

## BD434/436/438

### Medium Power Linear and Switching Applications

- Complement to BD433, BD435 and BD437 respectively



### 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		
	: BD434	- 22	V
	: BD436	- 32	V
	: BD438	- 45	V
$V_{CES}$	Collector-Emitter Voltage		
	: BD434	- 22	V
	: BD436	- 32	V
	: BD438	- 45	V
$V_{CEO}$	Collector-Emitter Voltage		
	: BD434	- 22	V
	: BD436	- 32	V
	: BD438	- 45	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	$I_C = -100\text{mA}, I_B = 0$	-22 -32 -45			V V V
	: BD434					
	: BD436 : BD438					
$I_{CBO}$	Collector Cut-off Current	$V_{CB} = -22\text{V}, I_E = 0$			-100 -100 -100	$\mu\text{A}$ $\mu\text{A}$ $\mu\text{A}$
	: BD434	$V_{CB} = -32\text{V}, I_E = 0$				
	: BD436 : BD438	$V_{CB} = -45\text{V}, I_E = 0$				
$I_{CEO}$	Collector Cut-off Current	$V_{CE} = -22\text{V}, V_{BE} = 0$ $V_{CE} = -32\text{V}, V_{BE} = 0$ $V_{CE} = -45\text{V}, V_{BE} = 0$			-100 -100 -100	$\mu\text{A}$ $\mu\text{A}$ $\mu\text{A}$
	: BD434					
	: BD436 : BD438					
$I_{EBO}$	Emitter Cut-off Current	$V_{EB} = -5\text{V}, I_C = 0$			-1	mA
$h_{FE}$	* DC Current Gain	$V_{CE} = -5\text{V}, I_C = -10\text{mA}$ $V_{CE} = -1\text{V}, I_C = -500\text{mA}$ $V_{CE} = -1\text{V}, I_C = -2\text{A}$	40 30 85 50 40	140 140 140		
	: BD434/436					
	: BD438					
	: ALL DEVICE					
	: BD434/436 : BD438					
$V_{CE(sat)}$	* Collector-Emitter Saturation Voltage	$I_C = -2\text{A}, I_B = -0.2\text{A}$			-0.2 -0.2 -0.2	V V V
	: BD434					
	: BD436 : BD438					
$V_{BE(on)}$	* Base-Emitter ON Voltage	$V_{CE} = -1\text{V}, I_C = -2\text{A}$			-1.1 -1.1 -1.2	V V V
	: BD434					
	: BD436 : BD438					
$f_T$	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

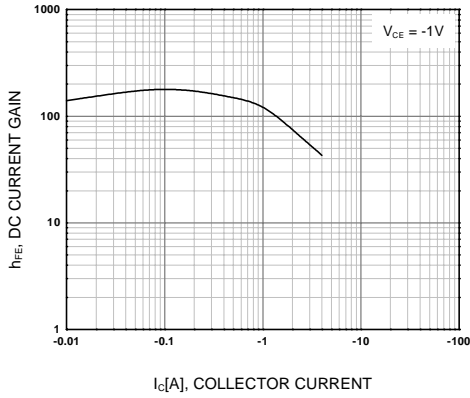


Figure 1. DC current Gain

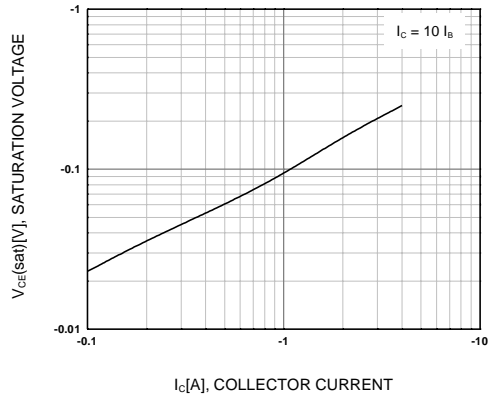


Figure 2. Collector-Emitter Saturation Voltage

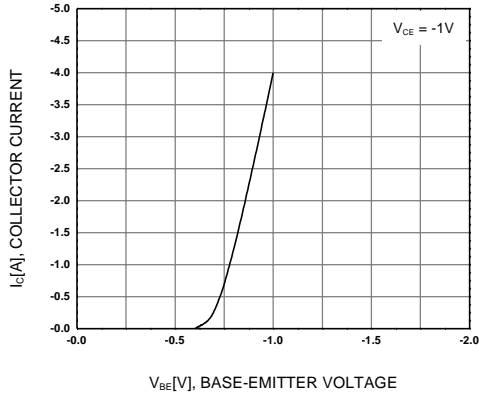


Figure 3. Base-Emitter On Voltage

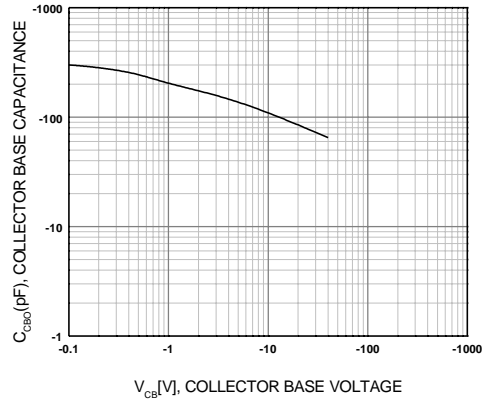


Figure 4. Collector-Base Capacitance

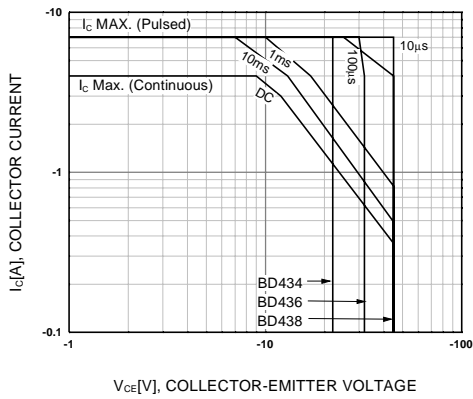


Figure 5. Safe Operating Area

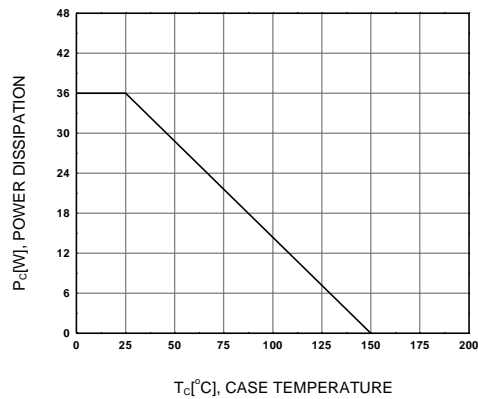


Figure 6. Power Derating

# Package Dimensions

## TO-126

BD434/436/438



Dimensions in Millimeters

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DenseTrench™	GTO™	QFET™	TinyLogic™
DOME™	HiSeC™	QS™	UHC™
EcoSPARK™	ISOPLANAR™	QT Optoelectronics™	UltraFET <sup>®</sup>
E <sup>2</sup> CMOS™	LittleFET™	Quiet Series™	VCX™
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