

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_c
- € 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
OFF CHARACTERISTICS				
V _{(BR)CEO}	Collector-Emitter Breakdown Voltage* (I _C =1.0mA, I _B =0)	40		Vdc
V _{(BR)CBO}	Collector-Base Breakdown Voltage (I _C =10μA, I _E =0)	60		Vdc
V _{(BR)EBO}	Emitter-Base Breakdown Voltage (I _E =10μA, I _C =0)	6.0		Vdc
I _{BL}	Base Cutoff Current (V _{CE} =30Vdc, V _{BE} =3.0Vdc)		50	nA
I _{CEX}	Collector Cutoff Current (V _{CE} =30Vdc, V _{BE} =3.0Vdc)		50	nA

ON CHARACTERISTICS

h _{FE}	DC Current Gain* (I _C =0.1mA, V _{CE} =1.0Vdc) (I _C =1.0mA, V _{CE} =1.0Vdc) (I _C =10mA, V _{CE} =1.0Vdc) (I _C =50mA, V _{CE} =1.0Vdc) (I _C =100mA, V _{CE} =1.0Vdc)	40 70 100 60 30	300	
V _{CE(sat)}	Collector-Emitter Saturation Voltage (I _C =10mA, I _B =1.0mA) (I _C =50mA, I _B =5.0mA)		0.2 0.4	Vdc
V _{BE(sat)}	Base-Emitter Saturation Voltage (I _C =10mA, I _B =1.0mA) (I _C =50mA, I _B =5.0mA)	0.65	0.85 0.95	Vdc

SMALL-SIGNAL CHARACTERISTICS

f _T	Current Gain-Bandwidth Product (I _C =10mA, V _{CE} =20Vdc, f=100MHz)	250		MHz
C _{obo}	Output Capacitance (V _{CB} =5.0Vdc, I _E =0, f=1.0MHz)		4.0	pF
C _{ibo}	Input Capacitance (V _{BE} =0.5Vdc, I _C =0, f=1.0MHz)		8.0	pF
NF	Noise Figure (I _C =100μA, V _{CE} =5.0Vdc, R _S =1.0kΩ f=10Hz to 15.7kHz)		5.0	dB

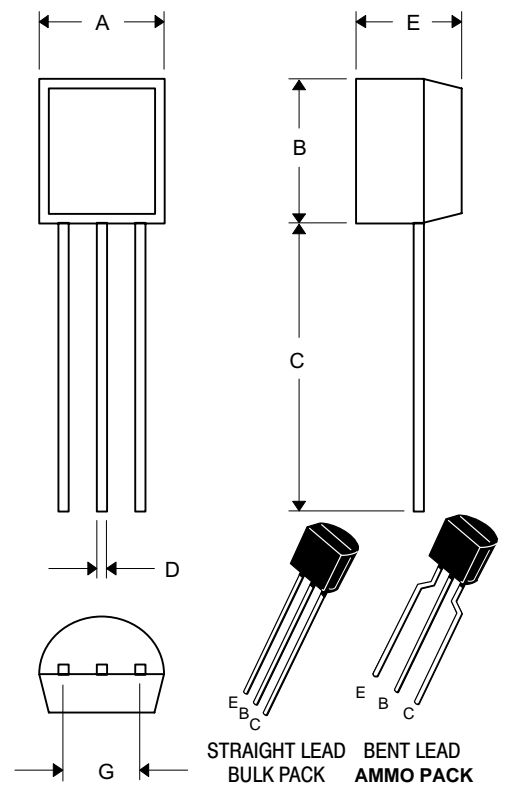
SWITCHING CHARACTERISTICS

t _d	Delay Time	(V _{CC} =3.0Vdc, V _{BE} =0.5Vdc)	35	ns
t _r	Rise Time	(I _C =10mA, I _{B1} =1.0mA)	35	ns
t _s	Storage Time	(V _{CC} =3.0Vdc, I _C =10mA)	200	ns
t _f	Fall Time	(I _{B1} =I _{B2} =1.0mA)	50	ns

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

Symbol	Characteristic	Max	Unit
R _{θJA}	Thermal Resistance, Junction-to-Ambient	200	°C/W

