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September 2015

BC517
NPN Darlington Transistor

Features

- This device is designed for applications requiring extremely high current gain at currents to 1.0 A.
- Sourced from process 05.

Straight Lead
Bulk Packing

Bent Lead
Tape & Reel
Ammo Packing

TO-92
1. Collector
2. Base
3. Emitter

Ordering Information

Part Number	Top Mark	Package	Packing Method
BC517_D74Z	BC517	TO-92 3L (Bent Lead)	Ammo

Absolute Maximum Ratings(1), (2)

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_{CEO}	Collector-Emitter Voltage	30	V
V_{CBO}	Collector-Base Voltage	40	V
V_{EBO}	Emitter-Base Voltage	10	V
I_C	Collector Current - Continuous	1.2	A
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	°C

Notes:

1. These ratings are based on a maximum junction temperature of 150°C.
2. These are steady-state limits. Fairchild Semiconductor should be consulted on applications involving pulsed or low-duty-cycle operations.

Thermal Characteristics[3]

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

Symbol	Parameter	Value	Unit
P_D	Total Device Dissipation, T_A = 25°C	625	mW
	Derate Above 25°C	5.0	mW/°C
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	83.3	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	200	°C/W

Note:

3. PCB size: FR-4, 76 mm x 114 mm x 1.57 mm (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.

Electrical Characteristics

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{CEO}	Collector-Emitter Breakdown Voltage	I_C = 2.0 mA, I_B = 0	30			V
V_{CBO}	Collector-Base Breakdown Voltage	I_C = 10 µA, I_E = 0	40			V
V_{EBO}	Emitter-Base Breakdown Voltage	I_E = 100 nA, I_C = 0	10			V
I_{CBO}	Collector Cut-Off Current	V_{CB} = 30 V, I_E = 0			100	nA
h_{FE}	DC Current Gain	V_{CE} = 2 V, I_C = 20 mA	30,000			
V_{CE}(sat)	Collector-Emitter Saturation Voltage	I_C = 100 mA, I_B = 0.1 mA			1	V
V_{BE}(on)	Base-Emitter On Voltage	I_C = 10 mA, V_{CE} = 5.0 V			1.4	V

