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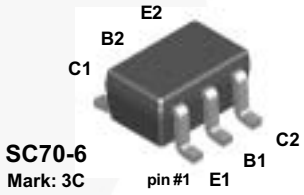
August 2015

BC857S
PNP, Multi-Chip, General-Purpose Amplifier

Description

This device is designed for general-purpose amplifier applications at collector currents to 200 mA. Sourced from Process 68.



NOTE: The pinouts are symmetrical; pin 1 and pin 4 are interchangeable. Units inside the carrier can be of either orientation and will not affect the functionality of the device.

Figure 1. Device Package

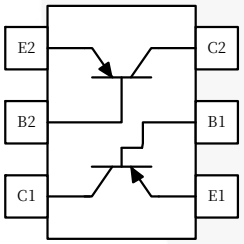


Figure 2. Internal Connections

Ordering Information

Part Number	Top Mark	Package	Packing Method
BC857S	3C	SC70 6L	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_{CES}	Collector-Base Voltage	-50	V
V_{CBO}	Collector-Base Voltage	-50	V
V_{EBO}	Emitter-Base Voltage	-5.0	V
I_C	Collector Current - Continuous	-200	mA
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	300	mW
	Derate Above 25°C	2.4	mW/°C
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	415	°C/W

Note:

3. PCB size: FR-4 76 x 114 x 1.57 mm3 (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	-45			V
$V_{(BR)CES}$	Collector-Base Breakdown Voltage	I_C = -10 µA, I_E = 0	-50			V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = -10 µA, I_E = 0	-50			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = -10 µA, I_C = 0	-5			V
I_{CBO}	Collector Cut-Off Current	V_{CB} = -30 V			-15	nA
		V_{CB} = -30 V, T_A = 150 °C			-4	µA
h_{FE}	DC Current Gain	I_C = -2.0 mA, V_{CE} = -5.0 V	125		630	
V_{CE}(sat)	Collector-Emitter Saturation Voltage	I_C = -10 mA, I_B = -0.5 mA			-0.30	V
		I_C = -100 mA, I_B = -5.0 mA			-0.65	
V_{BE}(on)	Base-Emitter On Voltage	I_C = -2.0 mA, V_{CE} = -5.0 V	-0.60		-0.75	V
		I_C = -10 mA, V_{CE} = -5.0 V			-0.82	
f_T	Current Gain-Bandwidth Product	I_C = -10 mA, V_{CE} = -5.0 V, f = 100 MHz		200		MHz
C_{ob}	Output Capacitance	V_{CB} = -10 V, f = 1.0 MHz		3.5		pF
NF	Noise Figure	I_C = -0.2 mA, V_{CE} = -5.0 V, R_S = 2.0 kΩ, f = 1.0 kHz, BW = 200 Hz		2.5		dB

