March 2015

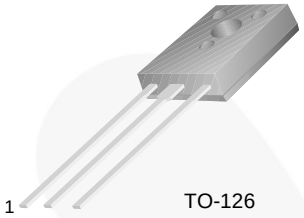
BD136 / BD138 / BD140
PNP Epitaxial Silicon Transistor

Features

- Complement to BD135, BD137 and BD139 respectively

Applications

- Medium Power Linear and Switching



TO-126

1. Emitter 2.Collector 3.Base

Ordering Information

Part Number	Marking	Package	Packing Method
BD13610S	BD136-10	TO-126 3L	Bulk
BD13610STU	BD136-10	TO-126 3L	Rail
BD13616S	BD136-16	TO-126 3L	Bulk
BD13616STU	BD136-16	TO-126 3L	Rail
BD13810STU	BD138-10	TO-126 3L	Rail
BD13816STU	BD138-16	TO-126 3L	Rail
BD14010STU	BD140-10	TO-126 3L	Rail
BD14016S	BD140-16	TO-126 3L	Bulk
BD14016STU	BD140-16	TO-126 3L	Rail

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Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter		Value	Unit
V_{CBO}	Collector-Base Voltage	BD136	-45	V
		BD138	-60	
		BD140	-80	
V_{CEO}	Collector-Emitter Voltage	BD136	-45	V
		BD138	-60	
		BD140	-80	
V_{EBO}	Emitter-Base Voltage		-5	V
I_C	Collector Current (DC)		-1.5	A
I_C	Collector Current (Pulse)		-3.0	A
I_B	Base Current		-0.5	A
P_C	Collector Dissipation	T_C = 25°C	12.5	W
		T_A = 25°C	1.25	
T_J	Junction Temperature		150	°C
T_{STG}	Storage Temperature		-55 to +150	°C

Electrical Characteristics

Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter		Conditions	Min.	Typ.	Max.	Unit
V_{CEO}(sus)	Collector-Emitter Sustaining Voltage[1]	BD136	I_C = -30 mA, I_B = 0	-45			V
		BD138		-60			
		BD140		-80			
I_{CBO}	Collector Cut-Off Current		V_{CB} = -30 V, I_E = 0			-0.1	µA
I_{EBO}	Emitter Cut-Off Current		V_{EB} = -5 V, I_C = 0			-10	µA
h_{FE1}	DC Current Gain[1]		V_{CE} = -2 V, I_C = -5 mA	25			
h_{FE2}	DC Current Gain[1]		V_{CE} = -2 V, I_C = -0.5 A	25			
h_{FE3}	DC Current Gain[1]		V_{CE} = -2 V, I_C = -150 mA	40		250	
V_{CE}(sat)	Collector-Emitter Saturation Voltage[1]		I_C = -500 mA, I_B = -50 mA			-0.5	V
V_{BE}(on)	Base-Emitter On Voltage[1]		V_{CE} = -2 V, I_C = -0.5 A			-1	V

Note:

1. Pulse test: pulse width = 350 µs, duty cycle = 2.0% pulsed.

h_{FE} Classification

Classification	10	16
h_{FE3}	63 ~ 160	100 ~ 250

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Typical Performance Characteristics

