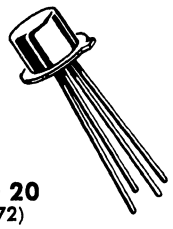
2N3287 thru 2N3290 (SILICON)



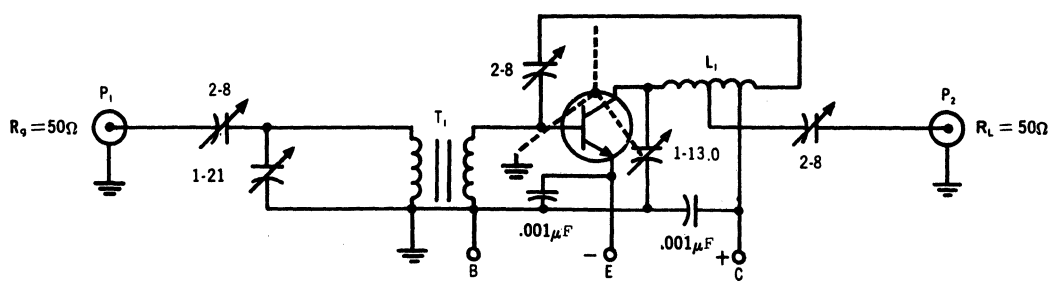
CASE 20
(TO-72)

NPN silicon annular transistors for high-gain, low-noise amplifier, oscillator, mixer and frequency multiplier applications.

MAXIMUM RATINGS

Rating	Symbol	2N3287 2N3288	2N3289 2N3290	Unit
Collector - Base Voltage	V_{CB}	40	30	Volts
Collector - Emitter Voltage	V_{CES}	40	30	Volts
Collector - Emitter Voltage	V_{CEO}	20	15	Volts
Emitter - Base Voltage	V_{EB}	3.0	3.0	Volts
Collector Current	I_C	50	50	mA
Power Dissipation at 25°C Case Above 25°C derate 1.71 mW/°C	P_D	300	300	mW
Power Dissipation at 25° C amb. Above 25°C derate 1.14 mW/°C	P_D	200	200	mW
Junction Temperature	T_J,	+200	+200	°C
Storage Temperature Range	T_{stg}	-65 to +200	-65 to +200	°C

200 MHz TEST CIRCUIT: POWER GAIN, NOISE FIGURE, & AGC



L_1-6 turns of #16 tinned wire; 3/8" ID; Air wound; winding length 3/4"; V_{CC} feeds tap 4 3/4 turns from collector end; output tap 3 1/2 turns from collector end.

T_1-3 turns primary and secondary Bifilar wound (close wound) on 1/4" ceramic form (cambion type) with brass slug. #22 enameled wire.

P_1-General Radio 874 G6 Pad (6dB)
P_2-General Radio 874 G6 Pad (6dB)

2N3287 thru 2N3290 (Continued)

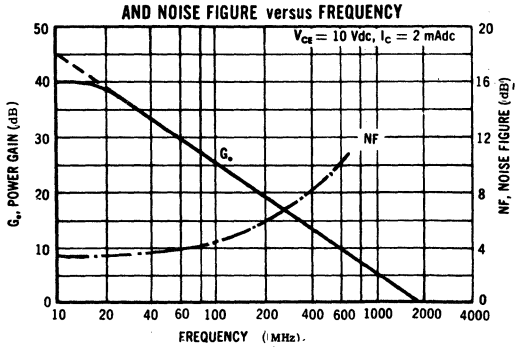
ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	BV_{CBO}	I_C = 10 μAdc, I_E = 0				Vdc
		2N3287, 2N3288	40	—	—	
		2N3289, 2N3290	30	—	—	
Collector-Emitter Breakdown Voltage	BV_{CES}	I_C = 10 μAdc, V_{BE} = 0				Vdc
		2N3287, 2N3288	40	—	—	
		2N3289, 2N3290	30	—	—	
Collector-Emitter Breakdown Voltage	BVCEO	I_C = 2.0 mAdc, I_B = 0				Vdc
		2N3287, 2N3288	20	—	—	
		2N3289, 2N3290	15	—	—	
Emitter-Base Breakdown Voltage	BV_{EBO}	I_E = 10 μAdc, I_C = 0	3.0	—	—	Vdc
Collector Cutoff Current	I_{CBO}	V_{CB} = 15 Vdc All Types	—	—	.010	μAdc
		V_{CB} = 15 Vdc, T_A = 150°C 2N3287, 2N3288	—	—	3.0	
DC Forward Current Transfer Ratio	h_{FE}	V_{CE} = 10 Vdc, I_C = 2 mAdc				—
		2N3287, 2N3288	15	—	100	
		2N3289, 2N3290	10	—	150	
Collector-Emitter Saturation Voltage	V_{CE} (sat)	I_C = 5 mAdc, I_B = 0.5 mAdc				Vdc
		2N3287, 2N3288	—	—	0.3	
		2N3289, 2N3290	—	—	0.4	
Base-Emitter Saturation Voltage	V_{BE} (sat)	I_C = 5 mAdc, I_B = 0.5 mAdc				Vdc
		2N3287, 2N3288	—	—	0.9	
		2N3288, 2N3290	—	—	1.0	
AC Current Gain	h_{fe}	V_{CE} = 10 Vdc, I_C = 2 mAdc, f = 1 kHz				—
		2N3287, 2N3288	15	—	150	
		2N3289, 2N3290	10	—	200	
Output Capacitance	C_{ob}	V_{CB} = 10 Vdc, I_E = 0, f = 0.1 MHz(Note 1)				pF
		2N3287	—	0.9	1.1	
		2N3288 thru 2N3290	—	1.2	1.5	
Collector-Base Time Constant	$r_b'C_c$	V_{CB} = 10 Vdc, I_C = 2 mAdc, f = 31.8 MHz				ps
		2N3287, 2N3288	3.0	8.0	15	
		2N3289, 2N3290	3.0	8.0	20	
Current Gain - Bandwidth Product	f_T	V_{CE} = 10 Vdc, I_C = 2 mAdc				MHz
		2N3287, 2N3288	350	600	1200	
		2N3289, 2N3290	300	500	1200	
Maximum Frequency of Oscillation	f_{max}	V_{CE} = 10 Vdc, I_C = 2 mAdc	—	2000	—	MHz
Power Gain	G_e	V_{CE} = 10 Vdc, I_C = 2 mAdc, f = 200 MHz				dB
		All Types	17	—	24	
Noise Figure	NF	V_{CE} = 10 Vdc, I_C = 2 mAdc, f = 200 MHz				dB
		2N3287, 2N3288	—	4.9	6.0	
		2N3289, 2N3290	—	6.0	7.0	
Power Gain (AGC)	G_e	V_{CE} = 5.0 Vdc, I_C = 20 mAdc, f = 200MHz(Note 2)				dB
		2N3287	—	—	0	
		2N3289	—	—	+5	
		2N3288, 2N3290	—	0	—	

Note 1. C_{ob} is measured in guarded circuit such that the can capacitance is not included.

Note 2. AGC is obtained by increasing I_C. The circuit remains adjusted for V_{CE} = 10 Vdc, I_C = 2 mAdc operation.

NEUTRALIZED POWER GAIN AND NOISE FIGURE versus FREQUENCY



POWER GAIN AND NOISE FIGURE versus COLLECTOR CURRENT