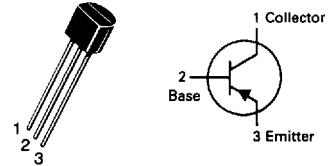


BC307,B,C BC308C BC309B

CASE 29-04, STYLE 17
TO-92 (TO-226AA)



AMPLIFIER TRANSISTORS

PNP SILICON

MAXIMUM RATINGS

Rating	Symbol	BC307	BC308C	BC309	Unit
Collector-Emitter Voltage	V_{CEO}	-45	-25	-25	Vdc
Collector-Base Voltage	V_{CBO}	-50	-30	-30	Vdc
Emitter-Base Voltage	V_{EBO}	-5.0			Vdc
Collector Current — Continuous	I_C	-100			mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	350 2.8			mW mW/°C
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	1.0 8.0			Watt mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150			°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	357	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	125	°C/W

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Type	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage ($I_C = -2.0$ mAdc, $I_B = 0$)	BC307 BC308C BC309B	$V_{(BR)CEO}$	-45 -25 -25	— — —	— — —	Vdc
Emitter-Base Breakdown Voltage ($I_E = -100$ μ Adc, $I_C = 0$)	BC307 BC308C BC309B	$V_{(BR)EBO}$	-5 -5 -5	— — —	— — —	Vdc Vdc
Collector-Emitter Leakage Current ($V_{CES} = -50$ V, $V_{BE} = 0$) ($V_{CES} = -30$ V, $V_{BE} = 0$) ($V_{CES} = -50$ V, $V_{BE} = 0$) $T_A = 125^\circ\text{C}$ ($V_{CES} = -30$ V, $V_{BE} = 0$) $T_A = 125^\circ\text{C}$	BC307 BC308C BC309B BC307 BC308C BC309B	I_{CES}	— — — — — —	-0.2 -0.2 -0.2 -0.2 -0.2 -0.2	-15 -15 -15 -4.0 -4.0 -4.0	nAdc μ A

ON CHARACTERISTICS

DC Current Gain ($I_C = -10$ μ Adc, $V_{CE} = -5.0$ Vdc) ($I_C = -2.0$ mAdc, $V_{CE} = -5.0$ Vdc) ($I_C = -100$ mAdc, $V_{CE} = -5.0$ Vdc)	BC307B/309B BC307C/308C BC307 BC308C BC307B/309B BC307C/308C BC307B/309B BC307C/308C	h_{FE}	— — 120 120 200 420 — —	150 270 — — 290 500 180 300	— — 800 800 460 800 — —	Vdc
Collector-Emitter Saturation Voltage ($I_C = -10$ mAdc, $I_B = -0.5$ mAdc) ($I_C = -10$ mAdc, $I_B = \text{see Note 1}$) ($I_C = -100$ mAdc, $I_B = -5.0$ mAdc)		$V_{CE(sat)}$	— — —	-0.10 -0.30 -0.25	-0.30 -0.60 —	Vdc
Base-Emitter Saturation Voltage ($I_C = -10$ mAdc, $I_B = -0.5$ mAdc) ($I_C = -100$ mAdc, $I_B = -5.0$ mAdc)		$V_{BE(sat)}$	— —	-0.70 -1.00	— —	Vdc
Base-Emitter On Voltage ($I_C = -2.0$ mAdc, $V_{CE} = -5.0$ Vdc)		$V_{BE(on)}$	-0.55	-0.62	-0.70	Vdc

Note 1: $I_C = -10$ mAdc on the constant base current characteristic, which yields the point $I_C = -11$ mAdc, $V_{CE} = -1.0$ V

ELECTRICAL CHARACTERISTICS (continued) ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Type	Symbol	Min.	Typ.	Max.	Unit
DYNAMIC CHARACTERISTICS						
Current-Gain — Bandwidth Product ($I_C = -10\text{ mAdc}$, $V_{CE} = -5.0\text{ Vdc}$, $f = 100\text{ MHz}$)	BC307	f_T	—	280	—	MHz
	BC308C		—	320	—	
	BC309B		—	360	—	
Common-Base Capacitance ($V_{CB} = -10\text{ Vdc}$, $I_C = 0$, $f = 1.0\text{ MHz}$)		C_{cbo}	—	—	6.0	pF
Noise Figure ($I_C = -0.2\text{ mAdc}$, $V_{CE} = -5.0\text{ Vdc}$, $R_S = 2.0\text{ k ohms}$, $f = 1.0\text{ kHz}$) ($I_C = -0.2\text{ mAdc}$, $V_{CE} = -5.0\text{ Vdc}$, $R_S = 2.0\text{ k ohms}$, $f = 1\text{ kHz}$, $f = 200\text{ Hz}$)	BC309	NF	—	2	4	dB
	BC307		—	2	10	
	BC308C		—	2	10	
	BC309B		—	2	4	

