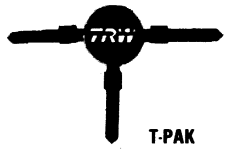
LT 3203*

UHF Linear Transistor

- High Output
- Low Cost
- Gold Reliability
- 2.5 GHz F_T



The LT3203 is a NPN transistor, gold metalized for reliability, using diffused ballast resistors for super linearity at currents compatible with the power dissipation capability of a T-Pack. LT3203 is the ideal candidate for up to **0.8 V MATV** amplifiers from **40** to **860 MHz**. The LT3203 has applications in driver stages of 12 volts VHF/UHF transmitters and broadband instrumentation equipment.

F

Electrical Characteristics

Symbol	Description	Conditions	Min.	Typ.	Max.	Units
BV_{EBO}	Emitter-Base Breakdown-Voltage	I_E = 0.1mA	3.5			V
BV_{CEO}	Collector-Emitter Breakdown-Voltage	I_C = 5.0mA	20			V
BV_{CBO}	Collector-Base Breakdown-Voltage	I_C = 1.0mA	40			V
I_{CBO}	Collector-Base Leakage	V_{CB} = 10V		50		μA
$V_{CE\ (SAT)}$	Collector-Emitter Saturation Voltage	I_C = 50mA I_C/I_B = 10		300		mV
h_{FE}	DC Current Gain	V_{CE} = 5V I_C = 50mA	70	100	300	
C_{CB}	Collector-Base Capacitance	V_{CB} = 8V f_o = 1.0 MHz		1.2		pF
NF_{min}	Minimum Noise Figure	V_{CE} = 8V I_C = 40mA f = 300 MHz		2.5		dB
G_{Umax}	Maximum Unilateral Gain	V_{CE} = 14V I_C = 40mA f = 500 MHz		15		dB
$\|S21\|^2_E$	Common Emitter Insertion Gain	V_{CE} = 14V I_C = 40mA f = 500 MHz		13		dB
F_T	Gain Bandwidth Product	V_{CE} = 14V I_C = 40mA		3.0		GHz
P_{out}	Power out @ 1dB Compression	V_{CE} = 14V I_C = 40mA		23		dBm
ITO	Third Order Intercept	V_{CE} = 14V I_{CE} = 40mA		45		dBm

Absolute Maximum Ratings @ 25°C Case

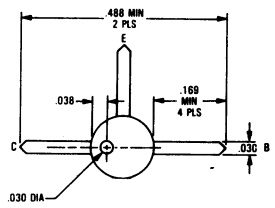
Collector Current (I_C)	Collector Base Voltage (V_{CBO})	Junction Temperature (T_j)	Storage Temperature (T_{STG})
150mA	40V	+150°C	-65°C to +150°C

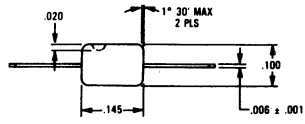
*Replaces TP394

LT3203 S PARAMETERS

S-dB and Angles:
V_{CE} = 8V, I_C = 20mA

Frequency (MHz)	S11		S21		S12		S22		k
100	-3.04	-114.1	24.22	116.2	-29.57	42.2	-4.81	- 42.1	0.298
200	-3.39	-148.3	19.22	95.8	-27.76	39.6	-7.87	- 47.6	0.554
300	-3.53	-162.8	15.87	83.9	-26.71	45.0	-9.06	- 50.9	0.768
400	-3.56	-171.6	13.51	76.1	-25.55	49.9	-9.50	- 55.2	0.897
500	-3.57	-177.7	11.60	68.9	-24.39	55.7	-9.53	- 60.5	0.981
600	-3.57	177.7	10.01	62.5	-23.14	59.9	-9.38	- 65.7	1.012
700	-3.51	173.7	8.78	56.3	-21.94	63.1	-9.24	- 72.4	1.003
800	-3.42	169.4	7.61	50.9	-20.87	66.6	-8.89	- 77.9	0.984
900	-3.38	166.9	6.64	45.3	-19.61	68.6	-8.59	- 84.2	0.932
1000	-3.27	162.9	5.79	39.9	-18.47	69.2	-8.23	- 90.3	0.870
1100	-3.15	159.7	4.96	34.7	-17.44	69.9	-7.89	- 96.5	0.817
1200	-3.05	155.8	4.19	29.6	-16.33	70.6	-7.52	-103.4	0.764
1300	-3.00	153.3	3.52	24.9	-15.24	69.2	-7.15	-108.7	0.704
V_{CE} = 14V, I_C = 40mA									
100	-3.49	-115.7	25.61	114.0	-31.18	44.2	-5.31	-39.2	0.385
200	-3.98	-149.1	20.41	94.8	-29.27	45.4	-8.17	-41.2	0.670
300	-4.11	-163.0	17.08	83.5	-27.50	51.2	-9.19	-42.2	0.842
400	-4.14	-171.4	14.72	76.4	-26.04	55.0	-9.59	-45.2	0.943
500	-4.13	-177.2	12.82	69.4	-24.67	59.2	-9.68	-49.2	0.996
600	-4.14	178.5	11.21	63.3	-23.44	62.3	-9.57	-53.3	1.033
700	-4.06	174.7	9.96	57.4	-22.26	64.5	-9.41	-59.1	1.018
800	-3.95	170.7	8.83	51.9	-21.05	66.8	-9.15	-64.0	0.979
900	-3.88	168.1	7.83	46.6	-20.12	68.8	-8.84	-69.5	0.958
1000	-3.78	164.4	6.96	41.4	-18.97	69.7	-8.50	-75.0	0.894
1100	-3.64	161.4	6.16	36.2	-18.04	69.9	-8.15	-81.0	0.837
1200	-3.50	157.7	5.38	31.0	-16.97	70.5	-7.88	-87.4	0.780
1300	-3.42	155.2	4.72	26.4	-16.00	70.0	-7.57	-92.7	0.727





T-PAK

Small Signal Low Noise Transistor for Receiver Applications

- Front End Amplifier
- Low Noise Oscillator
- High Frequency Multiplier
- Low Noise
- High Gain
- Wide Dynamic Range
- Plastic Package

T-PAK

F

The prime applications of this Silicon NPN transistor include satellite down conversion links, microwave radio relay communication links, ECM receivers, oscillators, mixers, and multipliers. Processes in wafer fabrication make this transistor effective in applications up to 3.5 GHz, with a very wide dynamic range.

The LT3703 sets new standards for low noise figure, high gain, and dynamic range. Gold metallization insures high reliability for low noise amplifier applications.