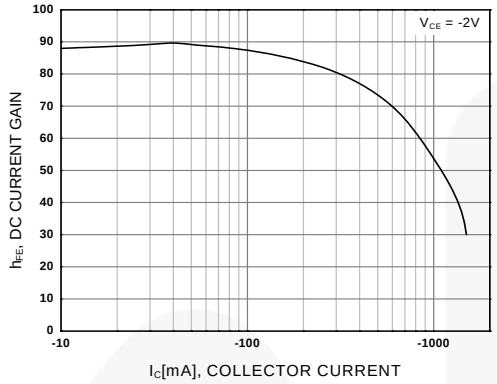

Figure 1. DC Current Gain

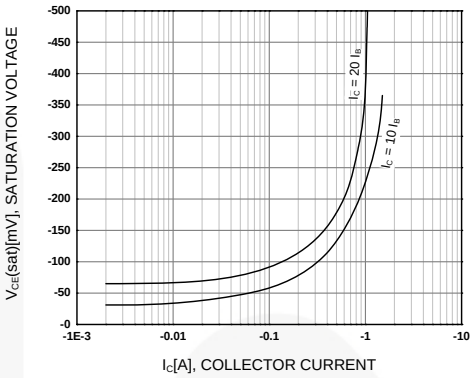

Figure 2. Collector-Emitter Saturation Voltage

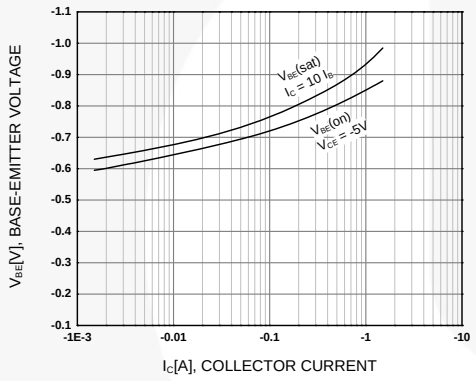

Figure 3. Base-Emitter Voltage

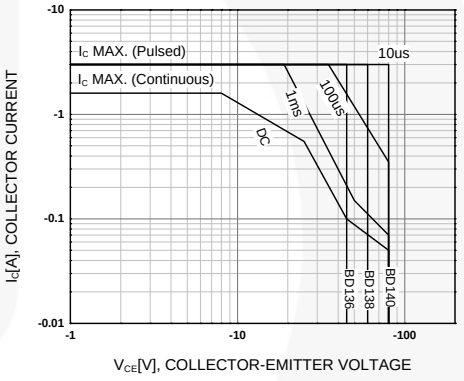

Figure 4. Safe Operating Area

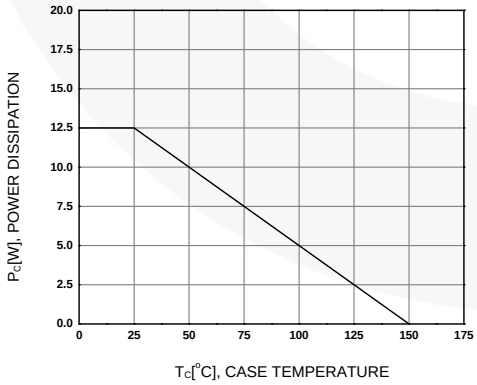

Figure 5. Power Derating

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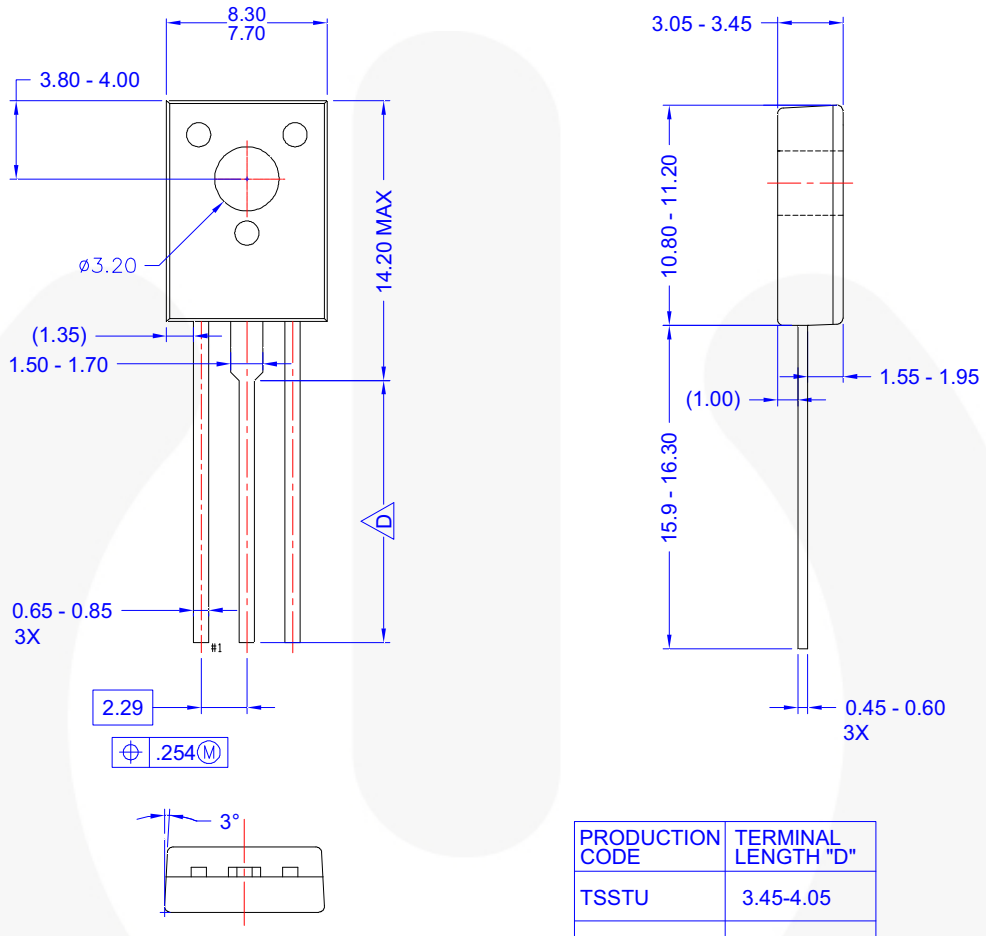
Physical Dimensions



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

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D) FOR TERMINAL LENGTH SEE TABLE
E) DRAWING FILE NAME AND REVISION : MKT-TO126AArev1

Figure 6. TO-126 (SOT-32) UNIFIED DRAWING (TSTU, TSSTU, STANDARD)

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Rev. I73

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