

BD139

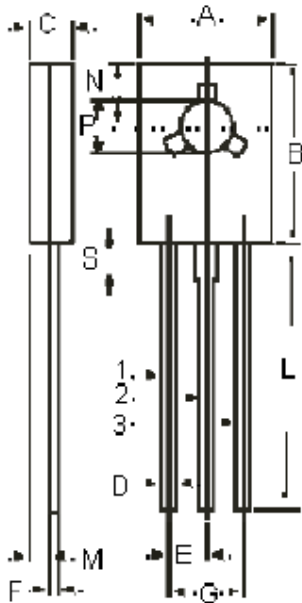
TO-126 NPN Transistors



Features:

- NPN Plastic Power Transistors.
- Medium Power Linear and Switching Applications.

TO-126 Plastic Package

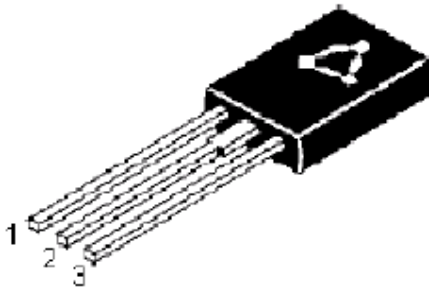


Dimensions	Minimum	Maximum
A	7.4	7.8
B	10.5	10.8
C	2.4	2.7
D	0.7	0.9
E	2.25 (Typical)	
F	0.49	0.75
G	4.5 (Typical)	
L	15.7 (Typical)	
M	1.27 (Typical)	
N	3.75 (Typical)	
P	3.0	3.2
S	2.5 (Typical)	

Dimensions : Millimetres

Pin Configuration:

1. Emitter
2. Collector
3. Base



Absolute Maximum Ratings

-	Symbol	-	BD139	Unit
Collector-Base Voltage (Open Emitter)	V_{CBO}	Maximum	100	V
Collector-Emitter Voltage (Open Base)	V_{CEO}		80	
Collector Current	I_C		1.5	A
Total Power Dissipation upto $T_C = 25^\circ\text{C}$	P_{tot}		12.5	W
Junction Temperature	T_j		150	$^\circ\text{C}$
Collector-Emitter Saturation Voltage $I_C = 0.5\text{A}$, $I_B = 0.05\text{A}$	$V_{CE(Sat)}$		0.5	V
DC Current Gain $I_C = 0.15\text{A}$; $V_{CE} = 2\text{V}$	h_{FE}	Minimum Maximum	40 250	-

Ratings (at $T_a = 25^\circ\text{C}$ unless otherwise specified)

-	Symbol	-	BD139	Unit
Collector-Base Voltage (Open Emitter)	V_{CBO}	Maximum	100	V
Collector-Emitter Voltage (Open Base)	V_{CEO}		80	
Emitter-Base Voltage (Open Collector)	V_{EBO}		5.0	
Collector Current	I_C		1.5	A
Base Current	I_B		0.5	
Total Power Dissipation up to $T_A = 25^\circ\text{C}$ Derate above 25°C	P_{tot}		1.25 10	W mW/ $^\circ\text{C}$
Total Power Dissipation up to $T_C = 25^\circ\text{C}$ Derate above 25°C		12.5 100		
Junction Temperature	T_j	150	$^\circ\text{C}$	
Storage Temperature	T_{stg}	-	-65 to +150	
Thermal Resistance				
From Junction to Case	$R_{th(j-c)}$	-	10	$^\circ\text{C/W}$
From Junction to Ambient	$R_{th(j-a)}$	-	100	

Characteristics ($T_{amb} = 25^{\circ}\text{C}$ unless otherwise specified)

-	Symbol	-	BD139	Unit
Collector Cut off Current $I_E = 0; V_{CB} = 30\text{V}$ $I_E = 0; V_{CB} = 30\text{V}; T_C = 125^{\circ}\text{C}$	I_{CBO}	Maximum	0.1 10	μA
Emitter Cut off Current $I_C = 0; V_{EB} = 5\text{V}$	I_{EBO}		10	
Breakdown Voltages $I_C = 0.03\text{A}; I_B = 0$ $I_C = 1\text{mA}; I_E = 0$ $I_E = 1\text{mA}; I_C = 0$	$V_{CEO (Sus)}^*$ V_{CBO} V_{EBO}	Minimum	40 100 5.0	V
Saturation Voltage $I_C = 0.5\text{A}; I_B = 0.05\text{A}$	$V_{CE (sat)}^*$		0.5	
Base-Emitter On Voltage $I_C = 0.5\text{A}; V_{CE} = 2\text{V}$	$V_{BE (on)}^*$	Maximum	1.0	
DC Current Gain $I_C = 0.15\text{A}; V_{CE} = 2\text{V}^*$ $I_C = 0.15\text{A}; V_{CE} = 2\text{V}^{**}$ $I_C = 0.15\text{A}; V_{CE} = 2\text{V}^*$	h_{FE}^*	Minimum	25	-
		Minimum Maximum	40 250	
		Minimum	25	

** h_{FE} Classification:

-6	Minimum	40
	Maximum	100
-10	Minimum	63
	Maximum	160
-16	Minimum	100
	Maximum	250
-25	Minimum	160
	Maximum	400

* Pulse Test: Pulse Width = $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

Specifications

$I_C (av)$ Maximum (A)	V_{CEO} Maximum (V)	h_{FE} Minimum at $I_C = 0.15\text{mA}$	P_{tot} at 25°C (mW)	Plastic Package	Type	Part Number
1.5	80	40	12.5	TO-126	NPN	BD139

Notes:

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