

# 2N3904

## NPN General Purpose Amplifier

### Features

- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
- € Capable of 625mW of Power Dissipation and 200mA I<sub>c</sub>
- € Epoxy meets UL 94 V-0 flammability rating
- € Moisture Sensitivity Level 1
- € Through Hole Package
- € Halogen free available upon request by adding suffix "-HF"
- Operating Temperature: -55°C to +150°C
- Storage Temperature: -55°C to +150°C

### Electrical Characteristics @ 25°C Unless Otherwise Specified

Symbol	Parameter	Min	Max	Units
<b>OFF CHARACTERISTICS</b>				
V <sub>(BR)CEO</sub>	Collector-Emitter Breakdown Voltage* (I <sub>C</sub> =1.0mA, I <sub>B</sub> =0)	40		Vdc
V <sub>(BR)CBO</sub>	Collector-Base Breakdown Voltage (I <sub>C</sub> =10μA, I <sub>E</sub> =0)	60		Vdc
V <sub>(BR)EBO</sub>	Emitter-Base Breakdown Voltage (I <sub>E</sub> =10μA, I <sub>C</sub> =0)	6.0		Vdc
I <sub>BL</sub>	Base Cutoff Current (V <sub>CE</sub> =30Vdc, V <sub>BE</sub> =3.0Vdc)		50	nA
I <sub>CEX</sub>	Collector Cutoff Current (V <sub>CE</sub> =30Vdc, V <sub>BE</sub> =3.0Vdc)		50	nA

### ON CHARACTERISTICS

h <sub>FE</sub>	DC Current Gain* (I <sub>C</sub> =0.1mA, V <sub>CE</sub> =1.0Vdc) (I <sub>C</sub> =1.0mA, V <sub>CE</sub> =1.0Vdc) (I <sub>C</sub> =10mA, V <sub>CE</sub> =1.0Vdc) (I <sub>C</sub> =50mA, V <sub>CE</sub> =1.0Vdc) (I <sub>C</sub> =100mA, V <sub>CE</sub> =1.0Vdc)	40 70 100 60 30	300	
V <sub>CE(sat)</sub>	Collector-Emitter Saturation Voltage (I <sub>C</sub> =10mA, I <sub>B</sub> =1.0mA) (I <sub>C</sub> =50mA, I <sub>B</sub> =5.0mA)		0.2 0.4	Vdc
V <sub>BE(sat)</sub>	Base-Emitter Saturation Voltage (I <sub>C</sub> =10mA, I <sub>B</sub> =1.0mA) (I <sub>C</sub> =50mA, I <sub>B</sub> =5.0mA)	0.65	0.85 0.95	Vdc

### SMALL-SIGNAL CHARACTERISTICS

f <sub>T</sub>	Current Gain-Bandwidth Product (I <sub>C</sub> =10mA, V <sub>CE</sub> =20Vdc, f=100MHz)	250		MHz
C <sub>obo</sub>	Output Capacitance (V <sub>CB</sub> =5.0Vdc, I <sub>E</sub> =0, f=1.0MHz)		4.0	pF
C <sub>ibo</sub>	Input Capacitance (V <sub>BE</sub> =0.5Vdc, I <sub>C</sub> =0, f=1.0MHz)		8.0	pF
NF	Noise Figure (I <sub>C</sub> =100μA, V <sub>CE</sub> =5.0Vdc, R <sub>S</sub> =1.0kΩ f=10Hz to 15.7kHz)		5.0	dB