Typical Performance Characteristics

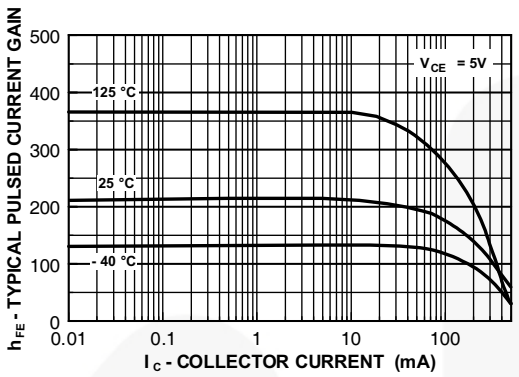


Figure 3. Typical Pulsed Current Gain vs. Collector Current

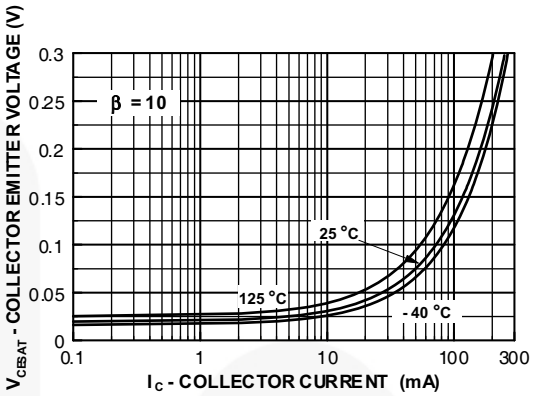


Figure 4. Collector-Emitter Saturation Voltage vs. Collector Current

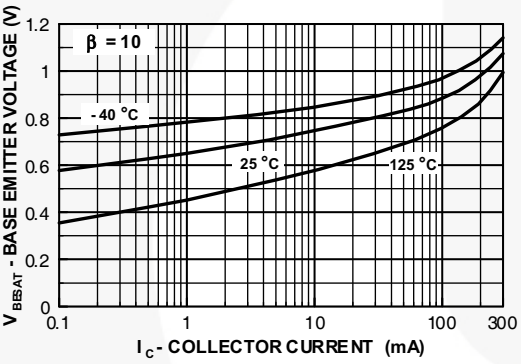


Figure 5. Base-Emitter Saturation Voltage vs. Collector Current

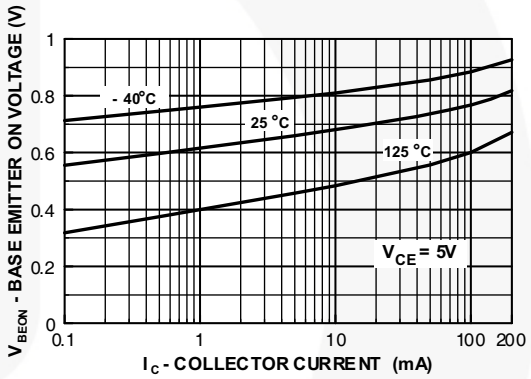


Figure 6. Base-Emitter On Voltage vs. Collector Current

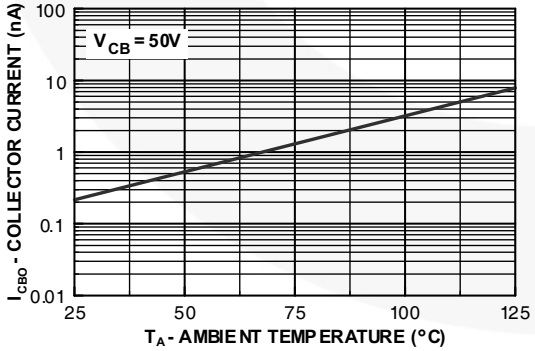


Figure 7. Collector Cut-Off Current vs. Ambient Temperature

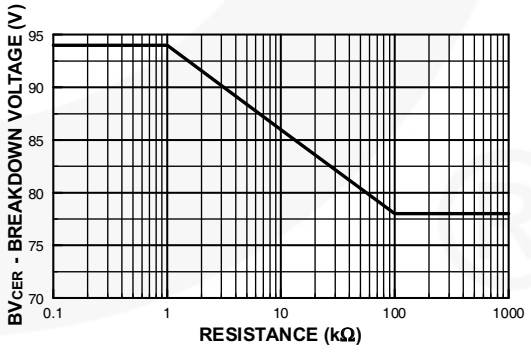


Figure 8. Collector-Emitter Breakdown Voltage with Resistance between Emitter-Base

Typical Performance Characteristics (Continued)

