BC317, A, B
BC318, A, B, C
BC319, A, B

CASE 29-02, STYLE 1
TO-92 (TO-226AA)

AMPLIFIER TRANSISTORS

NPN SILICON

Refer to BC549 for graphs.

MAXIMUM RATINGS

Rating	Symbol	BC 317	BC 318	BC 319	Unit
Collector-Emitter Voltage	V_{CEO}	45	30	20	Vdc
Collector-Base Voltage	V_{CBO}	50	40	30	Vdc
Emitter-Base Voltage	V_{EBO}	6.0	5.0	5.0	Vdc
Collector Current − Continuous	I_C	150			mAdc
Total Device Dissipation @ $T_A = 25°C$ Derate above 25°C	P_D	350 2.8			mW mW/°C
Total Device Dissipation @ $T_C = 25°C$ 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 Case	$R_{\theta JC}$	125	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JC}$	357	°C/W

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

Characteristic	Type	Symbol	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Collector-Emitter Breakdown Voltage $I_C = 1$ mA, $I_B = 0$	BC317 BC318 BC319	$V_{(BR)CEO}$	45 30 20			Vdc
Collector-Emitter Breakdown Voltage $I_C = 100$ μA, $V_{BE} = 0$	BC317 BC318 BC319	$V_{(BR)CES}$	50 40 30			Vdc
Collector-Base Breakdown Voltage $I_C = 100$ μA, $I_E = 0$	BC317 BC318 BC319	$V_{(BR)CBO}$	50 40 30			Vdc
Emitter-Base Breakdown Voltage $I_E = 100$ μA, $I_C = 0$	BC317 BC318 BC319	$V_{(BR)EBO}$	6 5 5			Vdc
Collector Cutoff Current $V_{CB} = 20$ V, $I_E = 0$		I_{CBO}			30	nAdc
ON CHARACTERISTICS						
Base-Emitter on Voltage $I_C = 2$ mA, $V_{CE} = 5$ V $I_C = 10$ mA, $V_{CE} = 5$ V		$V_{BE(on)}$	0.57	0.63	0.72 0.77	Vdc
Collector-Emitter Saturation Voltage $I_C = 100$ mA, $I_B = 5$ mA		$V_{CE(sat)}$		0.14	0.50	Vdc
Base-Emitter Saturation Voltage $I_C = 10$ mA, $I_B = 0.5$ mA $I_C = 100$ mA, $I_B = 5$ mA		$V_{BE(sat)}$		0.70 0.85		Vdc
DC Current Gain $I_C = 10$ μA, $V_{CE} = 5$ V	BC317A BC318A BC317B BC318B BC319B BC318C BC319C	h_{FE}	— — 40 40 40 100 100	90 90 150 150 150 270 270	— — — — — — —	
$I_C = 2$ mA, $V_{CE} = 5$ V	BC317A BC318A BC317B BC318B BC319B BC318C BC319C		110 110 200 200 200 420 420	180 180 290 290 290 520 520	220 220 450 450 450 800 800	

BC317,A,B, BC318,A,B,C, BC319,A,B,

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

Characteristic	Type	Symbol	Min.	Typ.	Max.	Unit
SMALL SIGNAL CHARACTERISTICS						
Spot Noise Figure I_C = 200 µA, V_{CE} = 5 V R_S = 2 KΩ, f = 1 KHz, B.W. = 200 Hz	BC317 BC318 BC319	NF		2 2 1.5	6 6 4	dB
Wide Band Noise Figure I_C = 200 µA, V_{CE} = 5 V R_S = 2 KΩ, B.W. = 30 Hz to 15 KHz	BC319	NF		1.8	4	dB
Output Capacitance V_{CB} = 10 V, I_E = 0 f = 1 MHz		C_{ob}		2.5	4	pF
Input Capacitance V_{EB} = 0.5 V, I_C = 0 f = 1 MHz		C_{ib}		11.5		pF
Current-Gain-Bandwidth Product I_C = 10 mA, V_{CE} = 5 V		f_T		280		MHz
Voltage Feedback Ratio I_C = 2 mA, V_{CE} = 5 V f = 1 KHz		h_{re}		2.0		$X10^{-4}$
Input Impedance I_C = 2 mA, V_{CE} = 5 V f = 1 KHz		h_{ie}		5.0		Kohms
Output Admittance I_C = 2 mA, V_{CE} = 5 V f = 1 KHz		h_{oe}		20		µmhos
Small Signal Current Gain I_C = 2 mA, V_{CE} = 5 V f = 1 KHz	BC317A BC318A BC317B BC318B BC319B BC318C BC319C	h_{fe}	125 125 240 240 240 450 450	220 220 330 330 330 600 600	260 260 500 500 500 900 900	

2