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Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor's system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (_), the underscore (_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.onsemi.com. Please email any questions regarding the system integration to Fairchild_questions@onsemi.com.

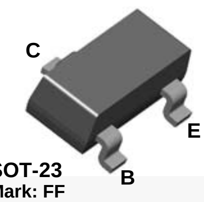
FAIRCHILD

October 2014

BCV27
NPN Darlington Transistor

Description

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



SOT-23
Mark: FF

Ordering Information

Part Number	Marking	Package	Packing Method
BCV27	FF	SOT-23 3L	Tape and Reel

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	Max.	Unit
P_D	Total Device Dissipation	350	mW
	Derate Above 25°C	2.8	mW/°C
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	357	°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
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	I_C = 10 mA, I_B = 0	30			V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = 10 µA, I_E = 0	40			V
$V_{(BR)EBO}$	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			0.1	µA
I_{EBO}	Emitter Cut-Off Current	V_{EB} = 10 V, I_C = 0			0.1	µA
h_{FE}	DC Current Gain	I_C = 1.0 mA, V_{CE} = 5.0 V	4000			
		I_C = 10 mA, V_{CE} = 5.0 V	10000			
		I_C = 100 mA, V_{CE} = 5.0 V	20000			
$V_{CE}(sat)$	Collector-Emitter Saturation Voltage	I_C = 100 mA, I_B = 0.1 mA			1.0	V
$V_{BE}(sat)$	Base-Emitter Saturation Voltage	I_C = 100 mA, I_B = 0.1 mA			1.5	V
f_T	Current Gain - Bandwidth Product	I_C = 30 mA, V_{CE} = 5.0 V, f = 100 MHz		220		MHz
C_c	Collector Capacitance	V_{CB} = 30 V, I_E = 0, f = 1.0 MHz		3.5		pF

