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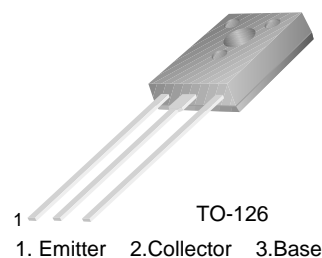


July 2011

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
$V_{CEO(sus)}$	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	μA μA μA
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	μA μA μA
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

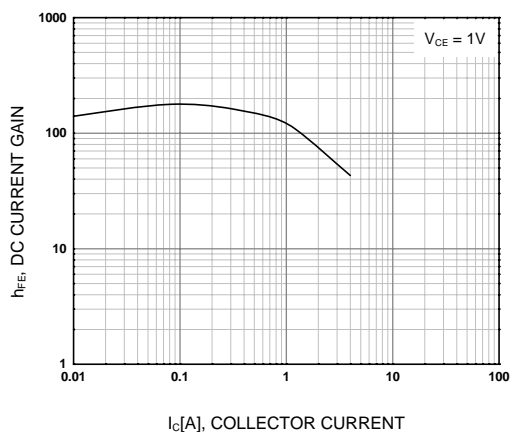


Figure 1. DC current Gain

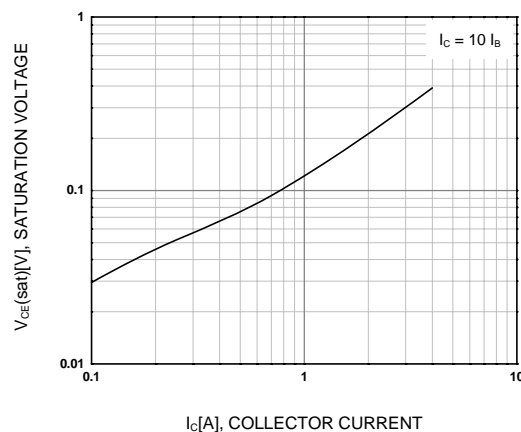


Figure 2. Collector-Emitter Saturation Voltage

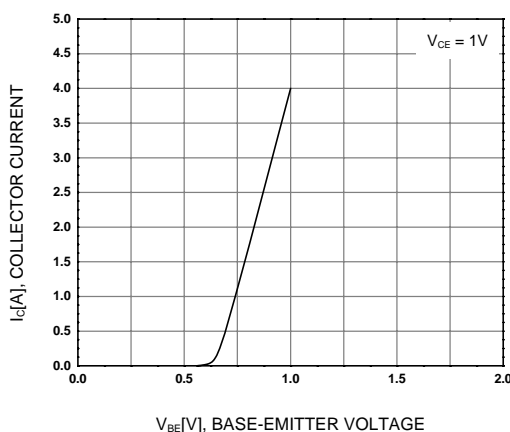


Figure 3. Base-Emitter On Voltage

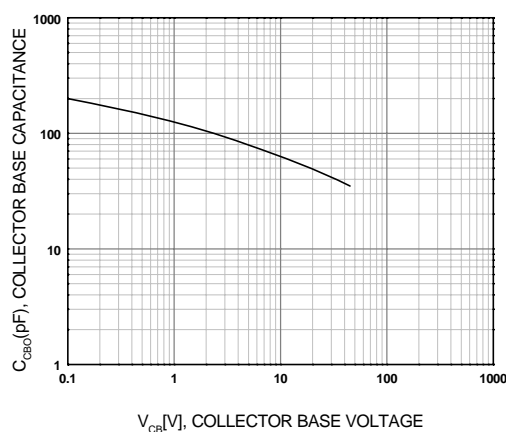


