

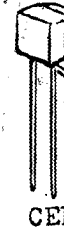
# BC 546 through BC 550

NPN SILICON AF SMALL SIGNAL TRANSISTORS

THE BC546 THROUGH BC550 ARE NPN SILICON PLANAR EPITAXIAL TRANSISTORS FOR USE IN AF SMALL SIGNAL AMPLIFIER STAGES AND DIRECT COUPLED CIRCUITS. THEY ARE COMPLEMENTARY TO BC556 THROUGH BC560.

THE BC549, BC550 ARE CHARACTERIZED BY LOW NOISE FIGURE.

CASE TO-92F



## ABSOLUTE MAXIMUM RATINGS

		BC546	BC547	BC548	BC549	BC550
Collector-Base Voltage	V <sub>CBO</sub>	80V	50V	30V	30V	50V
Collector-Emitter Voltage (V <sub>BE</sub> =0)	V <sub>CES</sub>	80V	50V	30V	30V	50V
Collector-Emitter Voltage (I <sub>B</sub> =0)	V <sub>CEO</sub>	65V	45V	30V	30V	45V
Emitter-Base Voltage	V <sub>EBO</sub>	6V	6V	5V	5V	5V
Collector Current	I <sub>C</sub>			100mA		
Collector Peak Current	I <sub>CM</sub>			200mA		
Total Power Dissipation (T <sub>A</sub> ≤ 25°C)	P <sub>tot</sub>			500mW		
				derate 4mW/°C above 25°C		
Operating Junction & Storage Temperature T <sub>j</sub> , T <sub>stg</sub>				-55 to 150°C		

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C unless otherwise noted)

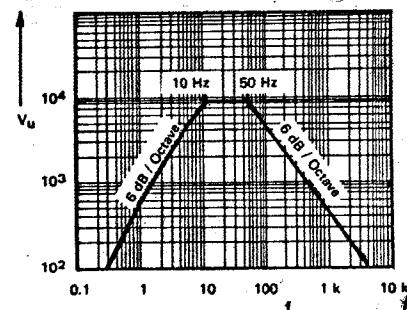
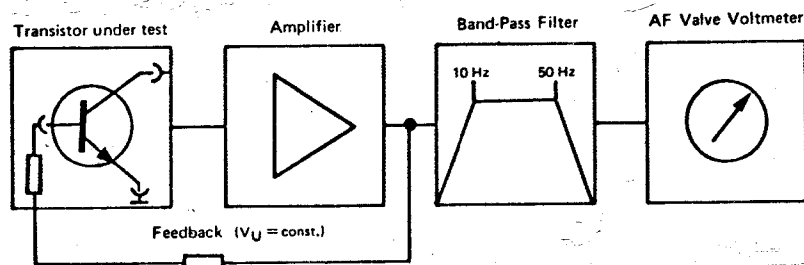
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITIONS
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>					I <sub>C</sub> =10μA I <sub>E</sub> =0
BC546		80			V	
BC547		50			V	
BC548		30			V	
BC549		30			V	
BC550		50			V	
Collector-Emitter Breakdown Voltage	BV <sub>CES</sub>					I <sub>C</sub> =10μA V <sub>BE</sub> =0
BC546		80			V	
BC547		50			V	
BC548		30			V	
BC549		30			V	
BC550		50			V	
Collector-Emitter Breakdown Voltage	LV <sub>CEO</sub>					I <sub>C</sub> =2mA (Pulsed) I <sub>B</sub> =0
BC546		65			V	
BC547		45			V	
BC548		30			V	
BC549		30			V	
BC550		45			V	