FIGURE 1 — NORMALIZED DC CURRENT GAIN

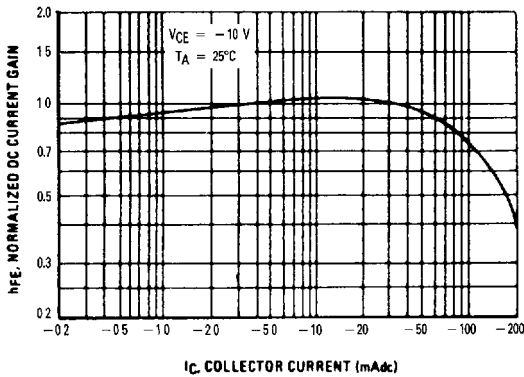


FIGURE 2 — "SATURATION" AND "ON" VOLTAGES

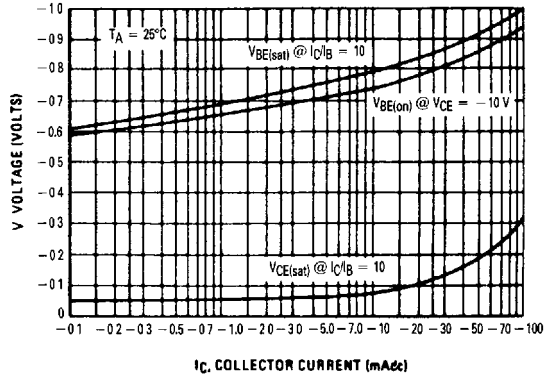


FIGURE 3 — CURRENT-GAIN-BANDWIDTH PRODUCT

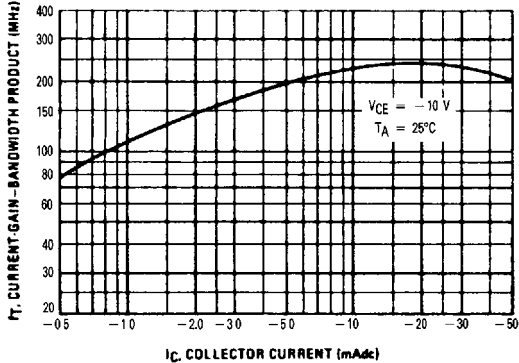


FIGURE 4 — CAPACITANCES

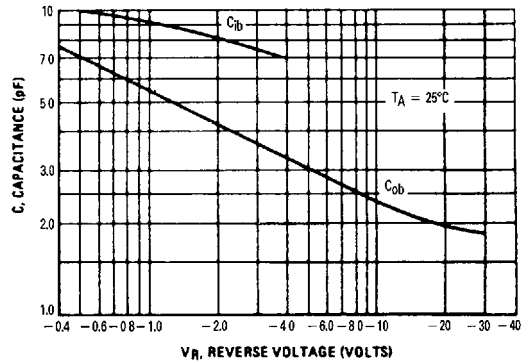


FIGURE 5 – OUTPUT ADMITTANCE

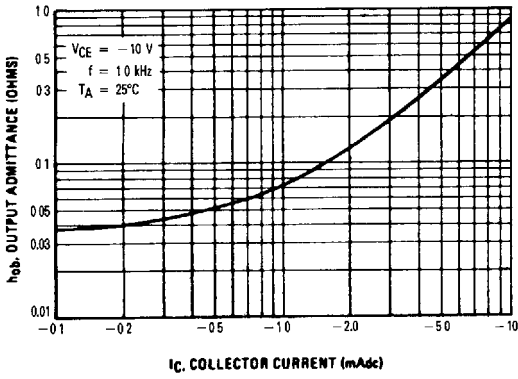


FIGURE 6 – BASE SPREADING RESISTANCE