Electrical Characteristics

Symbol	Description	Conditions	Min.	Typ.	Max.	Units
BV_{EBO}	Emitter-Base Breakdown-Voltage	I_C = .1mA	3.0			V
BV_{CEO}	Collector-Emitter Breakdown-Voltage	I_C = 1mA	14			V
I_{CBO}	Collector-Base Leakage	V_{CB} = 10V			1	μA
h_{FE}	DC Current Gain	V_{CE} = 5V I_E = 25mA	50	150	300	
C_{CB}	Collector-Base Capacitance	V_{CB} = 8V f = 1.0 MHz		.6		pF
NF_{min}	Minimum Noise Figure	V_{CE} = 8V, I_C = 5mA f = .3 GHz f = .5 GHz f = 1.0 GHz		1.5 1.8 3.4	2.8	dB dB dB
G_{ANF}	Gain @ Associated Noise Figure	V_{CE} = 8V, I_C = 5mA f = .3 GHz f = .5 GHz f = 1.0 GHz		21 16.0 11.0		dB dB dB
$\|S21\|^2_E$	Common Emitter Insertion Gain	V_{CE} = 8V, I_C = 25mA f = .3 GHz f = .5 GHz f = 1.0 GHz	13	20 15.5 9.5		dB dB dB
G_{Umax}	Maximum Unilateral Gain	V_{CE} = 8V, I_C = 25mA f = .3 GHz f = .5 GHz f = 1.0 GHz		24 19.5 13.5		dB dB dB
F_T	Gain Bandwidth Product	V_{CE} = 8V I_C = 25mA		3.5		GHz

Absolute Maximum Ratings

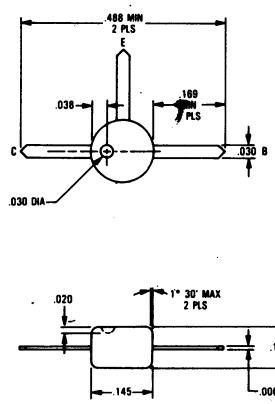
Collector Current (I_C)	Collector Base Voltage (V_{CBO})	Junction Temperature (T_j)	Storage Temperature (T_{STG})
50mA	25V	150°C	-65°C to +150°C

*Replaces TP491

LT3703 S PARAMETERS

S-dB and Angles:
V_{CE} = 8V, I_C = 5mA

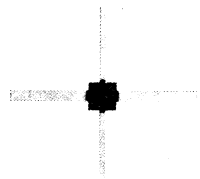
Frequency (MHz)	S11		S21		S12		S22		k
100	-2.41	- 52.7	22.86	144.3	-33.03	62.4	-1.04	-15.7	0.242
200	-4.10	- 89.9	20.15	120.8	-29.13	51.6	-2.48	-21.7	0.439
300	-5.31	-114.5	17.71	105.8	-27.67	47.3	-3.45	-23.9	0.634
400	-6.02	-131.9	15.66	96.7	-26.60	47.2	-4.02	-25.1	0.778
500	-6.49	-144.5	13.96	89.0	-25.83	48.1	-4.36	-26.1	0.916
600	-6.78	-153.9	12.44	83.0	-25.11	49.9	-4.54	-27.7	1.029
700	-6.92	-161.9	11.19	77.5	-24.23	51.3	-4.72	-29.0	1.097
800	-7.03	-168.9	10.17	72.5	-23.61	52.6	-4.72	-30.6	1.143
900	-7.12	-173.7	9.16	67.9	-22.79	54.7	-4.74	-32.4	1.172
1000	-7.11	-179.4	8.31	63.8	-21.99	55.0	-4.74	-35.0	1.167
1100	-7.10	175.9	7.67	59.7	-21.55	56.0	-4.74	-37.1	1.189
1200	-7.09	170.9	6.91	55.2	-20.87	57.4	-4.78	-39.8	1.196
1300	-7.11	166.8	6.30	51.6	-20.19	57.9	-4.69	-42.0	1.169
V_{CE} = 8V, I_C = 25mA									
100	-6.83	- 99.5	27.84	121.8	-36.55	56.4	-3.27	-22.0	0.600
200	-7.78	-136.8	23.07	102.1	-33.01	58.2	-5.03	-21.3	0.886
300	-8.07	-153.6	19.80	91.5	-30.48	63.0	-5.68	-20.3	1.024
400	-8.07	-163.5	17.53	85.5	-28.43	63.8	-5.97	-20.7	1.070
500	-8.06	-170.2	15.59	79.8	-26.90	64.7	-6.12	-21.7	1.128
600	-8.07	-175.4	14.00	75.0	-25.55	65.5	-6.15	-23.1	1.158
700	-7.91	-179.7	12.77	70.8	-24.45	65.8	-6.24	-24.5	1.172
800	-7.85	175.8	11.60	66.4	-23.38	65.6	-6.16	-26.5	1.169
900	-7.77	173.0	10.56	62.3	-22.39	65.7	-6.10	-28.4	1.161
1000	-7.63	169.2	9.73	58.8	-21.57	65.6	-6.05	-31.2	1.143
1100	-7.50	166.0	8.90	55.1	-20.84	64.7	-6.03	-33.1	1.141
1200	-7.42	162.0	8.18	51.1	-20.14	65.3	-5.99	-35.8	1.131
1300	-7.36	159.7	7.57	47.7	-19.38	64.4	-5.83	-38.0	1.086



T-PAK

Small Signal Low Noise Transistor for High Performance Receiver Applications

- **Front End Amplifier**
- **Low Noise Oscillator**
- **High Frequency Multiplier**
- **Low Noise**
- **High Gain**
- **Wide Dynamic Range**
- **Hermetic Package**



100 MIL

The prime applications of this Silicon NPN transistor include satellite down conversion links, microwave radio relay communication links, ECM receivers, oscillators, mixers, and multipliers. A new process in wafer fabrication helps make this new transistor effective in applications up to as high as 6 GHz, with a very wide dynamic range.

Utilizing ion implantation techniques coupled with arsenic emitters, the LT4700 sets new standards for low noise figure, high gain, and wide dynamic range. Gold metallization insures high reliability for low noise amplifier applications.

