

# 2SA1531, 2SA1531A

## Silicon PNP epitaxial planer type

For low-frequency and low-noise amplification

Complementary to 2SC3929 and 2SC3929A

### Features

- Low noise voltage NV.
- High forward current transfer ratio  $h_{FE}$ .
- S-Mini type package, allowing downsizing of the equipment and automatic insertion through the tape packing and the magazine packing.

### Absolute Maximum Ratings (Ta=25°C)

| Parameter                    | Symbol    | Ratings        | Unit |
|------------------------------|-----------|----------------|------|
| Collector to base voltage    | $V_{CBO}$ | 2SA1531<br>-35 | V    |
| 2SA1531A                     |           | -55            |      |
| Collector to emitter voltage | $V_{CEO}$ | 2SA1531<br>-35 | V    |
| 2SA1531A                     |           | -55            |      |
| Emitter to base voltage      | $V_{EBO}$ | -5             | V    |
| Peak collector current       | $I_{CP}$  | -100           | mA   |
| Collector current            | $I_C$     | -50            | mA   |
| Collector power dissipation  | $P_C$     | 150            | mW   |
| Junction temperature         | $T_j$     | 150            | °C   |
| Storage temperature          | $T_{stg}$ | -55 ~ +150     | °C   |

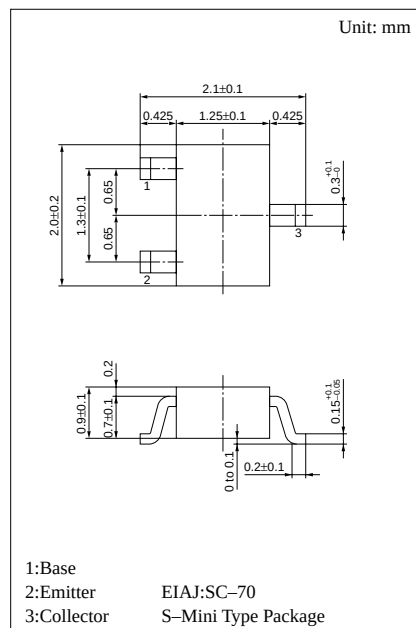
### Electrical Characteristics (Ta=25°C)

| Parameter                               | Symbol        | Conditions                                                                                   | min | typ  | max  | Unit |
|-----------------------------------------|---------------|----------------------------------------------------------------------------------------------|-----|------|------|------|
| Collector cutoff current                | $I_{CBO}$     | $V_{CB} = -10V, I_E = 0$                                                                     |     |      | -100 | nA   |
|                                         | $I_{CEO}$     | $V_{CE} = -10V, I_B = 0$                                                                     |     |      | -1   | μA   |
| Collector to base voltage               | $V_{CBO}$     | $I_C = -10\mu A, I_E = 0$                                                                    | -35 |      |      | V    |
|                                         |               |                                                                                              | -55 |      |      |      |
| Collector to emitter voltage            | $V_{CEO}$     | $I_C = -2mA, I_B = 0$                                                                        | -35 |      |      | V    |
|                                         |               |                                                                                              | -55 |      |      |      |
| Emitter to base voltage                 | $V_{EBO}$     | $I_E = -10\mu A, I_C = 0$                                                                    | -5  |      |      | V    |
| Forward current transfer ratio          | $h_{FE}^{*1}$ | $V_{CE} = -5V, I_C = -2mA$                                                                   | 180 |      | 700  |      |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | $I_C = -100mA, I_B = -10mA^{*2}$                                                             |     |      | -0.6 | V    |
| Base to emitter voltage                 | $V_{BE}$      | $V_{CE} = -1V, I_C = -100mA^{*2}$                                                            |     | -0.7 | -1.0 | V    |
| Transition frequency                    | $f_T$         | $V_{CB} = -10V, I_E = 2mA, f = 200MHz$                                                       |     | 80   |      | MHz  |
| Noise voltage                           | NV            | $V_{CE} = -10V, I_C = -1mA, G_v = 80dB$<br>$R_g = 100k\Omega, \text{Function} = \text{FLAT}$ |     |      | 150  | mV   |

