

# TBD135, 139

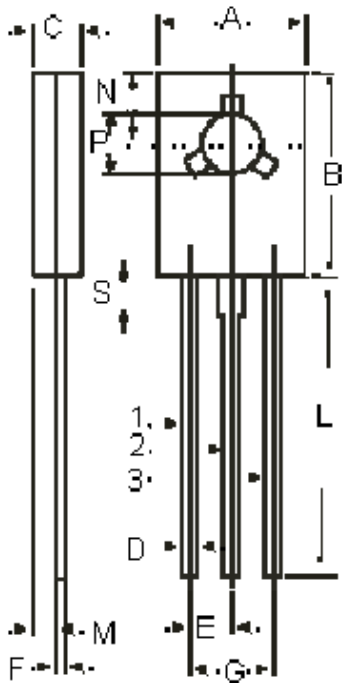
## TO-126 NPN Transistors



### Features:

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

### TO-126 Plastic Package

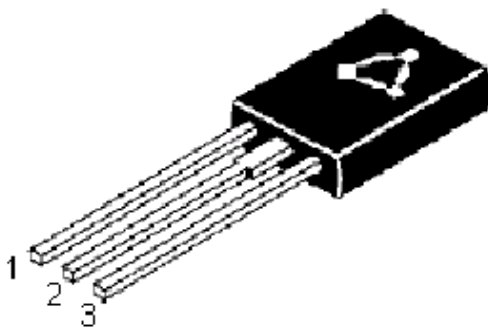


Dimensions	Minimum	Maximum
A	7.4	7.8
B	10.5	10.8
C	2.4	2.7
D	0.7	0.9
E	2.25 (Typical)	
F	0.49	0.75
G	4.5 (Typical)	
L	15.7 (Typical)	
M	1.27 (Typical)	
N	3.75 (Typical)	
P	3.0	3.2
S	2.5 (Typical)	

Dimensions : Millimetres

### Pin Configuration:

1. Emitter
2. Collector
3. Base



### Absolute Maximum Ratings

-	Symbol	-	TBD135	TBD139	Unit
Collector-Base Voltage (Open Emitter)	$V_{CB0}$	maximum	45	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	-	TBD135	TBD139	Unit
Collector-Base Voltage (Open Emitter)	$V_{CB0}$	maximum	45	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 $25^\circ\text{C}$	$P_{tot}$		1.25 10		W mW/ $^\circ\text{C}$
Total Power Dissipation up to $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$		12.5 100			
Junction Temperature	$T_j$	150		$^\circ\text{C}$	
Storage Temperature	$T_{stg}$	-	-65 to +150		
<b>Thermal Resistance</b>					
From Junction to Case	$R_{th(j-c)}$	-	-	10	$^\circ\text{C}/\text{W}$
From Junction to Ambient	$R_{th(j-a)}$	-	-	100	

# TBD135, 139



## TO-126 NPN Transistors

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

-	Symbol	-	TBD135	TBD139	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		$\mu\text{A}$
Emitter Cut off Current $I_C = 0; V_{EB} = 5\text{V}$	$I_{EBO}$		10		
Breakdown Voltages $I_C = 0.03\text{A}; I_B = 0$ $I_C = 1\text{mA}; I_E = 0$ $I_E = 1\text{mA}; I_C = 0$	$V_{CEO(sus)}^*$ $V_{CB0}$ $V_{EBO}$	minimum	45 45 5.0	40 100 5.0	V
Saturation Voltage $I_C = 0.5\text{A}; I_B = 0.05\text{A}$	$V_{CE(sat)}^*$	maximum	0.5		
Base-Emitter On Voltage $I_C = 0.5\text{A}; V_{CE} = 2\text{V}$	$V_{BE(on)}^*$		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	40		
		maximum	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 $25^{\circ}\text{C}$ (mW)	Plastic Package	Type	Part Number
1	45	40	12.5	TO-126	NPN	TBD135
1.5	80					TBD139



### Notes:

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