Ordering number:ENN1049E

PNP/NPN Epitaxial Planar Silicon Transistors

# 2SA1253/2SC3135

## High-$h_{FE}$, AF Amp Applications

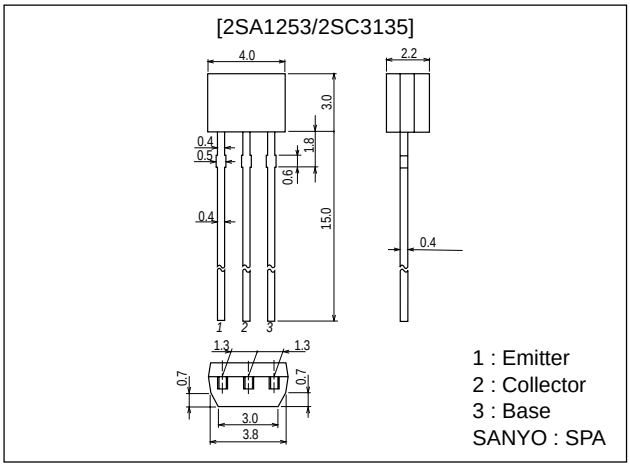
## Features

· High $V_{EBO}$.
· Wide ASO and high durability against breakdown.

## Package Dimensions

unit:mm

2033A




( ) : 2SA1253

## Specifications

### Absolute Maximum Ratings at Ta = 25˚C

| Parameter | Symbol | Conditions | Ratings | Unit |
|---|---|---|---|---|
| Collector-to-Base Voltage | $V_{CBO}$ | | (–)60 | V |
| Collector-to-Emitter Voltage | $V_{CEO}$ | | (–)50 | V |
| Emitter-to-Base Voltage | $V_{EBO}$ | | (–)15 | V |
| Collector Current | $I_C$ | | (–)200 | mA |
| Collector Current (Pulse) | $I_{CP}$ | | (–)400 | mA |
| Collector Dissipation | $P_C$ | | 250 | mW |
| Junction Temperature | Tj | | 150 | ˚C |
| Storage Temperature | Tstg | | –55 to +150 | ˚C |

### Electrical Characteristics at Ta = 25˚C

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| Collector Cutoff Current | $I_{CBO}$ | $V_{CB}$=(–)40V, $I_E$=0 | | | (–)0.1 | μA |
| Emitter Cutoff Current | $I_{EBO}$ | $V_{EB}$=(–)10V, $I_C$=0 | | | (–)0.1 | μA |
| DC Current Gain | $h_{FE}$ | $V_{CE}$=(–)6V, $I_C$=(–)1mA | 100* | | 560* | |
| Gain-Bandwidth Product | $f_T$ | $V_{CE}$=(–)6V, $I_C$=(–)1mA | | 100 | | MHz |
| Common Base Output Capacitance | Cob | $V_{CB}$=(–)6V, f=1MHz | | (3.8) 2.5 | | pF |

* : The 2SA1253/2SC3135 are classified by 1mA $h_{FE}$ as follows :

| Rank | R | S | T | U |
|---|---|---|---|---|
| $h_{FE}$ | 100 to 200 | 140 to 280 | 200 to 400 | 280 to 560 |

Continued on next page.