F

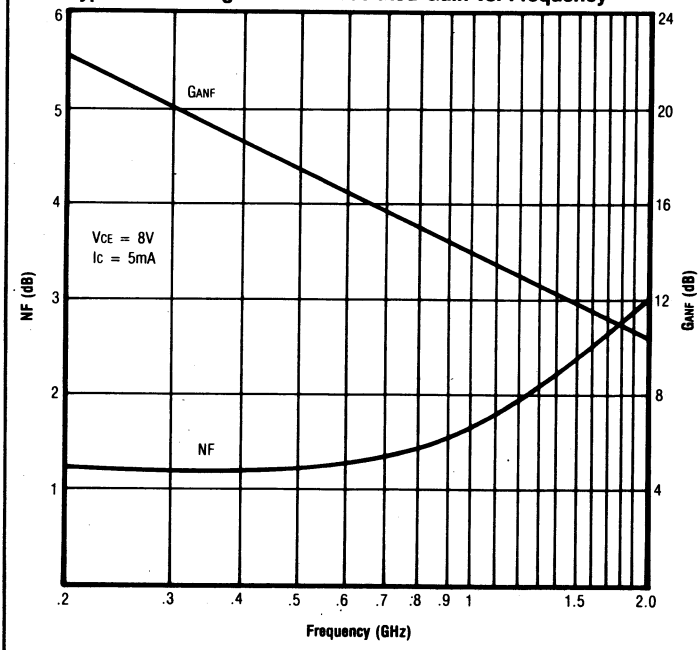
Electrical Characteristics

Symbol	Description	Conditions	Min.	Typ.	Max.	Units
Symbol	**Description**	**Conditions**	**Min.**	**Typ.**	**Max.**	**Units**
BV_{EBO}	Emitter-Base Breakdown-Voltage	I_E = .1mA	3			V
BV_{CEO}	Collector-Emitter Breakdown-Voltage	I_C = 1mA	12			V
I_{CBO}	Collector-Base Leakage	V_{CB} = 10V			1	μA
h_{FE}	DC Current Gain	V_{CE} = 5V I_C = 25mA	70	150	300	
C_{CB}	Collector-Base Capacitance	V_{CB} = 8V f = 1 MHz			.6	pF
NF_{min}	Minimum Noise Figure	V_{CE} = 8V, I_C = 5mA f = 0.5 GHz f = 1.0 GHz f = 2.0 GHz		1.2 1.6 3.0	2.5	dB dB dB
G_{ANF}	Gain @ Associated Noise Figure	V_{CE} = 8V, I_C = 5mA f = 0.5 GHz f = 1.0 GHz f = 2.0 GHz		18.0 14.0 11.0		dB dB dB
$\|S_{21}\|^2_E$	Common Emitter Insertion Gain	V_{CE} = 8V, I_C = 25mA f = 0.5 GHz f = 1.0 GHz f = 2.0 GHz	13.0	21.0 15.0 10.0		dB dB dB
$G_{U(max)}$	Maximum Unilateral Gain	V_{CE} = 8V, I_C = 25mA f = 0.5 GHz f = 1.0 GHz f = 2.0 GHz		26.0 21.0 16.0		dB dB dB
F_t	Gain Bandwidth Product	V_{CE} = 8V I_C = 25mA		6.0		GHz
F_{max}	Maximum Oscillation Frequency	V_{CE} = 8V I_C = 25mA		7.0		GHz

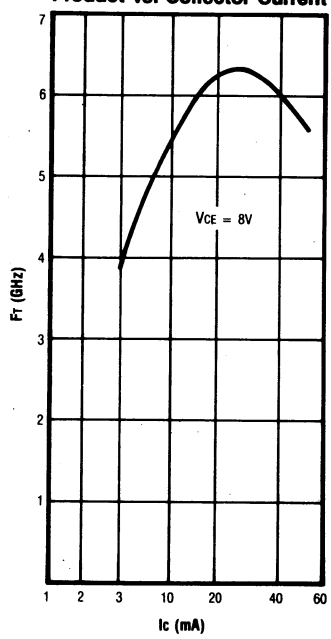
Absolute Maximum Ratings

Collector Current (I_C)	Collector Base Voltage (V_{CBO})	Junction Temperature (T_J)	Storage Temperature (T_S)
50mA	20V	200 °C	– 65 °C to 200 °C

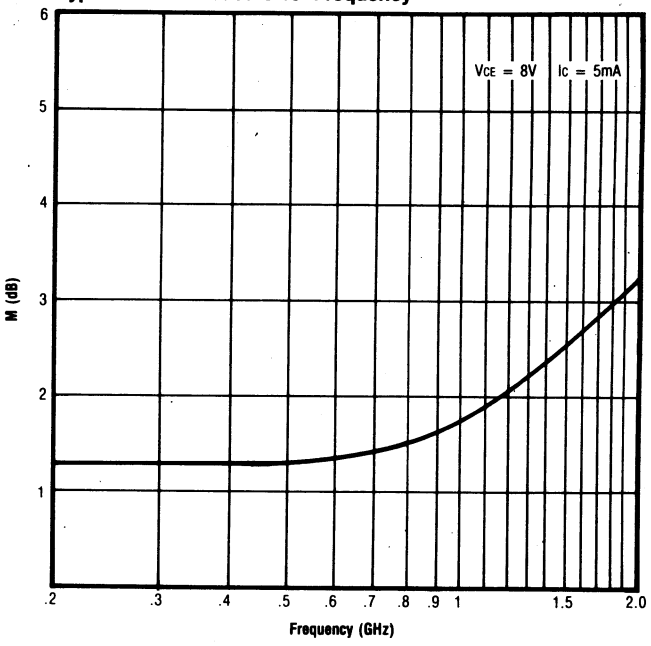
Typical Noise Figure and Associated Gain vs. Frequency



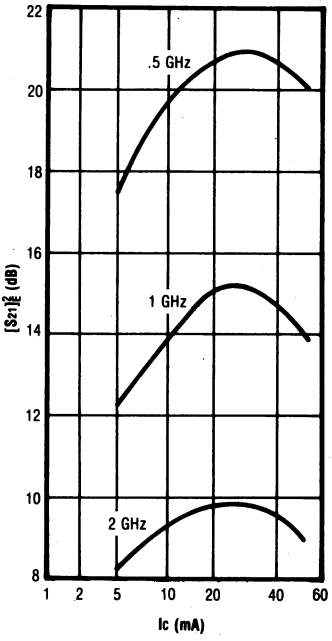
Typical Gain Bandwidth Product vs. Collector Current



Typical Noise Measure vs. Frequency



Typical Insertion Gain vs. Collector Current (VCE = 8V)



LT 4700 S PARAMETERS

S-dB and Angles:
V_{CE} = 8V, I_C = 5mA

Frequency (MHz)	S11		S21		S12		S22		k
100	−2.09	− 35.4	24.61	149.8	−33.54	71.3	−0.28	−18,5	0.14632
150	−2.70	− 48.2	23.37	153.7	−32.03	66.7	−0.42	−14.5	0.08388
200	−3.17	− 61.0	21.27	143.5	−30.61	56.5	−2.11	−17.4	0.38362
250	−3.62	− 73.5	19.86	133.3	−29.07	51.8	−2.20	−28.6	0.34603
400	−3.66	−106.1	18.67	113.0	−26.98	40.3	−3.23	−29.9	0.43098
500	−3.91	−119.4	17.34	107.3	−26.32	37.3	−3.69	−30.4	0.48277
600	−4.00	−130.2	16.13	100.2	−25.82	34.5	−4.15	−32.8	0.54641
700	−4.07	−139.1	15.05	94.4	−25.56	32.7	−4.56	−33.2	0.62994
800	−4.11	−146.6	14.04	89.9	−25.20	31.1	−4.75	−35.7	0.67527
900	−4.14	−152.9	13.06	85.1	−25.04	30.8	−5.10	−37.1	0.76699
1000	−4.76	−161.3	12.15	79.1	−25.02	34.9	−5.10	−36.8	0.91025
1100	−4.79	−166.5	11.41	75.5	−24.88	35.2	−5.33	−37.9	0.99839
1200	−4.81	−171.3	10.70	71.9	−24.55	35.8	−5.34	−39.0	1.03922
1300	−4.81	−175.7	10.03	68.3	−24.34	36.4	−5.42	−41.8	1.09306
1400	−4.80	−179.6	9.41	65.1	−24.19	37.7	−5.55	−43.1	1.16138
1500	−4.77	176.8	8.82	61.6	−23.92	36.9	−5.50	−45.4	1.19230
1600	−4.77	173.2	8.24	58.6	−23.73	38.9	−5.53	−47.3	1.24361
1700	−4.82	171.1	7.70	57.1	−23.50	40.0	−5.54	−49.1	1.29489
1800	−4.72	167.4	7.25	52.6	−23.31	40.4	−5.54	−51.3	1.31465
1900	−4.70	164.6	6.92	50.1	−22.96	41.3	−5.57	−54.0	1.30445
2000	−4.68	161.8	6.48	47.3	−22.74	42.8	−5.55	−56.0	1.32750

