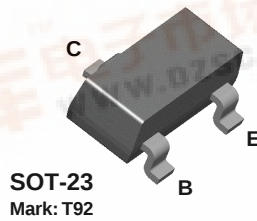




BSR18A



PNP General Purpose Amplifier

This device is designed as a general purpose amplifier and switching applications at collector currents of 10 μ A to 100 mA. Sourced from Process 66.

Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V _{CEO}	Collector-Emitter Voltage	40	V
V _{CBO}	Collector-Base Voltage	40	V
V _{EBO}	Emitter-Base Voltage	5.0	V
I _C	Collector Current - Continuous	200	mA
T _J , T _{stg}	Operating and Storage Junction Temperature Range	-55 to +150	°C

*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

NOTES:

- 1) These ratings are based on a maximum junction temperature of 150 degrees C.
- 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.
- 3) All voltages (V) and currents (A) are negative polarity for PNP transistors.

Thermal Characteristics

TA = 25°C unless otherwise noted

Symbol	Characteristic	Max	Units
		*BSR18A	
P _D	Total Device Dissipation Derate above 25°C	350 2.8	mW mW/°C
R _{θJA}	Thermal Resistance, Junction to Ambient	357	°C/W

*Device mounted on FR-4 PCB 40 mm X 40 mm X 1.5 mm.

PNP General Purpose Amplifier

(continued)

Electrical Characteristics

TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
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OFF CHARACTERISTICS

$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	$I_C = 10\ \mu A, I_B = 0$	40		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 1.0\ mA, I_E = 0$	40		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10\ \mu A, I_C = 0$	5.0		V
I_{CBO}	Collector-Cutoff Current	$V_{CB} = 30\ V$		50	nA
I_{EBO}	Emitter-Cutoff Current	$V_{EB} = 3.0\ V, I_C = 0$		50	nA

ON CHARACTERISTICS*

h_{FE}	DC Current Gain	$I_C = 0.1\ mA, V_{CE} = 1.0\ V$ $I_C = 1.0\ mA, V_{CE} = 1.0\ V$ $I_C = 10\ mA, V_{CE} = 1.0\ V$ $I_C = 50\ mA, V_{CE} = 1.0\ V$ $I_C = 100\ mA, V_{CE} = 1.0\ V$	60 80 100 60 30	300	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 10\ mA, I_B = 1.0\ mA$ $I_C = 50\ mA, I_B = 5.0\ mA$		0.25 0.4	V V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 10\ mA, I_B = 1.0\ mA$ $I_C = 50\ mA, I_B = 5.0\ mA$	0.65	0.85 0.95	V V

SMALL SIGNAL CHARACTERISTICS

f_T	Transition Frequency	$I_C = 10\ mA, V_{CE} = 20, f = 100\ MHz$	250		MHz
C_{cb}	Collector-Base Capacitance	$V_{CB} = 5.0\ V, I_E = 0, f = 100\ kHz$		4.5	pF
C_{eb}	Emitter-Base Capacitance	$V_{EB} = 0.5\ V, I_C = 0, f = 100\ kHz$		10	pF
h_{ie}	Input Impedance	$V_{CE} = 10\ V, I_C = 1.0\ mA, f = 1.0\ kHz$	2.0	12	k Ω
h_{fe}	Small-Signal Current Gain	$V_{CE} = 10\ V, I_C = 1.0\ mA, f = 1.0\ kHz$	100	400	
h_{oe}	Output Admittance	$V_{CE} = 10\ V, I_C = 1.0\ mA, f = 1.0\ kHz$	3.0	60	μS

