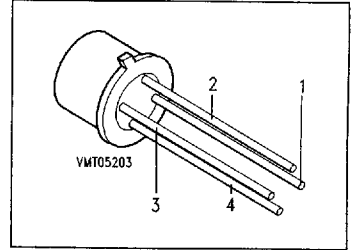


## NPN Silicon RF Transistor

**BFX 59**  
**BFX 59F**

- For broadband amplifiers at collector currents up to 30 mA.



**ESD:** Electrostatic discharge sensitive device, observe handling precautions!

Type	Marking	Ordering Code	Pin Configuration				Package <sup>1)</sup>
			1	2	3	4	
BFX 59 BFX 59F	BFX 59 BFX 59F	Q60206-X59 Q60206-X59-S5	B	E	Case	C	TO-72

### Maximum Ratings

Parameter	Symbol	Values	Unit
Collector-emitter voltage	$V_{CE0}$	20	V
Collector-base voltage	$V_{CB0}$	30	
Emitter-base voltage	$V_{EB0}$	3	
Collector current	$I_C$	100	mA
Base current	$I_B$	30	
Total power dissipation, $T_A \leq 70\text{ }^\circ\text{C}$	$P_{tot}$	370	mW
Junction temperature	$T_j$	200	°C
Ambient temperature range	$T_A$	- 65 ... + 175	
Storage temperature range	$T_{stg}$	- 65 ... + 175	

### Thermal Resistance

Junction - ambient	$R_{th\text{ JA}}$	≤ 650	K/W
Junction - case	$R_{th\text{ JC}}$	≤ 350	

<sup>1)</sup> For detailed information see chapter Package Outlines.

**Electrical Characteristics**

at  $T_A = 25^\circ\text{C}$ , unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

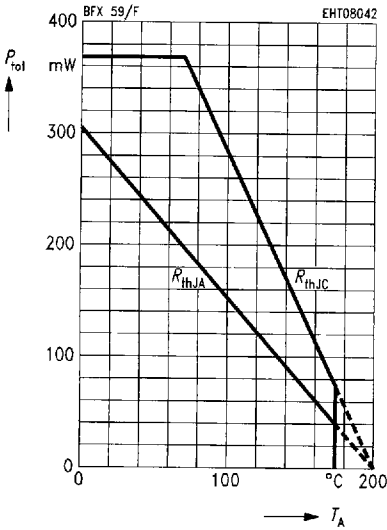
**DC Characteristics**

Collector-emitter breakdown voltage $I_C = 1\text{ mA}, I_B = 0$	$V_{(BR)CE0}$	20	—	—	V
Collector-base cutoff current $V_{CB} = 20\text{ V}, I_E = 0$	$I_{CBO}$	—	0.3	10	nA
Emitter-base cutoff current $V_{EB} = 3\text{ V}, I_C = 0$	$I_{EBO}$	—	—	10	$\mu\text{A}$
DC current gain $I_C = 10\text{ mA}, V_{CE} = 10\text{ V}$	$h_{FE}$	30	—	200	—

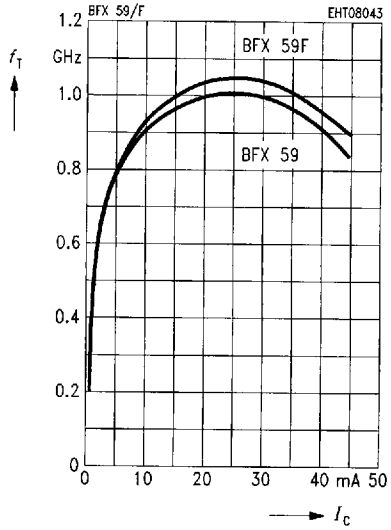
**AC Characteristics**

Transition frequency $I_C = 8\text{ mA}, V_{CE} = 10\text{ V}, f = 100\text{ MHz}$ $I_C = 20\text{ mA}, V_{CE} = 10\text{ V}, f = 100\text{ MHz}$	$f_T$	600 700	900 1000	— —	GHz
$I_C = 35\text{ mA}, V_{CE} = 10\text{ V}, f = 100\text{ MHz}$		700 700	1050 1000	— —	
Collector-base capacitance $V_{CB} = 10\text{ V}, V_{BE} = V_{DS} = 0, f = 1\text{ MHz}$	$C_{cb}$	0.4 0.55	— —	0.7 0.9	
Noise figure $I_C = 3\text{ mA}, V_{CE} = 10\text{ V}, f = 300\text{ MHz}, Z_s = 300\ \Omega$ $I_C = 3\text{ mA}, V_{CE} = 10\text{ V}, f = 200\text{ MHz}, Z_s = 60\ \Omega$	$F$	— —	2.6 3.4	— 4.5	dB

**Total power dissipation  $P_{tot} = f(T_A)$**



**Transition frequency  $f_T = f(I_C)$**   
 $V_{CE} = 10$  V,  $f = 100$  MHz



**Collector-base capacitance  $C_{cb} = f(V_{CB})$**

$V_{BE} = V_{be} = 0$ ,  $f = 1$  MHz

