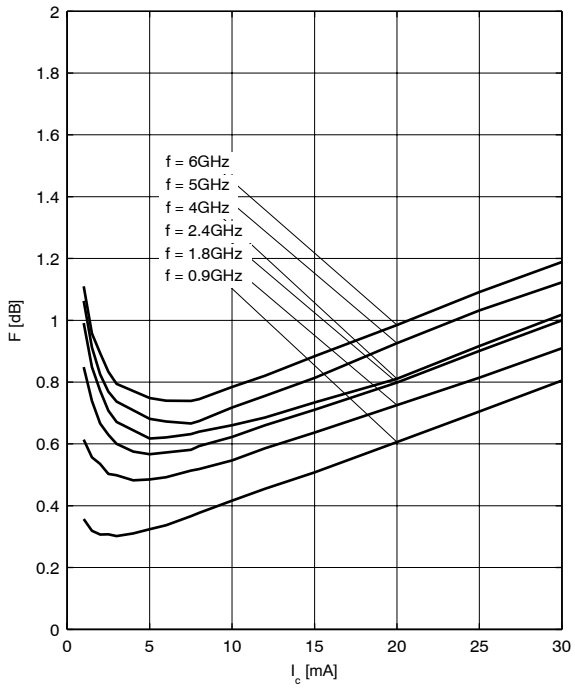
f = parameter



Noise figure $F = f(I_C)$

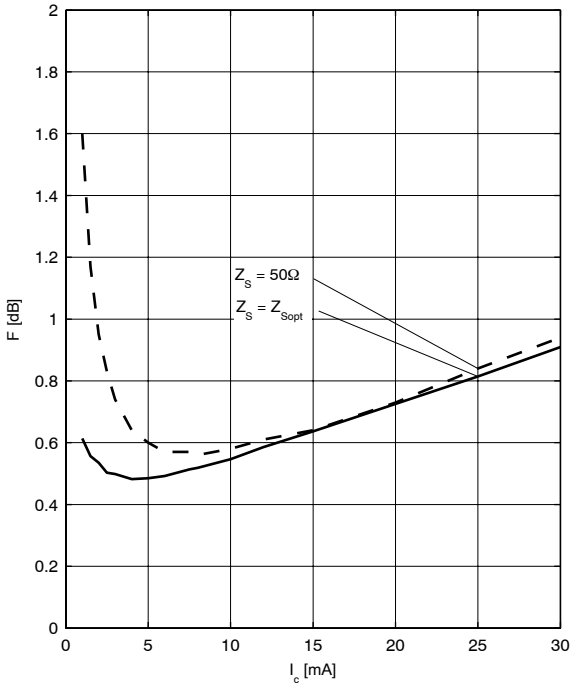
V_{CE} = 3 V, f = parameter

$Z_S = Z_{Sopt}$



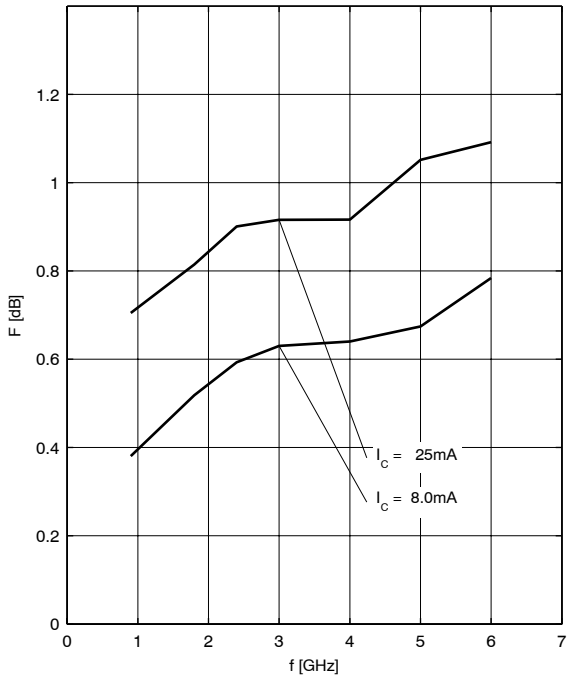
Noise figure $F = f(I_C)$

V_{CE} = 3V, f = 1.8 GHz

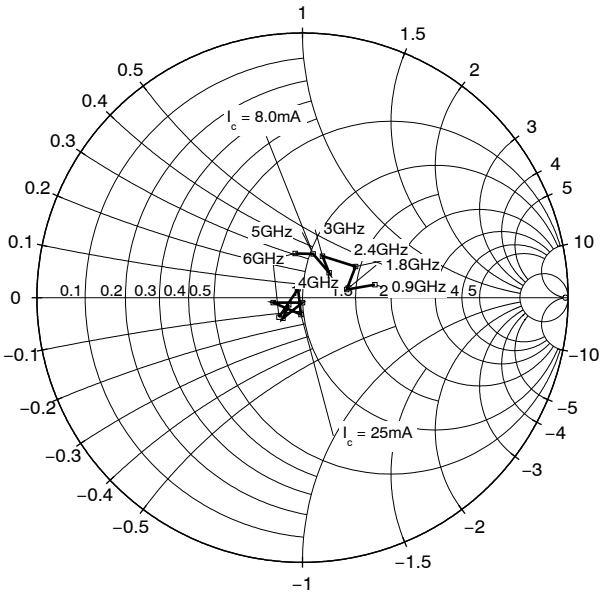


Noise figure $F = f(f)$

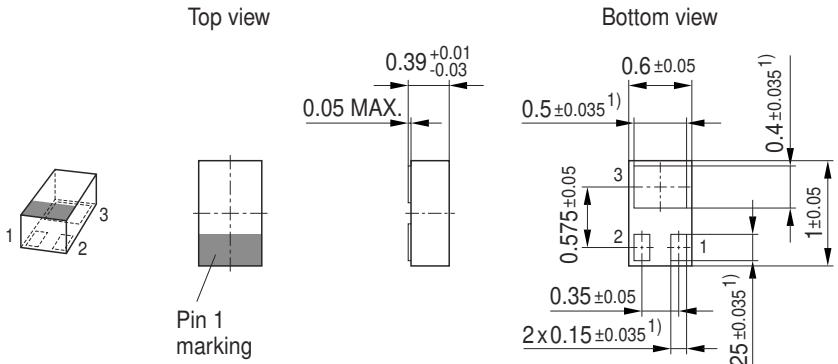
V_{CE} = 3V, $Z_S = Z_{Sopt}$



Source impedance for min.
noise figure vs. frequency