**MICRO ELECTRONICS LTD.**

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PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITIONS
Emitter-Base Breakdown Voltage BC546, 547	BV <sub>EB0</sub>	6			V	I <sub>E</sub> =1μA I <sub>C</sub> =0
BC548, 549, 550		5			V	
Collector Cutoff Current	I <sub>CBO</sub>		15		nA	V <sub>CB</sub> =30V I <sub>E</sub> =0
			5		μA	V <sub>CB</sub> =30V I <sub>E</sub> =0 T <sub>A</sub> =150°C
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	0.07	0.25		V	I <sub>C</sub> =10mA I <sub>B</sub> =0.5mA
		0.22	0.6		V	I <sub>C</sub> =100mA I <sub>B</sub> =5mA(Pulsed)
Collector-Emitter Knee Voltage	V <sub>CEK</sub>	0.3	0.6		V	I <sub>C</sub> =10mA, I <sub>B</sub> =value at which I <sub>C</sub> =11mA V <sub>CE</sub> =1V
Base-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	0.7			V	I <sub>C</sub> =10mA I <sub>B</sub> =0.5mA
		0.9			V	I <sub>C</sub> =100mA I <sub>B</sub> =5mA(Pulsed)
Base-Emitter Voltage	V <sub>BE</sub>	0.58	0.63	0.7	V	I <sub>C</sub> =2mA V <sub>CE</sub> =5V
		0.68	0.77		V	I <sub>C</sub> =10mA V <sub>CE</sub> =5V
Current Gain-Bandwidth Product	f <sub>T</sub>		250		MHz	I <sub>C</sub> =10mA V <sub>CE</sub> =5V
Collector-Base Capacitance	C <sub>ob</sub>	2.7	4.5		pF	V <sub>CB</sub> =10V I <sub>E</sub> =0 f=1MHz
Noise Figure BC546, 547, 548	NF	2	10		dB	I <sub>C</sub> =0.2mA V <sub>CE</sub> =5V R <sub>G</sub> =2KΩ f=1kHz Δf=200Hz
BC549, 550		1.4	4		dB	
Noise Figure BC549 only	NF	1.2	4		dB	I <sub>C</sub> =0.2mA V <sub>CE</sub> =5V R <sub>G</sub> =2KΩ f=30Hz-15kHz
BC550 only		1.2	3		dB	
Flicker Noise Voltage Referred to Base BC549, 550 only	$\overline{E_n}$		0.135		μV	I <sub>C</sub> =0.2mA V <sub>CE</sub> =5V R <sub>G</sub> =2KΩ f=10Hz-50Hz

### FLICKER NOISE MEASUREMENT



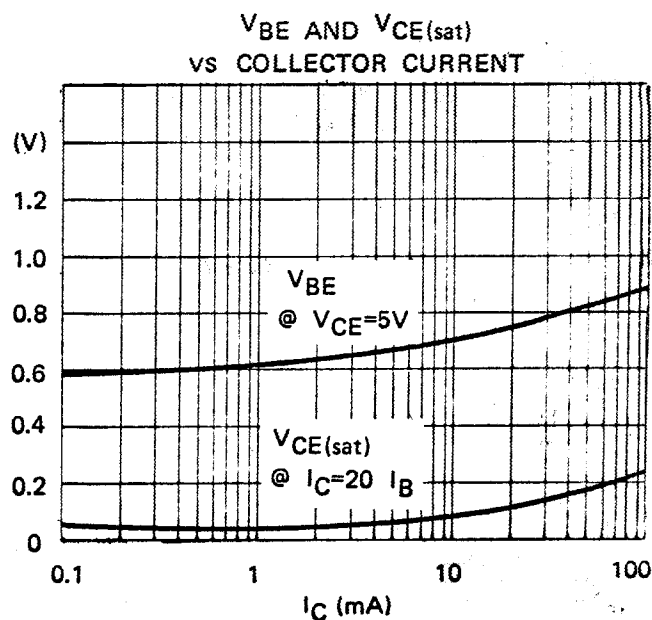
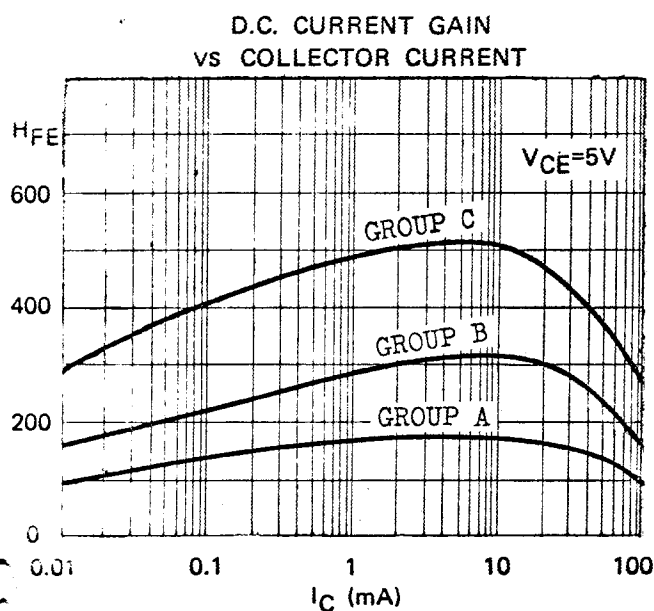
D.C. CURRENT GAIN ( $H_{FE}$ ) AT  $V_{CE}=5V$   $T_A=25^\circ C$

