



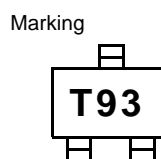
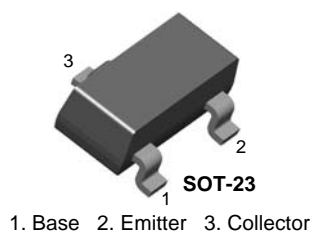
THE DATASHEET OF BSR18B



BSR18B

PNP General Purpose Amplifier

This device is designed as a general purpose amplifier and switch.
Sourced from Process 23.



Absolute Maximum Ratings * $T_a = 25^\circ\text{C}$ 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	$^\circ\text{C}$

* 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 * $T_a = 25^\circ\text{C}$ unless otherwise noted

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

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

Electrical Characteristics * $T_a = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	MIN	MAX	Units
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Off Characteristics

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

On Characteristics

h_{FE}	DC Current Gain	$I_c = 0.1\text{ mA}, V_{CE} = 1.0\text{ V}$ $I_c = 1.0\text{ mA}, V_{CE} = 1.0\text{ V}$ $I_c = 10\text{ mA}, V_{CE} = 1.0\text{ V}$ $I_c = 50\text{ mA}, V_{CE} = 1.0\text{ V}$ $I_c = 100\text{ mA}, V_{CE} = 1.0\text{ V}$	60 80 110 60 30	220	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage *	$I_c = 10\text{ mA}, I_B = 1.0\text{ mA}$ $I_c = 50\text{ mA}, I_B = 5.0\text{ mA}$		0.25 0.4	V V
$V_{BE(sat)}$	Emitter-Base Breakdown Voltage *	$I_c = 10\text{ mA}, I_B = 1.0\text{ mA}$ $I_c = 50\text{ mA}, I_B = 5.0\text{ mA}$	0.65	0.85 0.95	V V

Small Signal Characteristics

C_{cb}	Collector-Base Capacitance	$V_{CB} = 5.0\text{ V}, I_E = 0, f = 100\text{ kHz}$		4.5	pF
C_{eb}	Emitter-Base Capacitance	$V_{EB} = 0.5\text{ V}, I_c = 0, f = 100\text{ kHz}$		10	pF

Switching Characteristics

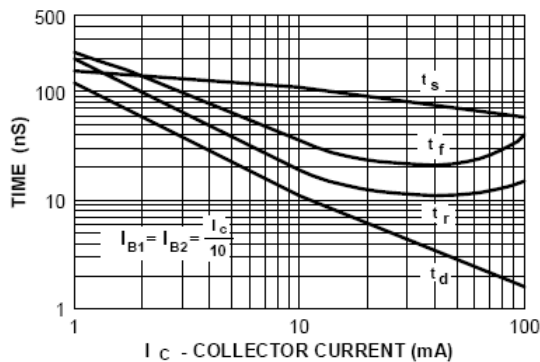
t_d	Delay Time	$I_c = 10\text{ mA}, I_{B1} = 1.0\text{ mA}, V_{CC} = 3.0\text{ V}$		35	ns
t_r	Rise Time			35	pF
t_s	Storage Time	$I_c = 10\text{ mA}, I_{BON} = I_{BOFF} = 1.0\text{ mA}$		225	ns
t_f	Fall Time	$V_{CC} = 3.0\text{ V}$		75	ns

* Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

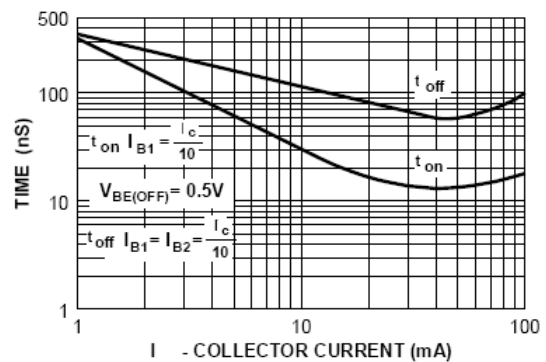
NOTE: All voltages (V) and currents (A) are negative polarity for PNP transistors.