Typical Performance Characteristics

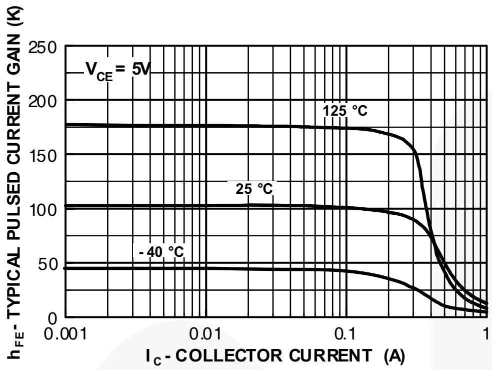


Figure 1. Typical Pulsed Current Gain vs. Collector Current

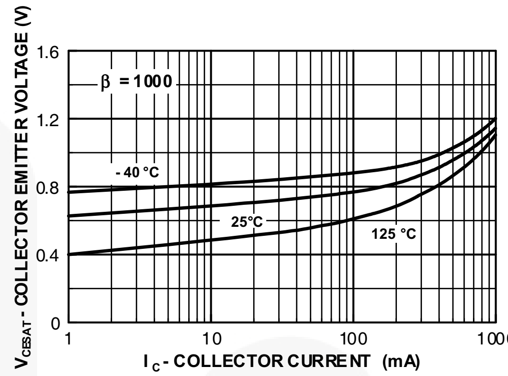


Figure 2. Collector-Emitter Saturation Voltage vs. Collector Current

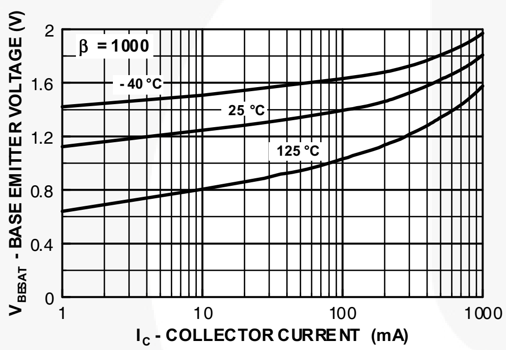


Figure 3. Base-Emitter Saturation Voltage vs. Collector Current

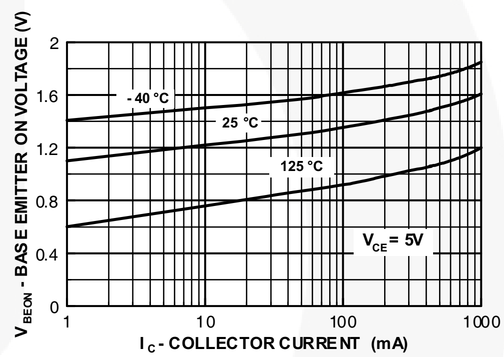


Figure 4. Base Emitter On Voltage vs. Collector Current

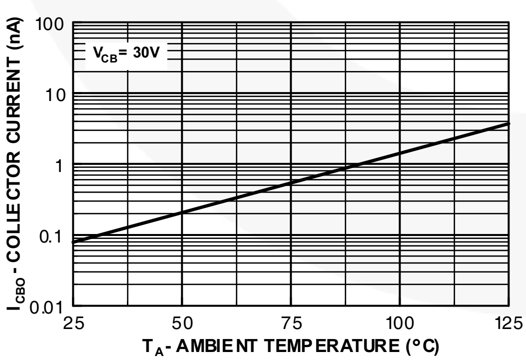


Figure 5. Collector Cut-Off Current vs. Ambient Temperature

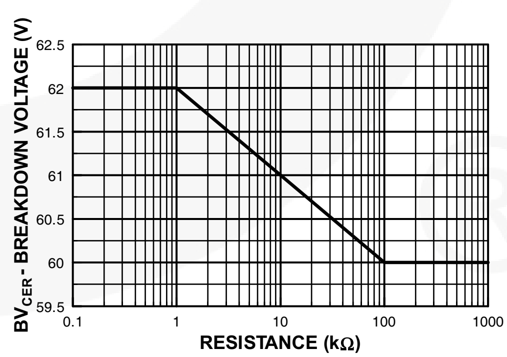


Figure 6. Collector-Emitter Breakdown Voltage with Resistance Between Emitter-Base

Typical Performance Characteristics (Continued)

