

BC 556 through BC 560

PNP SILICON AF SMALL SIGNAL TRANSISTORS

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

THE BC559, BC560 ARE CHARACTERIZED BY LOW NOISE FIGURE.

CASE TO-92F



ABSOLUTE MAXIMUM RATINGS

		BC556	BC557	BC558	BC559	BC560
Collector-Base Voltage	-V _{CB0}	80V	50V	30V	30V	50V
Collector-Emitter Voltage (V _{BE} =0)	-V _{CES}	80V	50V	30V	30V	50V
Collector-Emitter Voltage (I _B =0)	-V _{CEO}	65V	45V	30V	30V	45V
Emitter-Base Voltage	-V _{EB0}			5V		
Collector Current	-I _C			100mA		
Collector Peak Current	-I _{CM}			200mA		
Total Power Dissipation (T _A ≤25°C)	P _{tot}			500mW		

derate 4mW/°C above 25°C

Operating Junction & Storage Temperature T_j, T_{stg} -55 to 150°C

ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

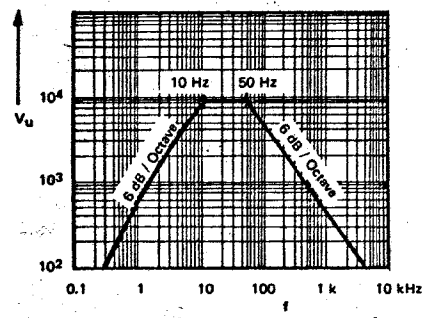
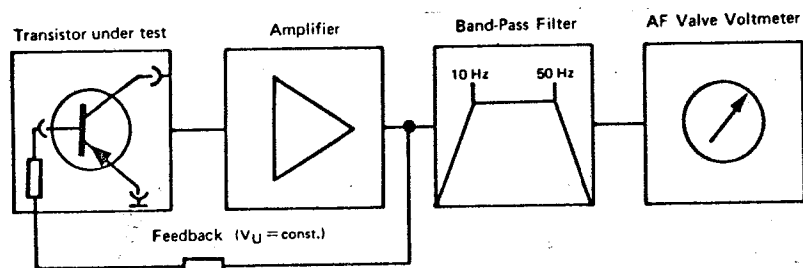
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITIONS
Collector-Base Breakdown Voltage	-BV _{CB0}					-I _C =10μA I _E =0
BC556		80			V	
BC557		50			V	
BC558		30			V	
BC559		30			V	
BC560		50			V	
Collector-Emitter Breakdown Voltage	-BV _{CES}					-I _C =10μA V _{BE} =0
BC556		80			V	
BC557		50			V	
BC558		30			V	
BC559		30			V	
BC560		50			V	
Collector-Emitter Breakdown Voltage	-LV _{CEO}					-I _C =2mA(Pulsed) I _B =0
BC556		65			V	
BC557		45			V	
BC558		30			V	
BC559		30			V	
BC560		45			V	

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PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	TEST CONDITIONS
Emitter-Base Breakdown Voltage	$-BV_{EBO}$	5			V	$-I_E=1\mu A$ $I_C=0$
Collector Cutoff Current	$-I_{CBO}$			15	nA	$-V_{CB}=30V$ $I_E=0$
				5	μA	$-V_{CB}=30V$ $I_E=0$ $T_A=150^\circ C$
Collector-Emitter Saturation Voltage	$-V_{CE(sat)}$		0.1	0.3	V	$-I_C=10mA$ $-I_B=0.5mA$
			0.25	0.65	V	$-I_C=100mA$ $-I_B=5mA$ (Pulsed)
Collector-Emitter Knee Voltage	$-V_{CEK}$		0.3	0.6	V	$-I_C=10mA$, I_B =value at which $-I_C=11mA$ $-V_{CE}=1V$
Base-Emitter Saturation Voltage	$-V_{BE(sat)}$		0.72		V	$-I_C=10mA$ $-I_B=0.5mA$
			0.92		V	$-I_C=100mA$ $-I_B=5mA$ (Pulsed)
Base-Emitter Voltage	$-V_{BE}$	0.6	0.65	0.75	V	$-I_C=2mA$ $-V_{CE}=5V$
			0.7	0.82	V	$-I_C=10mA$ $-V_{CE}=5V$
Current Gain-Bandwidth Product	f_T		180		MHz	$-I_C=10mA$ $-V_{CE}=5V$
Collector-Base Capacitance	C_{ob}		3.2		pF	$-V_{CB}=10V$ $I_E=0$ $f=1MHz$
Noise Figure BC556, 557, 558 BC559, 560	NF		2	10	dB	$-I_C=0.2mA$ $-V_{CE}=5V$ $R_G=2K\Omega$ $f=1kHz$ $\Delta f=200Hz$
			1.2	4	dB	
Noise Figure BC559 only BC560 only	NF		1.2	4	dB	$-I_C=0.2mA$ $-V_{CE}=5V$ $R_G=2K\Omega$ $f=30Hz-15KHz$
			1.2	2	dB	
Flicker Noise Voltage Referred to Base BC559, 560 only	$\overline{E_n}$			0.11	μV	$-I_C=0.2mA$ $-V_{CE}=5V$ $R_G=2K\Omega$ $f=10-50Hz$