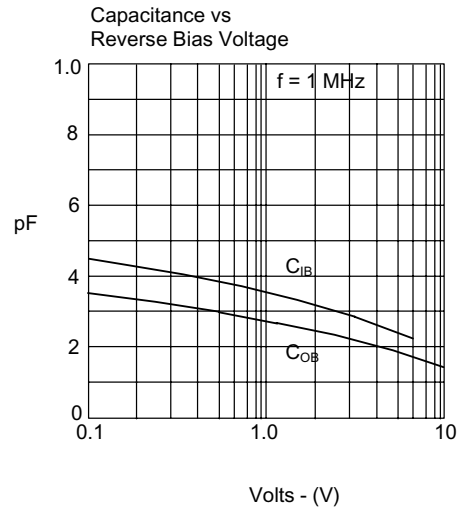
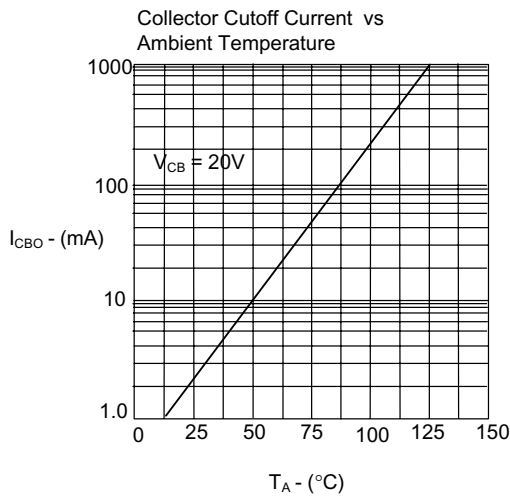
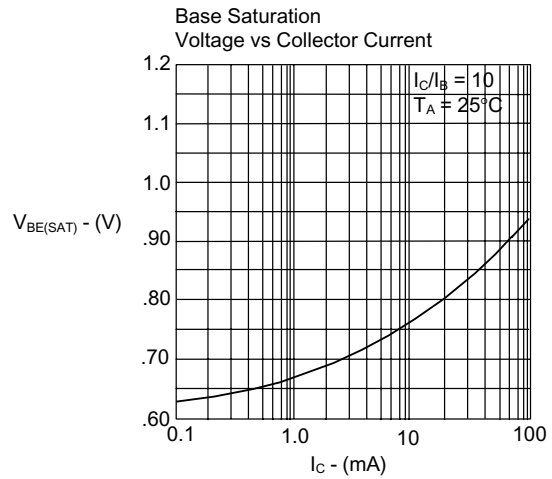
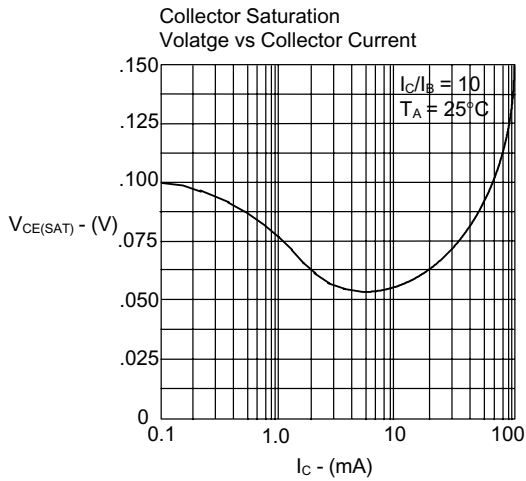
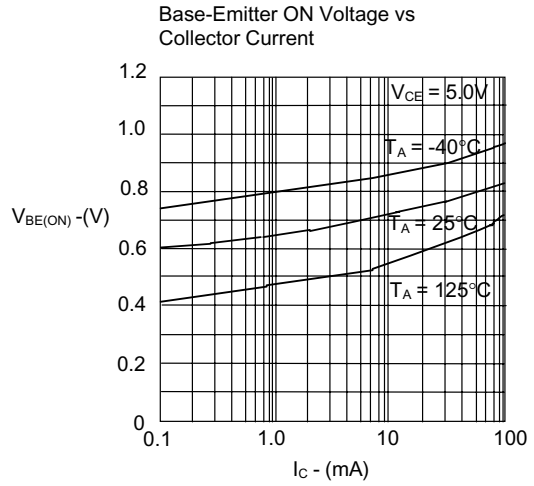
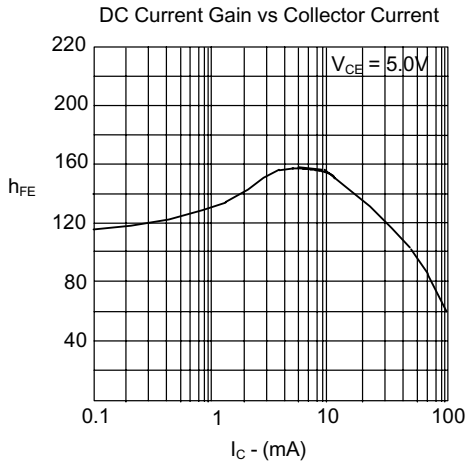
