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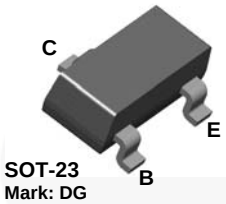
March 2014

BCW68G
PNP General-Purpose Amplifier

Description

This device is designed for general-purpose amplifier and switching applications at currents to 500 mA. Sourced from process 63.



SOT-23
Mark: DG

Ordering Information

Part Number	Marking	Package	Packing Method
BCW68G	DG	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	-45	V
V_{CBO}	Collector-Base Voltage	-60	V
V_{EBO}	Emitter-Base Voltage	-5	V
I_C	Collector Current - Continuous	-800	mA
T_J , T_{STG}	Junction and Storage 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 T_A = 25°C	2.8	mW/°C
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	357	°C/W

Note:

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

Electrical Characteristics

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

Symbol	Parameter	Conditions	Min.	Max.	Unit
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	I_C = -10 mA, I_B = 0	-45		V
$V_{(BR)CES}$	Collector-Emitter Breakdown Voltage	I_C = -10 µA	-60		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = -100 µA, I_E = 0	-60		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = -10 µA, I_C = 0	-5.0		V
I_{CES}	Collector Cut-Off Current	V_{CE} = -45 V		-20	nA
		V_{CE} = -45V, T_A = 150°C		-10	µA
I_{EBO}	Emitter Cut-Off Current	V_{EB} = -4.0 V		-20	nA
h_{FE}	DC Current Gain	I_C = -10 mA, V_{CE} = -1.0 V	120		
		I_C = -100 mA, V_{CE} = -1.0 V	160	400	
		I_C = -300 mA, V_{CE} = -1.0 V	60		
V_{CE}(sat)	Collector-Emitter Saturation Voltage	I_C = -300 mA, I_B = -30 mA		-1.5	V
V_{BE}(sat)	Base-Emitter Saturation Voltage	I_C = -500 mA, I_B = -50 mA		-2.0	V
f_T	Current Gain - Bandwidth Product	I_C = -20 mA, V_{CE} = -10 V, f = 100 MHz	100		MHz
C_{ob}	Output Capacitance	V_{CB} = -10 V, I_E = 0, f = 1.0 MHz		18	pF
C_{ib}	Input Capacitance	V_{EB} = -0.5 V, I_C = 0, f = 1.0 MHz		105	pF
NF	Noise Figure	I_C = -0.2 mA, V_{CE} = -5.0 V, R_S = 1.0 kΩ, f = 1.0 kHz, B_W = 200 Hz		10	dB