Figure 4. Collector-Base Capacitance

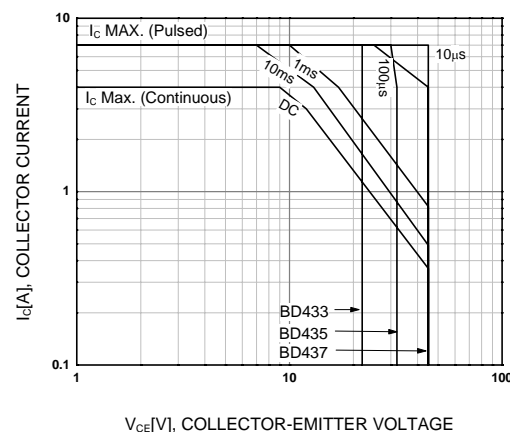


Figure 5. Safe Operating Area

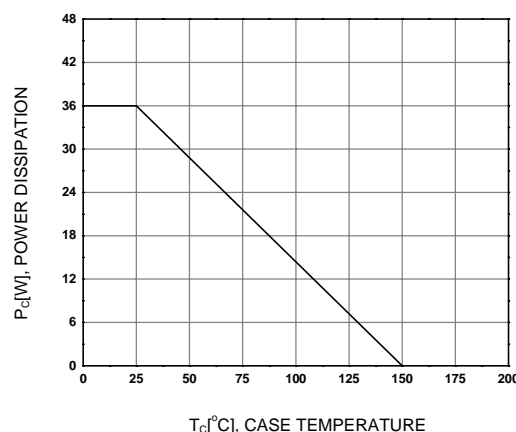
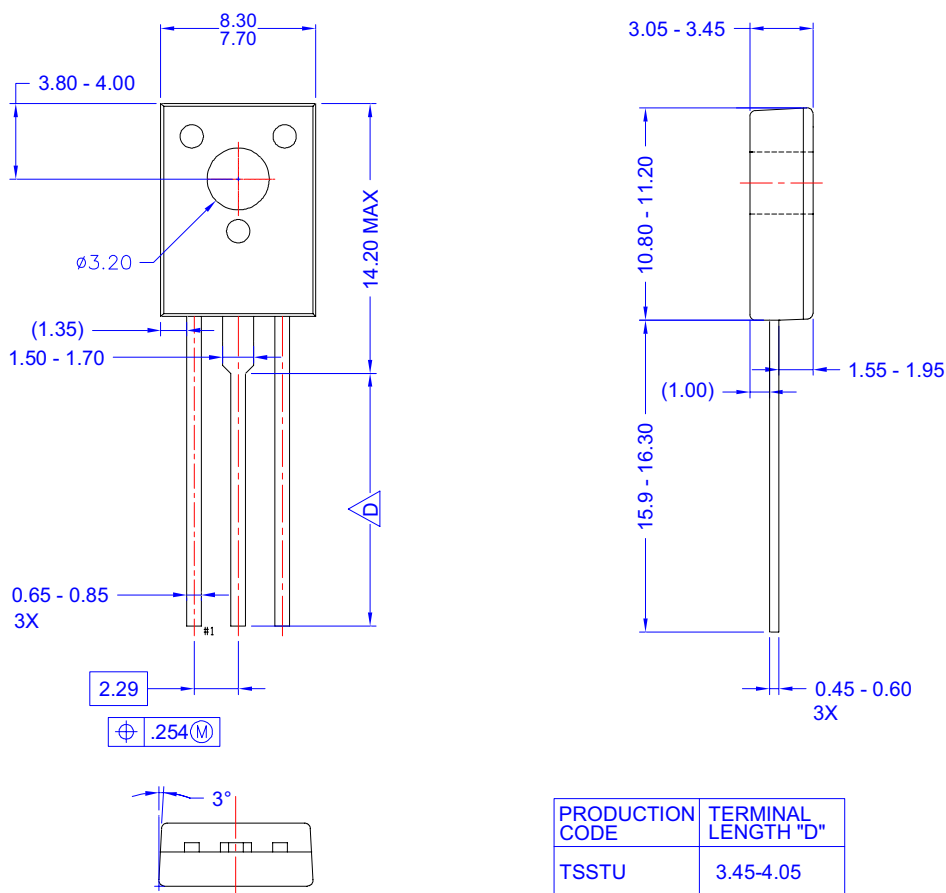


Figure 6. Power Derating

Physical Dimension

TO-126



NOTES:

- THIS PACKAGE DOES NOT COMPLY TO ANY CURENT PACKAGING STANDARD.
- ALL DIMENSIONS ARE IN MILLIMETERS.
- DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSIONS.
- FOR TERMINAL LENGTH SEE TABLE
- DRAWING FILE NAME AND REVISION : MKT-TO126Arev1

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

BD433/435/437 — NPN Epitaxial Silicon Transistor



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