<sup>\*1</sup> $h_{FE1}$  Rank classification

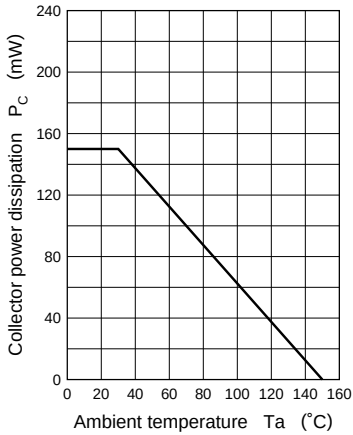
<sup>\*2</sup> Pulse measurement

| Rank              |          | R         | S         | T         |
|-------------------|----------|-----------|-----------|-----------|
| hFE               |          | 180 ~ 360 | 260 ~ 520 | 360 ~ 700 |
| Marking<br>Symbol | 2SA1531  | FR        | FS        | FT        |
|                   | 2SA1531A | HR        | HS        | HT        |

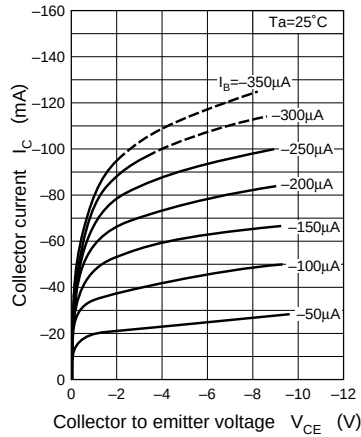


Marking symbol : F(2SA1531)  
H(2SA1531A)