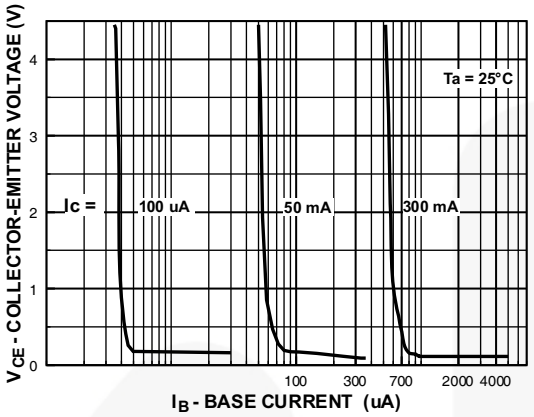


Figure 9. Collector Saturation Region

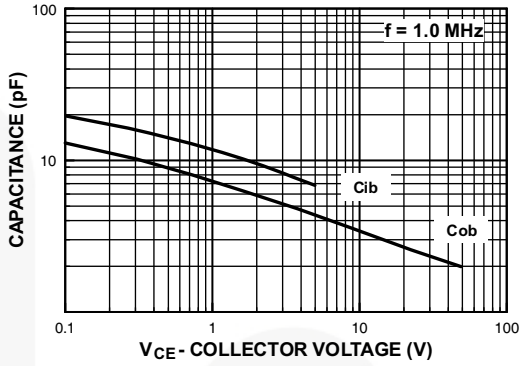


Figure 10. Input and Output Capacitance vs. Reverse Voltage

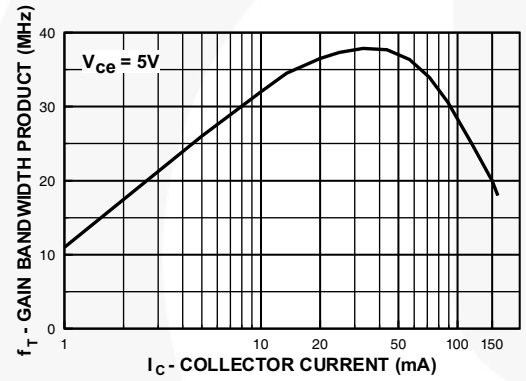


Figure 11. Gain Bandwidth Product vs. Collector Current

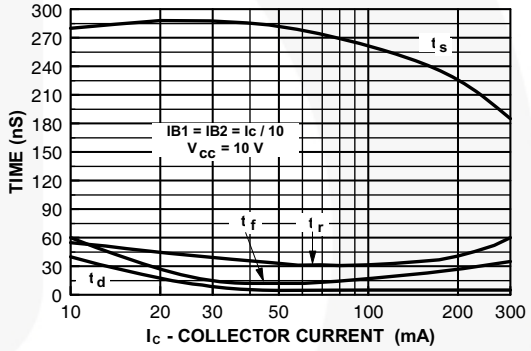


Figure 12. Switching Times vs. Collector Current

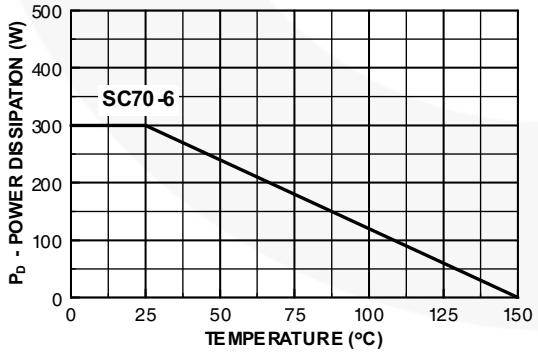


Figure 13. Power Dissipation vs. Ambient Temperature

Physical Dimensions

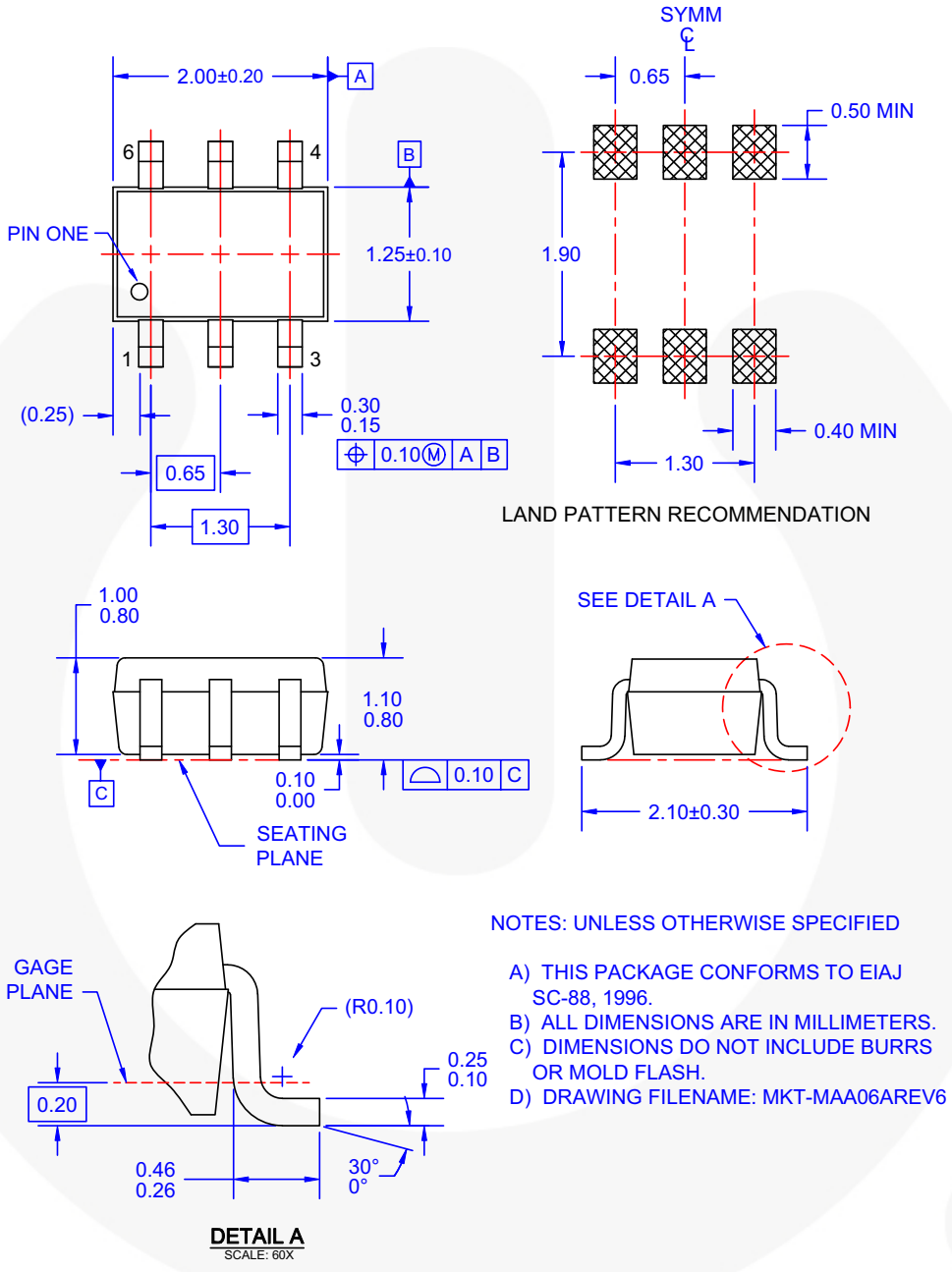


Figure 14. 6-LEAD, SC70, EIAJ SC-88, 1.25 MM WIDE

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