

NPN 1 GHz wideband transistor

T-3H17

 BFW92

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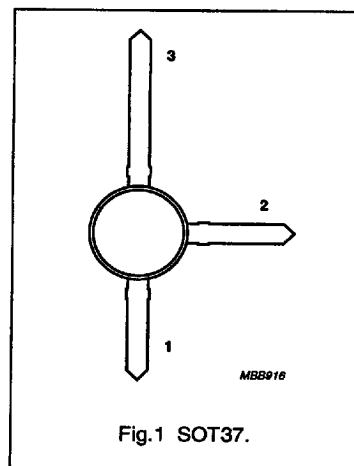
DESCRIPTION

NPN transistor in a plastic SOT37 envelope.

It has a low noise over a wide current range, a very high power gain and good intermodulation properties. It is primarily intended for wideband aerial amplifiers (40 to 860 MHz), channel and band aerial amplifiers for band I, II, III and IV/V (40 to 860 MHz), television distribution amplifiers and low noise wideband vertical amplifiers in high speed oscilloscopes.

PINNING

PIN	DESCRIPTION
Code: BFW92/02	
1	base
2	emitter
3	collector



QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter	—	25	V
V_{CEO}	collector-emitter voltage	open base	—	15	V
I_{CM}	peak collector current	$f > 1$ MHz	—	50	mA
P_{tot}	total power dissipation	up to $T_s = 155$ °C (note 1)	—	300	mW
f_T	transition frequency	$I_C = 25$ mA; $V_{CE} = 5$ V; $f = 500$ MHz; $T_j = 25$ °C	1.6	—	GHz
C_{re}	feedback capacitance	$I_C = 2$ mA; $V_{CE} = 5$ V; $f = 1$ MHz; $T_{amb} = 25$ °C	0.6	—	pF
F	noise figure	$I_C = 2$ mA; $V_{CE} = 5$ V; $R_s = 50$ Ω; $f = 500$ MHz; $T_{amb} = 25$ °C	4	—	dB
G_p	power gain	$I_C = 10$ mA; $V_{CE} = 10$ V; $f = 800$ MHz; $T_{amb} = 25$ °C	11	—	dB
P_O	output power	$I_C = 10$ mA; $V_{CE} = 10$ V; $f = 800$ MHz; $T_{amb} = 25$ °C; $d_{im} = -30$ dB; VSWR at output < 2	8	—	mW

Note

- T_s is the temperature at the soldering point of the collector lead.

NPN 1 GHz wideband transistor

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LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter	-	25	V
V_{CEO}	collector-emitter voltage	open base	-	15	V
V_{EBO}	emitter-base voltage	open collector	-	2.5	V
I_C	DC collector current		-	25	mA
I_{CM}	peak collector current	$f > 1$ MHz	-	50	mA
P_{tot}	total power dissipation	up to $T_s = 155$ °C (note 1)	-	300	mW
T_{stg}	storage temperature		-65	150	°C
T_j	junction temperature		-	175	°C

THERMAL RESISTANCE

SYMBOL	PARAMETER	CONDITIONS	THERMAL RESISTANCE
$R_{th(j-s)}$	thermal resistance from junction to soldering point	up to $T_s = 155$ °C (note 1)	65 K/W

Note

- T_s is the temperature at the soldering point of the collector lead.

CHARACTERISTICS

 $T_j = 25$ °C unless otherwise specified.

