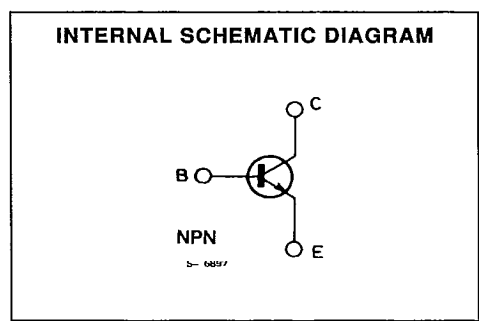
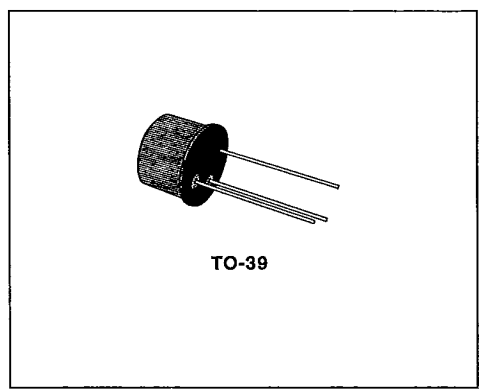


**CATV-MATV AMPLIFIERS**

**DESCRIPTION**

The BFW 16A and BFW 17A are multi-emitter silicon planar epitaxial NPN transistors in Jedec TO-39 metal case, with extremely good intermodulation properties and high power gain. They are primarily intended for final and driver stages in channel-and band-aerial amplifiers with high output power from 40 to 860 MHz.

Another possible application is as the final stage of the wide band vertical amplifier in high speed oscilloscopes.



**ABSOLUTE MAXIMUM RATINGS**

Symbol	Parameter	Value	Unit
V <sub>CB0</sub>	Collector-base Voltage (I <sub>E</sub> = 0)	40	V
V <sub>CER</sub>	Collector-emitter Voltage (R <sub>BE</sub> ≤ 50 Ω)	40	V
V <sub>CEO</sub>	Collector-emitter Voltage (I <sub>B</sub> = 0)	25	V
V <sub>EBO</sub>	Emitter-base Voltage (I <sub>C</sub> = 0)	3	V
I <sub>C</sub>	Collector Current	150	mA
I <sub>CM</sub>	Collector Peak Current	300	mA
P <sub>tot</sub>	Total Power Dissipation at T <sub>amb</sub> ≤ 25 °C at T <sub>case</sub> ≤ 125 °C	0.7	W
		1.5	W
T <sub>stg</sub> , T <sub>J</sub>	Storage and Junction Temperature	- 65 to 200	°C

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**THERMAL DATA**

$R_{th\ j-case}$	Thermal Resistance Junction-case	Max	50	°C/W
$R_{th\ j-amb}$	Thermal Resistance Junction-ambient	Max	250	°C/W

**ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ °C}$  unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CBO}$	Collector Cutoff Current ( $I_E = 0$ )	$V_{CB} = 20\text{ V}$ $T_{amb} = 150\text{ °C}$			20	$\mu\text{A}$
$V_{(BR)EBO}$	Emitter-base Breakdown Voltage ( $I_C = 0$ )	$I_E = 100\text{ }\mu\text{A}$	3			V
$V_{CEK}^{*/**}$	Collector-emitter Knee Voltage	$I_C = 100\text{ mA}$			0.75	V
$h_{FE}^*$	DC Current Gain	$I_C = 50\text{ mA}$ $V_{CE} = 5\text{ V}$ $I_C = 150\text{ mA}$ $V_{CE} = 5\text{ V}$	25			
$f_T$	Transition Frequency	$I_C = 150\text{ mA}$ $V_{CE} = 15\text{ V}$ $f = 500\text{ MHz}$  for <b>BFW 16A</b> for <b>BFW 17A</b>		1.2 1.1		GHz GHz
$C_{CBO}$	Collector-base Capacitance	$I_E = 0$ $V_{CB} = 15\text{ V}$ $f = 1\text{ MHz}$			4	pF
$C_{re}$	Reverse Capacitance	$I_C = 10\text{ mA}$ $V_{CE} = 15\text{ V}$ $f = 1\text{ MHz}$		1.7		pF
NF	Noise Figure (for <b>BFW 16A</b> only)	$I_C = 30\text{ mA}$ $V_{CE} = 15\text{ V}$ $R_g = 75\text{ }\Omega$ $f = 200\text{ MHz}$			6	dB
$G_{pe}$	Power Gain (not neutralized)	$I_C = 70\text{ mA}$ $V_{CE} = 18\text{ V}$ $f = 200\text{ MHz}$ for <b>BFW 16A</b> and <b>BFW 17A</b> $f = 800\text{ MHz}$ For <b>BFW 16A</b> only		16 6.5		dB dB
$P_0$	Output Power	$I_C = 70\text{ mA}$ $V_{CE} = 18\text{ V}$ Channel 9 <sup>(1)</sup>  for <b>BFW 16A</b> for <b>BFW 17A</b> Channel 62 <sup>(2)</sup> For <b>BFW 16A</b> only	130  70	150 150 90		mW mW mW

\* Pulsed : pulse duration = 300  $\mu\text{s}$ , duty cycle = 1 %.

