



Micro Commercial Components



Micro Commercial Components  
130 W Cochran St, Unit B  
Simi Valley, CA 93065  
Tel:818-701-4933

**BD135-6/10/16**  
**BD137-6/10/16**  
**BD139-6/10/16**

## Features

- Halogen free available upon request by adding suffix "-HF"
- Lead Free Finish/RoHS Compliant (Note1) ("P" Suffix designates RoHS Compliant. See ordering information)
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- DC Current Gain -  $h_{FE} = 40$  (Min) @  $I_C = 150\text{mAdc}$
- Complementary with BD136, BD138, BD140

## Maximum Ratings

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	BD135	45	Vdc
	BD137	60	
	BD139	80	
Collector-Base Voltage	BD135	45	Vdc
	BD137	60	
	BD139	80	
Emitter-Base Voltage	$V_{EBO}$	5.0	Vdc
Collector Current	$I_C$	1.5	Adc
Base Current	$I_B$	0.5	Adc
Total Device Dissipation @ $T_A=25^\circ\text{C}$	$P_D$	1.25	Watt
Derate above $25^\circ\text{C}$		10	mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C=25^\circ\text{C}$	$P_D$	12.5	Watt
Derate above $25^\circ\text{C}$		100	mW/ $^\circ\text{C}$
Operating & Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$
Maximum Thermal Resistance Junction to Case	$R_{\theta JC}$	10	$^\circ\text{C/W}$
Maximum Thermal Resistance Junction to Ambient Air	$R_{\theta JA}$	100	$^\circ\text{C/W}$

## Electrical Characteristics @ $25^\circ\text{C}$ Unless Otherwise Specified

Symbol	Parameter	Min	Max	Units
--------	-----------	-----	-----	-------

### OFF CHARACTERISTICS

$BV_{CEO}$	Collector-Emitter Sustaining Voltage* ( $I_C=30\text{mA}, I_B=0$ )	BD135 BD137 BD139	45 60 80	Vdc
$I_{CBO}$	Collector Cutoff Current ( $V_{CB}=30\text{Vdc}, I_E=0$ ) ( $V_{CB}=30\text{Vdc}, I_E=0, T_C=125^\circ\text{C}$ )		0.1 10	$\mu\text{Adc}$
$I_{EBO}$	Emitter Cutoff Current ( $V_{BE}=5.0\text{Vdc}, I_C=0$ )		10	$\mu\text{Adc}$
$h_{FE(1)}$	DC Current Gain* ( $I_C=5\text{mAdc}, V_{CE}=2\text{Vdc}$ )	25		
$h_{FE(2)}$	( $I_C=0.5\text{Adc}, V_{CE}=2\text{Vdc}$ )	25		
$h_{FE(3)}$	( $I_C=150\text{mAdc}, V_{CE}=2\text{Vdc}$ )	40	250	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage ( $I_C=500\text{mAdc}, I_B=50\text{mAdc}$ )		0.5	Vdc
$V_{BE(on)}$	Base-Emitter ON Voltage ( $V_{CE}=2\text{V}, I_C=0.5\text{A}$ )		1	Vdc

### CLASSIFICATION OF $h_{FE(3)}$

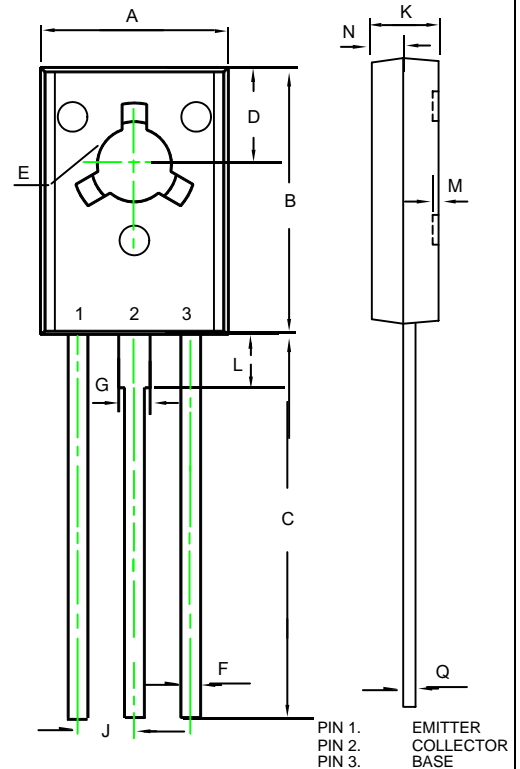
Rank	6	10	16
Range	40-100	63-160	100-250

