FAIRCHILD SEMICONDUCTOR®

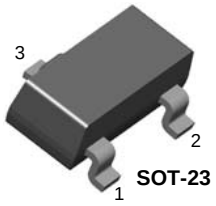
June 2007

BSR18B

PNP General Purpose Amplifier

This device is designed as a general purpose amplifier and switch.

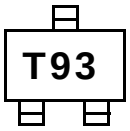
Sourced from Process 23.



SOT-23

1. Base 2. Emitter 3. Collector

Marking



Absolute Maximum Ratings

* T_a = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	40	V
V_{CEO}	Collector-Emitter Voltage	40	V
V_{EBO}	Emitter-Base Voltage	5.0	V
I_C	Collector Current (DC)	200	mA
T_J, T_{STG}	Junction Temperature, Storage Temperature	-55 ~ +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.

Thermal Characteristics

* T_a = 25°C unless otherwise noted

Symbol	Characteristic	Max	Units
P_D	Total Device Dissipation Derate above 25°C	230 1.84	mW mW/°C
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	550	°C/W

*Device mounted on FR-4 PCB 1.6" X 1.6" X 0.06".

Electrical Characteristics

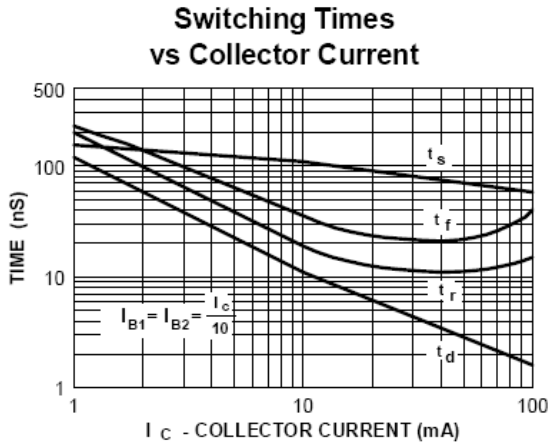
* T_a = 25°C unless otherwise noted

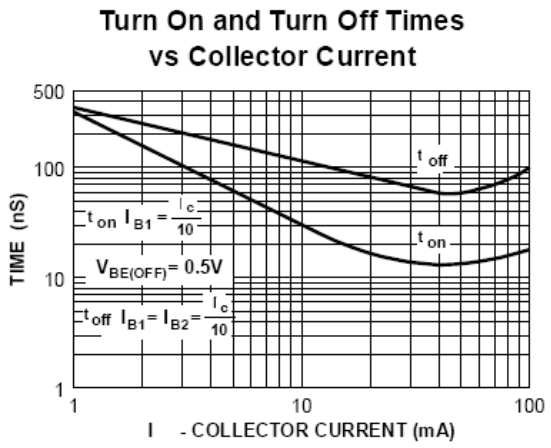
Symbol	Parameter	Test Condition	MIN	MAX	Units
Off Characteristics					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	I_C = 1.0 mA, I_B = 0	40		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = 10 μA, I_E = 0	40		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = 10 μA, I_C = 0	5.0		V
I_{CBO}	Collector-Cutoff Current	V_{CB} = 30 V		50	nA
I_{EBO}	Emitter-Cutoff Current	V_{CE} = 30 V, V_{EB} = 3.0 V		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 80 110 60 30	220	
$V_{CE(sat)}$	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
$V_{BE(sat)}$	Emitter-Base Breakdown 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					
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
Switching Characteristics					
t_d	Delay Time	I_C = 10 mA, I_{B1} = 1.0 mA, V_{CC} = 3.0 V		35	ns
t_r	Rise Time			35	pF
t_s	Storage Time	I_C = 10 mA, I_{Bon} = I_{Boff} = 1.0 mA		225	ns
t_f	Fall Time	V_{CC} = 3.0 V		75	ns

* Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

NOTE: All voltages (V) and currents (A) are negative polarity for PNP transistors.

