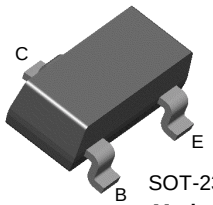
FAIRCHILD
SEMICONDUCTOR®

BSR13

NPN General Purpose Amplifier

- Sourced from process 10.



SOT-23
Mark: U7

Absolute Maximum Ratings* T_a=25°C unless otherwise noted

Symbol	Parameter	Ratings	Units
V_{CEO}	Collector-Emitter Voltage	30	V
V_{CBO}	Collector-Base Voltage	60	V
V_{EBO}	Emitter-Base Voltage	5.0	V
I_C	Collector Current - Continuous	0.5	A
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 ~ 150	°C

* This ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

NOTES:
1) These rating are based on a maximum junction temperature of 150 degrees C.
2) These are steady limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

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 = 10mA, I_B = 0	30		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = 10μA, I_E = 0	60		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = 10μA, I_C = 0	5.0		V
I_{CBO}	Collector Cutoff Current	V_{CB} = 50V, I_E = 0 V_{CB} = 50V, I_E = 0, T_a = 150°C		30 10	nA μA
I_{EBO}	Emitter Cutoff Current	V_{EB} = 3.0V, I_C = 0		15	nA
On Characteristics					
h_{FE}	DC Current Gain	I_C = 0.1mA, V_{CE} = 10V I_C = 1.0mA, V_{CE} = 10V I_C = 10mA, V_{CE} = 10V I_C = 150mA, V_{CE} = 10V * I_C = 150mA, V_{CE} = 1.0V * I_C = 500mA, V_{CE} = 10V *	35 50 75 100 50 30	 300 	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage *	I_C = 150mA, I_B = 15V I_C = 500mA, I_B = 50V		0.4 1.6	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	I_C = 150mA, I_B = 15V I_C = 500mA, I_B = 50V		1.3 2.6	V
Small Signal Characteristics					
f_T	Curent Gain Bandwidth Product	I_C = 20mA, V_{CE} = 20V, f = 100MHz	250		

* Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2.0%

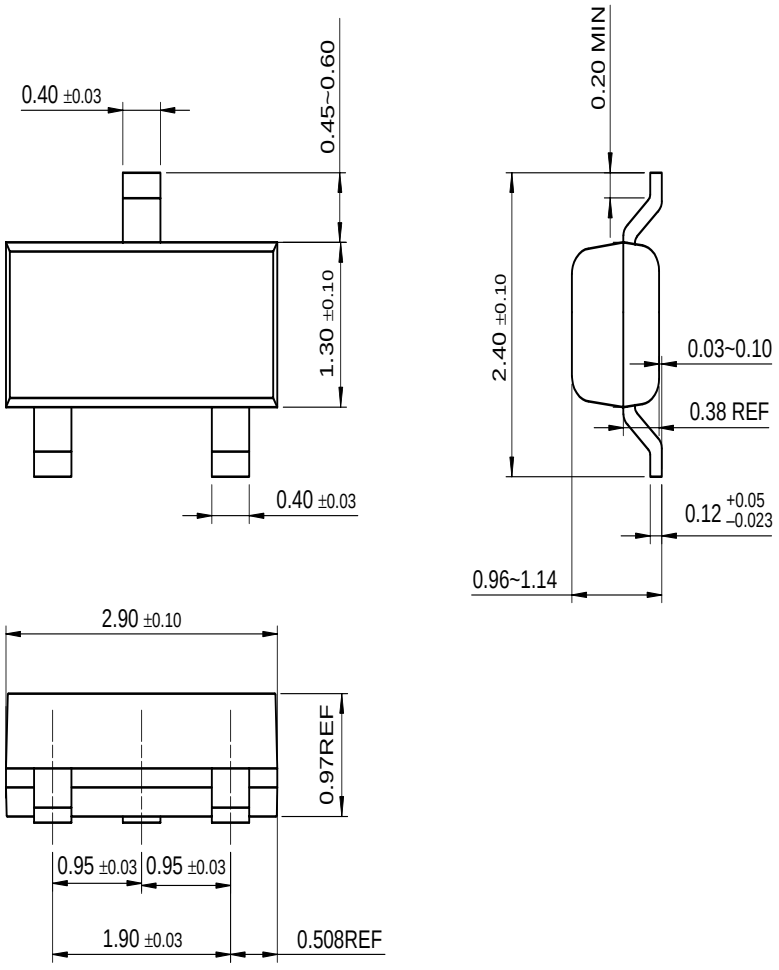
Thermal Characteristics T_a=25°C unless otherwise noted

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

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

Package Dimensions

SOT-23



Dimensions in Millimeters

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CROSSVOLT™	GlobalOptoisolator™	MicroPak™	QFET®	SuperSOT™-8
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