

BC846 THRU BC849

ELECTRICAL CHARACTERISTICS

Ratings at 25 °C ambient temperature unless otherwise specified

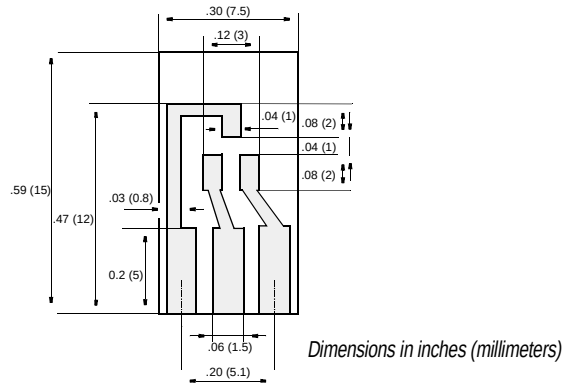
	Symbol	Min.	Typ.	Max.	Unit
h-Parameters at $V_{CE} = 5\text{ V}$, $I_C = 2\text{ mA}$, $f = 1\text{ kHz}$, Small Signal Current Gain					
Current Gain Group A	h_{fe}	–	220	–	–
B	h_{fe}	–	330	–	–
C	h_{fe}	–	600	–	–
Input Impedance	Current Gain Group A h_{ie}	1.6	2.7	4.5	$k\Omega$
	B h_{ie}	3.2	4.5	8.5	$k\Omega$
	C h_{ie}	6	8.7	15	$k\Omega$
Output Admittance	Current Gain Group A h_{oe}	–	18	30	μS
	B h_{oe}	–	30	60	μS
	C h_{oe}	–	60	110	μS
Reverse Voltage Transfer Ratio					
Current Gain Group A	h_{re}	–	$1.5 \cdot 10^{-4}$	–	–
B	h_{re}	–	$2 \cdot 10^{-4}$	–	–
C	h_{re}	–	$3 \cdot 10^{-4}$	–	–
DC Current Gain at $V_{CE} = 5\text{ V}$, $I_C = 10\text{ }\mu A$					
Current Gain Group A	h_{FE}	–	90	–	–
B	h_{FE}	–	150	–	–
C	h_{FE}	–	270	–	–
at $V_{CE} = 5\text{ V}$, $I_C = 2\text{ mA}$					
Current Gain Group A	h_{FE}	110	180	220	–
B	h_{FE}	200	290	450	–
C	h_{FE}	420	520	800	–
Thermal Resistance Junction to Substrate Backside	R_{thSB}	–	–	320 ¹⁾	K/W
Thermal Resistance Junction to Ambient Air	R_{thJA}	–	–	450 ¹⁾	K/W
Collector Saturation Voltage at $I_C = 10\text{ mA}$, $I_B = 0.5\text{ mA}$ at $I_C = 100\text{ mA}$, $I_B = 5\text{ mA}$	V_{CEsat} V_{CEsat}	– –	90 200	250 600	mV mV
Base Saturation Voltage at $I_C = 10\text{ mA}$, $I_B = 0.5\text{ mA}$ at $I_C = 100\text{ mA}$, $I_B = 5\text{ mA}$	V_{BEsat} V_{BEsat}	– –	700 900	– –	mV mV
Base-Emitter Voltage at $V_{CE} = 5\text{ V}$, $I_C = 2\text{ mA}$ at $V_{CE} = 5\text{ V}$, $I_C = 10\text{ mA}$	V_{BE} V_{BE}	580 –	660 –	700 720	mV mV
Collector-Emitter Cutoff Current at $V_{CE} = 80\text{ V}$ at $V_{CE} = 50\text{ V}$ at $V_{CE} = 30\text{ V}$ at $V_{CE} = 80\text{ V}$, $T_j = 125\text{ }^\circ C$ at $V_{CE} = 50\text{ V}$, $T_j = 125\text{ }^\circ C$ at $V_{CE} = 30\text{ V}$, $T_j = 125\text{ }^\circ C$	BC846 BC847 BC848, BC849 BC846 BC847 BC848, BC849 I_{CES} I_{CES} I_{CES} I_{CES} I_{CES} I_{CES}	– – – – – – – – – – –	0.2 0.2 0.2 – – – – – – – –	15 15 15 4 4 4 – – – – –	nA nA nA μA μA μA μA μA μA μA μA
Gain-Bandwidth Product at $V_{CE} = 5\text{ V}$, $I_C = 10\text{ mA}$, $f = 100\text{ MHz}$	f_T	–	300	–	MHz
¹⁾ Device on fiberglass substrate, see layout					