FLICKER NOISE MEASUREMENT



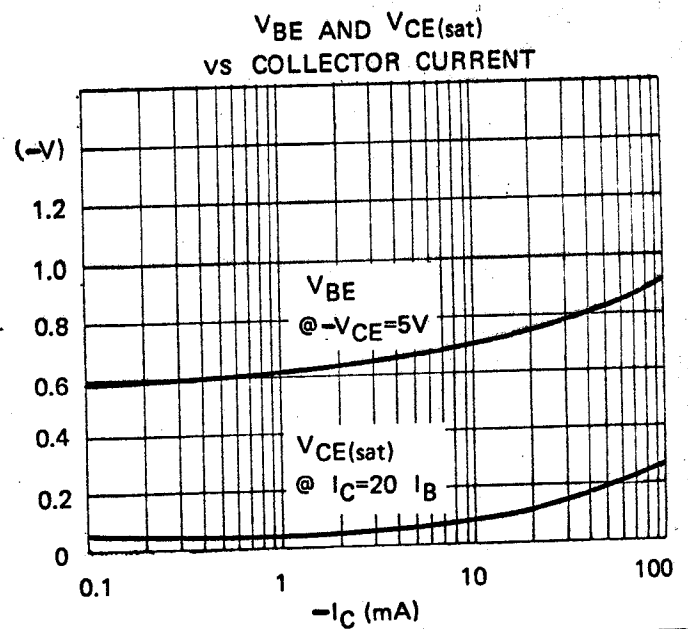
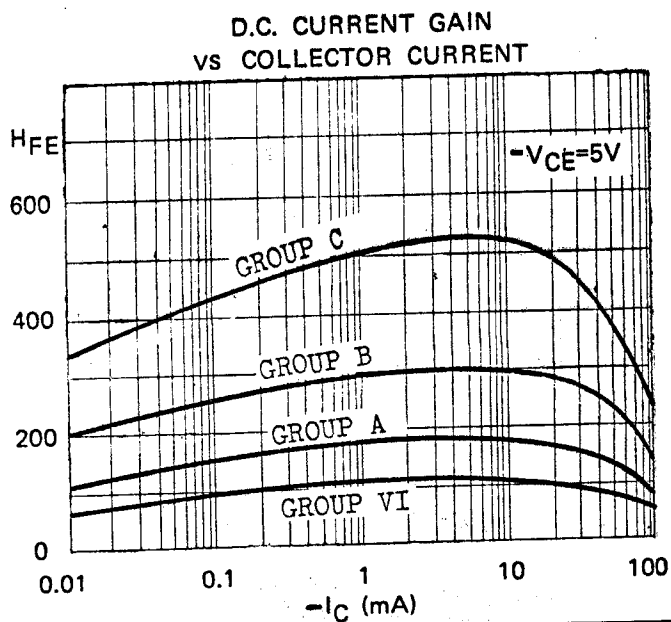
D.C. CURRENT GAIN (HFE) AT $-V_{CE}=5V$ $T_A=25^\circ C$

@ $-I_C$	BC556, BC557 BC558	BC556, BC557 BC558 BC559, BC560	BC556, BC557 BC558 BC559, BC560	BC558 BC559, BC560
	HFE GROUP VI	HFE GROUP A	HFE GROUP B	HFE GROUP C
	MIN TYP MIN	MIN TYP MAX	MIN TYP MAX	MIN TYP MAX
0.01mA	70	110	200	330
2mA	70 110 140	110 170 220	200 300 450	420 520 800
100mA	60	80	140	240