Typical Performance Characteristics

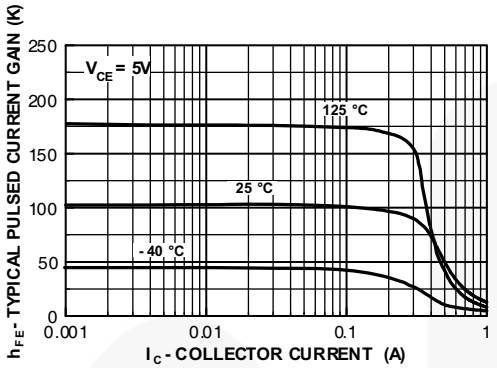

Figure 1. Typical Pulsed Current Gain vs. Collector Current

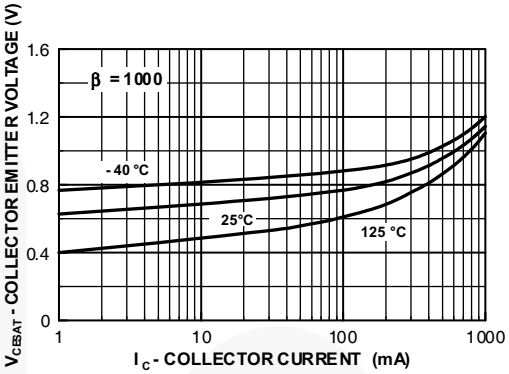

Figure 2. Collector-Emitter Saturation Voltage vs. Collector Current

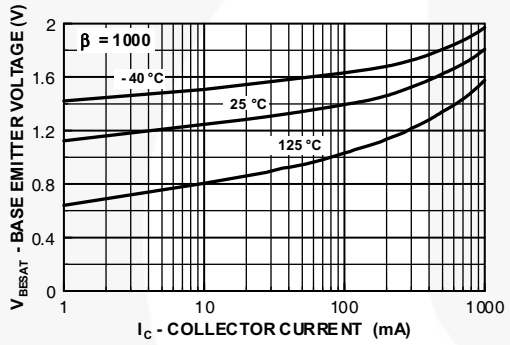

Figure 3. Base-Emitter Saturation Voltage vs. Collector Current

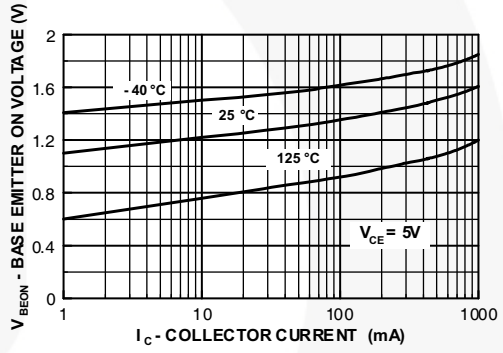

Figure 4. Base Emitter On Voltage vs. Collector Current

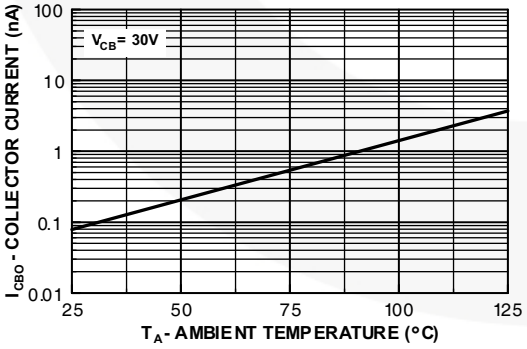

Figure 5. Collector Cut-Off Current vs. Ambient Temperature

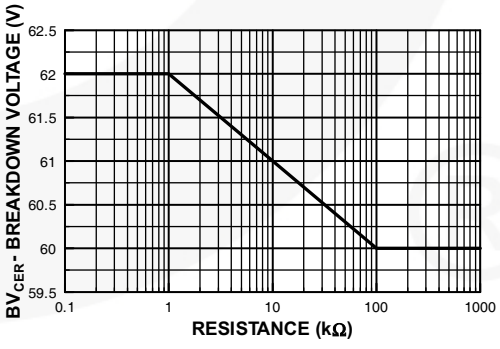

Figure 6. Collector-Emitter Breakdown Voltage with Resistance Between Emitter-Base

Typical Performance Characteristics (Continued)