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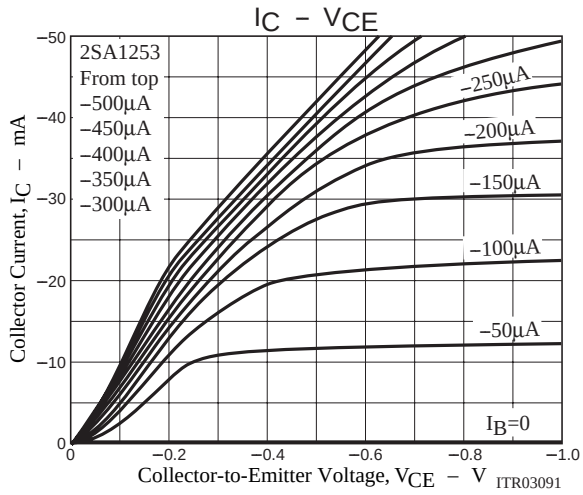
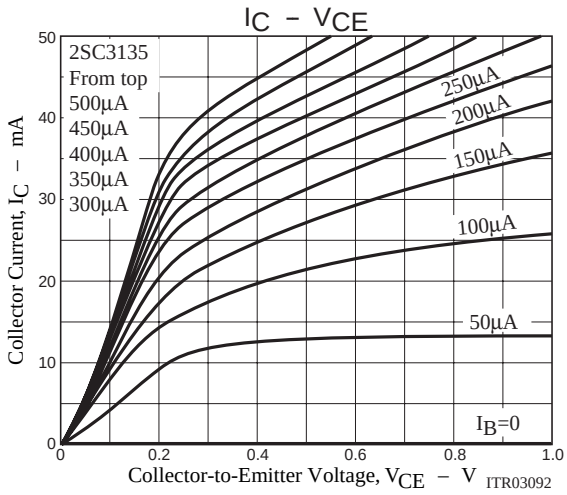
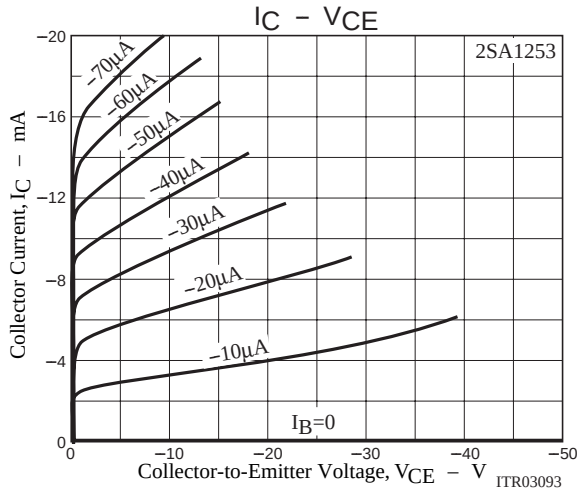
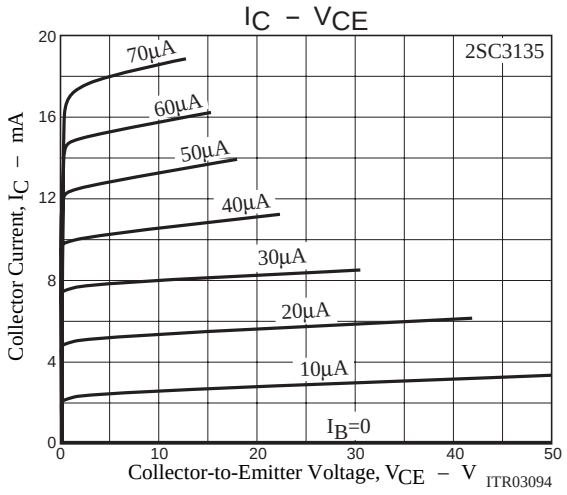
Continued from preceding page.

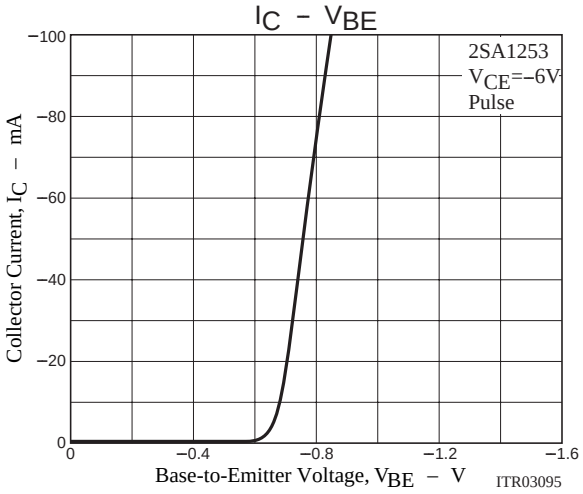
| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|---|---|---|---|---|---|
| | | | min | typ | max | |
| Collector-to-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C$=(–)50mA, $I_B$=(–)5mA | | (–0.2) 0.15 | (–)0.5 | V |
| Collector-to-Base Breakdown Voltage | $V_{(BR)CBO}$ | $I_C$=(–)10μA, $I_E$=0 | (–)60 | | | V |
| Collector-to-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | $I_C$=(–)1mA, $R_{BE}$=∞ | (–)50 | | | V |
| Emitter-to-Base Breakdown Voltage | $V_{(BR)EBO}$ | $I_E$=(–)10μA, $I_C$=0 | (–)15 | | | V |