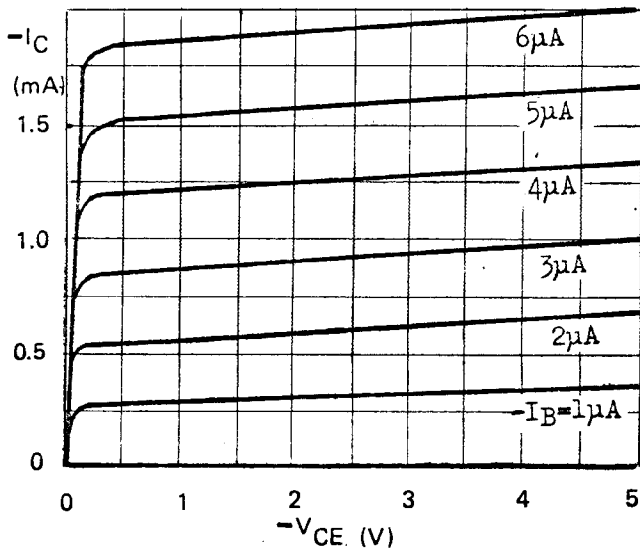
h - PARAMETERS AT $-I_C=2mA$ $-V_{CE}=5V$ $f=1KHz$ $T_A=25^\circ C$

h - PARAMETER	SYMBOL	HFE GROUP VI	HFE GROUP A	HFE GROUP B	HFE GROUP C	UNIT
		MIN TYP MAX	MIN TYP MAX	MIN TYP MAX	MIN TYP MAX	
Input Impedance	h_{ie}	1.4	2.7	4.5	8.7	$K\Omega$
Voltage Feedback Ratio	h_{re}	2.5	3	3.5	4	$\times 10^{-4}$
Small Signal Current Gain	h_{fe}	75 110 150	125 190 260	240 330 500	450 580 900	
Output Admittance	h_{oe}	20	25	35	60	μS

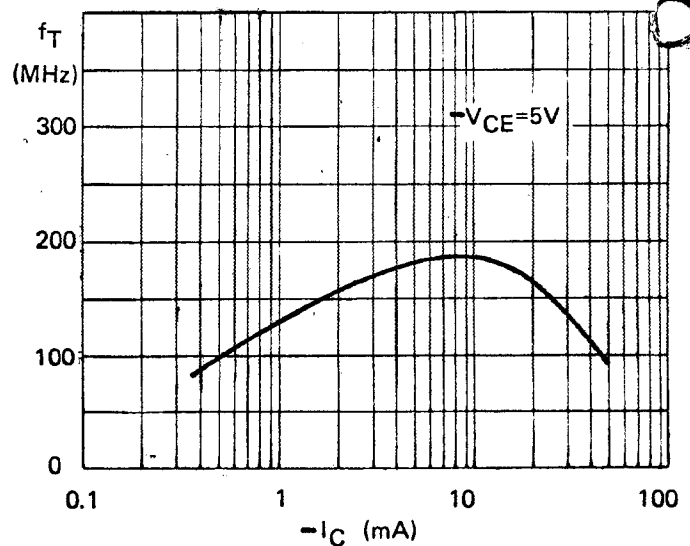
TYPICAL CHARACTERISTICS AT $T_A=25^\circ C$ (Pulse Test)



