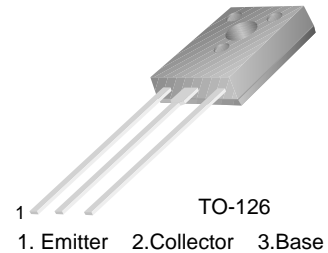


# BD433/435/437

## NPN Epitaxial Silicon Transistor

### Features

- Medium Power Linear and Switching Applications
- Complement to BD434, BD436 and BD438 respectively



### Ordering Information

Part Number	Marking	Package	Packing Method	Remarks
BD433S	BD433	TO-126	BULK	
BD435S	BD435	TO-126	BULK	
BD435STU	BD435	TO-126	RAIL	
BD437S	BD437	TO-126	BULK	

\* The suffix "S" of FSID denotes TO126 package.

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

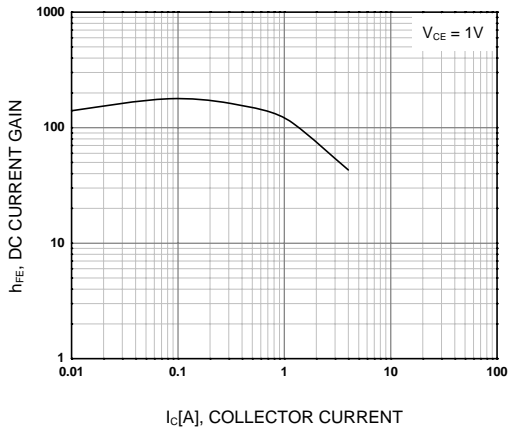
Symbol	Parameter	Value	Units
$V_{CBO}$	Collector-Base Voltage		
	: BD433	22	V
	: BD435	32	V
	: BD437	45	V
$V_{CES}$	Collector-Emitter Voltage		
	: BD433	22	V
	: BD435	32	V
	: BD437	45	V
$V_{CEO}$	Collector-Emitter Voltage		
	: BD433	22	V
	: BD435	32	V
	: BD437	45	V
$V_{EBO}$	Emitter-Base Voltage	5	V
$I_C$	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 to 150	$^\circ\text{C}$

**Electrical Characteristics**  $T_A = 25^\circ\text{C}$  unless otherwise noted

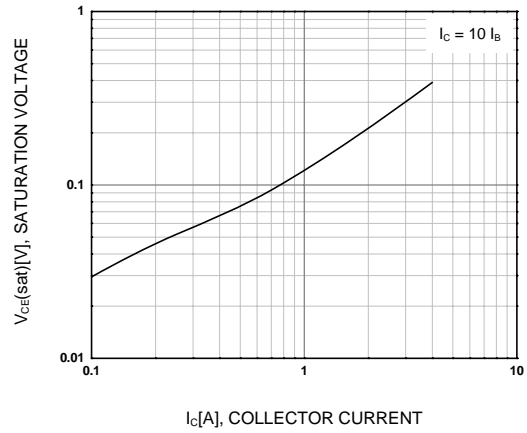
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
$V_{CE(sus)}$	Collector-Emitter Sustaining Voltage : BD433 : BD435 : BD437	$I_C = 100\text{mA}, I_B = 0$	22 32 45			V V V
$I_{CBO}$	Collector Cut-off Current : BD433 : BD435 : BD437	$V_{CB} = 22\text{V}, I_E = 0$ $V_{CB} = 32\text{V}, I_E = 0$ $V_{CB} = 45\text{V}, I_E = 0$			100 100 100	$\mu\text{A}$ $\mu\text{A}$ $\mu\text{A}$
$I_{CEO}$	Collector Cut-off Current : BD433 : BD435 : BD437	$V_{CE} = 22\text{V}, V_{BE} = 0$ $V_{CE} = 32\text{V}, V_{BE} = 0$ $V_{CE} = 45\text{V}, V_{BE} = 0$			100 100 100	$\mu\text{A}$ $\mu\text{A}$ $\mu\text{A}$
$I_{EBO}$	Emitter Cut-off Current	$V_{EB} = 5\text{V}, I_C = 0$			1	mA
$h_{FE}$	* DC Current Gain : BD433/435 : BD437 : ALL DEVICE : BD433/435 : BD437	$V_{CE} = 5\text{V}, I_C = 10\text{mA}$ $V_{CE} = 1\text{V}, I_C = 500\text{mA}$ $V_{CE} = 1\text{V}, I_C = 2\text{A}$	40 30 85 50 40	130 130 140		
$V_{CE(sat)}$	* Collector-Emitter Saturation Voltage : BD433 : BD435 : BD437	$I_C = 2\text{A}, I_B = 0.2\text{A}$		0.2 0.2 0.2	0.5 0.5 0.6	V V V
$V_{BE(on)}$	* Base-Emitter ON Voltage : BD433 : BD435 : BD437	$V_{CE} = 1\text{V}, I_C = 2\text{A}$			1.1 1.1 1.2	V V V
$f_T$	Current Gain Bandwidth Product	$V_{CE} = 1\text{V}, I_C = 250\text{mA}$	3			MHz