\*Pulse test: Pulse width 300  $\mu\text{sec}$ , Duty cycle 2%

Notes: 1. High Temperature Solder Exemption Applied, see EU Directive Annex Notes 7.

**Power Transistors**  
**NPN Silicon**  
**45,60,80 Volts**

## TO-126



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.291	0.307	7.40	7.80	
B	0.417	0.433	10.60	11.00	
C	0.602	0.618	15.30	15.70	
D	0.154	0.161	3.90	4.10	
E	0.118	0.126	3.00	3.20	
F	0.026	0.034	0.66	0.86	
G	0.046	0.054	1.17	1.37	
J	0.090TYP		2.290TYP		
K	0.098	0.114	2.50	2.90	
L	0.083	0.091	2.10	2.30	
M	0.000	0.012	0.00	0.30	
N	0.043	0.059	1.10	1.50	
Q	0.018	0.024	0.45	0.60	

[www.mccsemi.com](http://www.mccsemi.com)

BD135-6/10/16  
BD137-6/10/16  
BD139-6/10/16

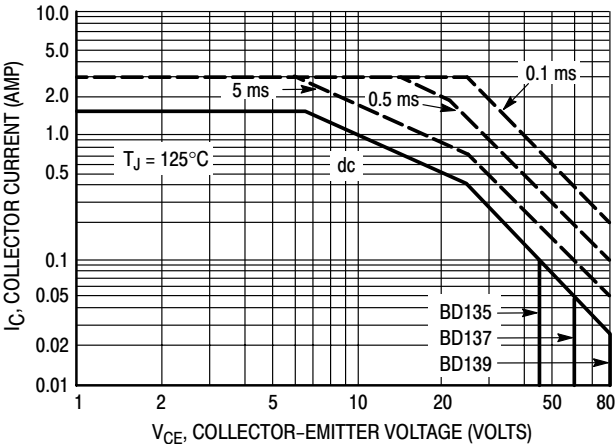


Figure 1. Active-Region Safe Operating Area



Micro Commercial Components

Ordering Information :

Device	Packing
Part Number-BP	Bulk; 1 Kpcs/Box

Note : Adding "-HF" suffix for halogen free, eg. Part Number-BP-HF

\*\*\*IMPORTANT NOTICE\*\*\*

Micro Commercial Components Corp. reserves the right to make changes without further notice to any product herein to make corrections, modifications, enhancements, improvements, or other changes. Micro Commercial Components Corp. does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others. The user of products in such applications shall assume all risks of such use and will agree to hold Micro Commercial Components Corp. and all the companies whose products are represented on our website, harmless against all damages.

\*\*\*LIFE SUPPORT\*\*\*

MCC's products are not authorized for use as critical components in life support devices or systems without the express written approval of Micro Commercial Components Corporation.

\*\*\*CUSTOMER AWARENESS\*\*\*

Counterfeiting of semiconductor parts is a growing problem in the industry. Micro Commercial Components (MCC) is taking strong measures to protect ourselves and our customers from the proliferation of counterfeit parts. MCC strongly encourages customers to purchase MCC parts either directly from MCC or from Authorized MCC Distributors who are listed by country on our web page cited below. Products customers buy either from MCC directly or from Authorized MCC Distributors are genuine parts, have full traceability, meet MCC's quality standards for handling and storage. MCC will not provide any warranty coverage or other assistance for parts bought from Unauthorized Sources. MCC is committed to combat this global problem and encourage our customers to do their part in stopping this practice by buying direct or from authorized distributors.