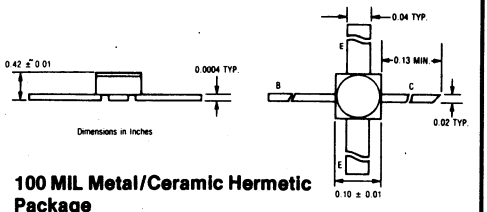
V_{CE} = 8V, I_C = 25mA

100	−5.83	− 88.2	30.87	131.0	−37.23	55.3	−2.18	−27.5	0.33256
150	−5.77	−107.6	29.28	125.3	−35.66	56.8	−3.33	−28.6	0.38799
200	−5.54	−121.6	27.32	119.5	−34.93	52.9	−4.67	−30.6	0.52604
250	−5.43	−132.5	25.47	112.9	−34.55	53.8	−5.39	−32.4	0.64475
400	−4.86	−152.7	22.60	96.7	−32.75	45.9	−7.29	−34.6	0.82367
500	−4.77	−160.5	20.82	92.8	−31.90	47.6	−7.79	−33.2	0.92234
600	−4.72	−166.2	19.35	87.7	−31.00	49.6	−8.18	−33.6	0.99615
700	−4.66	−170.7	18.07	83.4	−30.21	50.8	−8.47	−32.9	1.06180
800	−4.63	−174.6	16.93	80.0	−29.45	51.7	−8.64	−34.9	1.10767
900	−4.58	−177.9	15.94	76.7	−29.79	52.7	−8.84	−35.3	1.15458
1000	−5.29	176.5	14.85	72.4	−27.18	59.5	−8.36	−34.0	1.16067
1100	−5.27	−173.3	14.02	69.5	−26.60	59.4	−8.50	−35.3	1.19985
1200	−5.22	−170.4	13.20	66.3	−25.95	59.5	−8.48	−36.3	1.21402
1300	−5.17	167.7	12.50	63.2	−25.28	59.8	−8.55	−39.2	1.21229
1400	−5.13	−165.3	11.84	61.0	−24.82	60.2	−8.61	−40.4	1.24004
1500	−5.08	163.0	11.23	57.8	−24.24	58.8	−8.54	−42.8	1.23090
1600	−5.05	160.8	10.65	55.2	−23.81	59.7	−8.52	−44.9	1.24442
1700	−5.10	159.4	10.07	54.4	−23.36	59.6	−8.53	−46.5	1.27095
1800	−4.97	156.4	9.62	50.1	−22.93	58.9	−8.52	−49.1	1.25286
1900	−4.97	154.5	9.22	48.1	−22.44	58.9	−8.57	−51.2	1.24397
2000	−4.96	152.6	8.78	45.0	−22.10	59.2	−8.47	−54.0	1.24979

NOISE PARAMETERS

Freq.	N.F. OPT	ΓS OPT	Rn
0.5 GHz	1.2 dB	.244 /80°	.72Ω
1.0 GHz	1.6 dB	.337 / − 97°	.63Ω
1.5 GHz	2.3 dB	.353 / − 158°	.31Ω
2.0 GHz	3.0 dB	.345 / − 146°	1.15Ω

Reflection coefficient of source and the noise resistance at optimum noise figure for V_{CE} = 8V, I_C = 5mA



100 MIL Metal/Ceramic Hermetic Package

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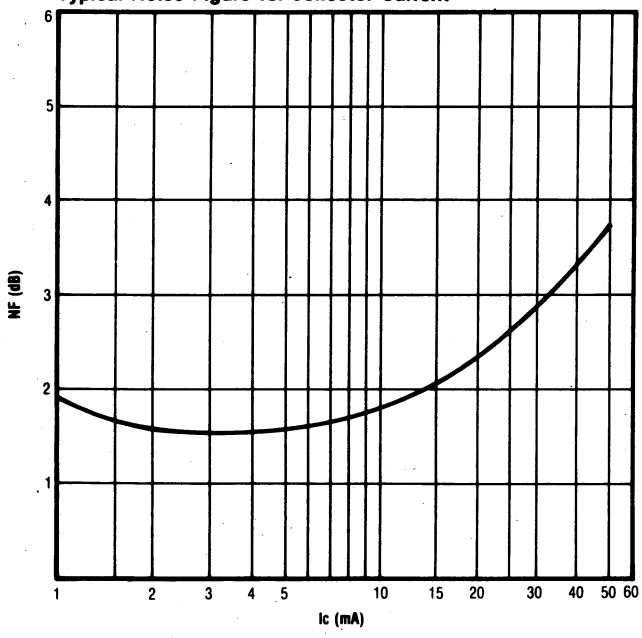
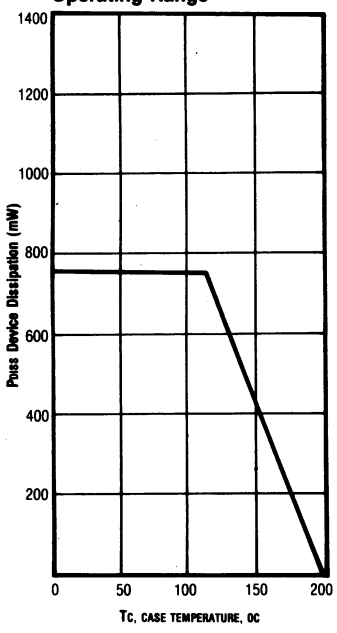
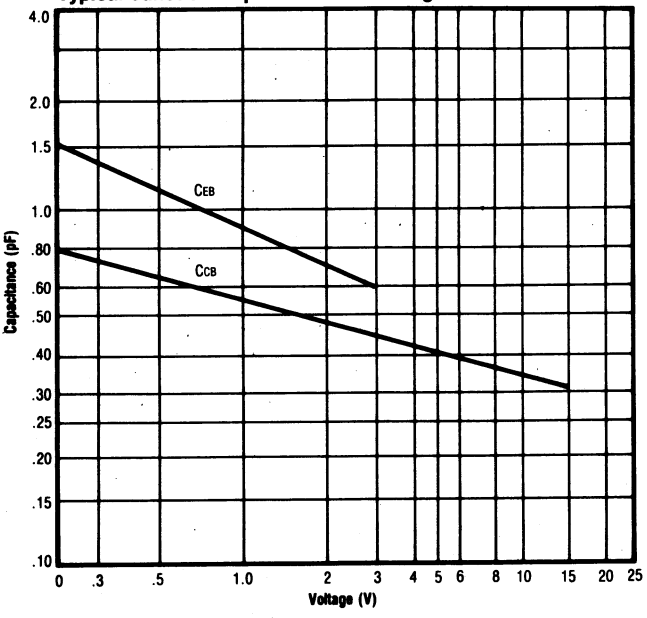
Typical Noise Figure vs. Collector Current