Typical Performance Characteristics

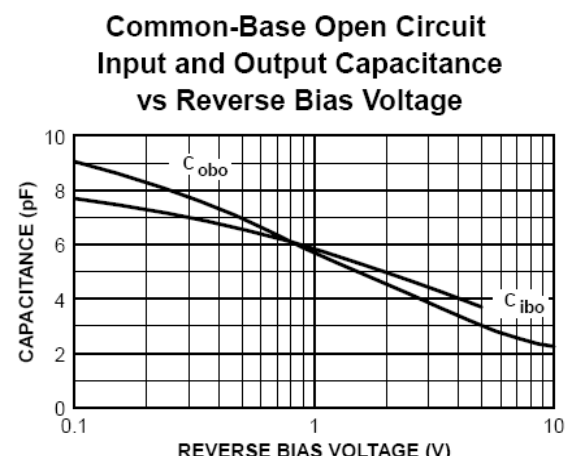
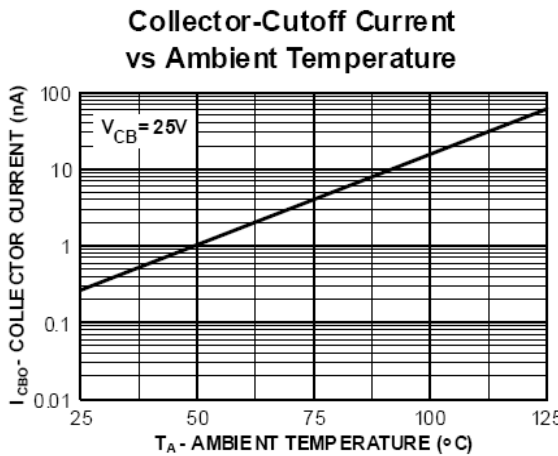
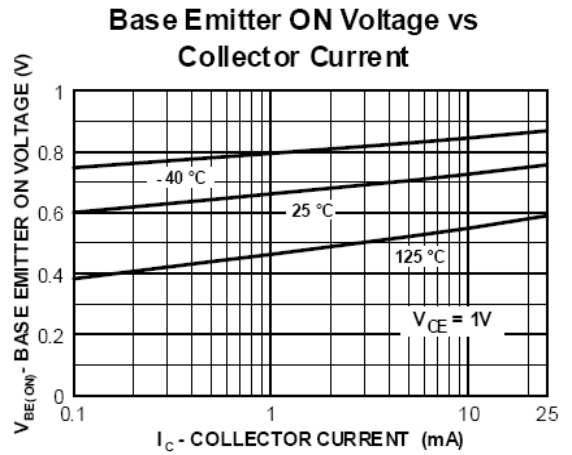
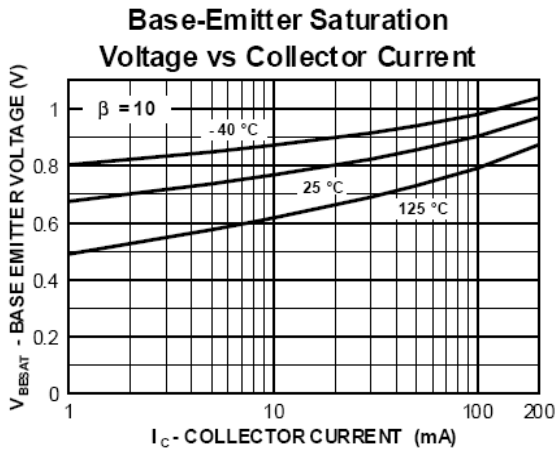
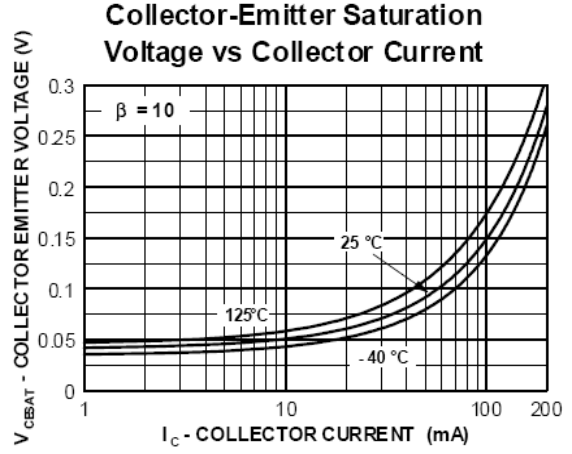
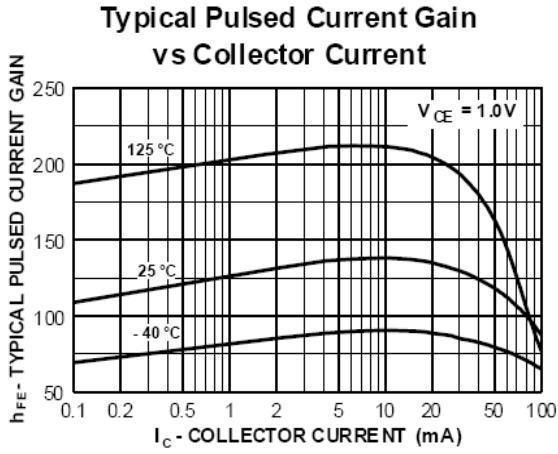
Switching Times vs Collector Current



Turn On and Turn Off Times vs Collector Current



Typical Performance Characteristics (continued)





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