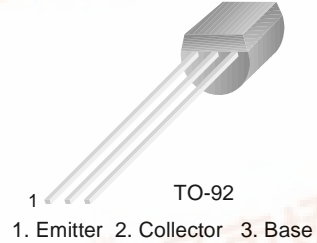


FAIRCHILD
SEMICONDUCTOR®

BSR50

NPN Darlington Transistor

- This device designed for applications requiring extremely high gain at collector currents to 0.5A.
- Sourced from Process 06.



NPN Epitaxial Silicon Transistor

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

Symbol	Parameter	Ratings	Units
V_{CE0}	Collector-Emitter Voltage	45	V
V_{CBO}	Collector-Base Voltage	60	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current	1.5	A
T_J, T_{STG}	Storage Temperature	-55 ~ 150	$^\circ\text{C}$

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
BV_{CEO}	Collector-Emitter Breakdown Voltage *	$I_C = 10\text{mA}, I_B = 0$	45			V
BV_{CBO}	Collector-Base Breakdown Voltage	$I_C = 100\mu\text{A}, I_B = 0$	60			V
BV_{EBO}	Emitter-Base Breakdown Voltage	$I_E = 100\mu\text{A}, I_C = 0$	5			V
I_{CBO}	Collector Cut-off Current	$V_{CB} = 45\text{V}, I_E = 0$			50	nA
I_{EBO}	Emitter Cut-off Current	$V_{EB} = 4.0\text{V}, I_C = 0$			50	nA
h_{FE}	DC Current Gain	$V_{CE} = 10\text{V}, I_C = 150\text{mA}$ $V_{CE} = 10\text{V}, I_C = 0.5\text{A}$	1,000 2,000			
$V_{CE}(\text{sat})$	Collector-Emitter Saturation Voltage	$I_C = 500\text{mA}, I_B = 500\mu\text{A}$ $I_C = 1.0\text{A}, I_B = 4.0\text{mA}$			1.3 1.6	V
$V_{BE}(\text{sat})$	Base-Emitter Saturation Voltage	$I_C = 500\text{mA}, I_B = 500\mu\text{A}$ $I_C = 1.0\text{mA}, I_B = 4.0\text{mA}$			0.9 2.2	V

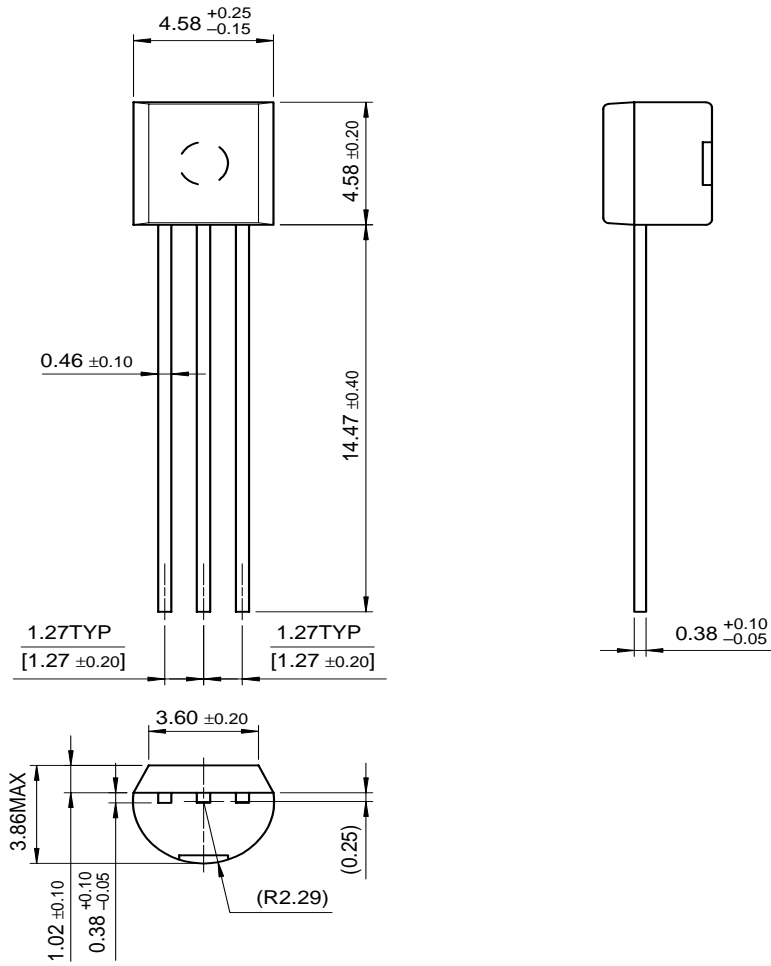
Thermal Characteristics $T_A=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Max.	Units
P_D	Total Device Dissipation Derate above 25°C	625 5.0	mW mW/ $^\circ\text{C}$
$R_{\theta JC}$	Thermal Resistance, Junction to Case	83.3	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	200	$^\circ\text{C}/\text{W}$

Package Dimensions

BSR50

TO-92



Dimensions in Millimeters

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FACT TM	ImpliedDisconnect TM	OCXPro TM	μSerDes TM	UltraFET [®]
FACT Quiet Series TM		OPTOLOGIC [®]	SILENT SWITCHER [®]	VCX TM
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PRODUCT STATUS DEFINITIONS

Definition of Terms

Datasheet Identification	Product Status	Definition
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No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
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