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[BSR15](#)

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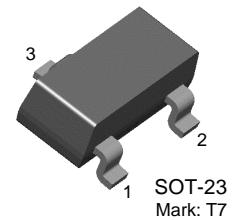
**BSR15**



## 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.



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	-40	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	°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	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		
$V_{CE(\text{sat})}$	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
$V_{BE(\text{sat})}$	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

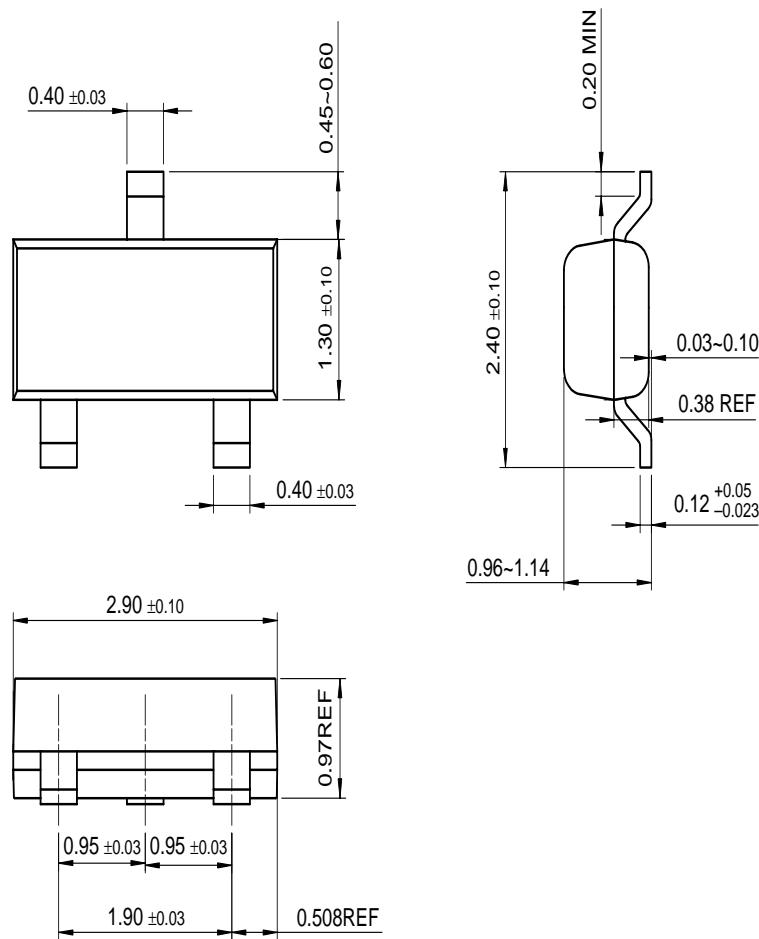
Symbol	Parameter	Max.	Units
$P_D$	Total Device Dissipation	350	mW
	Derate above $25^\circ\text{C}$	2.8	$\text{mW}/^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	357	$^\circ\text{C}/\text{W}$

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

**BSR15**

## Package Dimensions

**SOT-23**



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