Typical Performance Characteristics

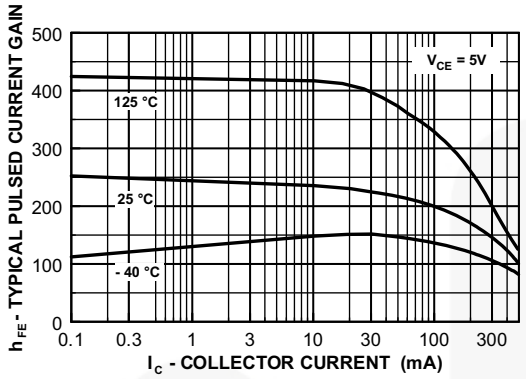


Figure 1. Typical Pulsed Current Gain vs. Collector Current

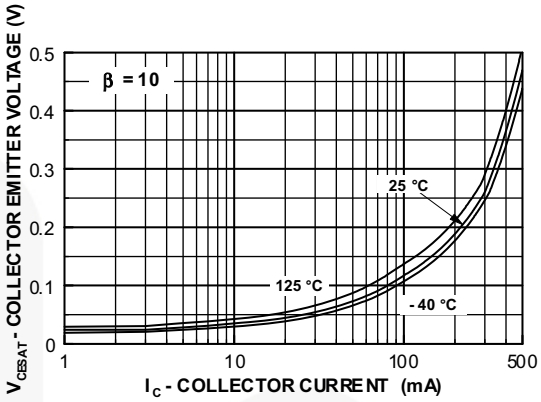


Figure 2. Collector-Emitter Saturation Voltage vs. Collector Current

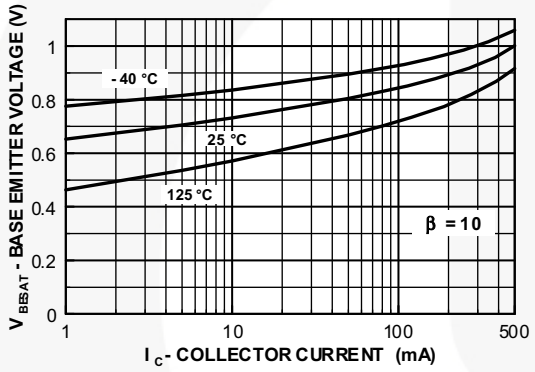


Figure 3. Base-Emitter Saturation Voltage vs. Collector Current

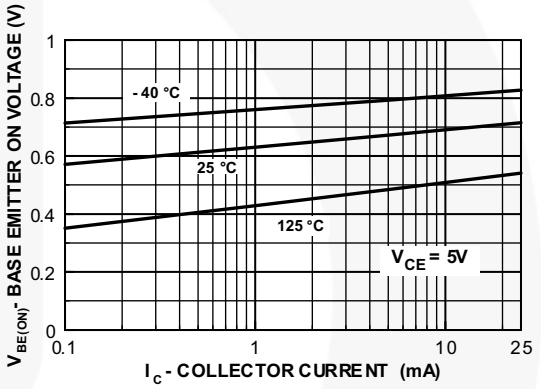


Figure 4. Base-Emitter On Voltage vs. Collector Current

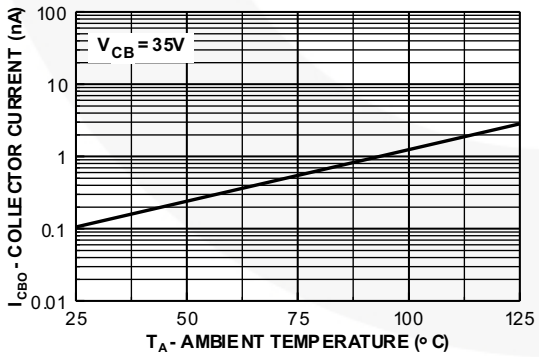


Figure 5. Collector Cut-Off Current vs. Ambient Temperature

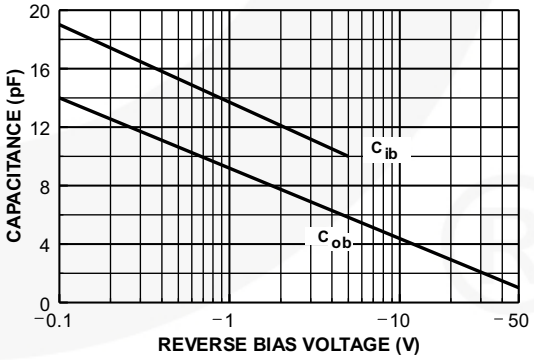


Figure 6. Input and Output Capacitance vs. Reverse Bias Voltage

Typical Performance Characteristics (Continued)