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

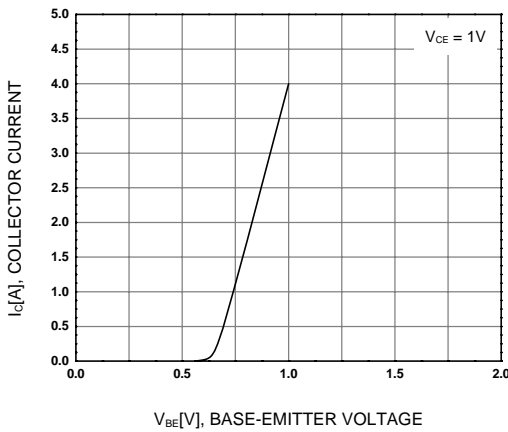
## Typical Performance Characteristics



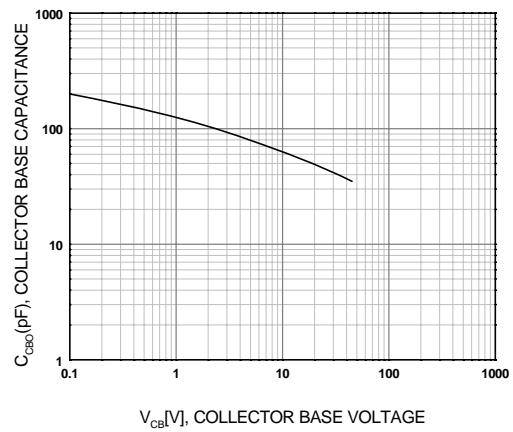
**Figure 1. DC current Gain**



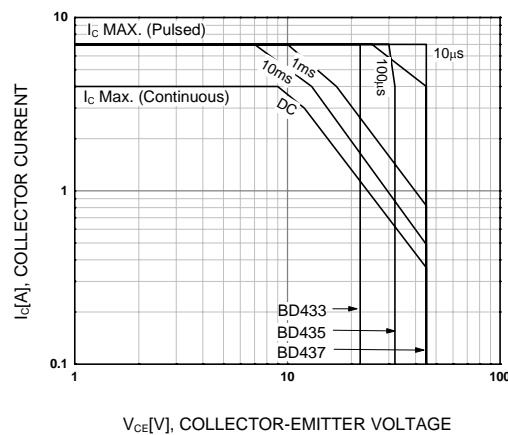
**Figure 2. Collector-Emitter Saturation Voltage**