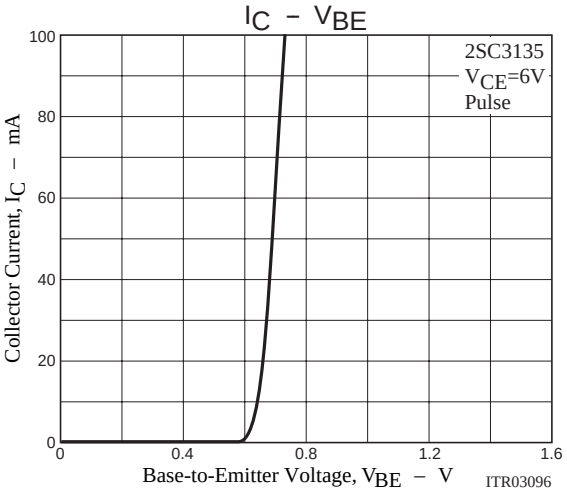


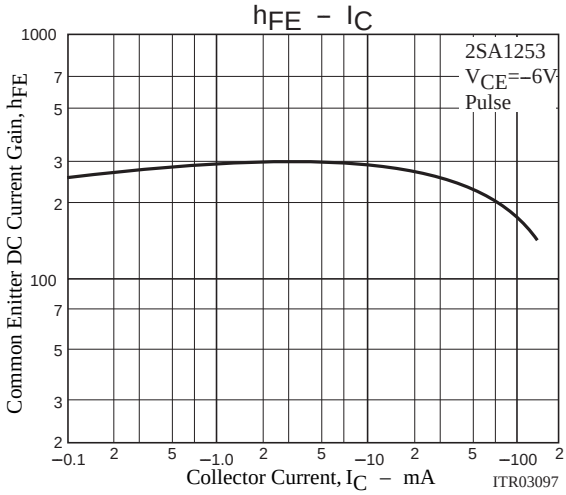



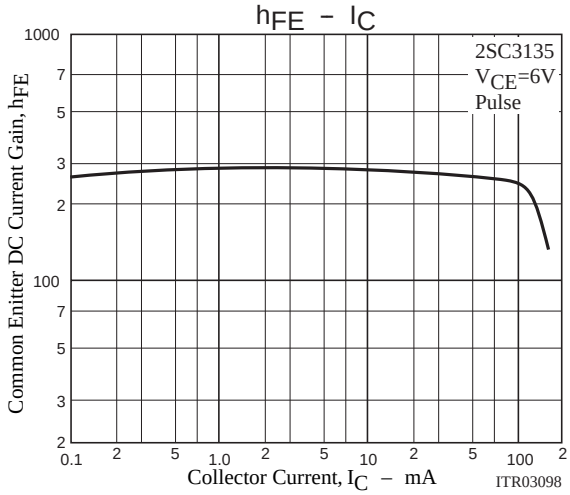



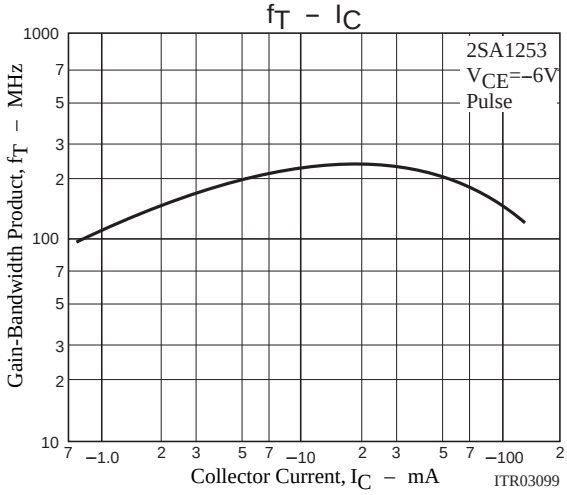



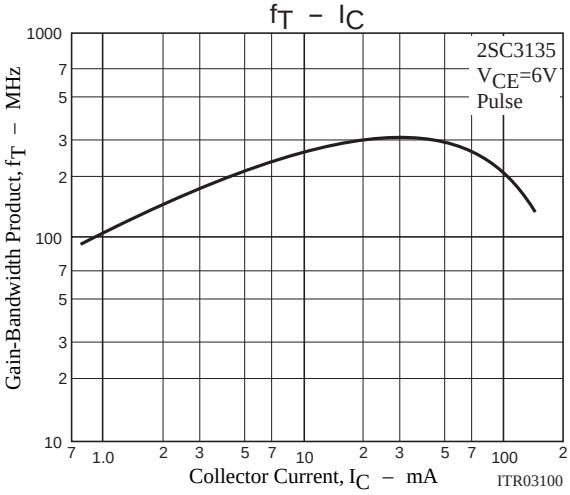



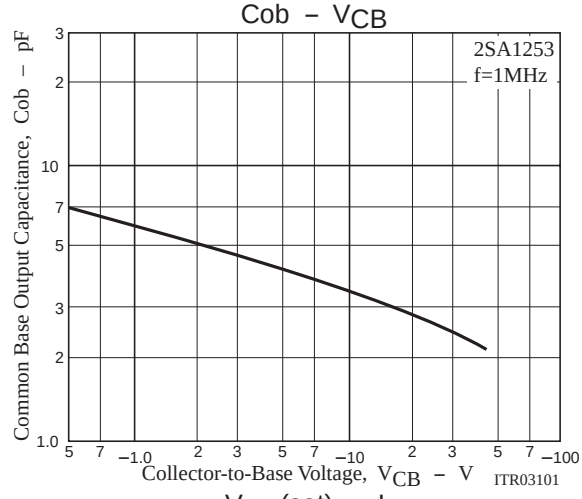



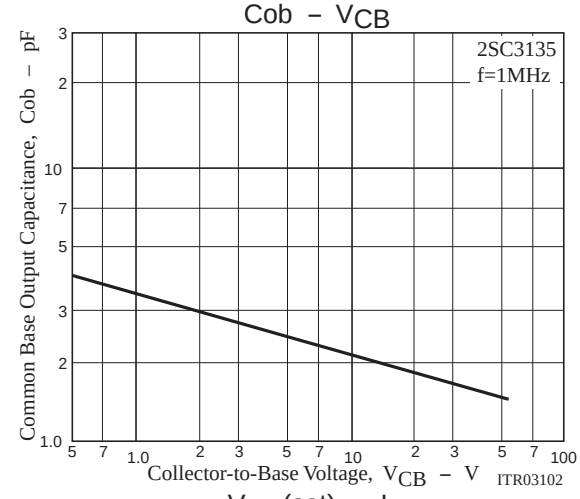

hFE – IC
2SA1253
VCE=–6V
Pulse
Common Enitter DC Current Gain, hFE
Collector Current, IC – mA
ITR03097

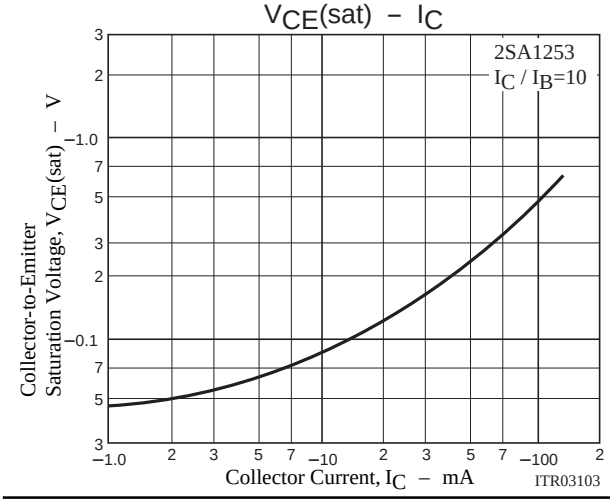

hFE – IC
2SC3135
VCE=6V
Pulse
Common Enitter DC Current Gain, hFE
Collector Current, IC – mA
ITR03098

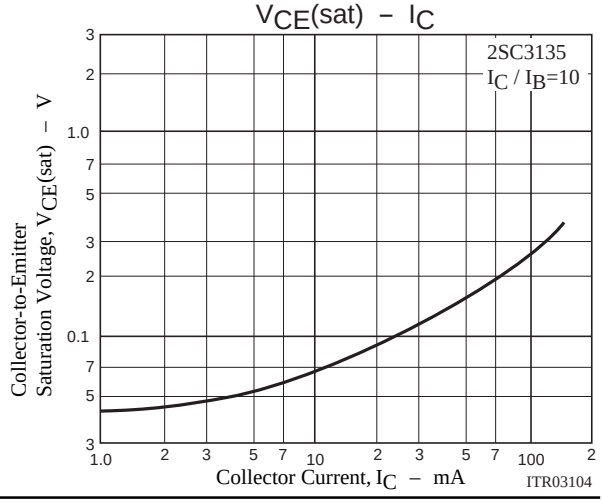

fT – IC
2SA1253
VCE=–6V
Pulse
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – mA
ITR03099


fT – IC
2SC3135
VCE=6V
Pulse
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – mA
ITR03100


Cob – VCB
2SA1253
f=1MHz
Common Base Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
ITR03101


Cob – VCB
2SC3135
f=1MHz
Common Base Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
ITR03102


VCE(sat) – IC
2SA1253
IC / IB=10
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – mA
ITR03103


VCE(sat) – IC
2SC3135
IC / IB=10
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – mA
ITR03104