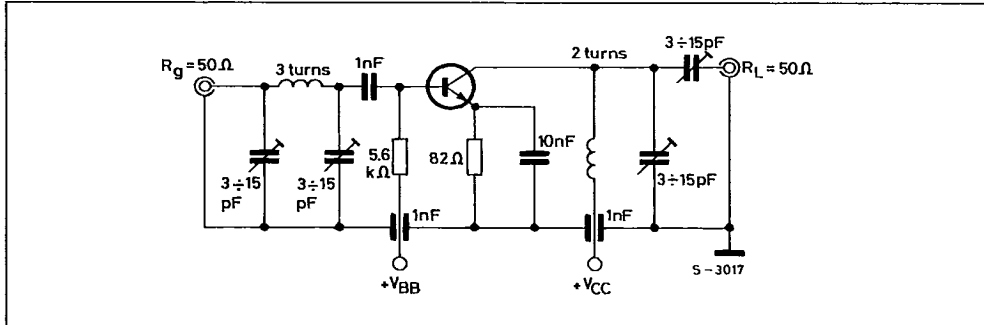
\*\*  $I_B$  = value for which  $I_C = 110\text{ mA}$  at  $V_{CE} = 1\text{ V}$ .

(1)  $f_p = 202\text{ MHz}$ ,  $f_q = 205\text{ MHz}$ ,  $f_{(2q-p)} = 208\text{ MHz}$ .

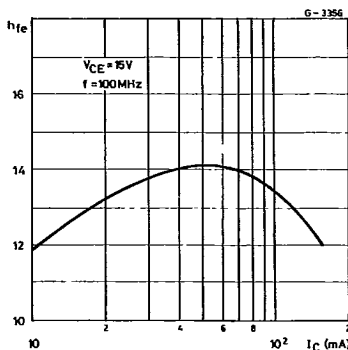
(2)  $f_p = 798\text{ MHz}$ ,  $f_q = 802\text{ MHz}$ ,  $f_{(2q-p)} = 806\text{ MHz}$ .

TEST CIRCUIT

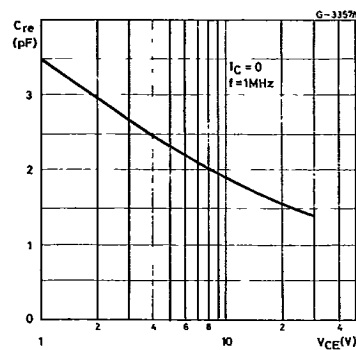
Test Circuit for Power Gain and Output Power Measurements ( $f = 200$  MHz).



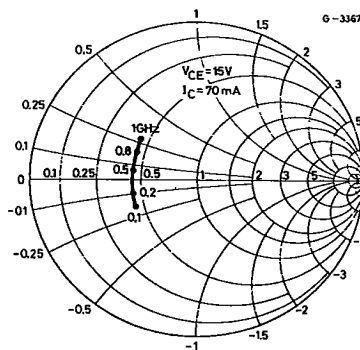
High Frequency Current Gain.



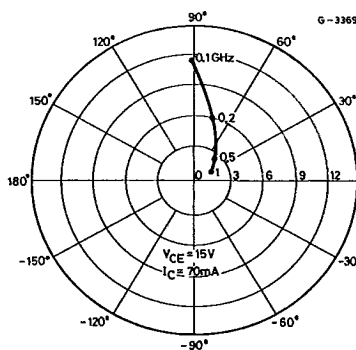
Reverse Capacitance.



Input Impedance  $S_{11e}$  (normalized 50  $\Omega$ ).

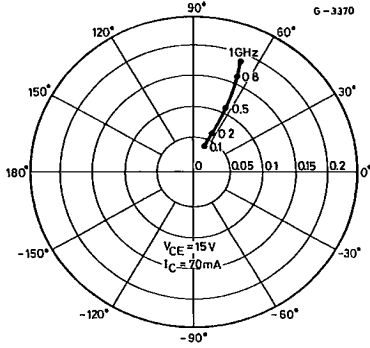


Forward Transfer Coefficient  $S_{21e}$ .



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Reverse Transfer Coefficient  $S_{12e}$ .



Output Impedance  $S_{22e}$  (normalized 50 Ω).

