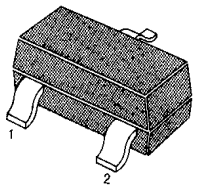
# BC856/857/858/859/860

# PNP EPITAXIAL SILICON TRANSISTOR

## SWITCHING AND AMPLIFIER APPLICATIONS

- Suitable for automatic insertion in thick and thin-film circuits
- LOW NOISE: BC859, BC860
- Complement to BC846 ... BC850

SOT-23




1. Base 2. Emitter 3. Collector

## ABSOLUTE MAXIMUM RATINGS ($T_A$=25°C)

| Characteristic | Symbol | Rating | Unit |
|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | | |
| : BC856 | | -80 | V |
| : BC857/860 | | -50 | V |
| : BC858/859 | | -30 | V |
| Collector-Emitter Voltage | $V_{CEO}$ | | |
| : BC856 | | -65 | V |
| : BC857/860 | | -45 | V |
| : BC858/859 | | -30 | V |
| Emitter-Base Voltage | $V_{EBO}$ | -5 | V |
| Collector Current (DC) | $I_C$ | -100 | mA |
| Collector Dissipation | $P_C$ | 310 | mW |
| Junction Temperature | $T_J$ | 150 | °C |
| Storage Temperature | $T_{STG}$ | -65 ~ 150 | °C |

## ELECTRICAL CHARACTERISTICS ($T_A$=25°C)

| Characteristic | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Collector Cut-off Current | $I_{CBO}$ | $V_{CB}$= -30V, $I_E$=0 | | | -15 | nA |
| DC Current Gain | $h_{FE}$ | $V_{CE}$= -5V, $I_C$= -2mA | 110 | | 800 | |
| Collector-Emitter Saturation Voltage | $V_{CE}$ (sat) | $I_C$= -10mA, $I_B$= -0.5mA | | -90 | -300 | mV |
| | | $I_C$= -100mA, $I_B$= -5mA | | -250 | -650 | mV |
| Collector-Base Saturation Voltage | $V_{BE}$ (sat) | $I_C$= -10mA, $I_B$= -0.5mA | | -700 | | mV |
| | | $I_C$= -100mA, $I_B$= -5mA | | -900 | | mV |
| Base-Emitter On Voltage | $V_{BE}$ (on) | $V_{CE}$= -5V, $I_C$= -2mA | -600 | -660 | -750 | mV |
| | | $V_{CE}$= -5V, $I_C$= -10mA | | | -800 | mV |
| Current Gain Bandwidth Product | $f_T$ | $V_{CE}$= -5V, $I_C$= -10mA f=100MHz | | 150 | | MHz |
| Collector-Base Capacitance | $C_{CBO}$ | $V_{CB}$= -10V, f=1MHz | | | 6 | pF |
| Noise Figure : BC856/857/858 | NF | $V_{CE}$= -5V, $I_C$= -200μA | | 2 | 10 | dB |
| : BC859/860 | | f=1KHz, $R_G$=2KΩ | | 1 | 4 | dB |
| : BC859 | NF | $V_{CE}$= -5V, $I_C$= -200μA | | 1.2 | 4 | dB |
| : BC860 | | $R_G$=2KΩ f=30~15000Hz | | 1.2 | 2 | dB |

## $h_{FE}$ CLASSIFICATION

| Classification | A | B | C |
|---|---|---|---|
| $h_{FE}$ | 110-220 | 200-450 | 420-800 |

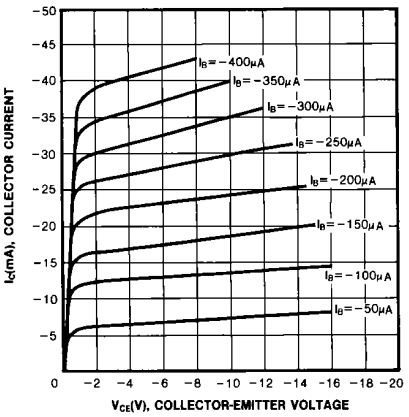
## MARKING CODE

| TYPE | 856A | 856B | 856C | 857A | 857B | 857C | 858A | 858B | 858C | 859A | 859B | 859C | 860A | 860B | 860C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MARK | 9AA | 9AB | 9AC | 9BA | 9BB | 9BC | 9CA | 9CB | 9CC | 9DA | 9DB | 9DC | 9EA | 9EB | 9EC |

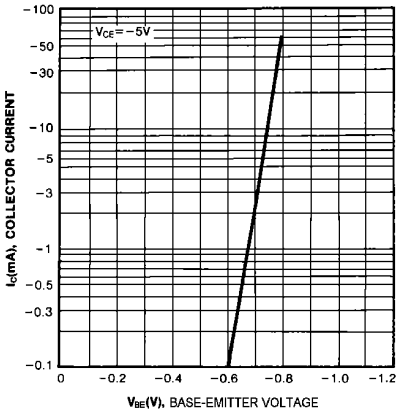
Rev. B

FAIRCHILD SEMICONDUCTOR TM

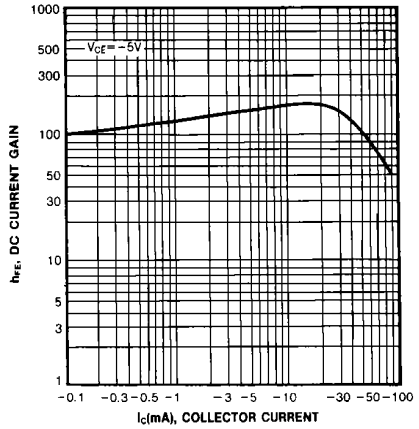
STATIC CHARACTERISTIC



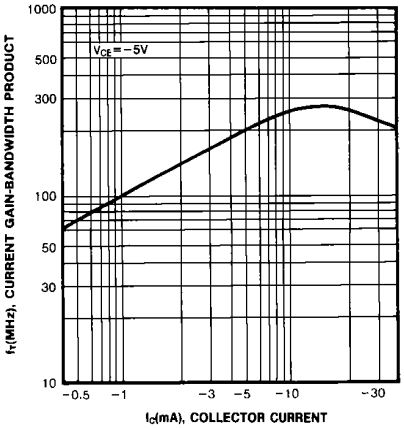

BASE-EMITTER VOLTAGE



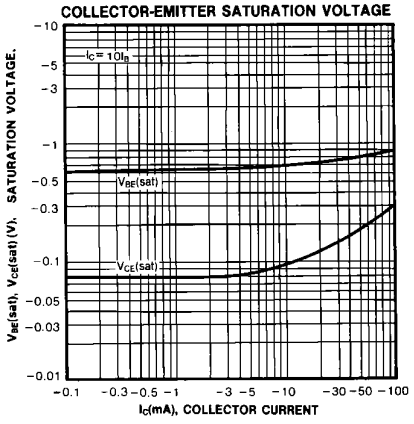

DC CURRENT GAIN



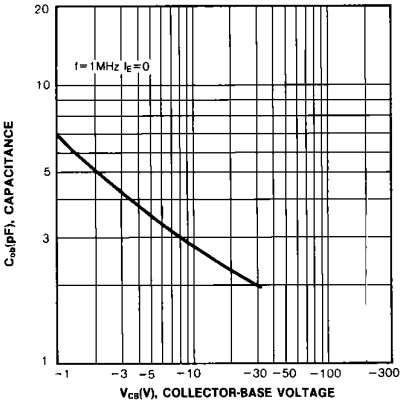

CURRENT GAIN-BANDWIDTH PRODUCT




BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE




COLLECTOR OUTPUT CAPACITANCE



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|---|---|---|
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