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FAIRCHILD SEMICONDUCTOR®

August 2013

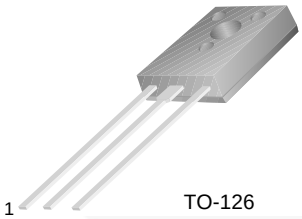
BD135 / 137 / 139
NPN Epitaxial Silicon Transistor

Features

- Complement to BD136, BD138 and BD140 respectively

Applications

- Medium Power Linear and Switching



TO-126

1. Emitter 2.Collector 3.Base

Ordering Information

Part Number	Marking	Package	Packing Method
BD13516S	BD135-16	TO-126 3L	Bulk
BD1356STU	BD135-6		Rail
BD13510STU	BD135-10		
BD13516STU	BD135-16		
BD13716STU	BD137-16		
BD13710STU	BD137-10		
BD13716S	BD137-16		Bulk
BD13916STU	BD139-16		Rail
BD13910S	BD139-10		Bulk
BD13916S	BD139-16		
BD1396STU	BD139-6		Rail
BD13910STU	BD139-10		

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_C = 25°C unless otherwise noted.

Symbol	Parameter		Value	Units
V_{CBO}	Collector-Base Voltage	BD135	45	V
		BD137	60	
		BD139	80	
V_{CEO}	Collector-Emitter Voltage	BD135	45	V
		BD137	60	
		BD139	80	
V_{EBO}	Emitter-Base Voltage		5	V
I_C	Collector Current (DC)		1.5	A
I_{CP}	Collector Current (Pulse)		3.0	A
I_B	Base Current		0.5	A
P_C	Device Dissipation	T_C = 25°C	12.5	W
		T_A = 25°C	1.25	W
T_J	Junction Temperature		150	°C
T_{STG}	Storage Temperature		- 55 to +150	°C

Electrical Characteristics

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

Symbol	Parameter		Test Condition	Min.	Typ.	Max.	Units
V_{CEO}(sus)	Collector-Emitter Sustaining Voltage	BD135	I_C = 30 mA, I_B = 0	45			V
		BD137		60			
		BD139		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		V_{CE} = 2 V, I_C = 5 mA	25			
h_{FE2}			V_{CE} = 2 V, I_C = 0.5 A	25			
h_{FE3}			V_{CE} = 2 V, I_C = 150 mA	40		250	
V_{CE}(sat)	Collector-Emitter Saturation Voltage		I_C = 500 mA, I_B = 50 mA			0.5	V
V_{BE}(on)	Base-Emitter On Voltage		V_{CE} = 2 V, I_C = 0.5 A			1	V

