2N3307
2N3308

CASE 20, STYLE 10
TO-72 (TO-206AF)

GENERAL PURPOSE TRANSISTOR

PNP SILICON

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MAXIMUM RATINGS

Rating	Symbol	2N3307	2N3308	Unit
Collector-Emitter Voltage	V_{CEO}	35	25	Vdc
Collector-Emitter Voltage	V_{CES}	40	30	Vdc
Collector-Base Voltage	V_{CBO}	40	30	Vdc
Emitter-Base Voltage	V_{EBO}	3.0		Vdc
Collector Current — Continuous	I_C	50		mAdc
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	200 1.14		mW mW/°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	300 1.71		mW mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−65 to +200		°C

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

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (I_C = 2.0 mAdc, I_B = 0)	2N3307 2N3308	$V_{(BR)CEO}$	 35 25	 — —	Vdc
Collector-Emitter Breakdown Voltage (I_C = 10 μAdc, V_{BE} = 0)	2N3307 2N3308	$V_{(BR)CES}$	 40 30	 — —	Vdc
Collector-Base Breakdown Voltage(1) (I_C = 10 μAdc, I_E = 0)	2N3307 2N3308	$V_{(BR)CBO}$	 40 30	 — —	Vdc
Emitter-Base Breakdown Voltage (I_E = 10 μAdc, I_C = 0)		$V_{(BR)EBO}$	3.0	—	Vdc
Collector Cutoff Current (V_{CB} = 15 Vdc) (V_{CB} = 15 Vdc, T = 150°C)	 2N3307	I_{CBO}	 — —	 0.010 3.0	μAdc
ON CHARACTERISTICS					
DC Current Gain (V_{CE} = 10 Vdc, I_C = 2.0 mAdc)	2N3307 2N3308	h_{FE}	 40 25	 250 250	—
Collector-Emitter Saturation Voltage (I_C = 3.0 mAdc, I_B = 0.6 mAdc)		$V_{CE(sat)}$	—	0.4	Vdc
Base-Emitter Saturation Voltage (I_C = 3.0 mAdc, I_B = 0.6 mAdc		$V_{BE(sat)}$	—	1.0	Vdc
SMALL-SIGNAL CHARACTERISTICS					
Current-Gain — Bandwidth Product (V_{CE} = 10 Vdc, I_C = 2.0 mAdc, f = 100 MHz		f_T	300	1200	MHz
Maximum Frequency of Operation (V_{CE} = 10 Vdc, I_C = 2.0 mAdc)		f_{max}	Typical 2000		MHz
Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 0.1 MHz	2N3307 2N3308	C_{obo}	 — —	 1.3 1.6	pF
Small-Signal Current Gain (V_{CE} = 10 Vdc, I_C = 2.0 mAdc, f = 1 kHz)	2N3307 2N3308	h_{fe}	 40 25	 250 250	—
Collector Base Time Constant (V_{CB} = 10 Vdc, I_C = 2.0 mAdc, f = 31.8 MHz)	2N3307 2N3308	$rb'C_c$	 2.0 2.0	 15 20	ps

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

Characteristic		Symbol	Min	Max	Unit
Noise Figure (V_{CE} = 10 Vdc, I_C = 2.0 mAdc, f = 200 MHz)	2N3307	NF	—	4.5	dB
	2N3308		—	6.0	
SWITCHING CHARACTERISTICS					
Power Gain(2) (V_{CE} = 10 Vdc, I_C = 2.0 mAdc, f = 200 MHz)		G_e	17	—	dB
Power Gain (AGC)(2) (V_{CE} = 5.0 Vdc, I_C = 20 mAdc, f = 200 MHz)	2N3307	G_e	—	0	dB
	2N3308		—	—	

(1) C_{obo} is measured in guarded circuit such that the can capacitance is not included.
(2) AGC is obtained by increasing I_C. The circuit remains adjusted for V_{CE} = −10 Vdc, I_C = −2 mAdc operation.

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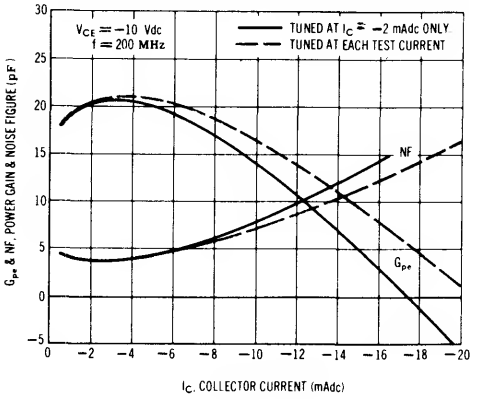
COMMON EMITTER AVERAGE SMALL POWER GAIN & NOISE FIGURE versus COLLECTOR CURRENT



NOISE FIGURE versus FREQUENCY