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Collector-Base Capacitance at $V_{CB} = 10\text{ V}$, $f = 1\text{ MHz}$	C_{CBO}	–	3.5	6	pF
Emitter-Base Capacitance at $V_{EB} = 0.5\text{ V}$, $f = 1\text{ MHz}$	C_{EBO}	–	9	–	pF
Noise Figure at $V_{CE} = 5\text{ V}$, $I_C = 200\text{ }\mu\text{A}$, $R_G = 2\text{ k}\Omega$, $f = 1\text{ kHz}$, $\Delta f = 200\text{ Hz}$ BC846, BC847, BC848	F	–	2	10	dB
	F	–	1.2	4	dB
at $V_{CE} = 5\text{ V}$, $I_C = 200\text{ }\mu\text{A}$, $R_G = 2\text{ k}\Omega$, $f = 30\text{...}15000\text{ Hz}$ BC849	F	–	1.4	4	dB



Layout for R_{thJA} test

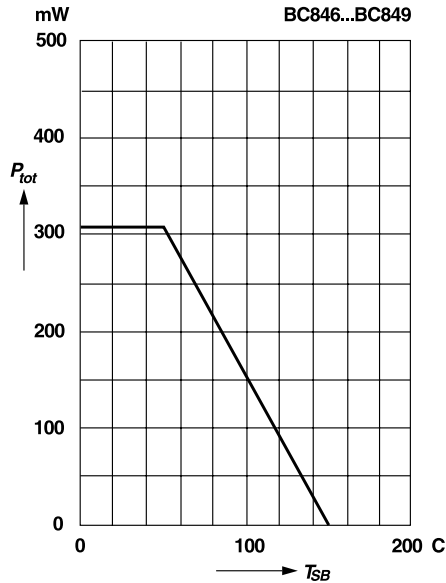
Thickness: Fiberglass 0.059 in (1.5 mm)

Copper leads 0.012 in (0.3 mm)

RATINGS AND CHARACTERISTIC CURVES BC846 THRU BC849

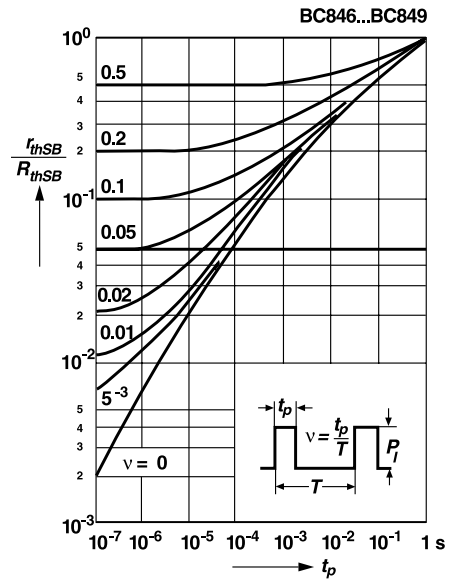
**Admissible power dissipation
versus temperature of substrate backside**