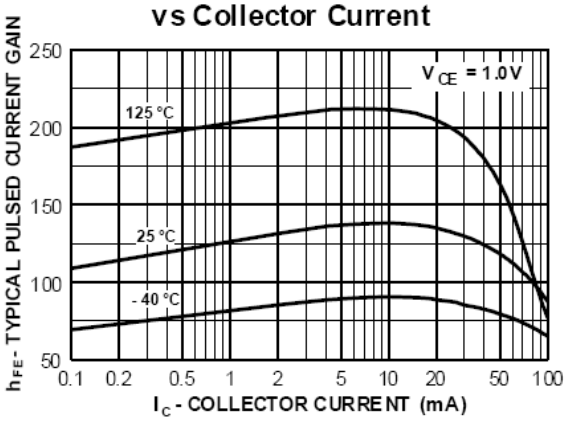
Typical Performance Characteristics



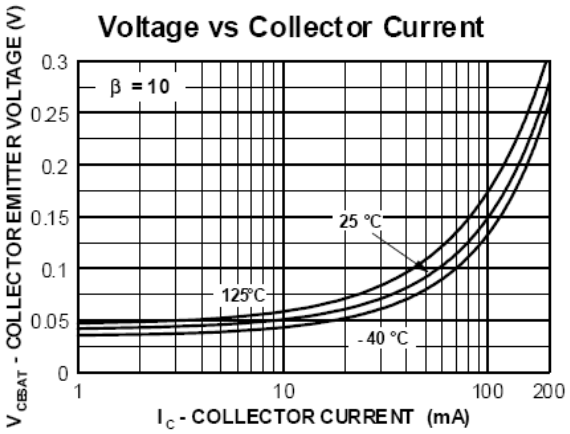


Typical Performance Characteristics (continued)

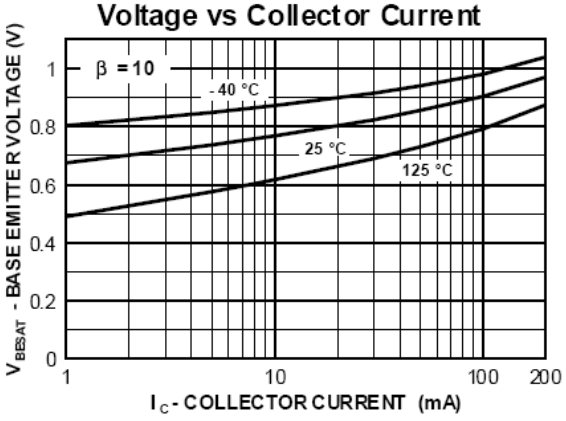
Typical Pulsed Current Gain vs Collector Current



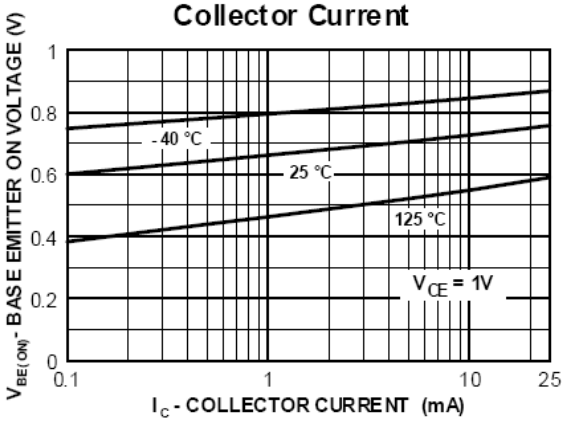
Collector-Emitter Saturation Voltage vs Collector Current



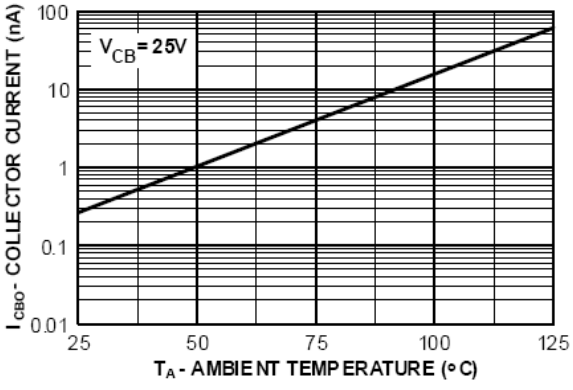
Base-Emitter Saturation Voltage vs Collector Current



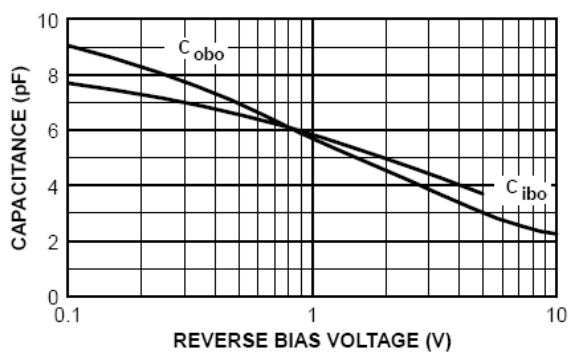
Base Emitter ON Voltage vs Collector Current



Collector-Cutoff Current vs Ambient Temperature



Common-Base Open Circuit Input and Output Capacitance vs Reverse Bias Voltage



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