



5 GHz Wideband NPN Chip – BFR93

Silicon NPN Planar RF Transistor in bare die form

Rev 1.1
3/11/17

Description

NPN transistor in unencapsulated chip form. It is primarily intended for use in RF wideband amplifiers, such as in aerial amplifiers, radar systems, oscilloscopes, spectrum analyzers, etc. The transistor features low intermodulation distortion and high power gain; due to its very high transition frequency, it also has excellent wideband properties and low noise up to high frequencies. PNP complement is BFT93.

Features:

- High Power Gain
- Low Noise
- Wide Transition Frequency

Ordering Information

The following part suffixes apply:

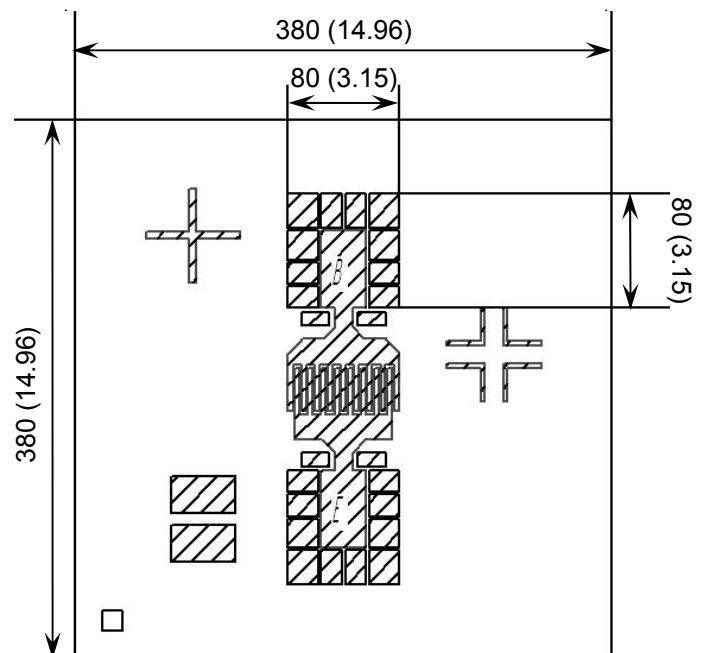
- No suffix - MIL-STD-750 /2072 Visual Inspection
- "H" - MIL-STD-750 /2072 Visual Inspection + MIL-PRF-38534 Class H LAT
- "K" - MIL-STD-750 /2072 Visual Inspection + MIL-PRF-38534 Class K LAT

LAT = Lot Acceptance Test.

For further information on LAT process flows see below.

www.siliconsupplies.com/quality/bare-die-lot-qualification

Die Dimensions in μm (mils)



B = BASE, E = EMITTER
CHIP BACKSIDE IS COLLECTOR

Supply Formats:

- Default – Die in Waffle Pack (400 per tray capacity)
- Sawn Wafer on Tape – By specific request
- Unsawn Wafer – By specific request
- With additional electrical selection – Specific request
- Sawn as pairs or adjacent pair pick – Specific request

Mechanical Specification

Die Size (Unsawn)	380 x 380 14.96 x 14.96	μm mils
Base & Emitter Bond Pad Size	80 x 80 3.15 x 3.15	μm mils
Die Thickness	240 (± 20) 9.45 (± 0.78)	μm mils
Top Metal Composition	Au 1.5 μm	
Back Metal Composition	Au 0.35 μm	





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Absolute Maximum Ratings $T_A = 25^\circ\text{C}$ unless otherwise stated

SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
V_{CBO}	collector-base voltage	open emitter	-	20	V
V_{CEO}	collector-emitter voltage	open base	-	12	V
V_{EBO}	emitter-base voltage	open collector	-	2	V
I_C	DC collector current	-	-	40	mA
P_{tot}	total power dissipation	-	-	200	mW
T_{stg}	storage temperature	-	-65	150	$^\circ\text{C}$
T_J	junction temperature	-	-	175	$^\circ\text{C}$

Electrical Characteristics $T_A = 25^\circ\text{C}$

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	SYMBOL
I_{CBO}	collector cut-off current	$I_E = 0 ; V_{CB} = 10\text{V}$	-	-	100	nA
h_{FE}	DC current gain	$I_C = 30\text{mA}; V_{CE} = 5\text{V}$	25	50	150	
f_T	transition frequency	$I_C = 30\text{mA}; V_{CE} = 5\text{V}; f = 300\text{MHz}$	-	5	-	GHz
G_P	power gain	$I_C = 30\text{mA}; V_{CE} = 5\text{V}; f = 800\text{MHz}$	-	18	-	dB
NF	noise figure	$I_C = 4\text{mA}; V_{CE} = 5\text{V}; f = 500\text{MHz}$	-	1.9	-	dB

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