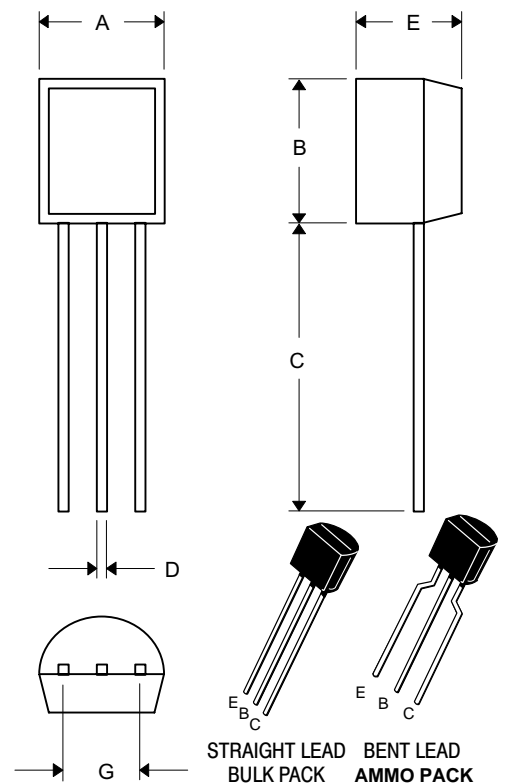
### SWITCHING CHARACTERISTICS

t <sub>d</sub>	Delay Time	(V <sub>CC</sub> =3.0Vdc, V <sub>BE</sub> =0.5Vdc)	35	ns
t <sub>r</sub>	Rise Time	(I <sub>C</sub> =10mA, I <sub>B1</sub> =1.0mA)	35	ns
t <sub>s</sub>	Storage Time	(V <sub>CC</sub> =3.0Vdc, I <sub>C</sub> =10mA)	200	ns
t <sub>f</sub>	Fall Time	(I <sub>B1</sub> =I <sub>B2</sub> =1.0mA)	50	ns

\*Pulse Width ≤ 300μs, Duty Cycle ≤ 2.0%

Symbol	Characteristic	Max	Unit
R <sub>θJA</sub>	Thermal Resistance, Junction-to-Ambient	200	°C/W