V_{CE} = 3 V, I_C = 8 mA / 25 mA



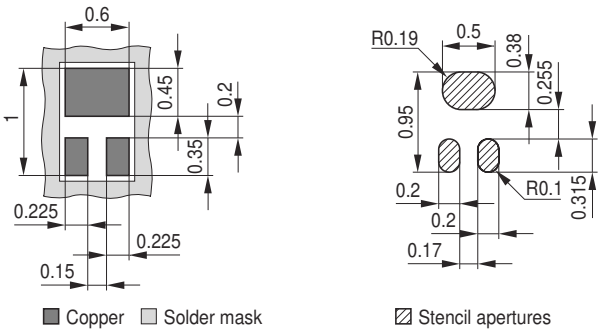
Package Outline



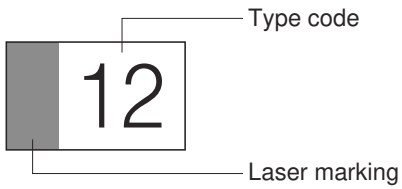
1) Dimension applies to plated terminal

Foot Print

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

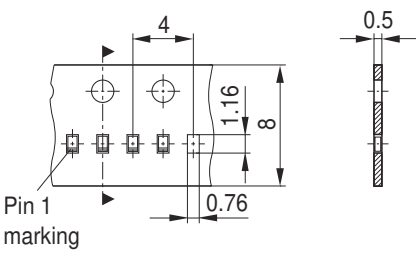


Marking Layout



Standard Packing

Reel ø180 mm = 15.000 Pieces/Reel



Published by Infineon Technologies AG,
St.-Martin-Strasse 53,
81669 München

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.