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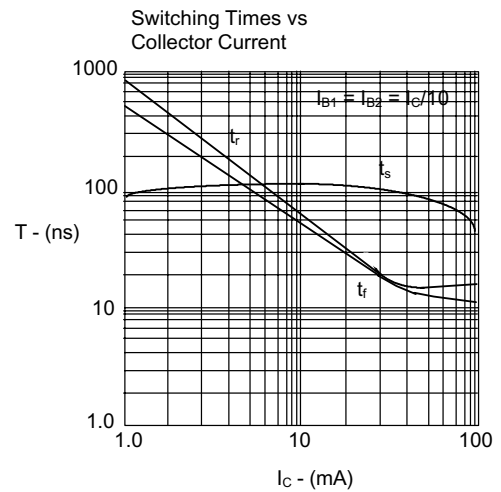
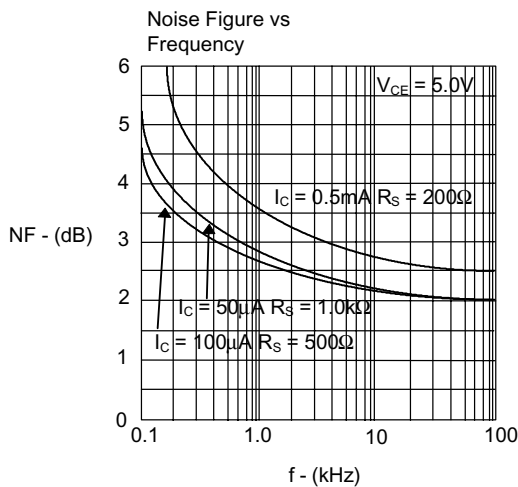
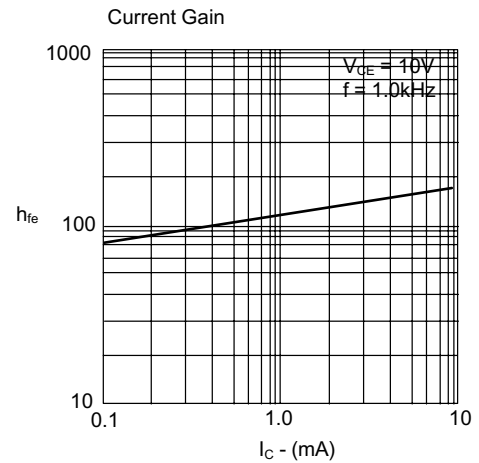
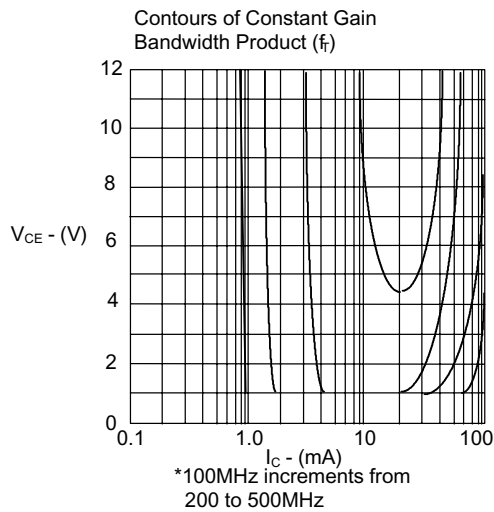
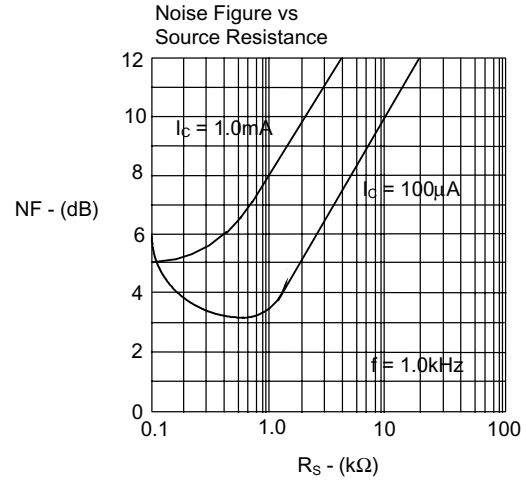
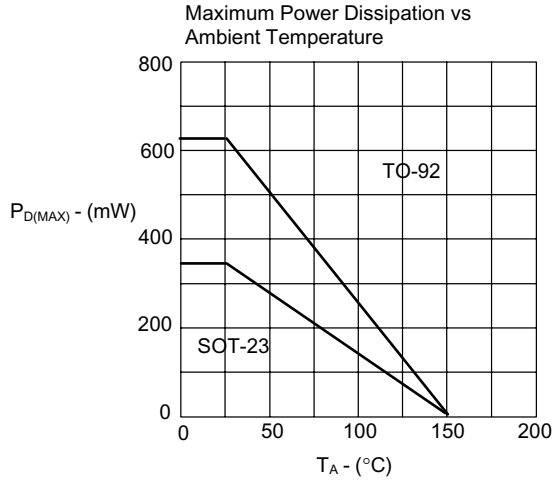
DIMENSIONS

