

# BD139

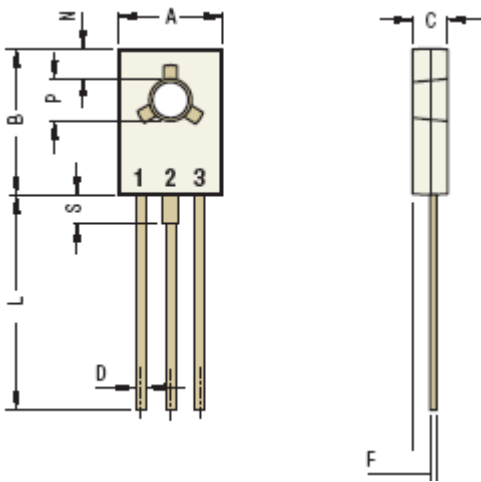


## TO-126 NPN Transistors

### NPN Epitaxial Silicon Power Transistors

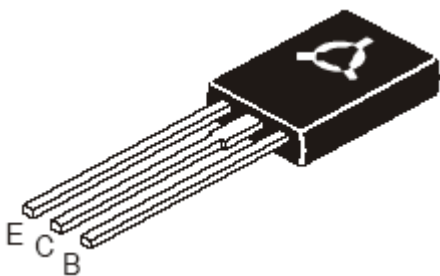


TO126  
Plastic Package



Dimensions	Minimum	Maximum
A	7.2	8.38
B	10.16	11.43
C	2.29	3.04
D	0.64	0.88
E	2.040	2.285
F	0.39	0.63
G	4.07	5.08
L	15.00	16.63
M	0.89	1.65
N	3.31	4.44
P	2.54	3.30
S	-	2.54

Dimensions : Millimetres



1. Emitter
2. Collector
3. Base

### Absolute Maximum Ratings

Description	Symbol	BD139	Unit
Collector-emitter voltage	$V_{CEO}$	80	V
Collector-emitter voltage ( $R_{BE} = 1k\Omega$ )	$V_{CER}$	100	
Collector-base voltage	$V_{CBO}$		
Emitter base voltage	$V_{EBO}$	5.0	
Collector current	$I_C$	1.5	A
Collector peak current	$I_{CM}$	2.0	
Base current	$I_B$	0.5	
Power dissipation at $T_a = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	1.25 10	W mW/ $^\circ\text{C}$
Power dissipation at $T_c = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	12.5 100	W mW/ $^\circ\text{C}$
Power dissipation at $T_c = 70^\circ\text{C}$	$P_D$	8.0	W
Operating and storage junction Temperature range	$T_j, T_{stg}$	-55 to +150	$^\circ\text{C}$

### Thermal Characteristics

Junction to ambient in free air	$R_{th(j-a)}$	100	$^\circ\text{C/W}$
Junction to case	$R_{th(j-c)}$	10	$^\circ\text{C/W}$

### Electrical characteristics ( $T_c = 25^\circ\text{C}$ unless specified otherwise)

Description	Symbol	Test Condition	Minimum	Maximum	Unit
Collector emitter sustaining voltage	$*V_{CEO(sus)}$	$I_C = 30\text{mA}, I_B = 0$ BD139	80		V
Collector cut off current	$I_{CBO}$	$V_{CB} = 30\text{V}, I_E = 0$		0.1	$\mu\text{A}$
		$V_{CB} = 30\text{V}, I_E = 0,$ $T_c = 125^\circ\text{C}$		10	
Emitter cut off current	$I_{EBO}$	$V_{EB} = 5\text{V}, I_C = 0$			
DC current gain	$*h_{FE}$	$I_C = 0.005\text{A}, V_{CE} = 2\text{V}$	25	250	-
		$I_C = 0.15\text{A}, V_{CE} = 2\text{V}$	40		
		$I_C = 0.5\text{A}, V_{CE} = 2\text{V}$	25		

\*Pulse test: -Pulse width=300ms, duty cycle = 2%.

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### Electrical Characteristics ( $T_c = 25^\circ\text{C}$ unless specified otherwise)

Description	Symbol	Test Condition	Minimum	Maximum	Unit
DC Current Gain	* $h_{FE}$ Group	$I_C = 0.15\text{A}, V_{CE} = 2\text{V}$			
		- 6	40	100	-
		- 10	63	160	
		- 16	100	250	
		- 25	160	400	
Collector emitter saturation voltage	* $V_{CE(sat)}$	$I_C = 0.5\text{A}, I_B = 0.05\text{A}$	-	0.5	
Base emitter on voltage	* $V_{BE(on)}$	* $I_C = 0.5\text{A}, V_{CE} = 2\text{V}$	-	1.0	

### Part Number Table

Description	Part Number
NPN Epitaxial Silicon Power Transistors	BD139-10

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