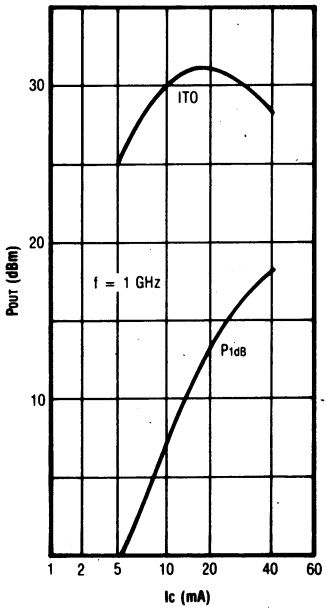
Device Dissipation Operating Range



Typical Junction Capacitance vs. Voltage



Typical Third Order Intercept vs. Collector Current ($V_{CE} = 8V$)

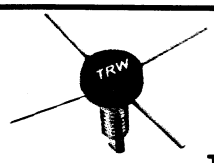


PT 4572 A

TRW

Broadband Class A Linear Applications

- **High Output**
- **Low Noise**
- **Low Distortion**



TO-117A

These rugged NPN silicon transistors are specifically designed for broadband Class A applications requiring low distortion and low noise figure. Ceramic capped and stud mounted, these high power devices are ideally suited for CATV and MATV amplifiers. The PT4572A is used as an intermediate or output stage transistor.

F

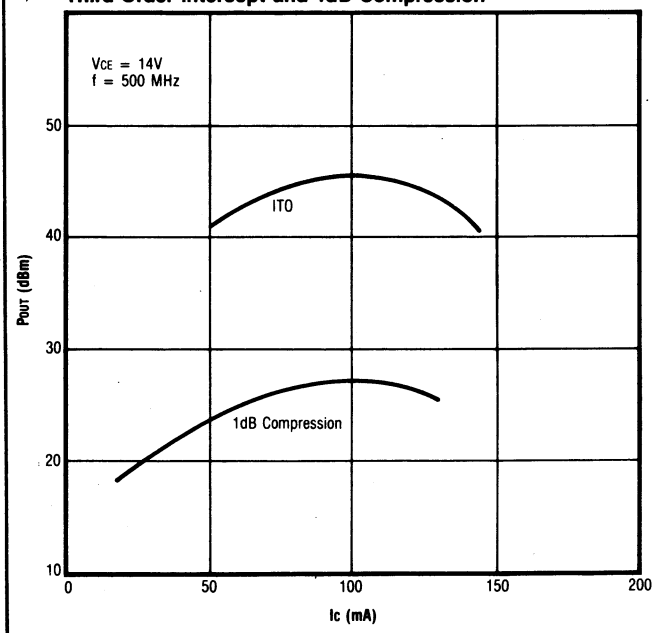
Electrical Characteristics

Symbol	Description	Conditions	Min.	Typ.	Max.	Units
BV_{EBO}	Emitter-Base Breakdown-Voltage	I_E = 0.1mA	3.0			V
BV_{CEO}	Collector-Emitter Breakdown-Voltage	I_C = 5.0mA	25			V
BV_{CBO}	Collector-Base Breakdown-Voltage	I_C = 1.0mA	40			V
I_{CBO}	Collector-Base Leakage	V_{CB} = 10V			200	µA
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage	I_C = 100mA, I_C/I_B = 2		400		mV
h_{FE}	DC Current Gain	V_{CE} = 5V, I_C = 50mA	20	100	150	
C_{CB}	Collector-Base Capacitance	V_{CB} = 8V, f = 1 MHz		2.2		pF
NF_{min}	Minimum Noise Figure	V_{CE} = 8V, I_C = 50mA, f = 300 MHz		2.3		dB
G_{Umax}	Maximum Unilateral Gain	V_{CE} = 14V, I_C = 90mA, f = 300 MHz		16		dB
$\|S_{21}\|^2_E$	Common Emitter Insertion Gain	V_{CE} = 14V, I_C = 90mA, f = 300 MHz		14		dB
F_T	Gain Bandwidth Product	V_{CE} = 14V, I_C = 90mA		2.5		GHz
P_{OUT}	Power out @ 1dB Compression	V_{CE} = 14V, I_C = 90mA, f = 500 MHz		27		dBm
ITO	Third Order Intercept	V_{CE} = 14V, I_C = 90mA, f = 500 MHz		45		dBm

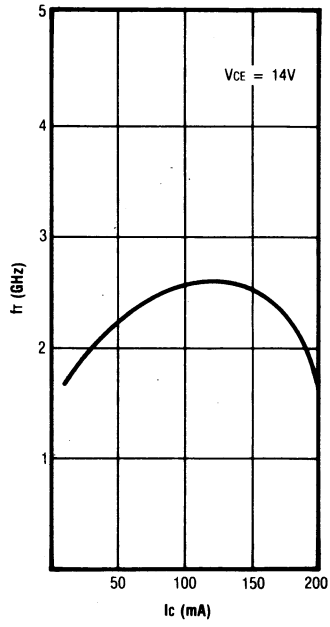
Absolute Maximum Ratings @ 25°C Case

Collector Current (I_C)	Collector Base Voltage (V_{CBO})	Junction Temperature (T_J)	Storage Temperature (T_{STG})
200mA	40V	200°C	−65°C to +200°C

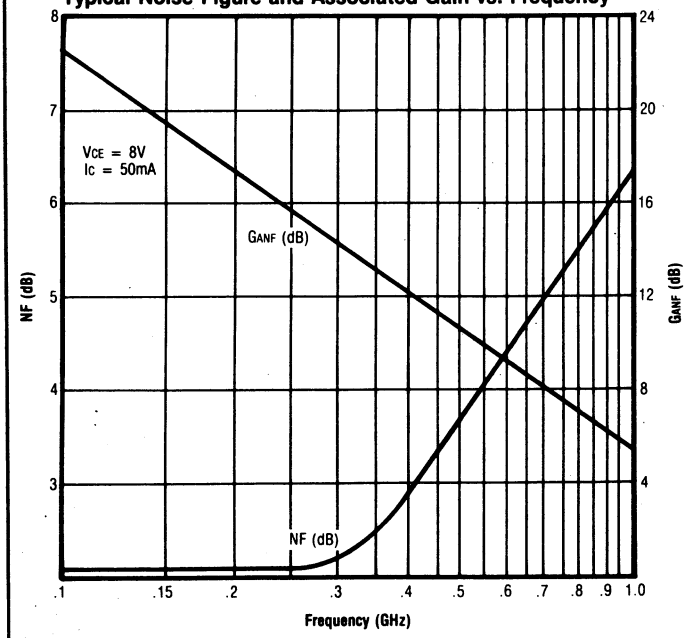
Third Order Intercept and 1dB Compression



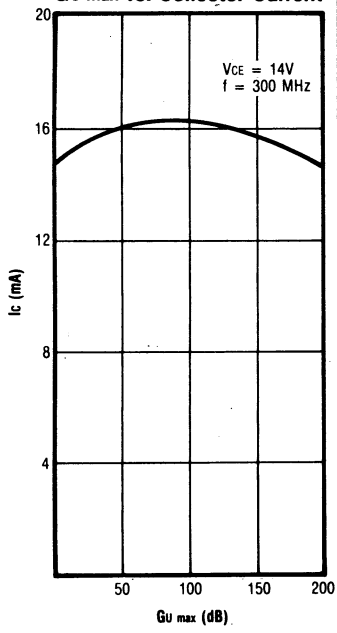
Gain-Bandwidth Product vs. Collector Current