SWITCHING CHARACTERISTICS

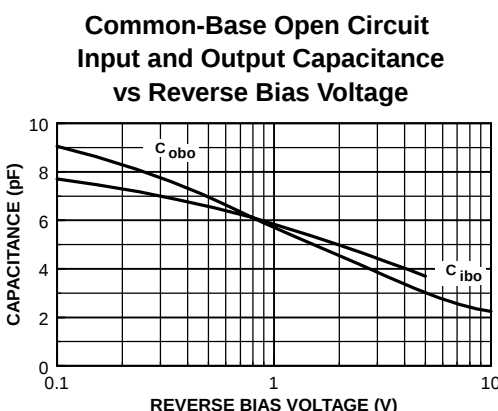
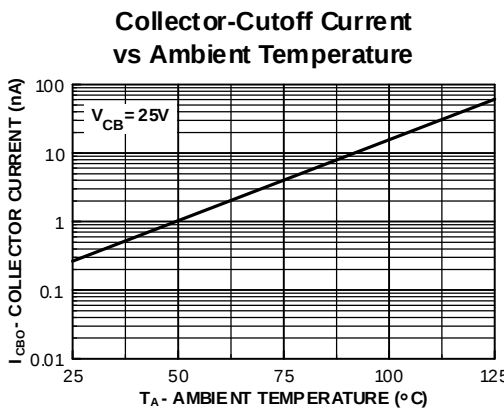
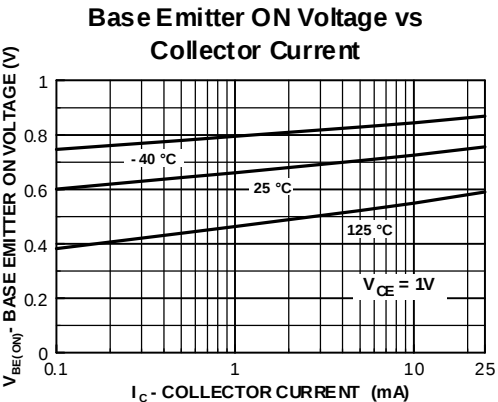
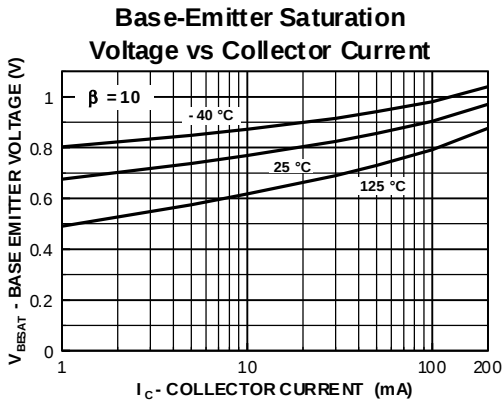
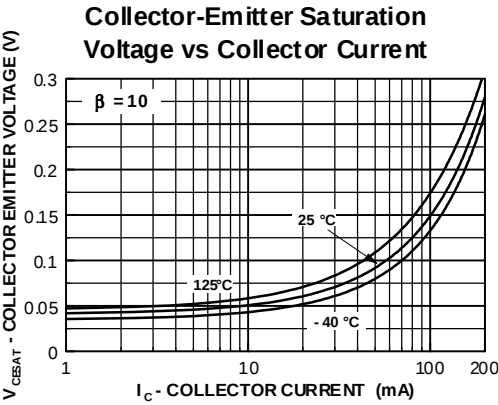
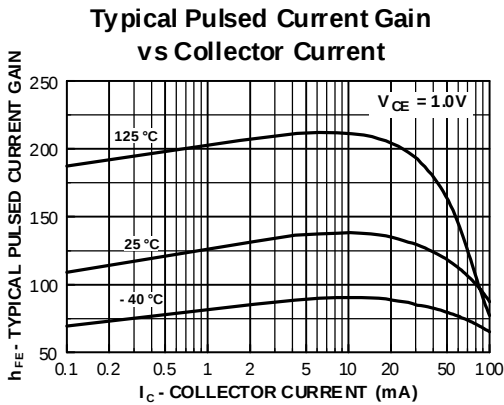
t_d	Delay Time	$I_C = 10\ mA, I_{B1} = 1.0\ mA, V_{EB} = 0.5\ V$		35	ns
t_r	Rise Time			35	ns
t_s	Storage Time	$I_C = 10\ mA, I_{BON} = I_{BOFF} = 1.0\ mA$		275	ns
t_f	Fall Time			75	ns