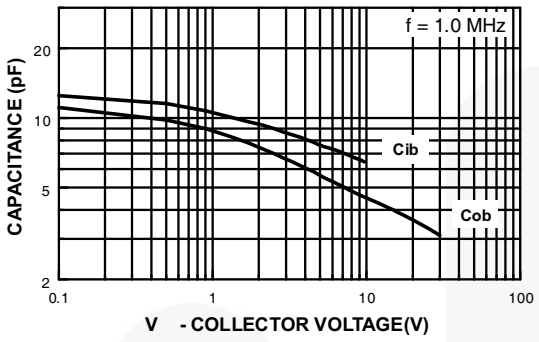

Figure 7. Input and Output Capacitance vs. Reverse Voltage

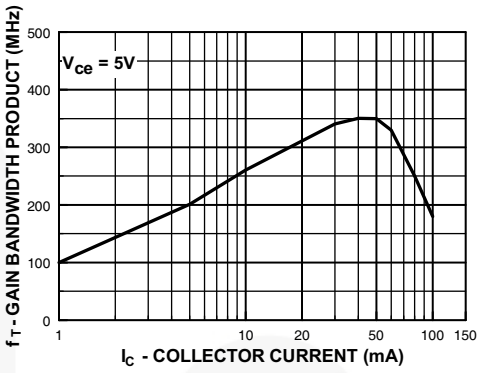

Figure 8. Gain Bandwidth Product vs. Collector Current

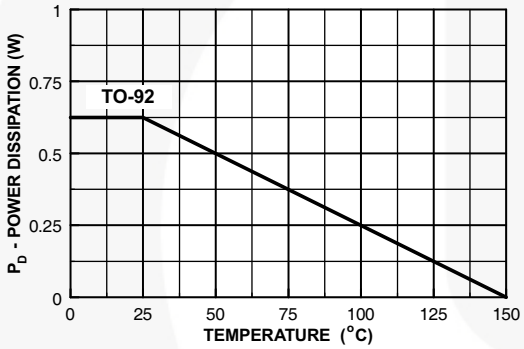

Figure 9. Power Dissipation vs. Ambient Temperature

Physical Dimensions

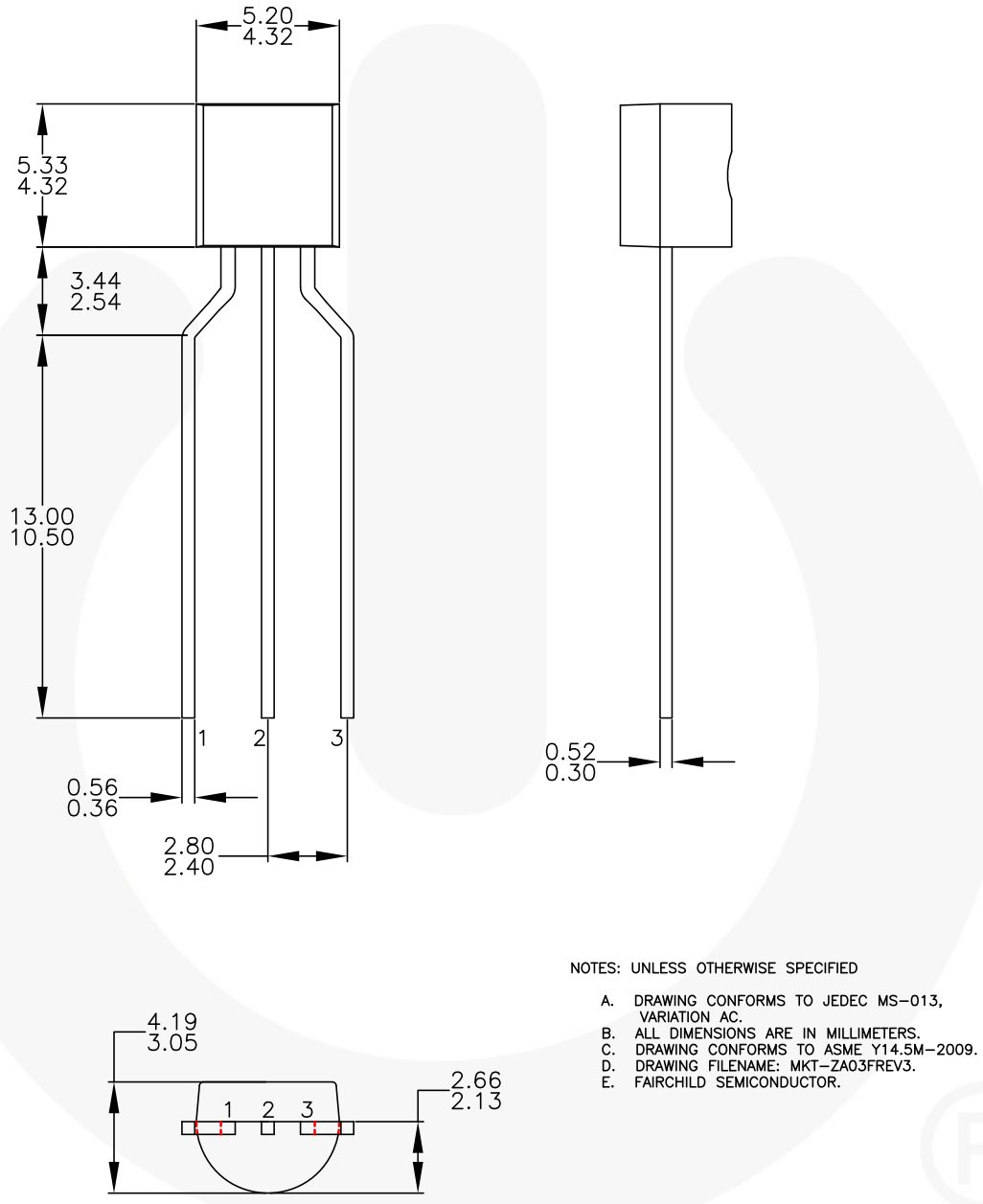

Figure 10. 3-Lead, TO-92, Molded, 0.2 In Line Spacing Lead Form, Ammo, Tape and Reel Packing

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Preliminary	First Production	Datasheet contains preliminary data; supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design.
No Identification Needed	Full Production	Datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve the design.
Obsolete	Not In Production	Datasheet contains specifications on a product that is discontinued by Fairchild Semiconductor. The datasheet is for reference information only.

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