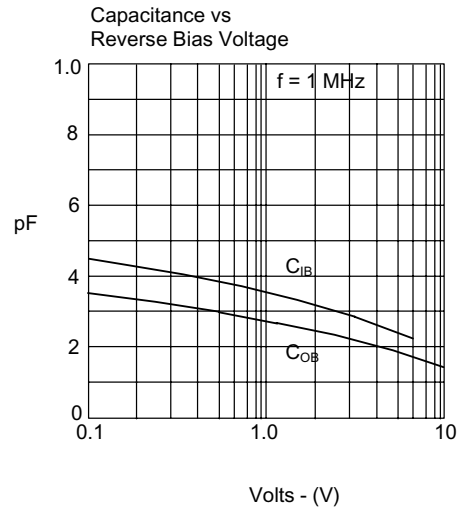
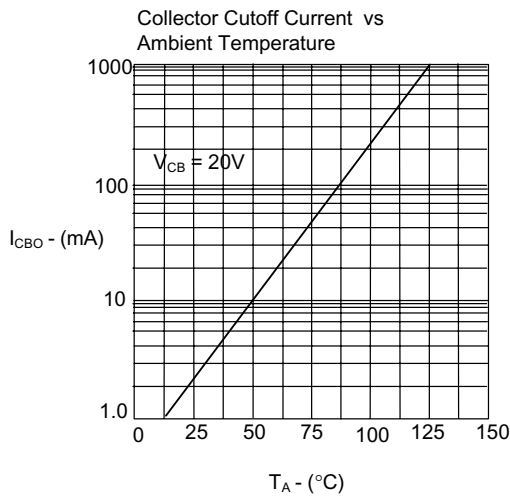
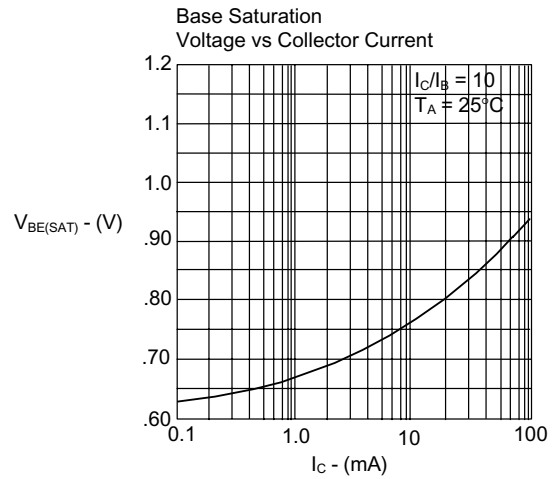
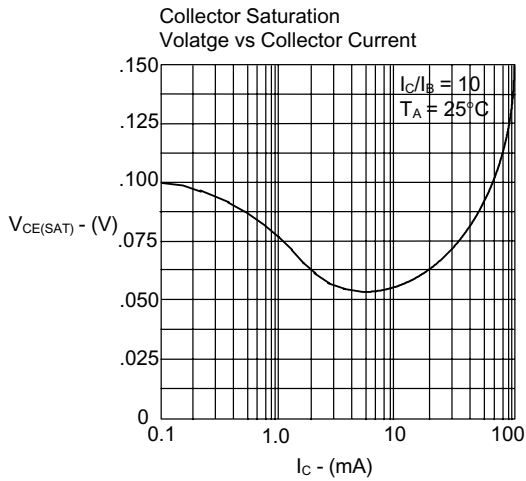
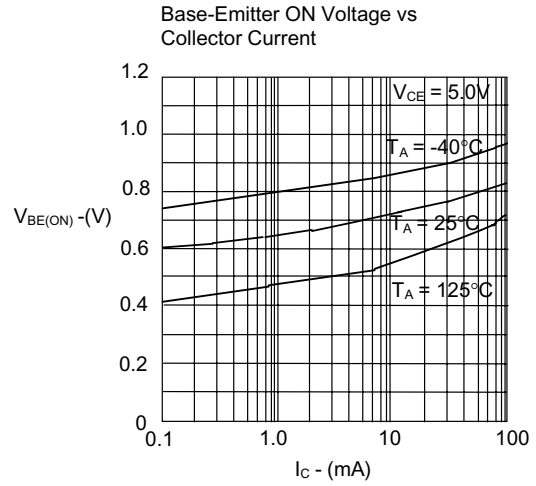
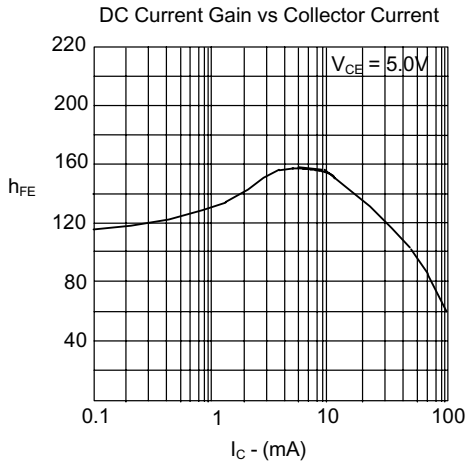