@ $I_C$	BC546, BC547 BC548	BC546, BC547 BC548 BC549, BC550	BC548 BC549, BC550
	HFE GROUP A MIN TYP MAX	HFE GROUP B MIN TYP MAX	HFE GROUP C MIN TYP MAX
0.01mA	90	170	290
2mA	110 170 220	200 300 450	420 520 800
100mA	100	160	270

h - PARAMETERS AT  $I_C=2mA$   $V_{CE}=5V$   $f=1kHz$   $T_A=25^\circ C$

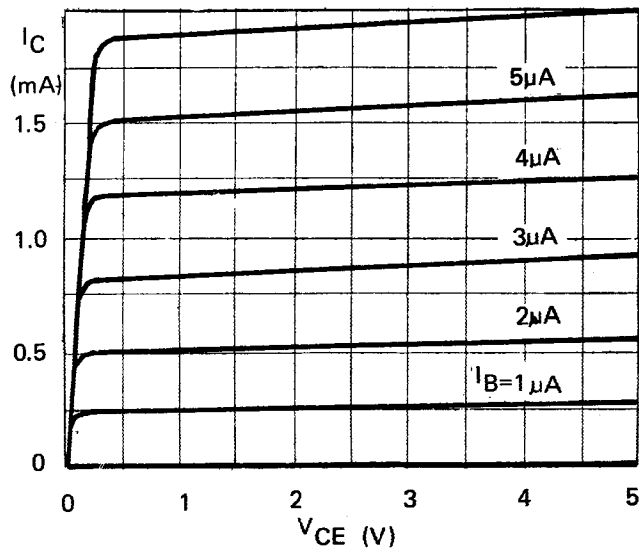
h - PARAMETER	SYMBOL	HFE GROUP A			HFE GROUP B			HFE GROUP C			UNIT
		MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	
Input Impedance	$h_{ie}$	1.6	2.7	4.5	3.2	4.5	8.5	6	8.7	15	$k\Omega$
Voltage Feedback Ratio	$h_{re}$		1.5			2			3		$\times 10^{-4}$
Small Signal Current Gain	$h_{fe}$	125	190	260	240	330	500	450	580	900	
Output Admittance	$h_{oe}$		18	30		30	60		60	110	$\mu S$

TYPICAL CHARACTERISTICS AT  $T_A=25^\circ C$  (Pulse Test)

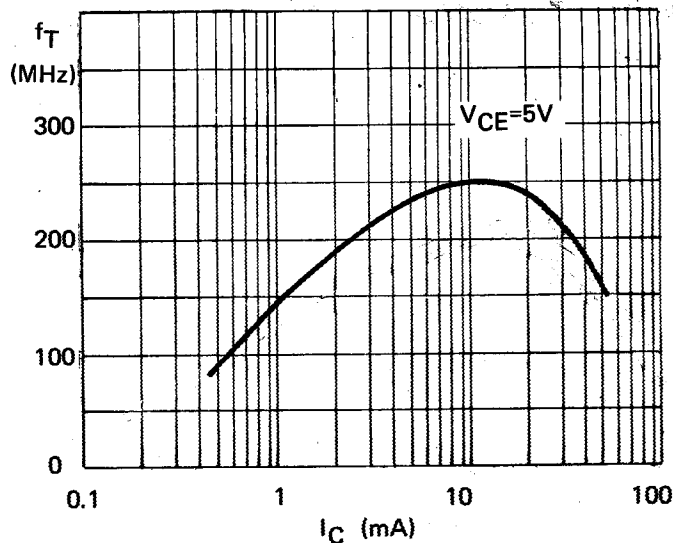


TYPICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$  UNLESS OTHERWISE SPECIFIED)