Device on fiberglass substrate, see layout

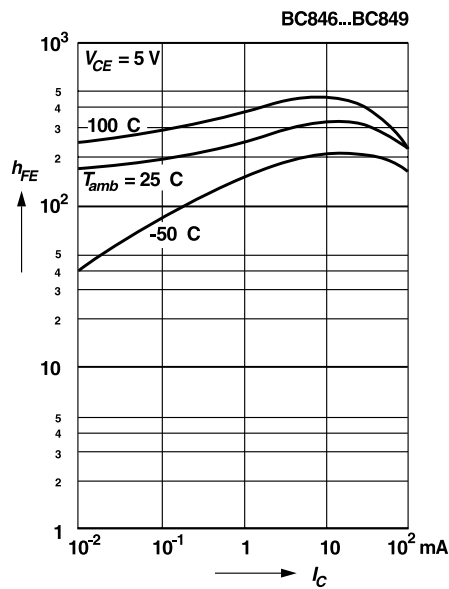


**Pulse thermal resistance
versus pulse duration (normalized)**

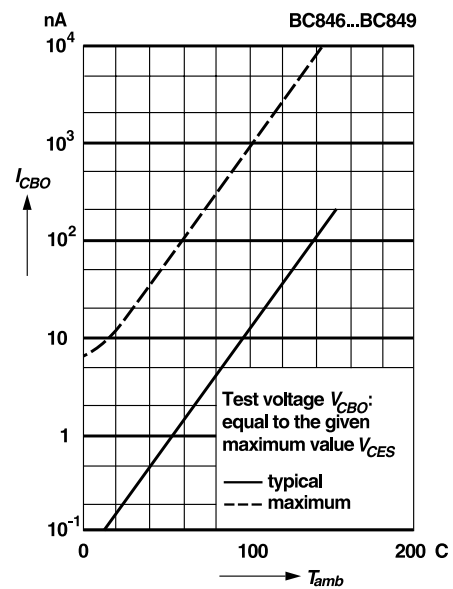
Device on fiberglass substrate, see layout



**DC current gain
versus collector current**

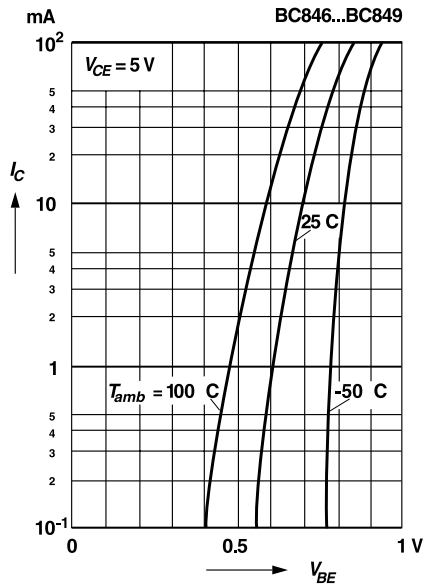


**Collector-Base cutoff current
versus ambient temperature**

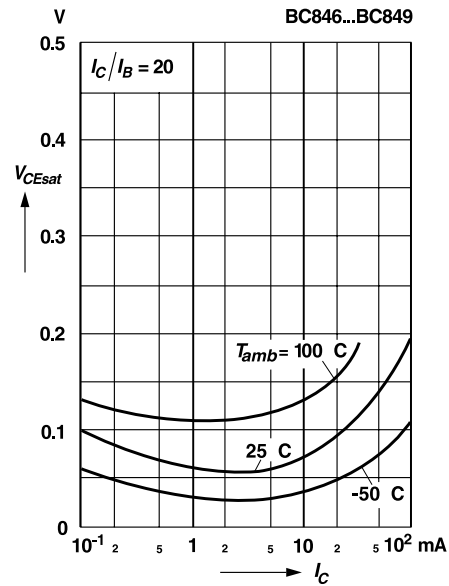


RATINGS AND CHARACTERISTIC CURVES BC846 THRU BC849

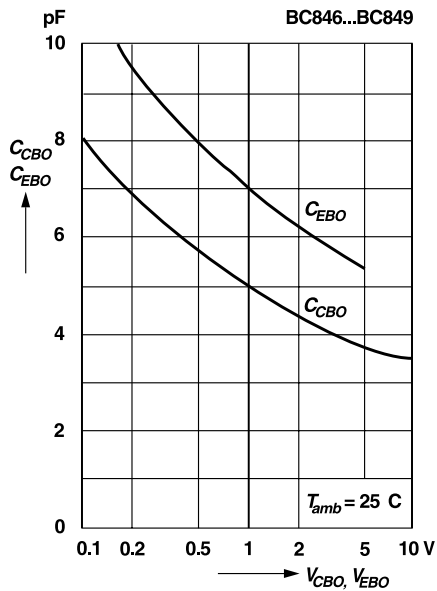
Collector current versus
base-emitter voltage