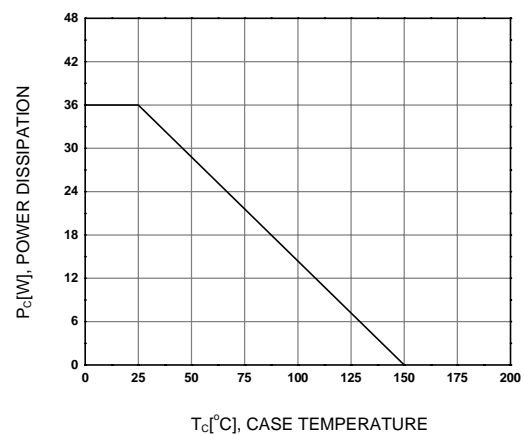
**Figure 3. Base-Emitter On Voltage**



**Figure 4. Collector-Base Capacitance**



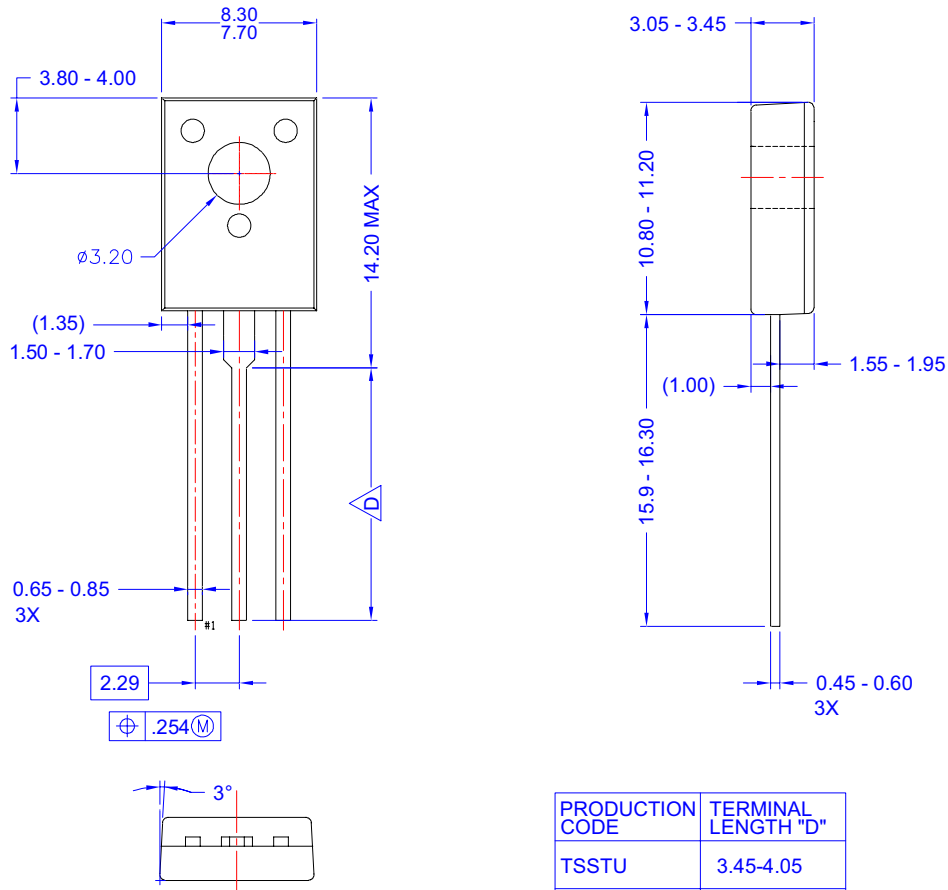
**Figure 5. Safe Operating Area**



**Figure 6. Power Derating**

## Physical Dimension

### TO-126



**NOTES:**

- A) THIS PACKAGE DOES NOT COMPLY TO ANY CURRENT PACKAGING STANDARD.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSIONS.
- D)** FOR TERMINAL LENGTH SEE TABLE
- E) DRAWING FILE NAME AND REVISION : MKT-TO126AArev1






PRODUCTION CODE	TERMINAL LENGTH "D"
TSSTU	3.45-4.05
TSTU	2.36-2.96
NONE (STD LENGTH)	12.76-13.36

Dimensions in Millimeters



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BitSiC®	Global Power Resource <sup>SM</sup>	Programmable Active Droop™	<b>power</b>
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FACT®	OptoHi™	SupreMOS®	Ultra FRFET™
FAST®	OPTOLOGIC®	SyncFET™	UniFET™
FastvCore™	OPTOPLANAR®	Sync-Lock™	VCX™
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