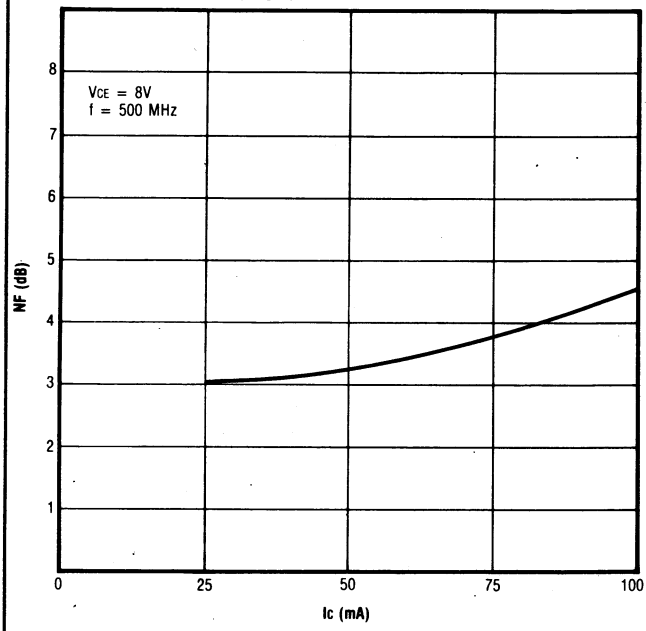
Typical Noise Figure and Associated Gain vs. Frequency



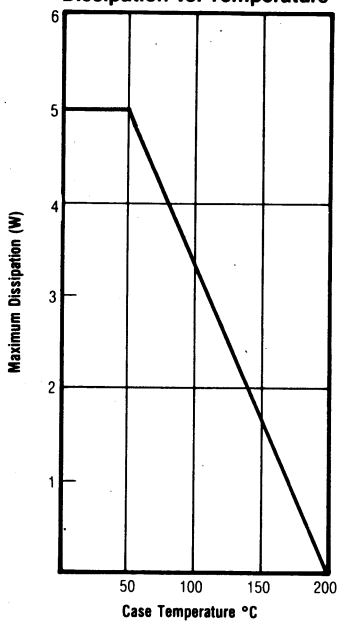
GU max vs. Collector Current



NF vs. Collector Current



Dissipation vs. Temperature



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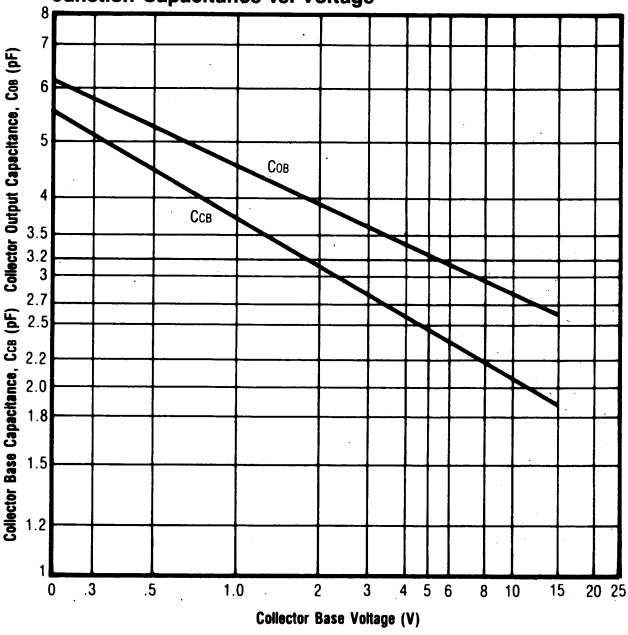
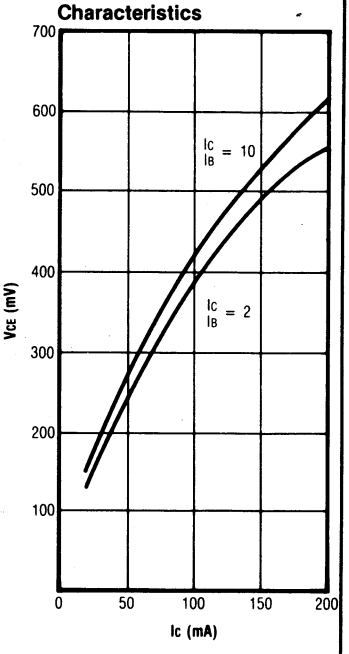
Junction Capacitance vs. Voltage



Collector Saturation Characteristics



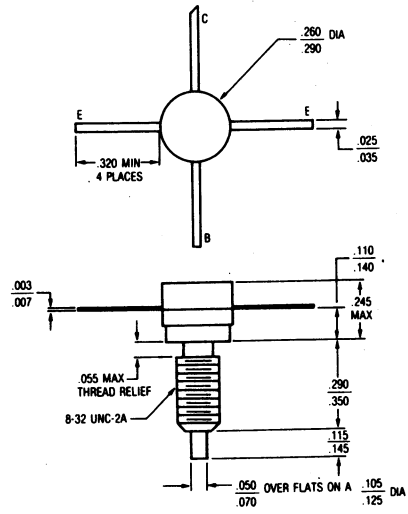
PT 4572 A S PARAMETERS

S-dB and Angles:
V_{CE} = 8V, I_C = 50mA

Frequency (MHz)	S11		S21		S12		S22		k
100	−4.58	−172.6	22.07	96.2	−31.41	60.7	−16.48	−108.4	1.085
200	−4.47	169.5	17.14	84.5	−26.24	67.2	−20.29	−124.3	1.101
300	−4.29	156.2	13.79	74.2	−22.99	67.3	−18.02	−132.3	1.100
400	−4.32	146.8	11.42	65.4	−20.62	65.6	−18.23	−128.8	1.098
500	−4.30	136.9	9.43	57.6	−18.96	63.5	−16.01	−129.2	1.123
600	−4.04	128.1	7.90	49.7	−17.55	60.3	−15.84	−143.4	1.119
700	−4.20	121.3	6.47	43.5	−16.45	58.1	−14.73	−141.8	1.164
800	−4.10	113.1	5.23	36.5	−15.67	55.5	−12.53	−158.0	1.216
900	−4.00	105.5	4.08	30.9	−14.82	53.2	−12.23	−166.1	1.245
1000	−4.11	99.9	3.07	25.6	−14.12	51.4	−12.14	−170.1	1.295

V_{CE} = 14V, I_C = 90mA

100	−4.49	−177.2	24.66	83.6	−32.32	66.1	−16.41	− 86.9	0.914
200	−4.61	167.1	17.94	75.5	−26.89	70.9	−19.88	− 92.7	1.066
300	−4.49	157.1	14.31	69.1	−23.68	71.1	−19.75	− 99.9	1.100
400	−4.25	147.5	11.78	62.7	−21.31	69.7	−18.35	−110.1	1.094
500	−4.16	138.0	9.76	56.5	−19.44	67.5	−17.36	−117.7	1.105
600	−4.01	130.3	8.14	50.2	−18.02	65.6	−15.80	−127.3	1.115
700	−3.97	123.5	6.80	44.7	−16.86	63.0	−14.36	−137.5	1.139
800	−4.07	115.2	5.43	38.9	−15.97	60.8	−13.31	−146.4	1.214
900	−3.99	107.8	4.23	34.1	−15.12	58.6	−12.54	−153.3	1.248
1000	−4.12	101.5	3.19	30.5	−14.40	57.2	−11.78	−161.1	1.312



TO-117A

TRW

RF Transistor

- **High fT - 2.0 GHz**
- **Low Distortion**
- **Low Noise Figure: 2.3 dB @ 200 MHz**

TO-39

The PT4579 is a high-output NPN silicon TO-39-mounted transistor designed for ultra-linear communications or instrumentation applications. Low noise figure combined with high-output capability gives this device an exceptional dynamic range. Gold metalization is used to achieve the high reliability demanded by the most severe communications requirements. High gain makes this transistor ideal for broadband applications.

