

# TO-126 Plastic-Encapsulate Transistors

## BD135/137/139 TRANSISTOR (NPN)

### FEATURES

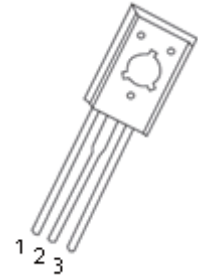
- High Current
- Complement To BD136, BD138 And BD140

### MAXIMUM RATINGS ( $T_a=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage	BD135	45
		BD137	60
		BD139	80
$V_{CEO}$	Collector-Emitter Voltage	BD135	45
		BD137	60
		BD139	80
$V_{EBO}$	Emitter-Base Voltage	5	V
$I_C$	Collector Current	1.5	A
$P_C$	Collector Power Dissipation	1.25	W
$R_{\theta JA}$	Thermal Resistance From Junction To Ambient	100	$^\circ\text{C}/\text{W}$
$T_j$	Junction Temperature	150	$^\circ\text{C}$
$T_{stg}$	Storage Temperature	-55~+150	$^\circ\text{C}$

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1. EMITTER
2. COLLECTOR
3. BASE



### ELECTRICAL CHARACTERISTICS ( $T_a=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=0.1\text{mA}, I_E=0$	45			V
BD135						
BD137						
BD139			80			
Collector-emitter sustaining voltage	$V_{CEO(SUS)}^*$	$I_C=0.03\text{A}, I_B=0$	45			V
BD135						
BD137						
BD139			80			
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=0.1\text{mA}, I_C=0$	5			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=30\text{V}, I_E=0$			0.1	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB}=5\text{V}, I_C=0$			10	$\mu\text{A}$
DC current gain	$h_{FE(1)}^*$	$V_{CE}=2\text{V}, I_C=150\text{mA}$	40		250	
	$h_{FE(2)}^*$	$V_{CE}=2\text{V}, I_C=5\text{mA}$	25			
	$h_{FE(3)}^*$	$V_{CE}=2\text{V}, I_C=500\text{mA}$	25			
Collector-emitter saturation voltage	$V_{CE(sat)}^*$	$I_C=500\text{mA}, I_B=50\text{mA}$			0.5	V
Base-emitter voltage	$V_{BE}^*$	$V_{CE}=2\text{V}, I_C=500\text{mA}$			1	V

\*Pulse test: pulse width  $\leq 350\mu\text{s}$ , duty cycles  $\leq 2.0\%$ .

### CLASSIFICATION OF $h_{FE(1)}$

RANK	6	10	16
RANGE	40-100	63-160	100-250

# Typical Characteristics

