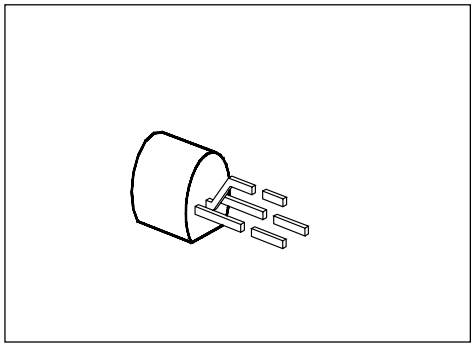
SIEMENS

NPN Silicon RF Transistor — BF 959

- For SAW filter driver applications in TV tuners
- For linear broadband VHF amplifier stages
- For oscillator applications



Type	Marking	Ordering Code	Pin Configuration 1	2	3	Package[1)]
BF 959	–	Q62702-F640	C	E	B	TO-92

Maximum Ratings

Parameter	Symbol	Values	Unit
Collector-emitter voltage	V_{CE0}	20	V
Collector-emitter reverse voltage	V_{CES}	30	
Collector-base voltage	V_{CB0}	30	
Emitter-base voltage	V_{EB0}	3	
Peak collector current	I_{CM}	100	mA
Peak base current	I_{BM}	30	
Total power dissipation, $T_A \leq 25$ °C $V_{CE} \leq 15$ V	P_{tot}	500	mW
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	– 55 … + 150	

Thermal Resistance

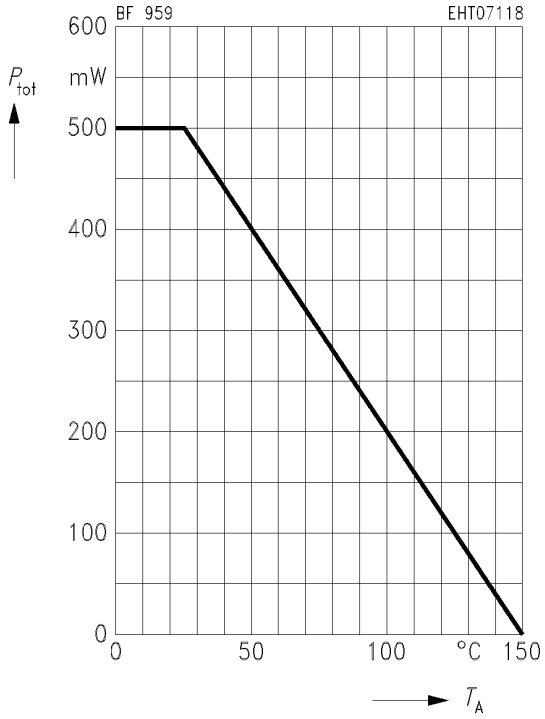
Junction - ambient	$R_{th\ JA}$	≤ 250	K/W

1) For detailed information see chapter Package Outlines.

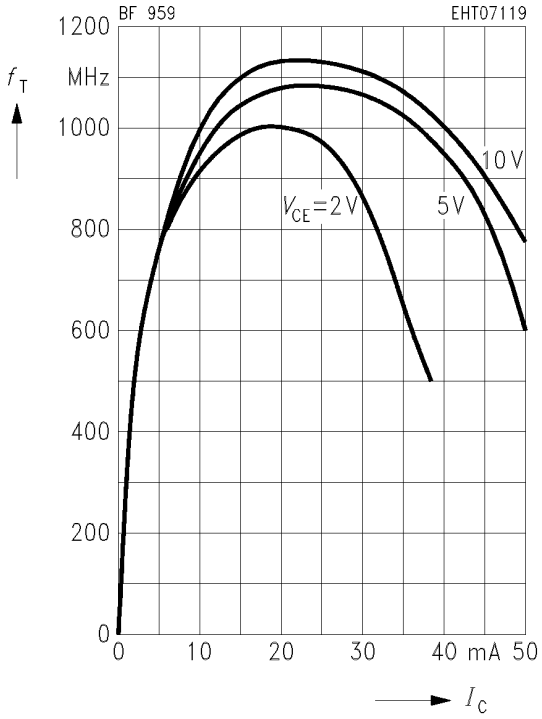
Electrical Characteristics
at T_A = 25 °C, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage I_C = 1 mA	$V_{(BR)\ CE0}$	20	–	–	V
Collector-base breakdown voltage I_C = 10 µA	$V_{(BR)\ CB0}$	30	–	–	
Emitter-base breakdown voltage I_E = 10 µA	$V_{(BR)\ EB0}$	3	–	–	
Collector cutoff current V = 20 V	I_{CB0}	–	–	100	nA
DC current gain, V_{CE} = 10 V I_C = 5 mA I_C = 20 mA	h_{FE}	 35 40	 – 85	 – –	–
Base-emitter voltage I_C = 20 mA, V_{CE} = 10 V	V_{BE}	–	0.75	–	V
Collector-emitter saturation voltage I_C = 30 mA, I_B = 2 mA	$V_{CE\ sat}$	–	–	1	
Base-emitter saturation voltage I_C = 30 mA, I_B = 2 mA	$V_{BE\ sat}$	–	–	0.95	
AC Characteristics					
Transition frequency I_C = 20 mA, V_{CE} = 10 V, f = 100 MHz I_C = 30 mA, V_{CE} = 5 V	f_T	 700 600	 1100 –	 – –	MHz
Output capacitance V_{CB} = 10 V, I_E = 0, f = 1 MHz	C_{obo}	–	0.9	–	pF
Collector-base capacitance V_{CE} = 10 V, V_{BE} = 0, f = 1 MHz	C_{cb}	–	0.75	–	
Noise figure V_{CE} = 10 V, f = 200 MHz, R_S = 60 Ω I_C = 5 mA I_C = 20 mA	F	 – –	 3 4	 – –	dB
Output conductance I_C = 20 mA, V_{CE} = 10 V, f = 35 MHz	g_{22e}	–	0.06	–	mS

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



Transition frequency $f_T = f(I_C)$
f = 100 MHz



Collector-base capacitance $C_{cb} = f(V_{CB})$
f= 1 MHz