

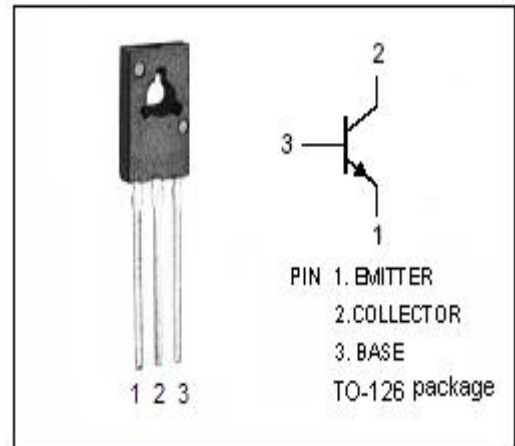
# isc Silicon NPN Power Transistor

**BD139**
**DESCRIPTION**

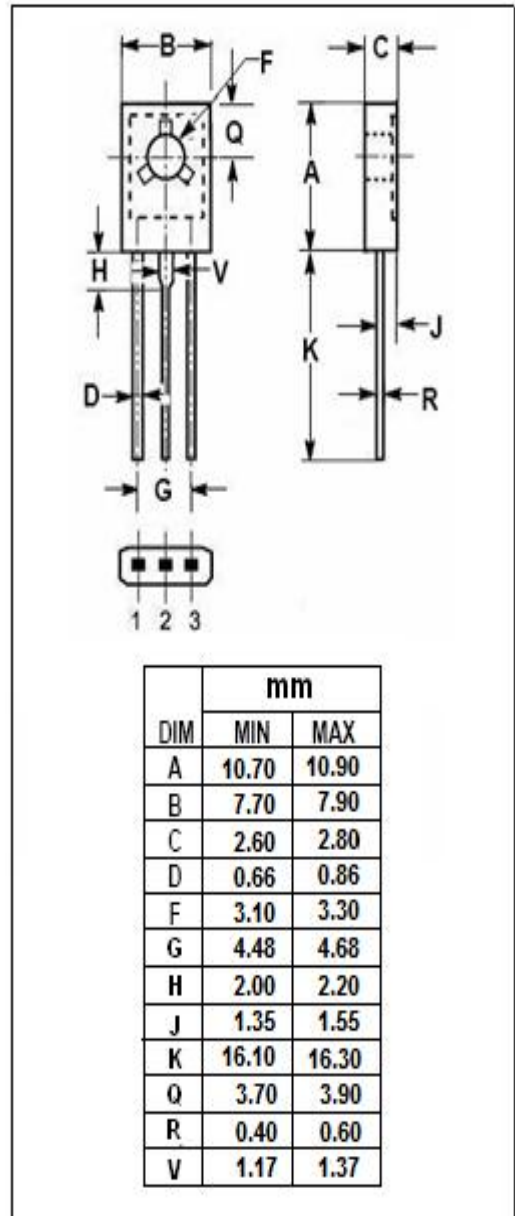
- DC Current Gain-  
:  $h_{FE} = 40(\text{Min}) @ I_C = 0.15\text{A}$
- Collector-Emitter Sustaining Voltage -  
:  $V_{CEO(\text{SUS})} = 80\text{V}(\text{Min})$
- Complement to type BD140
- Minimum Lot-to-Lot variations for robust device performance and reliable operation

**APPLICATIONS**

- Designed for use as audio amplifiers and drivers utilizing complementary or quasi complementary circuits.


**ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )**

SYMBOL	PARAMETER	VALUE	UNIT
$V_{CBO}$	Collector-Base Voltage	100	V
$V_{CEO}$	Collector-Emitter Voltage	80	V
$V_{EBO}$	Emitter-Base Voltage	5	V
$I_C$	Collector Current-Continuous	1.5	A
$I_B$	Base Current-Continuous	0.5	A
$P_C$	Collector Power Dissipation @ $T_a = 25^\circ\text{C}$	1.25	W
	Collector Power Dissipation @ $T_c = 25^\circ\text{C}$	12.5	
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{\text{stg}}$	Storage Temperature Range	-55~150	$^\circ\text{C}$


**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	MAX	UNIT
$R_{th\ j-c}$	Thermal Resistance, Junction to Case	10	$^\circ\text{C}/\text{W}$
$R_{th\ j-a}$	Thermal Resistance, Junction to Ambient	100	$^\circ\text{C}/\text{W}$

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BD139

## ELECTRICAL CHARACTERISTICS

T<sub>C</sub>=25°C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
V <sub>CEQ(SUS)</sub>	Collector-Emitter Sustaining Voltage	I <sub>C</sub> = 30mA ; I <sub>B</sub> = 0	80			V
V <sub>CE(sat)</sub>	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 0.5A; I <sub>B</sub> = 50mA			0.5	V
V <sub>BE(on)</sub>	Base-Emitter On Voltage	I <sub>C</sub> = 0.5A; V <sub>CE</sub> = 2V			1.0	V
I <sub>CBO</sub>	Collector Cutoff Current	V <sub>CB</sub> = 30V; I <sub>E</sub> = 0 V <sub>CB</sub> = 30V; I <sub>E</sub> = 0, T <sub>C</sub> =125°C			0.1 10	μ A
I <sub>EBO</sub>	Emitter Cutoff Current	V <sub>EB</sub> = 5V; I <sub>C</sub> = 0			10	μ A
h <sub>FE-1</sub>	DC Current Gain	I <sub>C</sub> = 5mA ; V <sub>CE</sub> = 2V	25			
h <sub>FE-2</sub>	DC Current Gain	I <sub>C</sub> = 0.5A ; V <sub>CE</sub> = 2V	25			
h <sub>FE-3</sub>	DC Current Gain	I <sub>C</sub> = 0.15A ; V <sub>CE</sub> = 2V	40		250	

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