*Pulse Test: Pulse Width $\leq 300\ \mu s$, Duty Cycle $\leq 0.01\%$ **NOTE:** All voltages (V) and currents (A) are negative polarity for PNP transistors.**Spice Model**

PNP (Is=1.41f Xti=3 Eg=1.11 Vaf=18.7 Bf=180.7 Ne=1.5 Ise=0 Ikf=80m Xtb=1.5 Br=4.977 Nc=2 Isc=0 Ikr=0 Rc=2.5 Cjc=9.728p Mjc=.5776 Vjc=.75 Fc=.5 Cje=8.063p Mje=.3677 Vje=.75 Tr=33.42n Tf=179.3p Itf=.4 Vtf=4 Xtf=6 Rb=10)

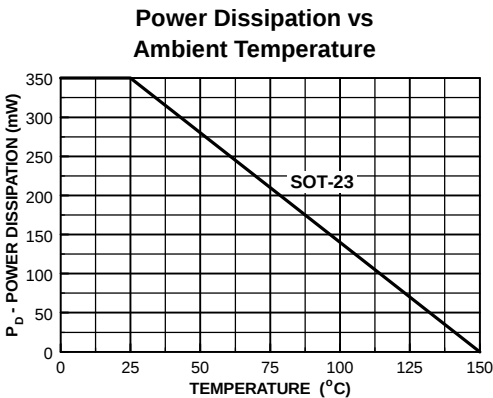
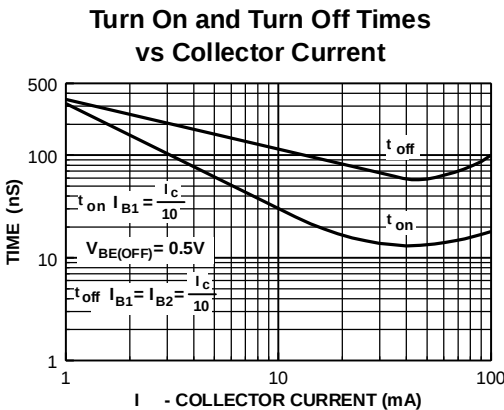
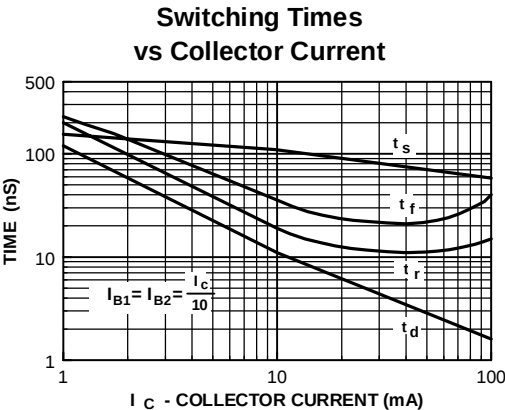
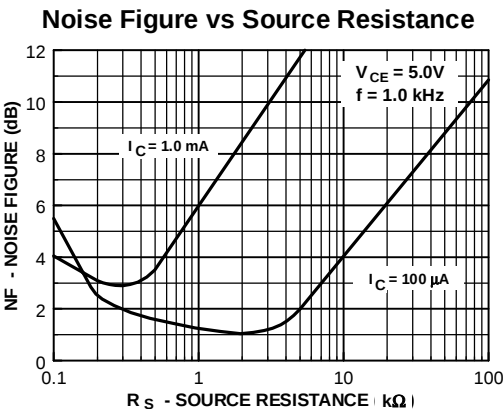
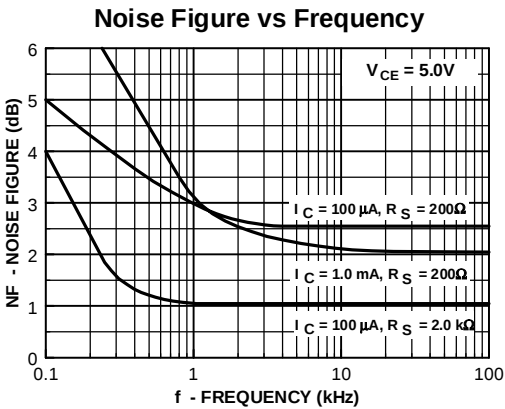
PNP General Purpose Amplifier
(continued)