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

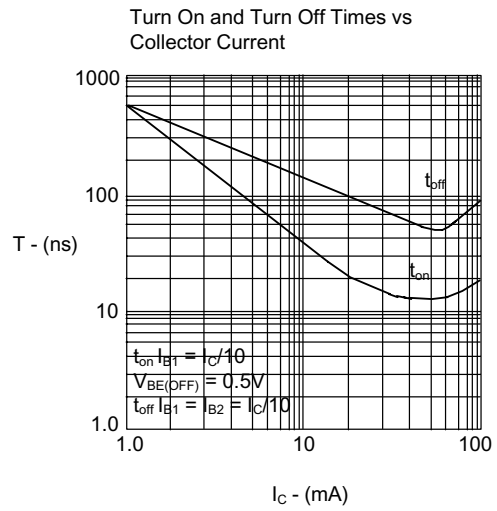
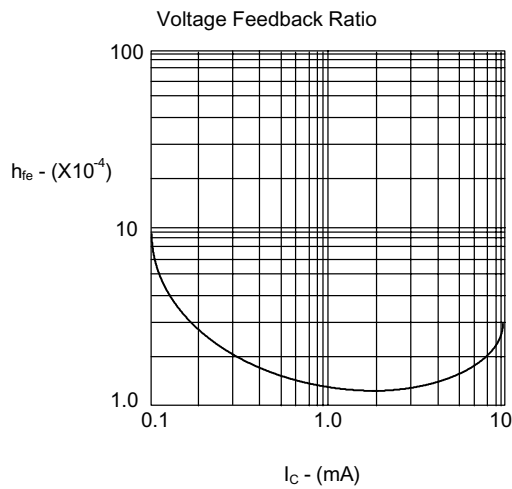
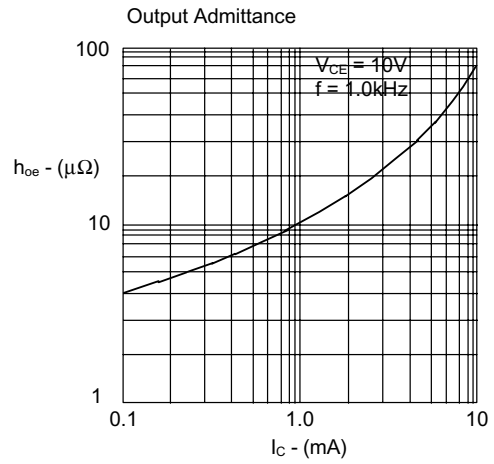
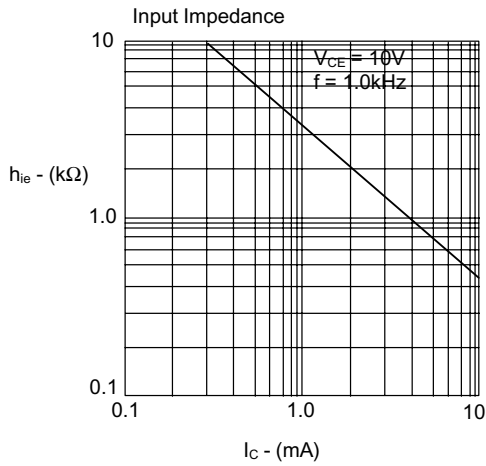
* For ammo packing detailed specification, click here to visit our website of product packaging for details.



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TM

Micro Commercial Components

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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Наши контакты:

Телефон: +7 812 627 14 35

Электронная почта: sales@st-electron.ru

Адрес: 198099, Санкт-Петербург,
Промышленная ул, дом № 19, литера Н,
помещение 100-Н Офис 331