

NPN 1 GHz wideband transistor

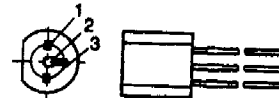
BF748

FEATURES

- Stable oscillator operation
- High current gain
- Low feedback capacitance
- Good thermal stability.

PINNING

PIN	DESCRIPTION
1	collector
2	emitter
3	base



DESCRIPTION

Low cost NPN transistor in a plastic SOT54 (TO-92 variant) envelope.

It is intended for VHF and UHF TV tuner applications and can be used as a mixer and/or oscillator.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_{CB0}	collector-base voltage	open emitter	-	-	30	V
V_{CE0}	collector-emitter voltage	open base	-	-	20	V
V_{EB0}	emitter-base voltage	open collector	-	-	3	V
I_{CM}	peak collector current		-	-	50	mA
P_{tot}	total power dissipation	up to $T_s = 75^\circ\text{C}$ (note 1)	-	-	500	mW
f_T	transition frequency	$I_C = 15\text{ mA}; V_{CE} = 10\text{ V}; f = 500\text{ MHz}$	0.8	1.2	1.6	GHz

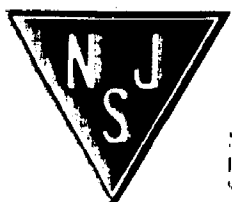
LIMITING VALUES

In accordance with the Absolute Maximum System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CB0}	collector-base voltage	open emitter	-	30	V
V_{CE0}	collector-emitter voltage	open base	-	20	V
V_{EB0}	emitter-base voltage	open collector	-	3	V
I_{CM}	peak collector current		-	50	mA
P_{tot}	total power dissipation	up to $T_s = 75^\circ\text{C}$ (note 1)	-	500	mW
T_{stg}	storage temperature		-55	150	$^\circ\text{C}$
T_j	junction temperature		-	150	$^\circ\text{C}$

Note

1. T_s is the temperature at the soldering point of the collector lead, 4 mm from the body.



NPN 1 GHz wideband transistor

BF748

THERMAL RESISTANCE

SYMBOL	PARAMETER	CONDITIONS	THERMAL RESISTANCE
$R_{th, Jc}$	thermal resistance from junction to soldering point	up to $T_s = 75\text{ °C}$ (note 1)	150 K/W

Note

- T_s is the temperature at the soldering point of the collector lead, 4 mm from the body.

CHARACTERISTICS

$T_j = 25\text{ °C}$ unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector cut-off current	$I_E = 0; V_{CB} = 10\text{ V}$	-	-	100	nA
h_{FE}	DC current gain	$I_C = 2\text{ mA}; V_{CE} = 10\text{ V}$	40	95	250	
f_T	transition frequency	$I_C = 15\text{ mA}; V_{CE} = 10\text{ V}; f = 500\text{ MHz}$	0.8	1.2	1.6	GHz
C_{re}	feedback capacitance	$I_E = I_B = 0; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$	-	0.65	-	pF
G_{UM}	maximum unilateral power gain (note 1)	$I_C = 15\text{ mA}; V_{CE} = 10\text{ V}; f = 100\text{ MHz}$	-	25	-	dB

Note

- G_{UM} is the maximum unilateral power gain, assuming S_{12} is zero and $G_{UM} = 10 \log \frac{|S_{21}|^2}{(1 - |S_{11}|^2)(1 - |S_{22}|^2)}$ dB.