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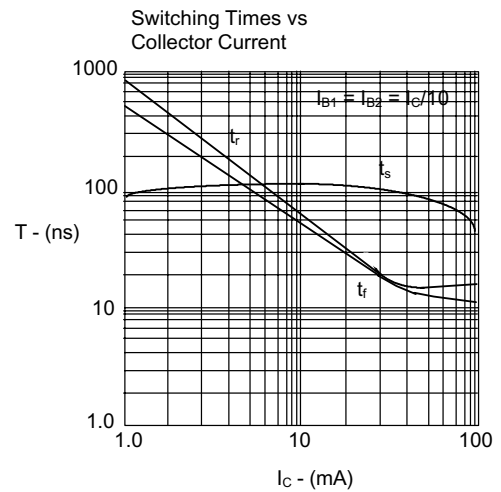
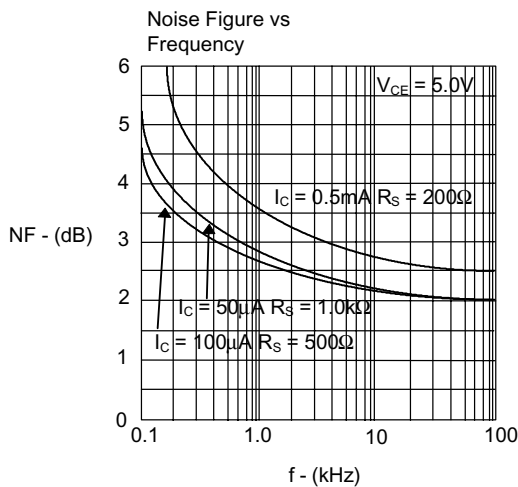
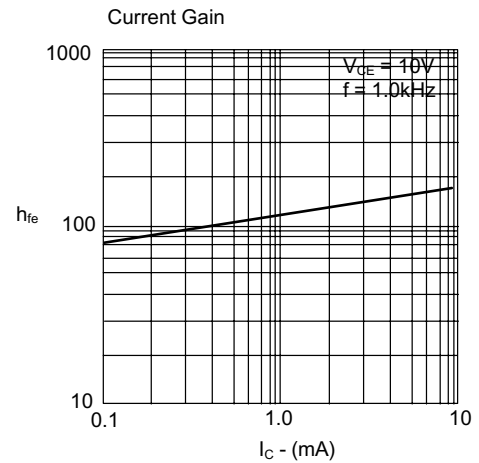
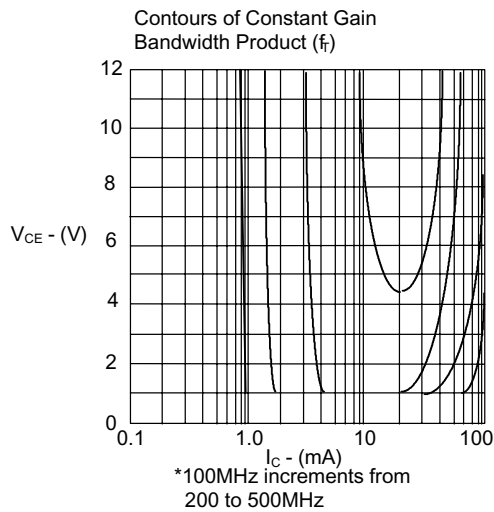
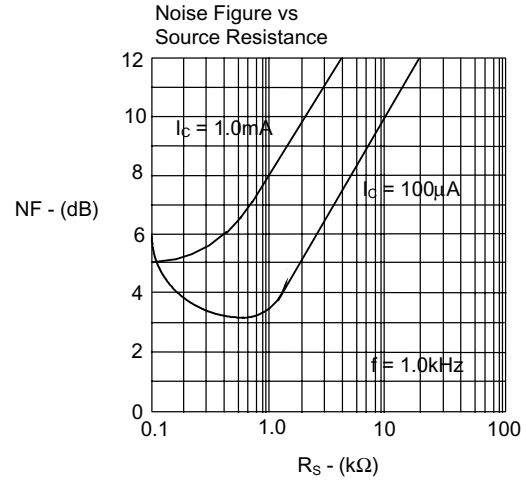
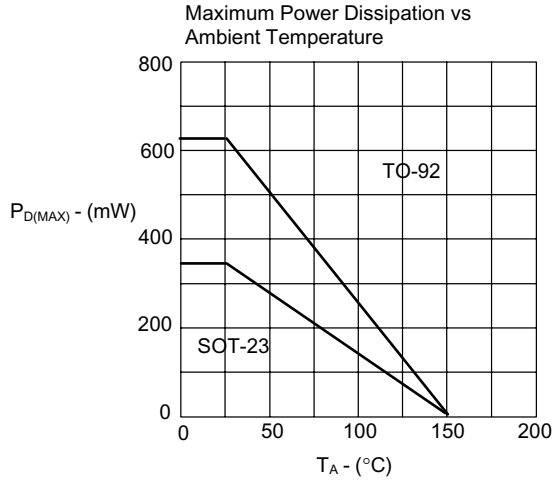
### DIMENSIONS

DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.175	.185	4.45	4.70	
B	.175	.185	4.45	4.70	
C	.500	---	12.70	---	
D	.016	.020	0.41	0.63	
E	.135	.145	3.43	3.68	
G	.095	.105	2.42	2.67	Straight Lead
	.173	.220	4.40	5.60	Bent Lead

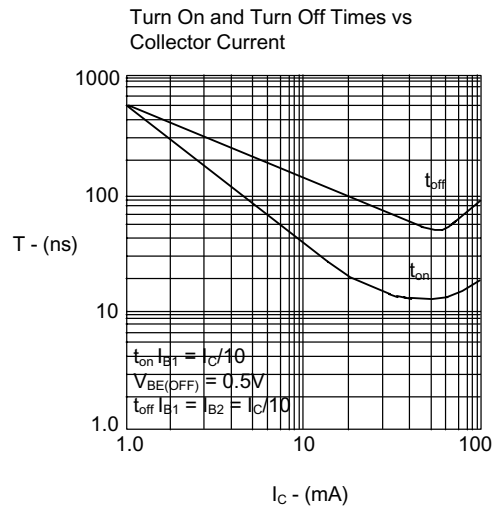
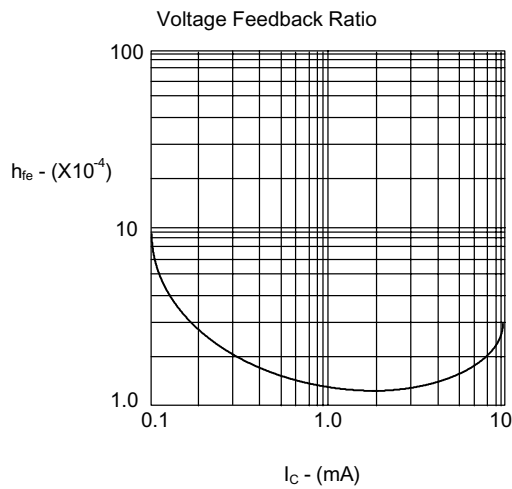
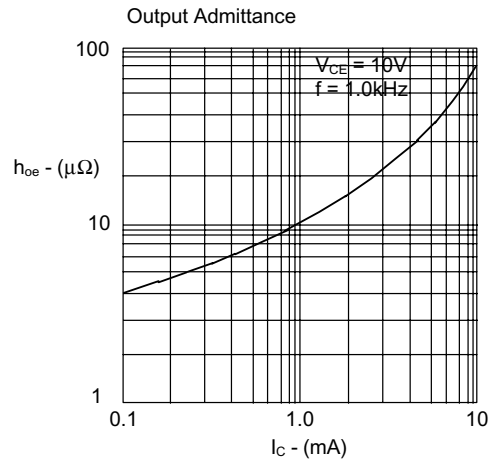
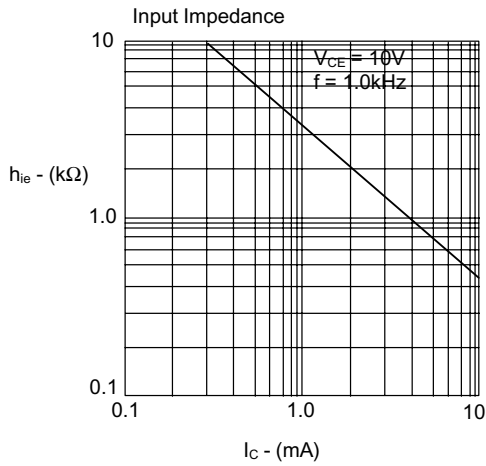
\* For ammo packing detailed specification, click here to visit our website of product packaging for details.



# 2N3904



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## Ordering Information :

Device	Packing
Part Number-AP	Ammo Packing: 20Kpcs/Carton
Part Number-BP	Bulk: 100Kpcs/Carton

Note : Adding "-HF" suffix for halogen free, eg. Part Number-AP-HF

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- Специальные условия для постоянных клиентов.
- Подбор аналогов.
- Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.
- Приемлемые сроки поставки, возможна ускоренная поставка.
- Доставку товара в любую точку России и стран СНГ.
- Комплексную поставку.
- Работу по проектам и поставку образцов.
- Формирование склада под заказчика.
- Сертификаты соответствия на поставляемую продукцию (по желанию клиента).
- Тестирование поставляемой продукции.
- Поставку компонентов, требующих военную и космическую приемку.
- Входной контроль качества.
- Наличие сертификата ISO.

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- Техническую поддержку проекта.
- Защиту от снятия компонента с производства.
- Оценку стоимости проекта по компонентам.
- Изготовление тестовой платы монтаж и пусконаладочные работы.



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