NPN 12 GHz WIDEBAND TRANSISTOR

BFG33 is an npn transistor in a microminiature SOT143 envelope with double emitter bonding. The device contains a BFQ33 crystal and is for use in circuits using SMD technology.

Features

- Extremely high transition frequency
- Very low noise at high frequencies.

QUICK REFERENCE DATA

Collector-base voltage (open emitter)	V_{CBO}	max.	9.0 V
Collector-emitter voltage (open base)	V_{CEO}	max.	7.0 V
Collector current (DC)	I_C	max.	20 mA
Total power dissipation up to T_{amb} = 25 °C mounted on a ceramic substrate 8 x 10 x 0.7 mm	P_{tot}	max.	300 mW
Junction temperature	T_j	max.	150 °C
Transition frequency at f = 1.5 GHz I_C = 14 mA; V_{CE} = 5 V; T_{amb} = 25 °C	f_T	typ.	12 GHz
Noise figure at optimum source impedance I_C = 5 mA; V_{CE} = 5 V; f = 2 GHz; T_{amb} = 25 °C	F	typ.	2.5 dB

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MECHANICAL DATA

SOT143.

BFG33 Marking code: V6
BFG33X Marking code: V16

Pinning

BFG33
1 = collector
2 = base
3, 4 = emitter

BFG33X
1 = collector
2, 4 = emitter
3 = base

RATINGS

Limiting values in accordance with the Absolute Maximum System (IEC 134).

Collector-base voltage (open emitter)	V_{CBO}	max.	9.0 V
Collector-emitter voltage (open base)	V_{CEO}	max.	7.0 V
Emitter-base voltage (open collector)	V_{EBO}	max.	2.0 V
Collector current (DC)	I_C	max.	20 mA
Total power dissipation up to T_{amb} = 25 °C mounted on a ceramic substrate 8 x 10 x 0.7 mm	P_{tot}	max.	300 mW
Storage temperature range	T_{stg}		−65 to 150 °C
Junction temperature	T_j	max.	150 °C

THERMAL RESISTANCE

From junction to ambient mounted on ceramic substrate 8 x 10 x 0.7 mm	$R_{th\ j\text{-}a}$	=	430 K/W

CHARACTERISTICS

T_j = 25 °C unless otherwise specified

Collector cut-off current I_E = 0; V_{CB} = 5 V	I_{CBO}	max.	50 nA
DC current gain I_C = 14 mA; V_{CE} = 5 V	h_{FE}	min.	50
Transition frequency at f = 1.5 GHz I_C = 14 mA; V_{CE} = 5 V; T_{amb} = 25 °C	f_T	typ.	12 GHz
Noise figure at optimum source impedance I_C = 5 mA; V_{CE} = 5 V; f = 2 GHz; T_{amb} = 25 °C	F	typ.	2.5 dB
Maximum unilateral power gain I_C = 14 mA; V_{CE} = 5 V; f = 2 GHz; T_{amb} = 25 °C; S_{12} = 0 $G_{UM} = 10 \log \frac{\lvert S_{21}\rvert^2}{(1-\lvert S_{11}\rvert^2)(1-\lvert S_{22}\rvert^2)}$	G_{UM}	typ.	10.5 dB

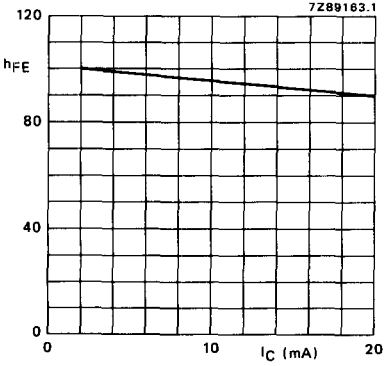


Fig.1 Gain as a function of collector current.

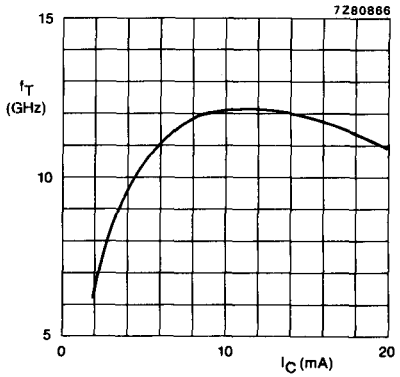


Fig.2 Transitional frequency as a function of collector current.

MECHANICAL DATA

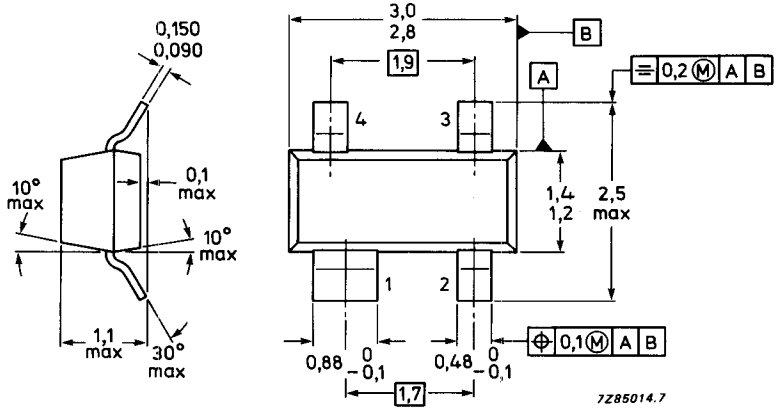
Dimensions in mm

Fig.3 SOT143.

Pinning:

BFG33	BFG33X
1 = collector	1 = collector
2 = base	2, 4 = emitter
3, 4 = emitter	3 = base

BFG33 Marking code: V6
BFG33X Marking code: V16



TOP VIEW