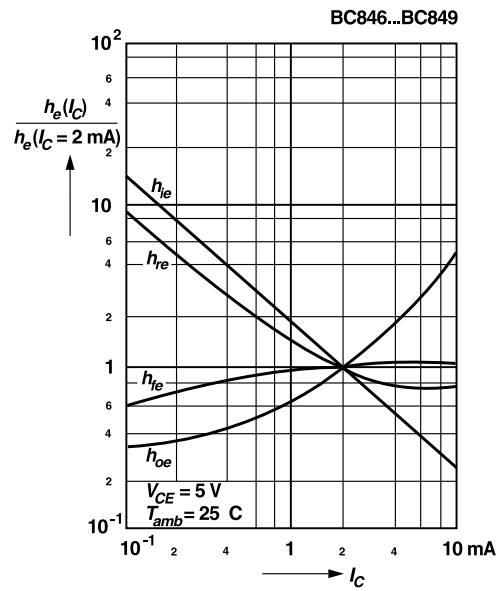
Collector saturation voltage
versus collector current



Collector base capacitance,
Emitter base capacitance
versus reverse bias voltage

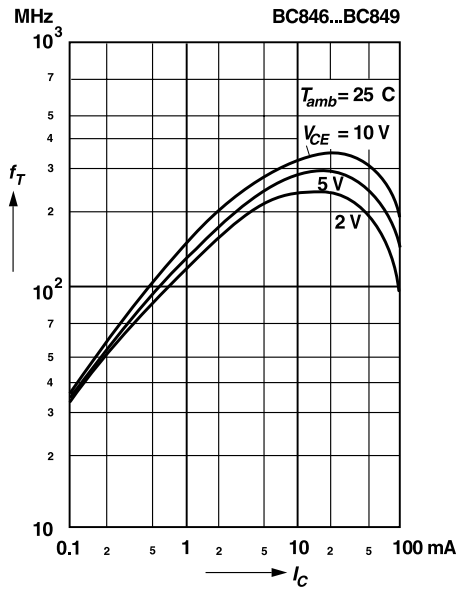


Relative h-parameters
versus collector current

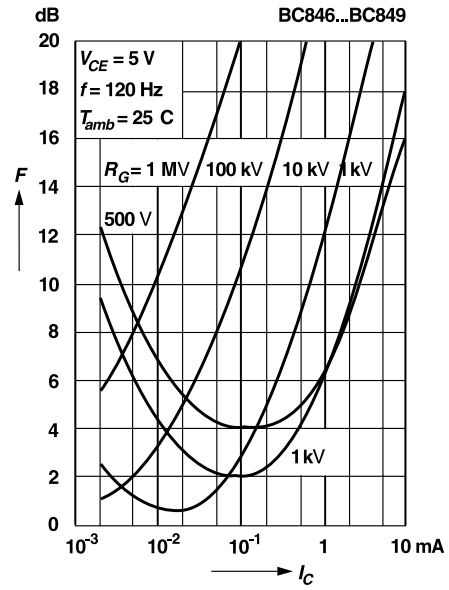


RATINGS AND CHARACTERISTIC CURVES BC846 THRU BC849

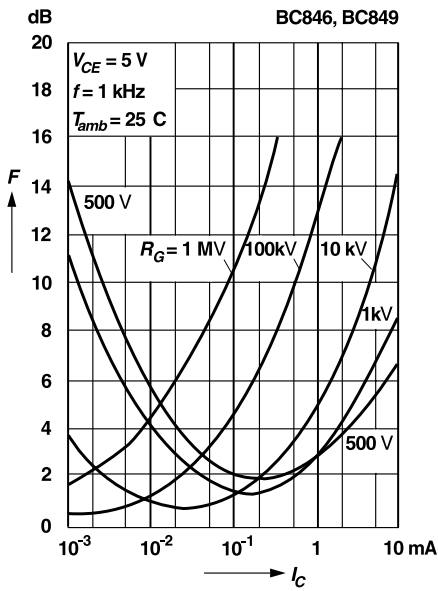
Gain-bandwidth product
versus collector current



Noise figure
versus collector current



Noise figure
versus collector current



Noise figure
versus collector emitter voltage

