



Micro Commercial Components



Micro Commercial Components
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BD135
BD137
BD139

Features

- 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°C		10	mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C=25^\circ\text{C}$	P_D	12.5	Watt
Derate above 25°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°C Unless Otherwise Specified

Symbol	Parameter	Min	Max	Units
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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	μAdc
I_{EBO}	Emitter Cutoff Current ($V_{BE}=5.0\text{Vdc}, I_C=0$)		10	μAdc
$h_{FE(1)}$	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 $h_{FE(3)}$

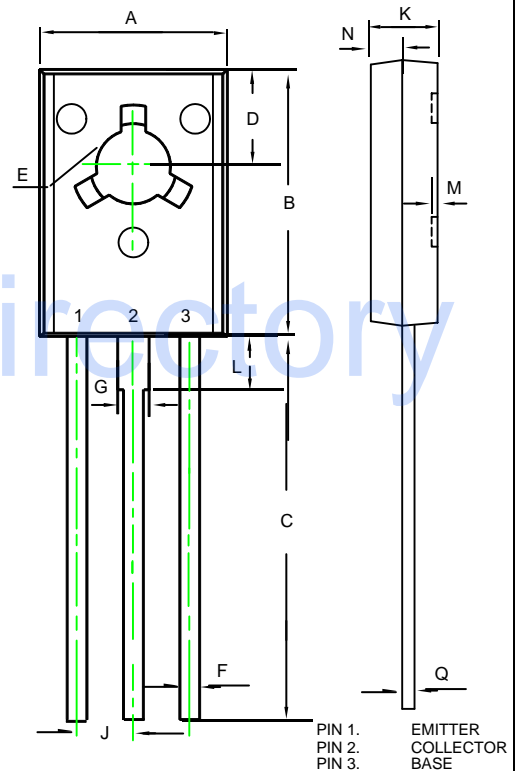
Rank	6	10	16
Range	40-100	63-160	100-250

*Pulse test: Pulse width 300 μsec , 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	

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BD135
BD137
BD139

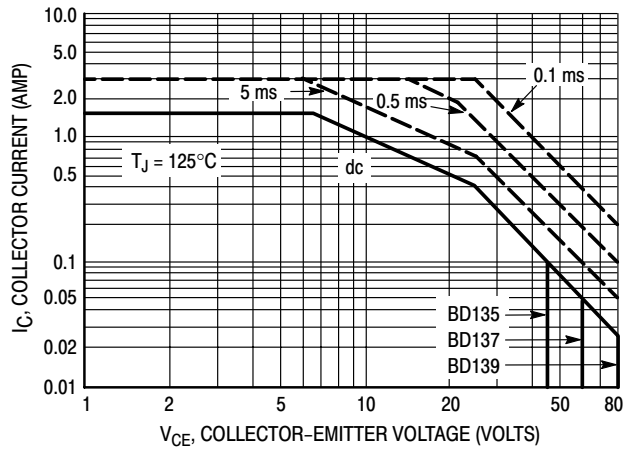


Figure 1. Active-Region Safe Operating Area



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Ordering Information :

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

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