

## BD433/435/437

### Medium Power Linear and Switching Applications

- Complement to BD434, BD436 and BD438 respectively



### NPN Epitaxial Silicon Transistor

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

Symbol	Parameter	Value	Units
$V_{CBO}$	Collector-Base Voltage		
	: BD433	22	V
	: BD435	32	V
	: BD437	45	V
$V_{CES}$	Collector-Emitter Voltage		
	: BD433	22	V
	: BD435	32	V
	: BD437	45	V
$V_{CEO}$	Collector-Emitter Voltage		
	: BD433	22	V
	: BD435	32	V
	: BD437	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			V			
	: BD433						32	V	
	: BD435						45	V	
$I_{CBO}$	Collector Cut-off Current	$V_{CB} = 22\text{V}, I_E = 0$			100	$\mu\text{A}$			
	: BD433						$V_{CB} = 32\text{V}, I_E = 0$	100	$\mu\text{A}$
	: BD435							$V_{CB} = 45\text{V}, I_E = 0$	100
: BD437									
$I_{CEO}$	Collector Cut-off Current	$V_{CE} = 22\text{V}, V_{BE} = 0$			100	$\mu\text{A}$			
	: BD433						$V_{CE} = 32\text{V}, V_{BE} = 0$	100	$\mu\text{A}$
	: BD435							$V_{CE} = 45\text{V}, V_{BE} = 0$	100
: BD437									
$I_{EBO}$	Emitter Cut-off Current	$V_{EB} = 5\text{V}, I_C = 0$			1	mA			
$h_{FE}$	* DC Current Gain	$V_{CE} = 5\text{V}, I_C = 10\text{mA}$	40	130					
	: BD433/435						$V_{CE} = 1\text{V}, I_C = 500\text{mA}$	30	130
	: BD437							$V_{CE} = 1\text{V}, I_C = 2\text{A}$	85
	: ALL DEVICE						50		
	: BD433/435						40		
: BD437									
$V_{CE(sat)}$	* Collector-Emitter Saturation Voltage	$I_C = 2\text{A}, I_B = 0.2\text{A}$			0.2	0.5			
	: BD433						0.2	0.5	
	: BD435						0.2	0.6	
: BD437									
$V_{BE(on)}$	* Base-Emitter ON Voltage	$V_{CE} = 1\text{V}, I_C = 2\text{A}$			1.1	V			
	: BD433						1.1	V	
	: BD435						1.2	V	
: BD437									
$f_T$	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

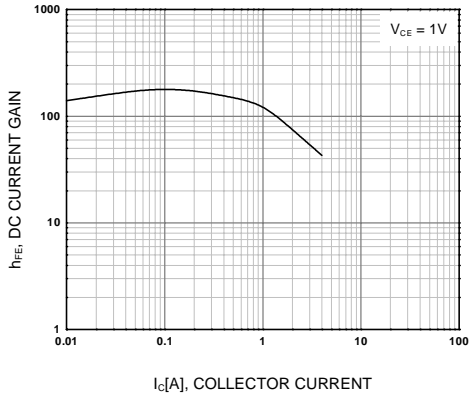


Figure 1. DC current Gain

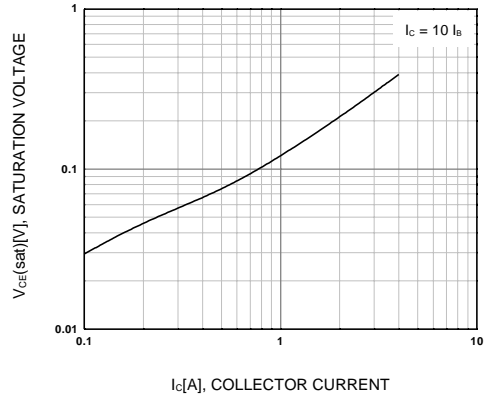


Figure 2. Collector-Emitter Saturation Voltage

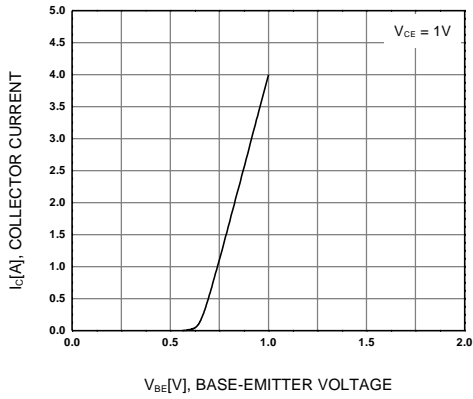


Figure 3. Base-Emitter On Voltage

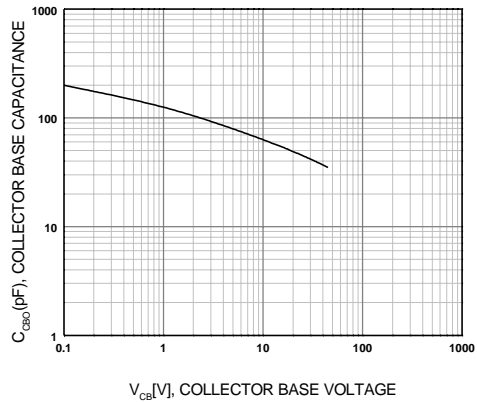


Figure 4. Collector-Base Capacitance

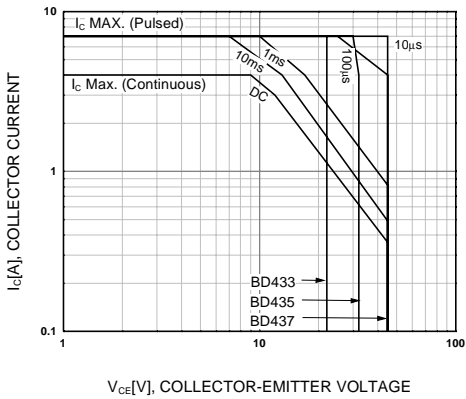


Figure 5. Safe Operating Area

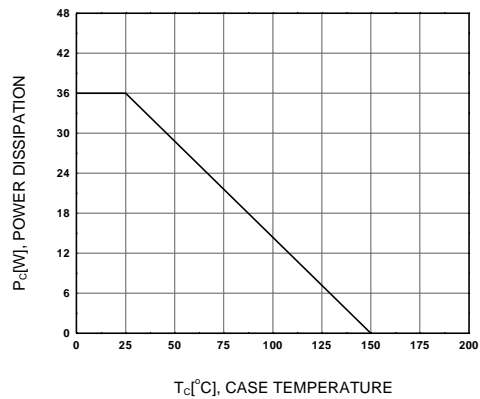


Figure 6. Power Derating

# Package Dimensions

BD433/435/437

## TO-126



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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