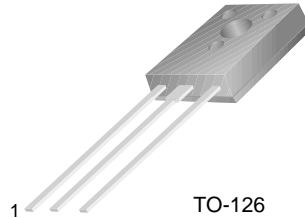


## BD440/442

BD440/442

### Medium Power Linear and Switching Applications

- Complement to BD439, BD441 respectively



TO-126  
1. Emitter 2. Collector 3. Base

### PNP Epitaxial Silicon Transistor

#### Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
$V_{CBO}$	Collector-Base Voltage		
	: BD440	- 60	V
	: BD442	- 80	V
$V_{CES}$	Collector-Emitter Voltage		
	: BD440	- 60	V
	: BD442	- 80	V
$V_{CEO}$	Collector-Emitter Voltage		
	: BD440	- 60	V
	: BD442	- 80	V
$V_{EBO}$	Emitter-Base Voltage	- 5	V
$I_C$	Collector Current (DC)	- 4	A
$I_{CP}$	*Collector Current (Pulse)	- 7	A
$I_B$	Base Current	- 1	A
$P_C$	Collector Dissipation ( $T_C=25^\circ\text{C}$ )	36	W
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	- 65 ~ 150	$^\circ\text{C}$

#### Electrical Characteristics $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage					
	: BD440	$I_C = -100\text{mA}, I_B = 0$	-60			V
	: BD442		-80			V
$I_{CBO}$	Collector Cut-off Current					
	: BD440	$V_{CB} = -60\text{V}, I_E = 0$			- 100	$\mu\text{A}$
	: BD442	$V_{CB} = -80\text{V}, I_E = 0$			- 100	$\mu\text{A}$
$I_{CES}$	Collector Cut-off Current					
	: BD440	$V_{CE} = -60\text{V}, V_{BE} = 0$			- 100	$\mu\text{A}$
	: BD442	$V_{CE} = -80\text{V}, V_{BE} = 0$			- 100	$\mu\text{A}$
$I_{EBO}$	Emitter Cut-off Current	$V_{EB} = -5\text{V}, I_C = 0$			- 1	mA
$h_{FE}$	* DC Current Gain					
	: BD440	$V_{CE} = -5\text{V}, I_C = -10\text{mA}$	20	140		
	: BD442		15	140		
	: BD440	$V_{CE} = -1\text{V}, I_C = -500\text{mA}$	40	140		
	: BD442		40	140		
	: BD440	$V_{CE} = -1\text{V}, I_C = -2\text{A}$	25			
	: BD442		15			
$V_{CE(sat)}$	* Collector-Emitter Saturation Voltage	$I_C = -2\text{A}, I_B = -0.2\text{A}$			- 0.8	V
$V_{BE(on)}$	* Base-Emitter ON Voltage					
	: BD440	$V_{CE} = -5\text{V}, I_C = -10\text{mA}$		-0.58		V
	: BD442	$V_{CE} = -1\text{V}, I_C = -2\text{A}$			- 1.5	V
$f_T$	Current Gain Bandwidth Product	$V_{CE} = -1\text{V}, I_C = -250\text{mA}$	3			MHz

\* Pulse Test: PW=300 $\mu\text{s}$ , duty Cycle=1.5% Pulsed

# Typical Characteristics

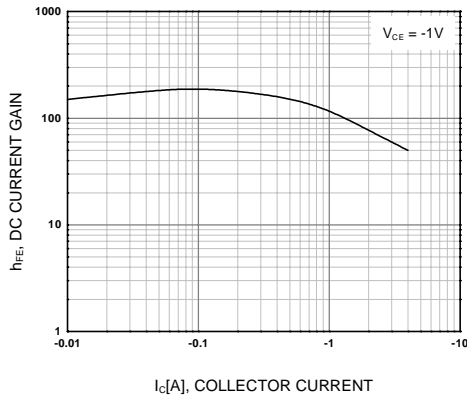


Figure 1. DC current Gain

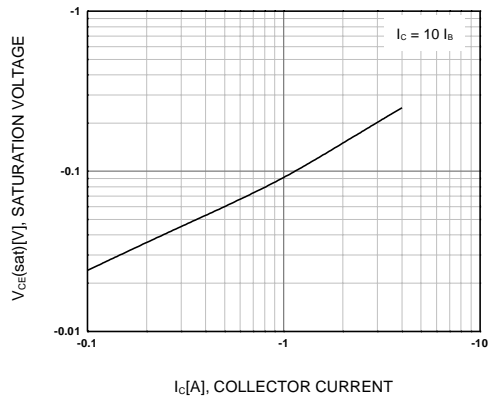


Figure 2. Collector-Emitter Saturation Voltage

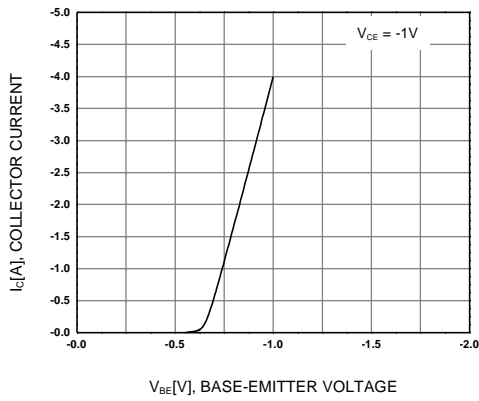


Figure 3. Base-Emitter On Voltage

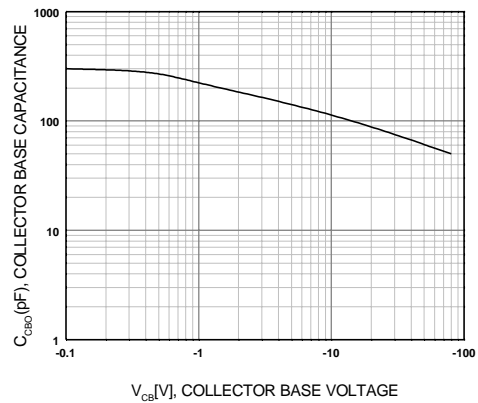


Figure 4. Collector-Base Capacitance

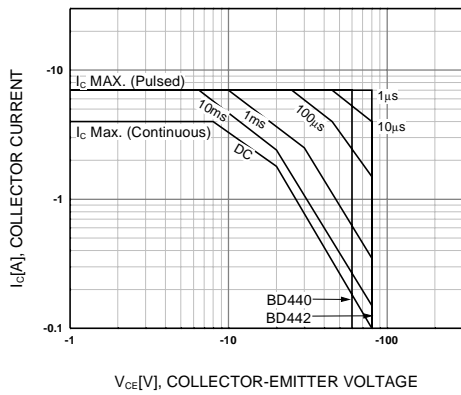


Figure 5. Safe Operating Area

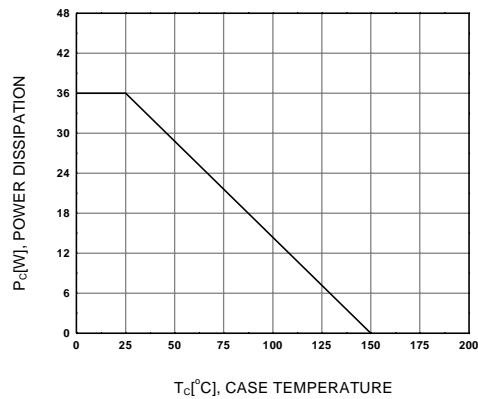


Figure 6. Power Derating

# Package Dimensions

## TO-126



Dimensions in Millimeters

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