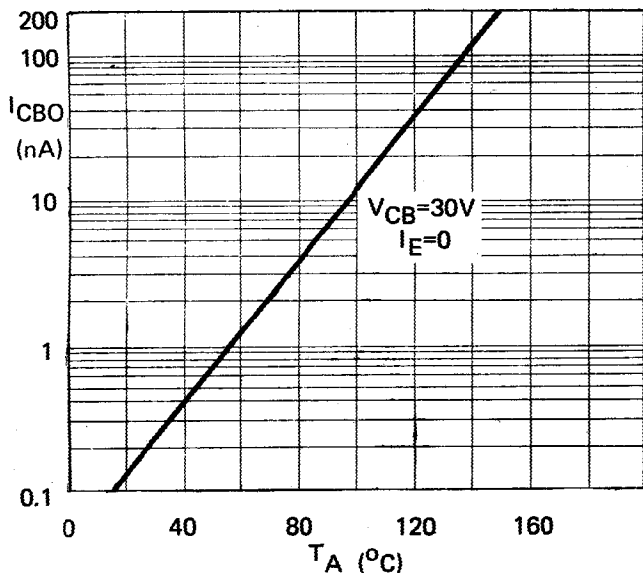
COMMON EMITTER  
OUTPUT CHARACTERISTICS



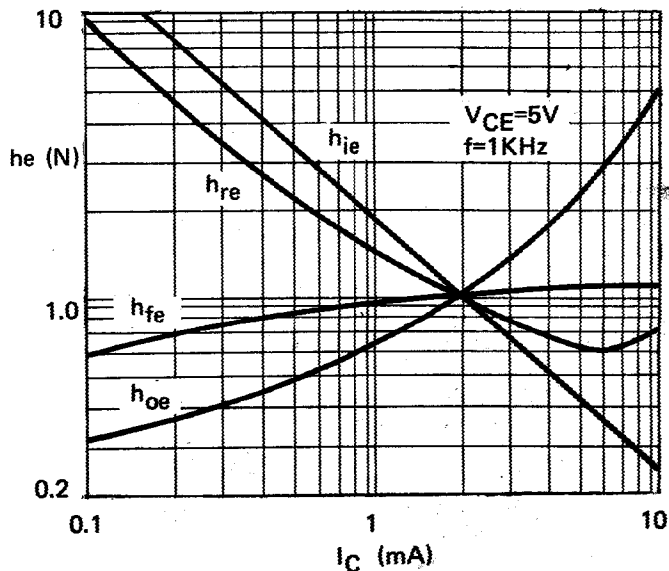
CURRENT GAIN - BANDWIDTH PRODUCT  
VS COLLECTOR CURRENT



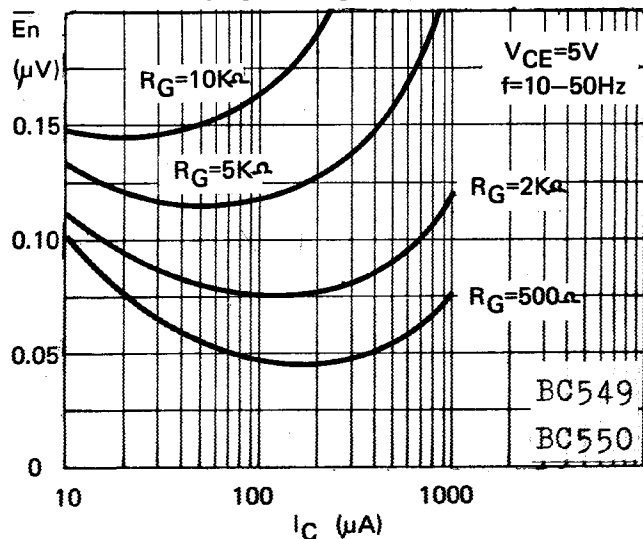
COLLECTOR CUTOFF CURRENT  
VS AMBIENT TEMPERATURE



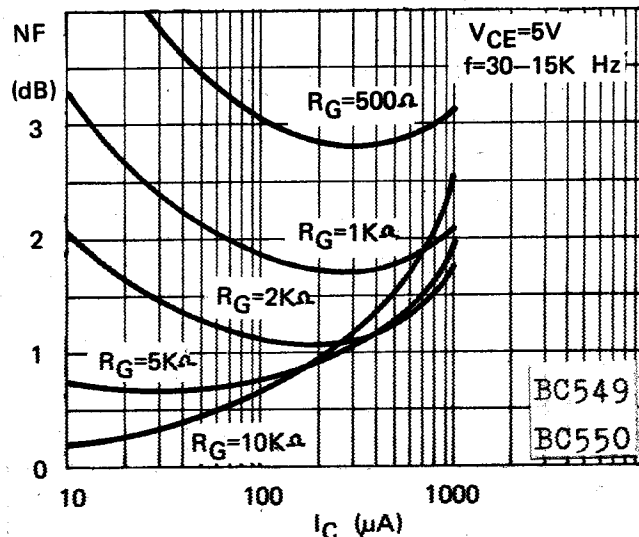
h-PARAMETERS (NORMALIZED)  
VS COLLECTOR CURRENT



EQUIVALENT NOISE VOLTAGE AT BASE  
VS COLLECTOR CURRENT



BROAD BAND NOISE FIGURE  
VS COLLECTOR CURRENT



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