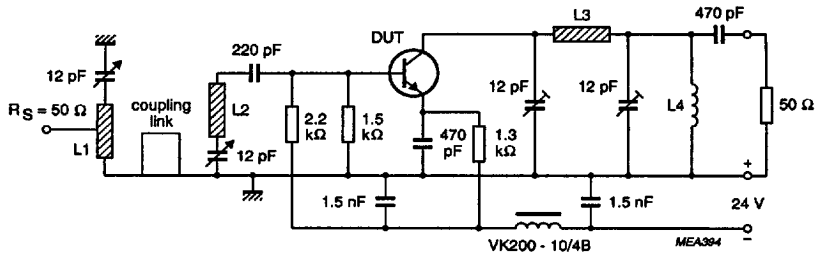
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector cut-off current	$I_E = 0$; $V_{CB} = 10$ V	-	-	50	nA
h_{FE}	DC current gain	$I_C = 2$ mA; $V_{CE} = 1$ V	25	90	-	
		$I_C = 25$ mA; $V_{CE} = 1$ V	25	90	-	
f_T	transition frequency	$I_C = 2$ mA; $V_{CE} = 5$ V; $f = 500$ MHz	-	1	-	GHz
		$I_C = 25$ mA; $V_{CE} = 5$ V; $f = 500$ MHz	-	1.6	-	GHz
C_c	collector capacitance	$I_E = I_B = 0$; $V_{CB} = 10$ V; $f = 1$ MHz	-	0.7	-	pF
C_e	emitter capacitance	$I_C = I_B = 0$; $V_{EB} = 0.5$ V; $f = 1$ MHz	-	1.5	-	pF
C_{re}	feedback capacitance	$I_C = 2$ mA; $V_{CE} = 5$ V; $f = 1$ MHz; $T_{amb} = 25$ °C	-	0.6	-	pF
F	noise figure	$I_C = 2$ mA; $V_{CE} = 5$ V; $R_s = 50$ Ω; $f = 500$ MHz; $T_{amb} = 25$ °C	-	4	-	dB
G_p	power gain	$I_C = 10$ mA; $V_{CE} = 10$ V; $f = 800$ MHz; $T_{amb} = 25$ °C	-	11	-	dB
P_o	output power	note 1	-	8	-	mW

Note

- $I_C = 10$ mA; $V_{CE} = 10$ V; $f = 800$ MHz; $T_{amb} = 25$ °C; $d_{im} = -30$ dB; VSWR at output < 2
 $f_p = 798$ MHz; $f_q = 802$ MHz;
measured at $f_{(p-q)} = 806$ MHz.

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- L1 = 24 mm x 6 mm x 0.5 mm silver plated copper strip. Tap of the input at 5 mm from earth.
- L2 = 15 mm x 6 mm x 0.5 mm silver plated copper strip.
- L3 = 20 mm x 8 mm x 0.5 mm silver plated copper strip.
- L4 = 4 turns enamelled 0.5 mm copper wire; winding pitch 1.5 mm; internal diameter 4 mm. Coupling link: 42 mm silver plated 1 mm copper wire.

Fig.2 Intermodulation distortion test circuit.

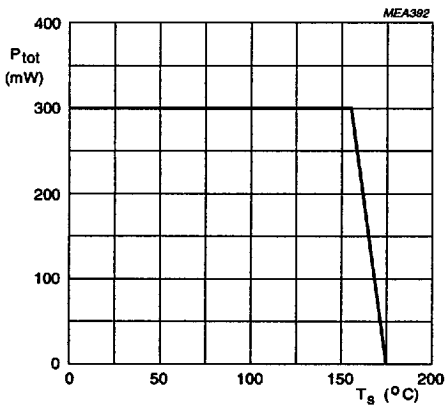
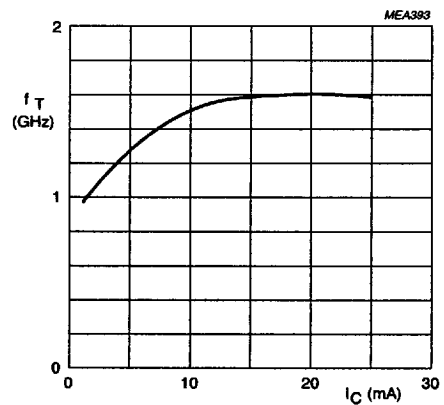


Fig.3 Power derating curve.



$V_{CE} = 5 \text{ V}; f = 500 \text{ MHz}; T_j = 25 \text{ }^\circ\text{C}.$

Fig.4 Transition frequency as a function of collector current.