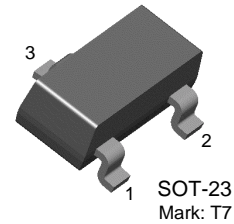


## BSR15

### 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.



SOT-23  
Mark: T7  
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
$V_{\text{CEO}}$	Collector-Emitter Voltage	-40	V
$V_{\text{CBO}}$	Collector-Base Voltage	-60	V
$V_{\text{EBO}}$	Emitter-Base Voltage	-5.0	V
$I_{\text{C}}$	Collector Current - Continuous	-800	mA
$T_{\text{J}}, T_{\text{ST}}$	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
<b>Off Characteristics</b>						
$BV_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	$I_C = -10\text{mA}, I_B = 0$	-40			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	$V_{CB} = -50\text{V}$ $V_{CB} = -50\text{V}, T_A = 150^\circ\text{C}$			-20 -20	nA $\mu\text{A}$
$I_{CEX}$	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
<b>On Characteristics</b>						
$h_{FE}$	DC Current Gain	$I_C = -0.1\text{mA}, V_{CE} = -10\text{V}$ $I_C = -1.0\text{mA}, V_{CE} = -10\text{V}$ $I_C = -10\text{mA}, V_{CE} = -10\text{V}$ $I_C = -150\text{mA}, V_{CE} = -10\text{V}$ $I_C = -500\text{mA}, V_{CE} = -10\text{V}$	35 50 75 100 30	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
<b>Small Signal Characteristics</b>						
$f_T$	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
<b>Switching Characteristics</b>						
$t_{on}$	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 $25^\circ\text{C}$	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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