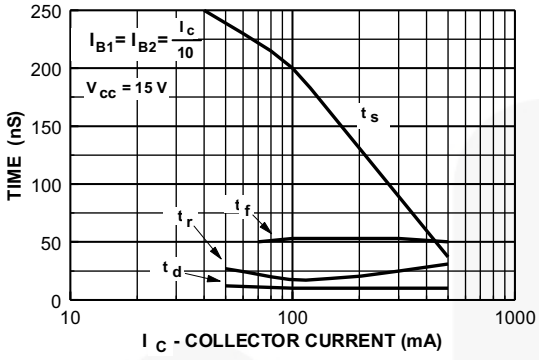


Figure 7. Switching Times vs. Collector Current

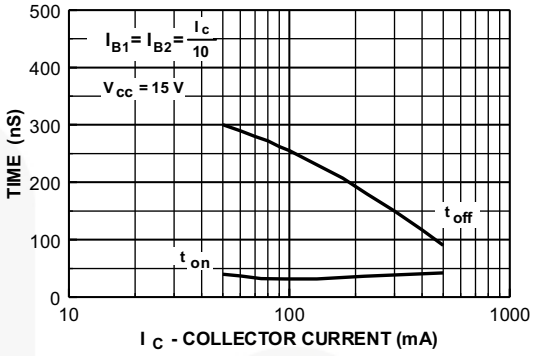


Figure 8. Turn-On and Turn-Off Times vs. Collector Current

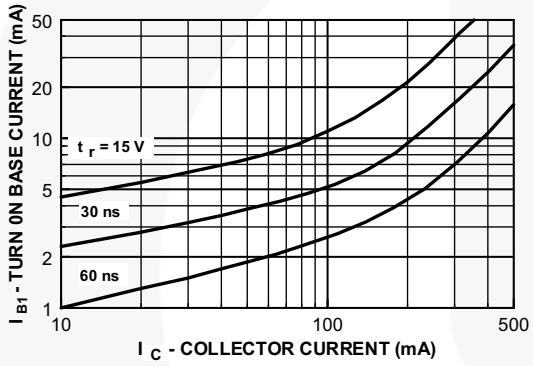


Figure 9. Rise Time vs. Turn-On Base Current

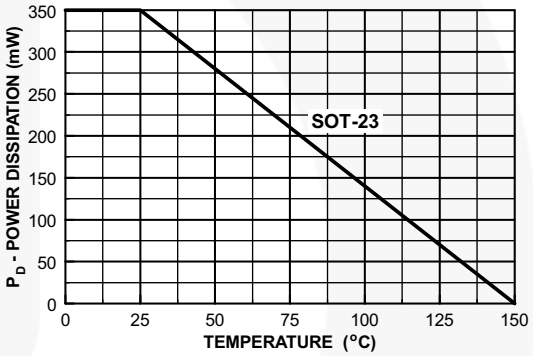


Figure 10. Power Dissipation vs. Ambient Temperature

Typical Performance Characteristics (Continued, f = 1.0 kHz)