F

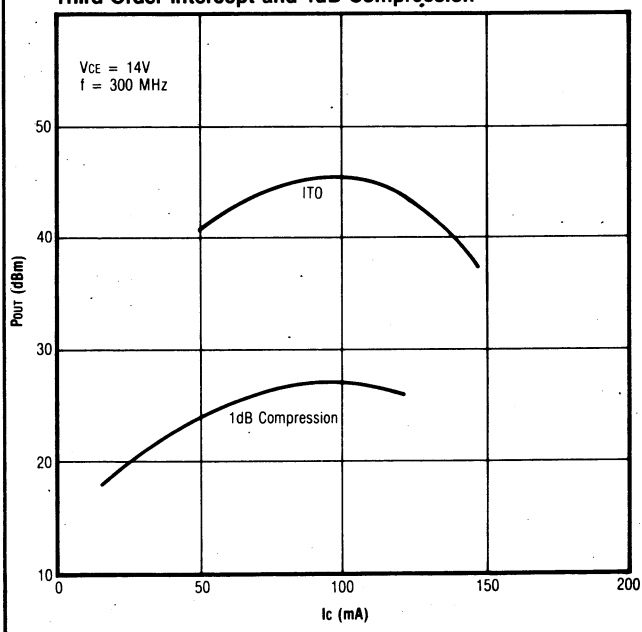
Electrical Characteristics

Symbol	Description	Conditions	Min.	Typ.	Max.	Units
BV_{EBO}	Emitter-Base Breakdown-Voltage	I_E = 0.1mA	3.0			V
BV_{CEO}	Collector-Emitter Breakdown-Voltage	I_C = 25mA	25			V
BV_{CBO}	Collector-Base Breakdown-Voltage	I_C = 1.0mA	40			V
I_{CBO}	Collector-Base Leakage	V_{CB} = 13V		100		μA
$V_{CE\ (SAT)}$	Collector-Emitter Saturation Voltage	I_C = 100mA I_C/I_B = 2		400		mV
h_{FE}	DC Current Gain	V_{CE} = 5V I_C = 50mA	50	150	300	
C_{CB}	Collector-Base Capacitance	V_{CB} = 8V f = 1 MHz		2.5		pF
NF_{min}	Minimum Noise Figure	V_{CE} = 8V I_C = 50mA f = 300 MHz		2.3		dB
G_{Umax}	Maximum Unilateral Gain	V_{CE} = 14V I_C = 90mA f = 300 MHz		13.5		dB
$\lvert S_{21}\rvert^2_E$	Common Emitter Insertion Gain	V_{CE} = 14V I_C = 90mA f = 300 MHz		12.0		dB
F_T	Gain Bandwidth Product	V_{CE} = 14V I_C = 90mA		2.5		GHz
P_{OUT}	Power out @ 1dB Compression	V_{CE} = 14V I_C = 90mA f = 300 MHz		26		dBm
ITO	Third Order Intercept	V_{CE} = 14V I_C = 90mA f = 300 MHz		46		dBm

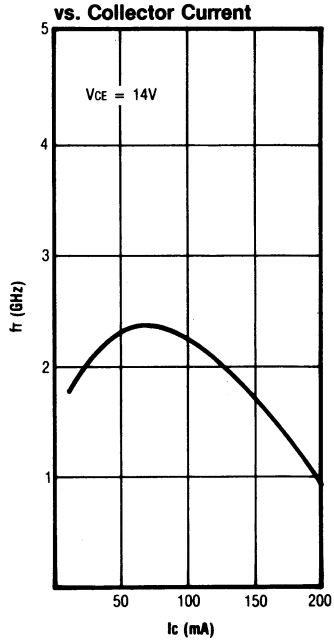
Absolute Maximum Ratings @ 25°C Case

Collector Current (I_C)	Collector Base Voltage (V_{CBO})	Junction Temperature (T_j)	Storage Temperature (T_{STG})
200mA	40V	+200°C	−65°C to +200°C

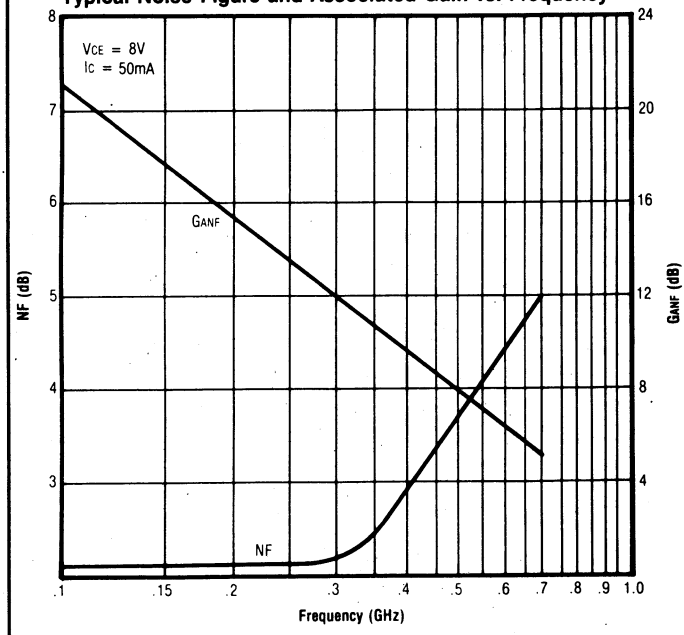
Third Order Intercept and 1dB Compression



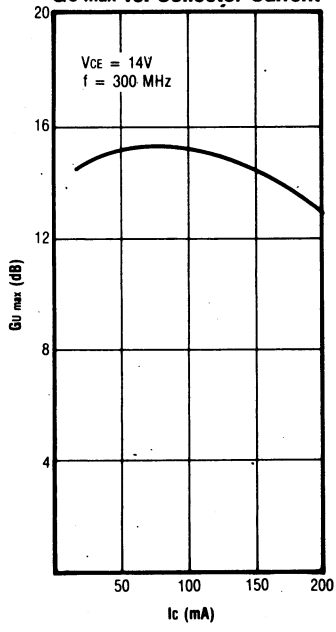
Gain-Bandwidth Product vs. Collector Current



