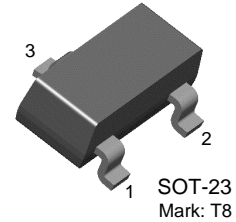


BSR16

PNP General Purpose Amplifier

- This device designed for use as general purpose amplifier and switches requiring collector currents to 500mA.
- Sourced from Process 63.
- See BCW68G for Characteristics.



1. Base 2. Emitter 3. Collector

PNP Epitaxial Silicon Transistor

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

Symbol	Parameter	Value	Units
V_{CEO}	Collector-Emitter Voltage	-60	V
V_{CBO}	Collector-Base Voltage	-60	V
V_{EBO}	Emitter-Base Voltage	-5.0	V
I_C	Collector Current - Continuous	-800	mA
T_J, T_{ST}	Operating and Storage Junction Temperature Range	-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.

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristics						
$BV_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	$I_C = -10\text{mA}, I_B = 0$	-60			V
$BV_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = -100\mu\text{A}, I_E = 0$	-60			V
$BV_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = -10\mu\text{A}, I_C = 0$	-5.0			V
I_{CBO}	Collector Cut-off Current	$V_{CB} = -50\text{V}$ $V_{CB} = -50\text{V}, T_A = 150^\circ\text{C}$			-10 -10	nA μA
I_{CEX}	Collector Cut-off Current	$V_{CE} = -30\text{V}, V_{EB} = -0.5\text{V}$			-50	nA
I_{BEX}	Reverse Base Current	$V_{CE} = -30\text{V}, V_{EB} = -3.0\text{V}$			-50	nA

On Characteristics						
h_{FE}	DC Current Gain	$I_C = -0.1\text{mA}, V_{CE} = -10\text{V}$ $I_C = -1.0\text{mA}, V_{CE} = -10\text{V}$ $I_C = -10\text{mA}, V_{CE} = -10\text{V}$ $I_C = -150\text{mA}, V_{CE} = -10\text{V}$ $I_C = -500\text{mA}, V_{CE} = -10\text{V}$	75 100 100 100 50	300		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = -150\text{mA}, I_B = -15\text{mA}$ $I_C = -500\text{mA}, I_B = -50\text{mA}$			-0.4 -1.6	V V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = -150\text{mA}, I_B = -15\text{mA}$ $I_C = -500\text{mA}, I_B = -50\text{mA}$			-1.3 -2.6	V V

Small Signal Characteristics						
f_T	Current Gain Bandwidth Product	$I_C = -50\text{mA}, V_{CE} = -20\text{V},$ $f = 100\text{MHz}, T_A = 25^\circ\text{C}$	200			MHz
C_{cb}	Output Capacitance	$V_{CB} = -10\text{V}, I_E = 0, f = 1.0\text{MHz}$			8.0	pF
C_{eb}	Emitter-Base Capacitance	$V_{CB} = -2.0\text{V}, I_E = 0, f = 1.0\text{MHz}$			30	pF

Switching Characteristics						
t_{on}	Turn-On Time	$V_{CC} = -30\text{V}, I_C = -150\text{mA},$ $I_{B1} = -15\text{mA}$			45	ns
t_d	Delay Time				10	ns
t_r	Rise Time				40	ns
t_{off}	Turn-Off Time	$V_{CC} = -30\text{V}, I_C = -150\text{mA},$ $I_{B1} = I_{B2} = -15\text{mA}$			100	ns
t_s	Storage Time				80	ns
t_f	Fall Time				30	ns

Thermal Characteristics $T_A=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Max.	Units
P_D	Total Device Dissipation	350	mW
	Derate above 25°C	2.8	mW/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	357	$^\circ\text{C}/\text{W}$

* Device mounted on FR-4 PCB 40mm \times 40mm \times 1.5mm

Package Dimensions

SOT-23



Dimensions in Millimeters

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