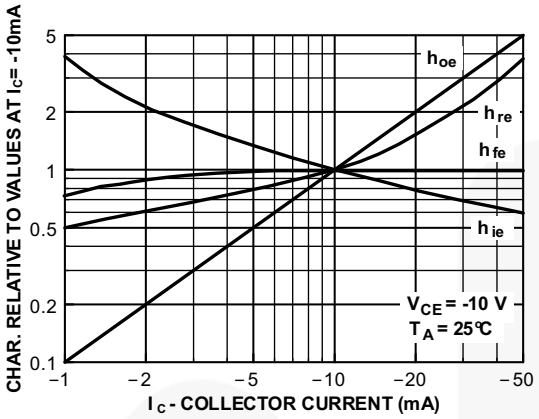


Figure 11. Common Emitter Characteristics

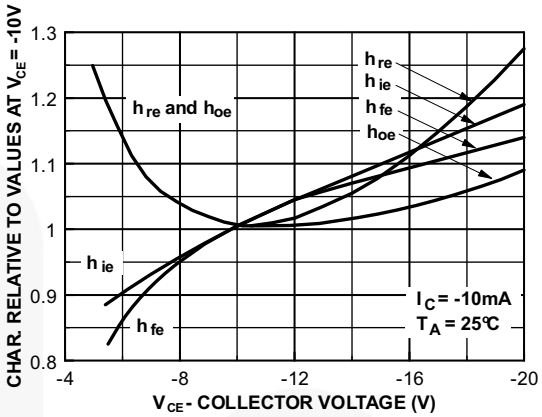


Figure 12. Common Emitter Characteristics

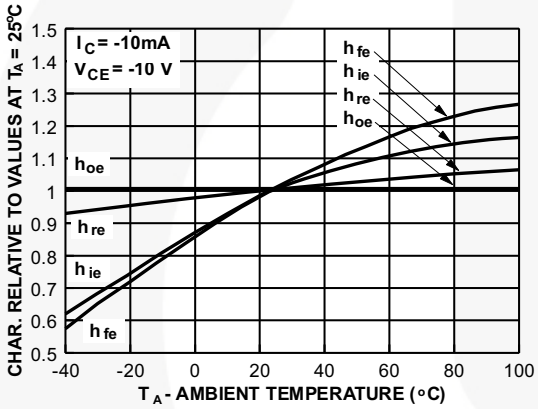


Figure 13. Common Emitter Characteristics

Physical Dimensions

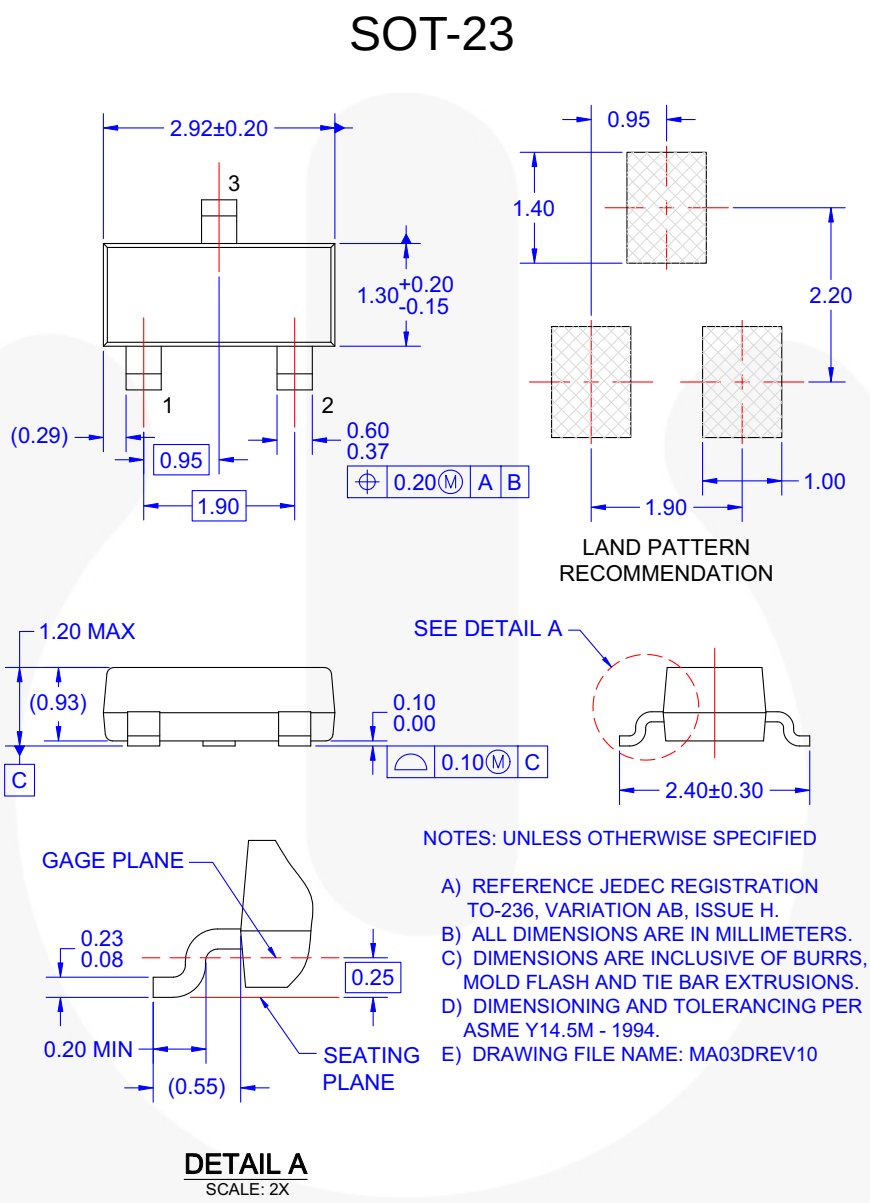


Figure 14. 3-LEAD, SOT23, JEDEC TO-236, LOW PROFILE (ACTIVE)

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