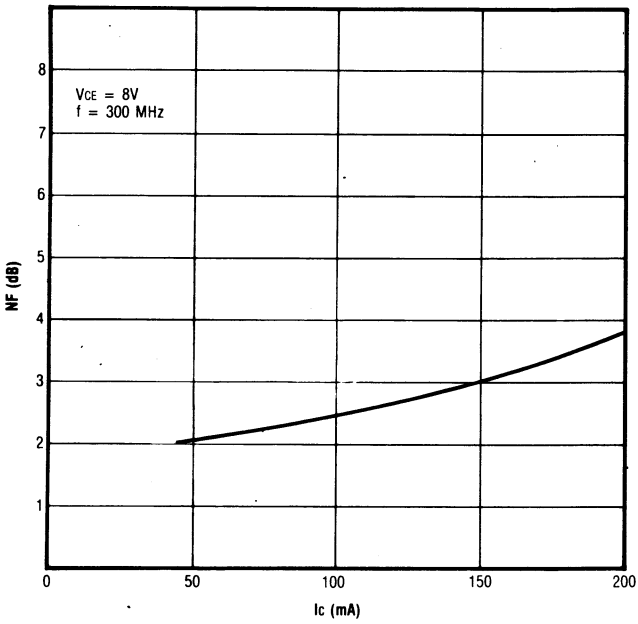
Typical Noise Figure and Associated Gain vs. Frequency



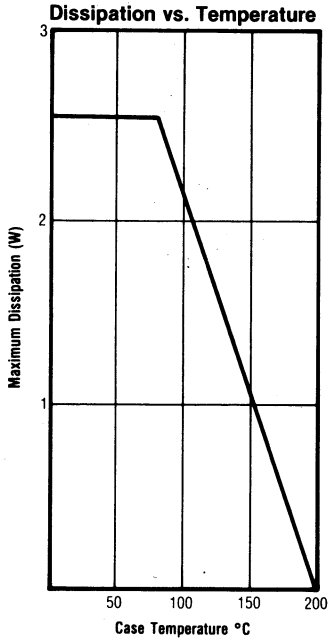
GU max vs. Collector Current



NF vs. Collector Current



Dissipation vs. Temperature



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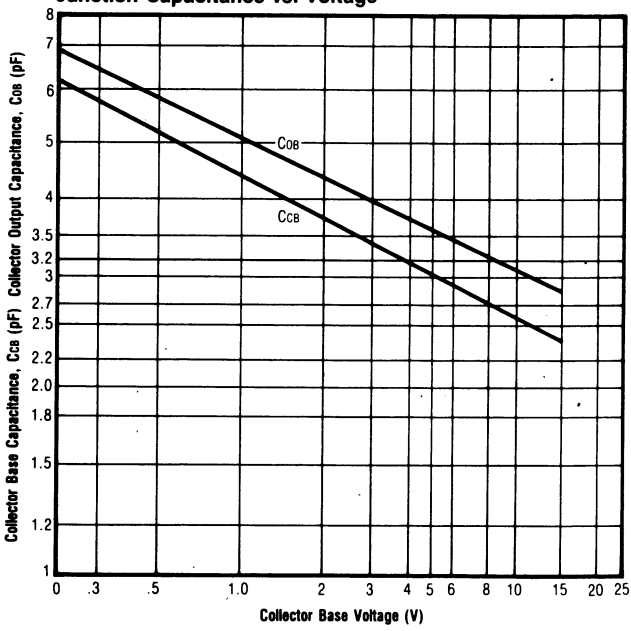
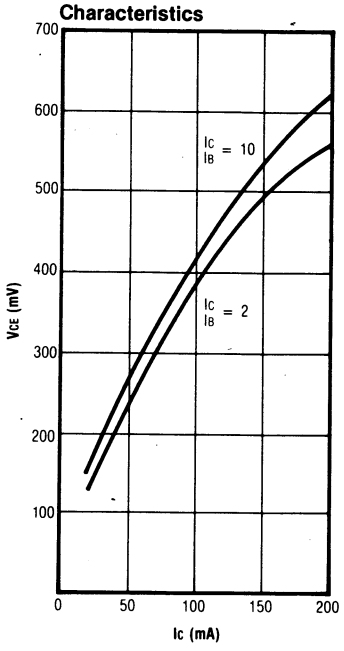
Junction Capacitance vs. Voltage



Collector Saturation Characteristics



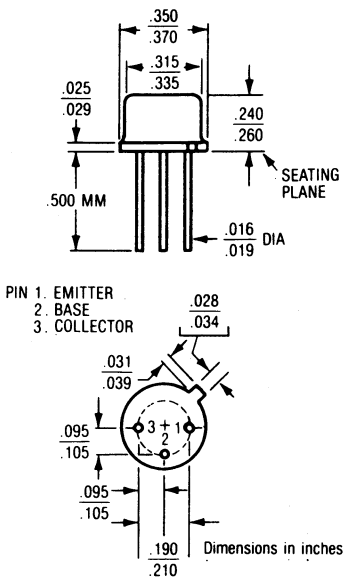
PT 4579 S PARAMETERS

S-dB and Angles:
V_{CE} = 8V, I_C = 50mA

Frequency (MHz)	S11		S21		S12		S22		k
100	−5.90	−170.7	19.47	96.2	−26.71	66.7	−15.48	−113.1	1.043
200	−5.73	170.6	14.39	83.4	−21.49	71.2	−17.43	−129.8	1.064
300	−5.60	158.7	11.21	73.6	−18.27	71.4	−16.90	−134.9	1.061
400	−5.65	148.4	8.97	65.5	−15.95	70.4	−15.46	−140.3	1.067
500	−5.53	137.7	7.21	58.2	−14.17	68.9	−15.41	−144.0	1.065
600	−5.33	128.4	5.85	51.4	−12.75	67.2	−14.00	−148.0	1.057
700	−5.38	117.8	4.69	46.2	−11.49	65.3	−12.82	−149.6	1.064
800	−5.59	109.5	3.83	39.8	−10.50	62.9	−11.50	−156.7	1.078
900	−5.49	101.0	2.99	34.6	− 9.56	60.8	−10.80	−162.2	1.076
1000	−5.69	90.5	2.27	29.5	− 8.76	58.5	−10.01	−169.2	1.091

V_{CE} = 14V, I_C = 90mA

100	−6.12	−164.8	21.44	92.0	−28.07	64.6	−14.71	− 99.9	0.972
200	−5.94	−179.1	15.65	82.1	c23.14	69.6	−15.64	−112.7	1.060
300	−5.83	173.2	12.20	74.6	−20.09	70.3	−14.63	−116.3	1.082
400	−5.88	167.3	9.81	67.8	−17.96	69.6	−13.38	−115.2	1.091
500	−5.91	161.9	8.05	62.0	−16.34	69.2	−12.22	−114.4	1.086
600	−6.03	156.8	6.55	56.1	−14.99	68.5	−11.15	−113.1	1.082
700	−6.15	151.4	5.33	51.1	−13.89	67.1	−10.21	−113.6	1.078
800	−6.26	146.4	4.23	46.3	−12.96	67.0	− 9.44	−115.0	1.084
900	−6.33	140.6	3.33	41.9	−12.18	66.2	− 8.60	−115.9	1.076
1000	−6.24	134.0	2.45	37.9	−11.42	65.7	− 8.00	−118.6	1.073



TO-39