Typical Characteristics



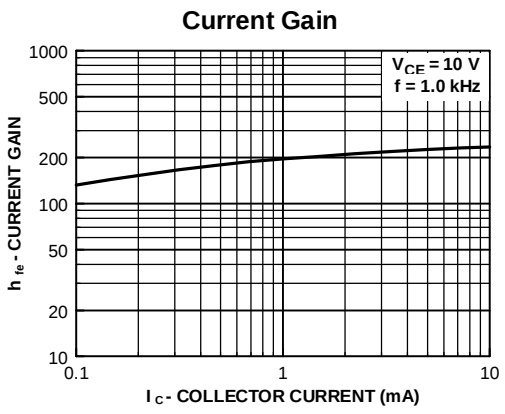
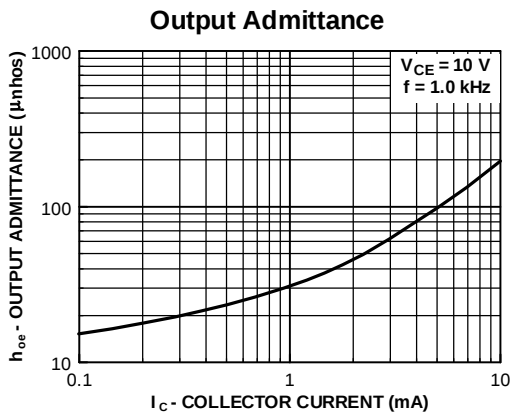
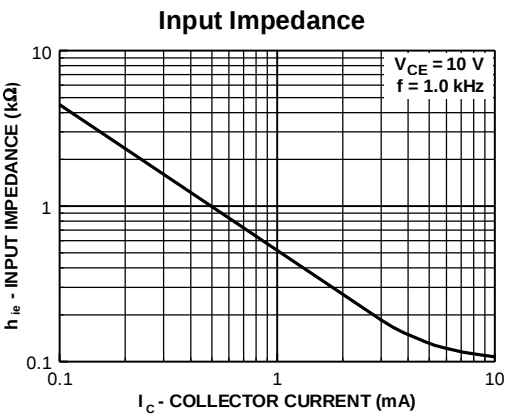
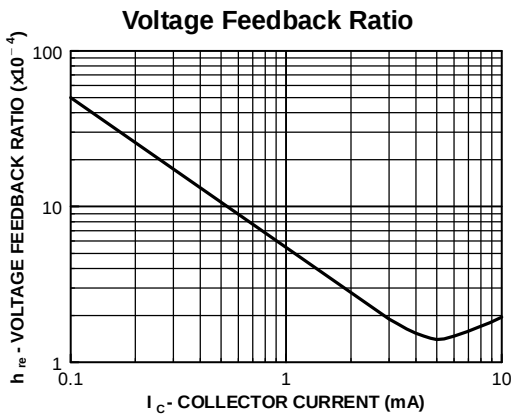
PNP General Purpose Amplifier
(continued)

Typical Characteristics (continued)



PNP General Purpose Amplifier
(continued)

Typical Characteristics (continued)



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