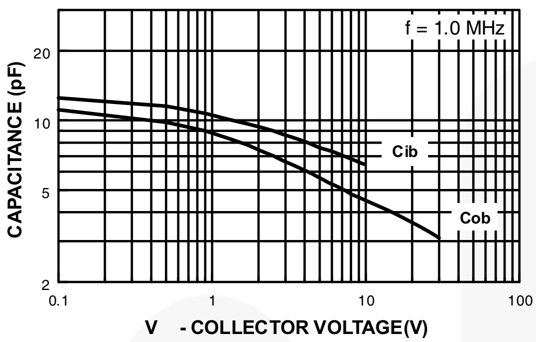


Figure 7. Input and Output Capacitance vs. Reverser Voltage

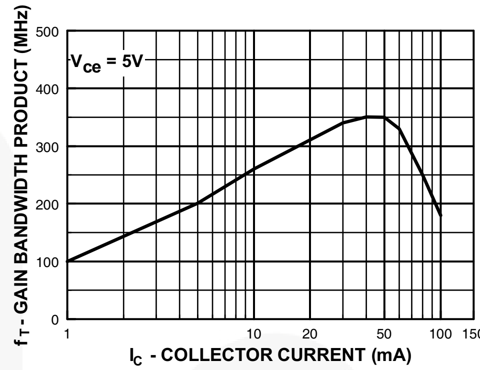


Figure 8. Gain Bandwidth Product vs. Collector Current

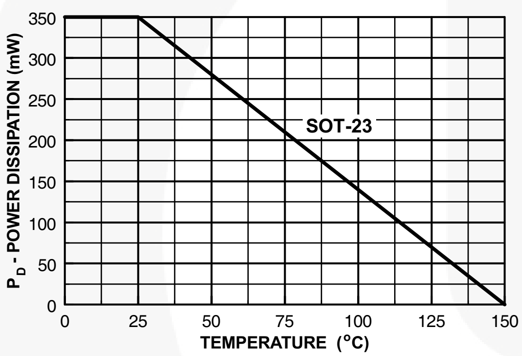
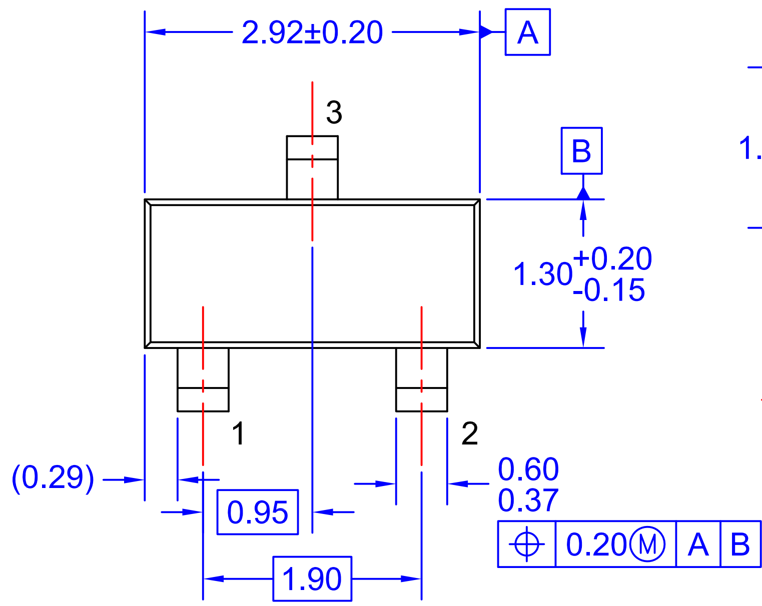
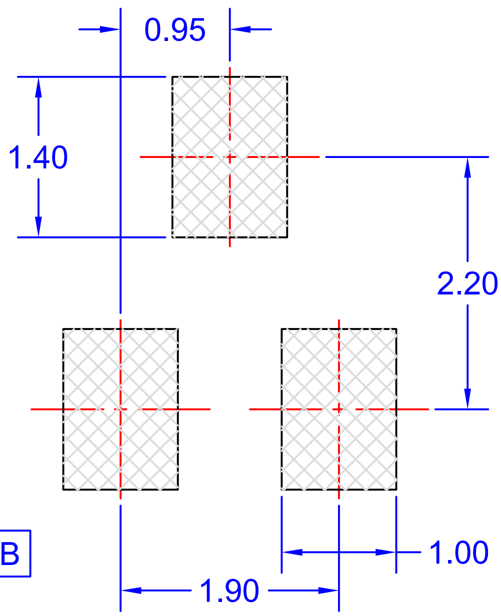
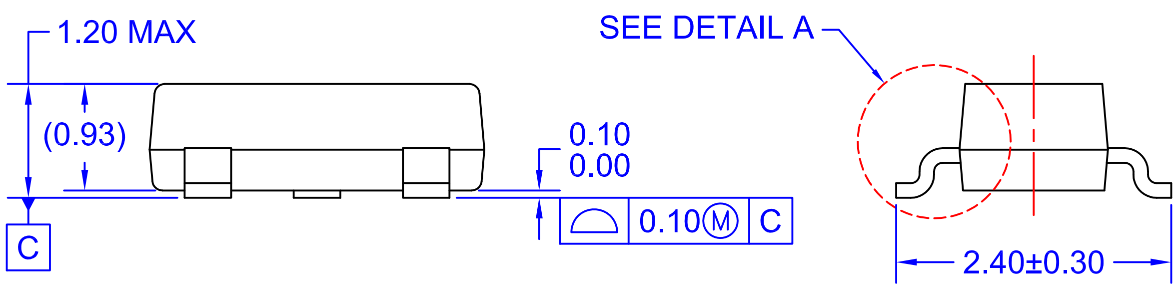


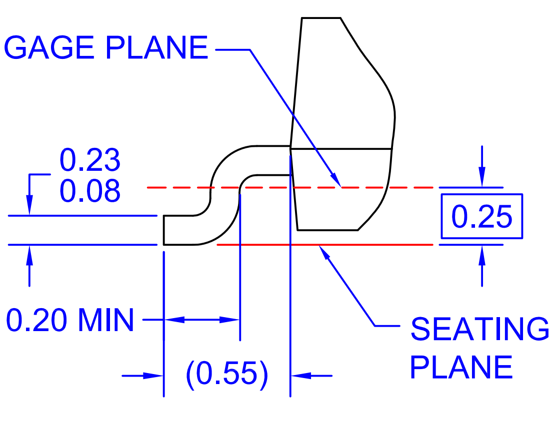
Figure 9. Power Dissipation vs. Ambient Temperature





LAND PATTERN RECOMMENDATION





DETAIL A

SCALE: 2X

NOTES: UNLESS OTHERWISE SPECIFIED

A) REFERENCE JEDEC REGISTRATION TO-236, VARIATION AB, ISSUE H.
B) ALL DIMENSIONS ARE IN MILLIMETERS.
C) DIMENSIONS ARE INCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR EXTRUSIONS.
D) DIMENSIONING AND TOLERANCING PER ASME Y14.5M - 2009.
E) DRAWING FILE NAME: MA03DREV12

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