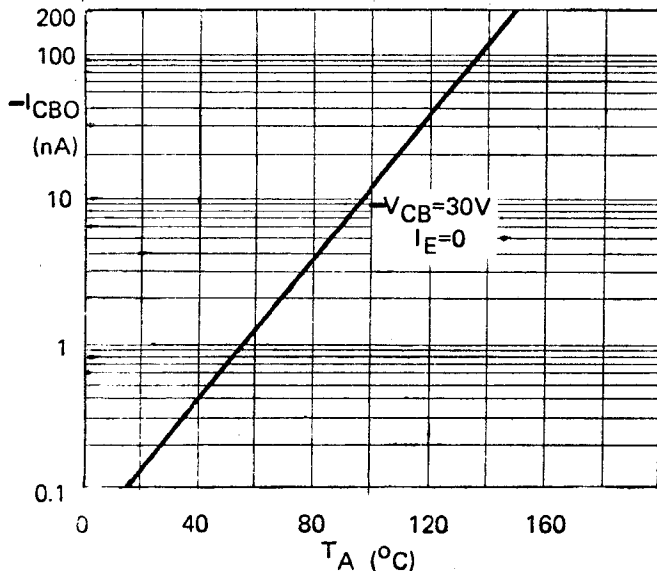
COMMON EMITTER
OUTPUT CHARACTERISTICS



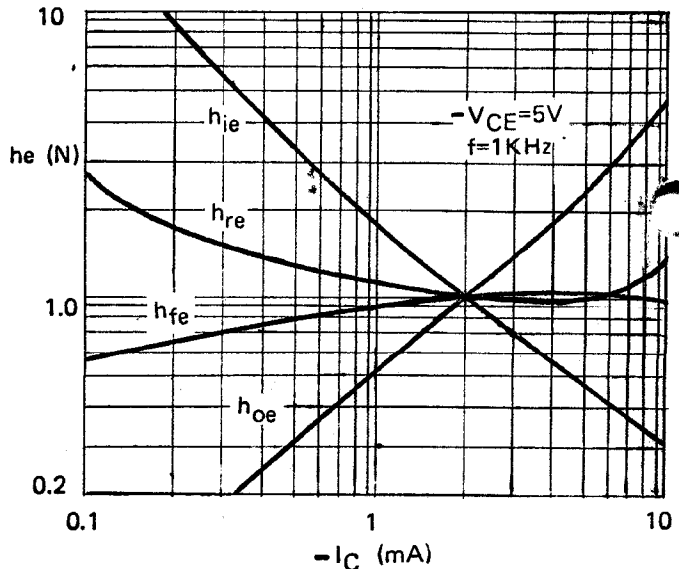
CURRENT GAIN - BANDWIDTH PRODUCT
VS COLLECTOR CURRENT



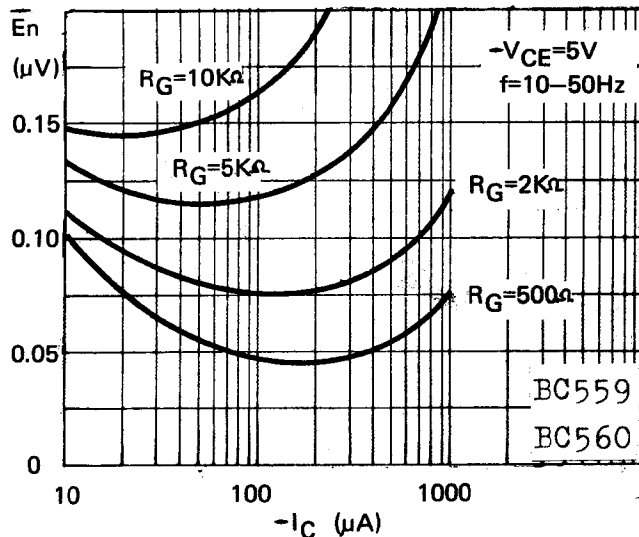
COLLECTOR CUTOFF CURRENT
VS AMBIENT TEMPERATURE



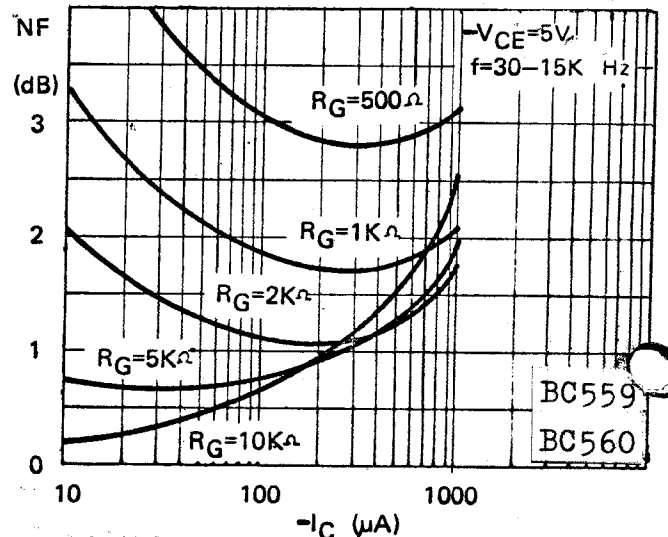
h-PARAMETERS (NORMALIZED)
VS COLLECTOR CURRENT



EQUIVALENT NOISE VOLTAGE AT BASE
VS COLLECTOR CURRENT



BROAD BAND NOISE FIGURE
VS COLLECTOR CURRENT



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