h_{FE} Classification

Classification	6	10	16
h_{FE3}	40 ~ 100	63 ~ 160	100 ~ 250

Typical Performance Characteristics

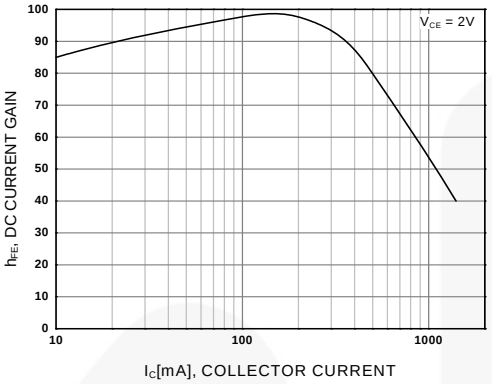


Figure 1. DC current Gain

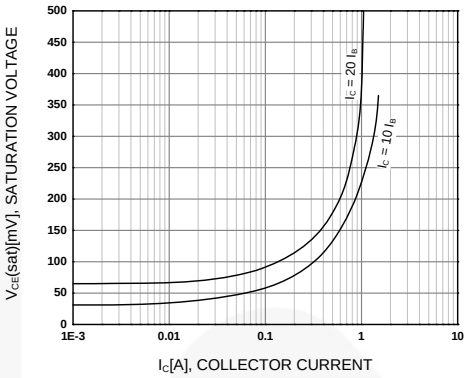


Figure 2. Collector-Emitter Saturation Voltage

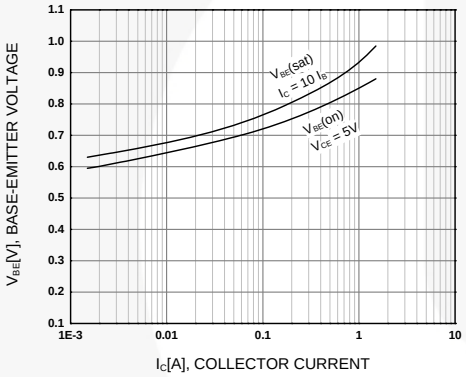


Figure 3. Base-Emitter Voltage

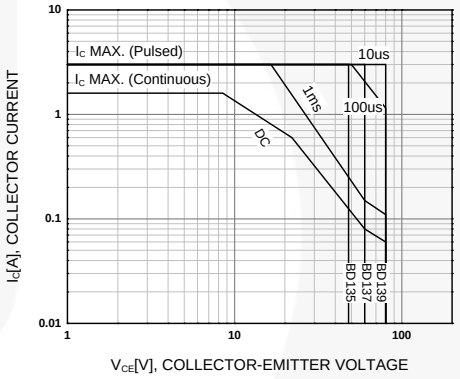


Figure 4. Safe Operating Area

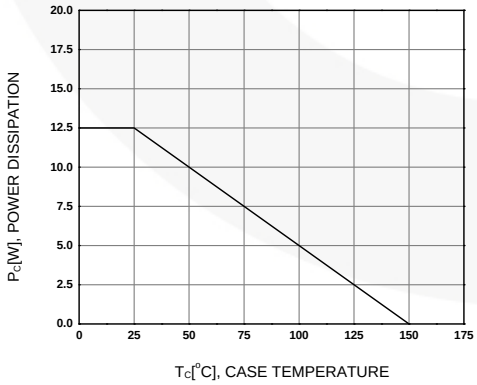
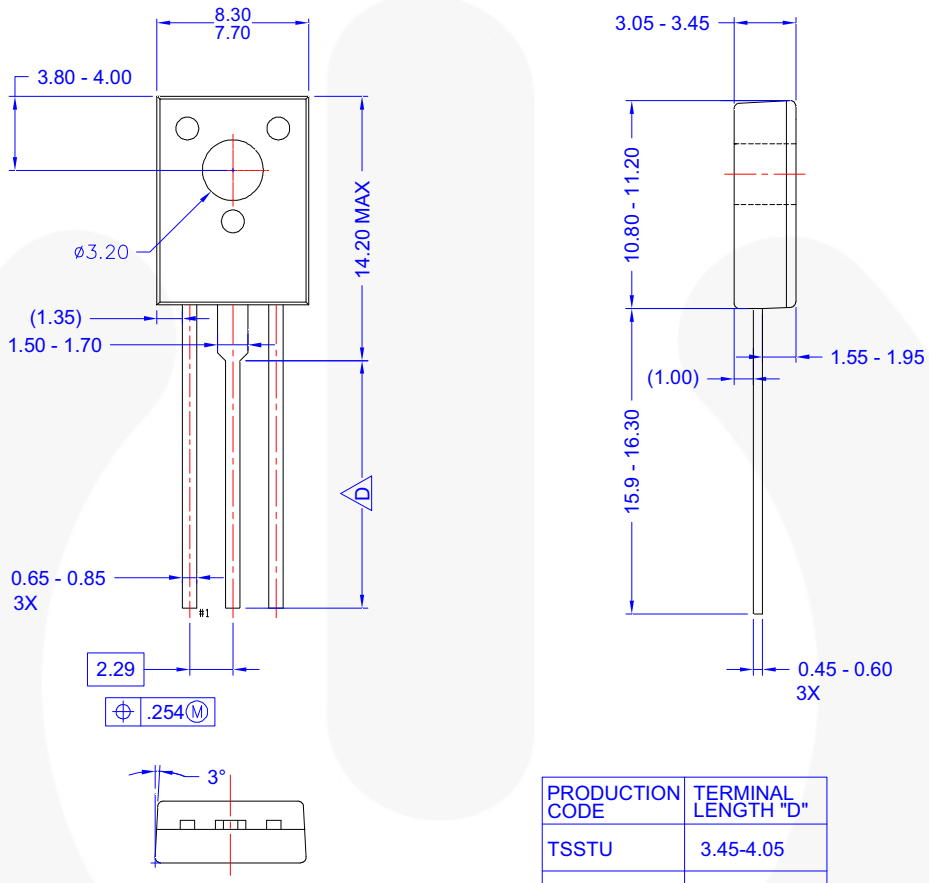


Figure 5. Power Derating

Physical Dimensions

TO-126 3L



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

NOTES:
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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

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

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