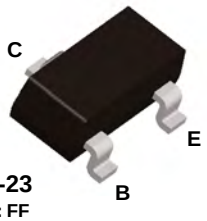
FAIRCHILD SEMICONDUCTOR™

Discrete POWER & Signal Technologies

BCV27



SOT-23
Mark: FF

NPN Darlington Transistor

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

Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
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

*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

NOTES:
1) These ratings are based on a maximum junction temperature of 150 degrees C.
2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations

Thermal Characteristics

TA = 25°C unless otherwise noted

Symbol	Characteristic	Max	Units
		***BCV27**	
P_D	Total Device Dissipation Derate above 25°C	350 2.8	mW mW/°C
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	357	°C/W

*Device mounted on FR-4 PCB 40 mm X 40 mm X 1.5 mm.

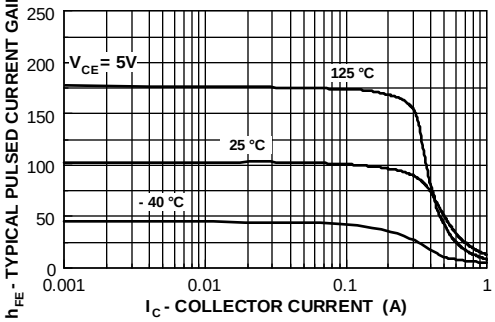
NPN Darlington Transistor
(continued)

Electrical Characteristics
TA = 25°C unless otherwise noted

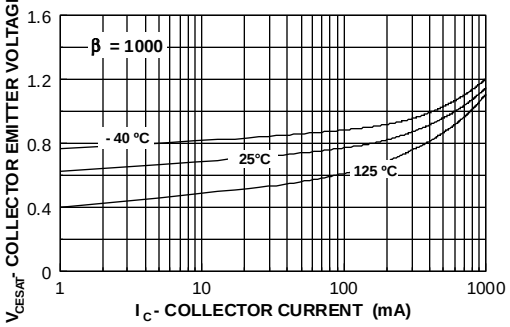
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	I_C = 10 mA, I_B = 0	30			V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = 10 µA, I_E = 0	40			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = 100 nA, I_C = 0	10			V
I_{CBO}	Collector-Cutoff Current	V_{CB} = 30 V, I_E = 0			0.1	µA
I_{EBO}	Emitter-Cutoff Current	V_{EB} = 10 V, I_C = 0			0.1	µA
ON CHARACTERISTICS						
h_{FE}	DC Current Gain	I_C = 1.0 mA, V_{CE} = 5.0 V I_C = 10 mA, V_{CE} = 5.0 V I_C = 100 mA, V_{CE} = 5.0 V	4,000 10,000 20,000			
$V_{CE(sat)}$	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
SMALL SIGNAL CHARACTERISTICS						
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 Characteristics

Typical Pulsed Current Gain vs Collector Current



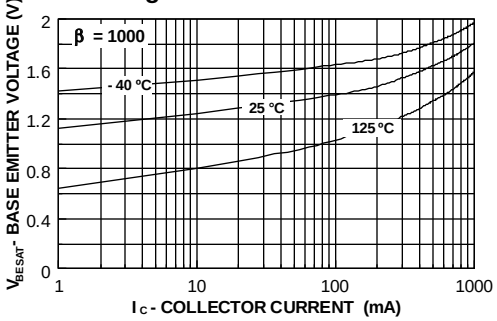
Collector-Emitter Saturation Voltage vs Collector Current



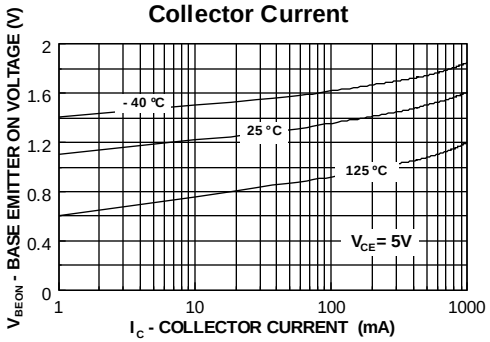
NPN Darlington Transistor
(continued)

Typical Characteristics (continued)

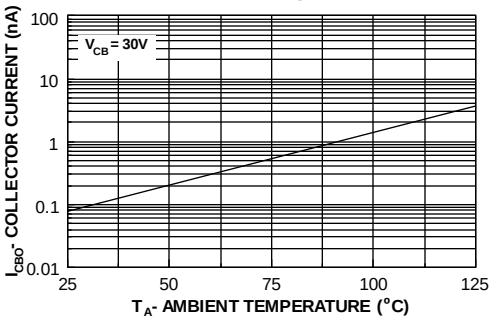
Base-Emitter Saturation Voltage vs Collector Current



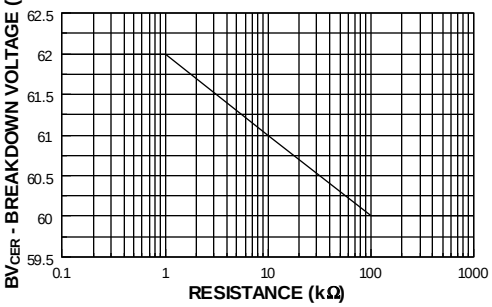
Base Emitter ON Voltage vs Collector Current



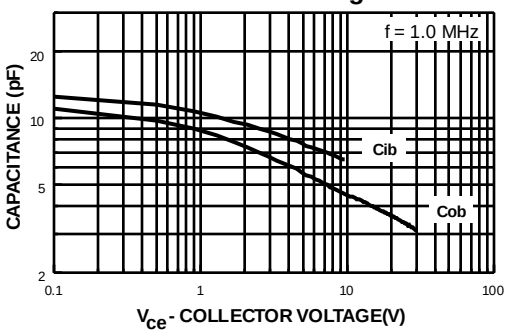
Collector-Cutoff Current vs Ambient Temperature



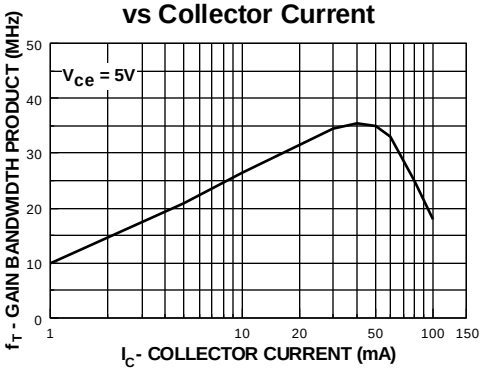
Collector-Emitter Breakdown Voltage with Resistance Between Emitter-Base



Input and Output Capacitance vs Reverse Voltage

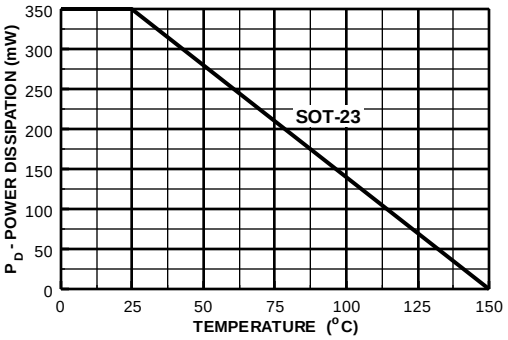


Gain Bandwidth Product vs Collector Current



Typical Characteristics (continued)

Power Dissipation vs Ambient Temperature



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