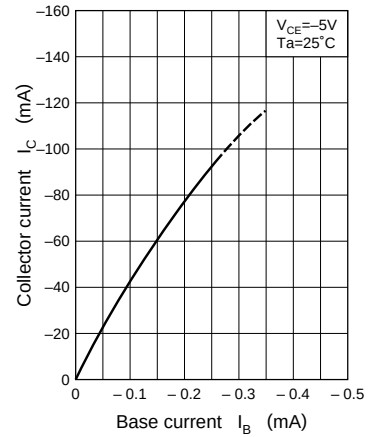
$P_C - T_a$



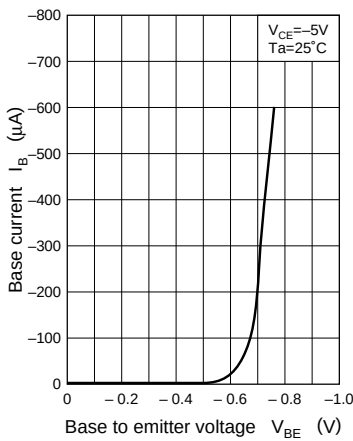
$I_C - V_{CE}$



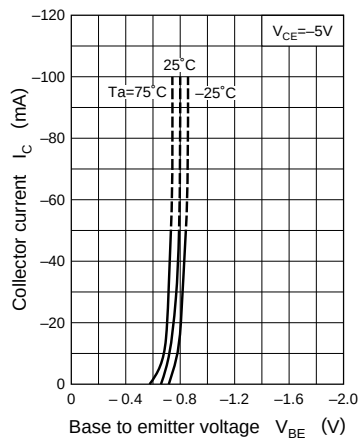
$I_C - I_B$



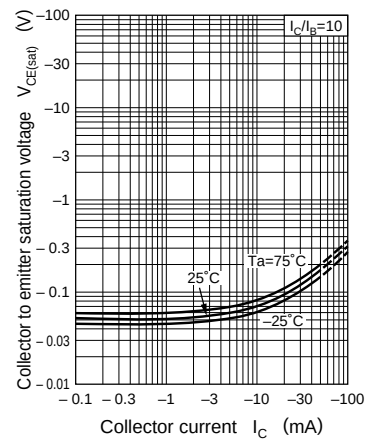
$I_B - V_{BE}$



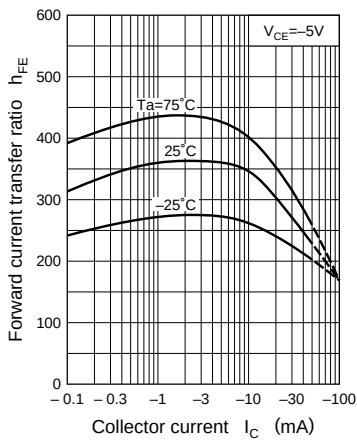
$I_C - V_{BE}$



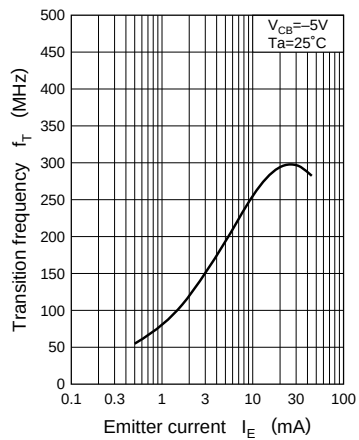
$V_{CE(sat)} - I_C$



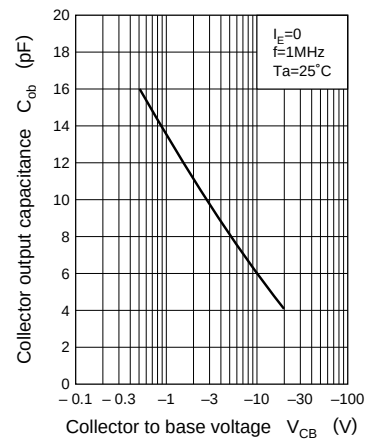
$h_{FE} - I_C$

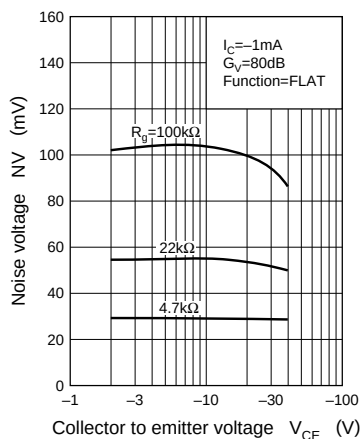
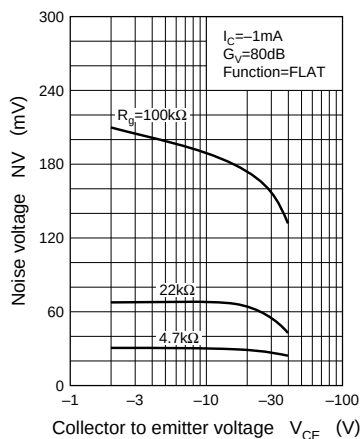
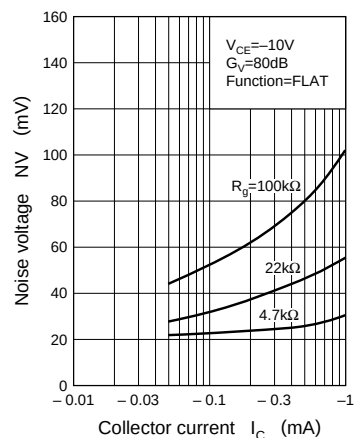
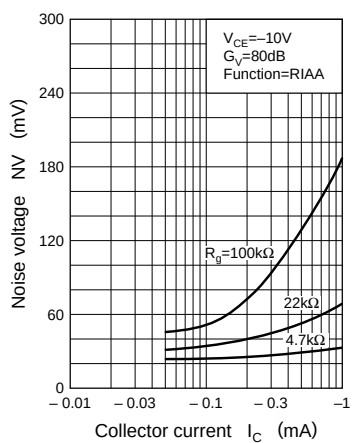
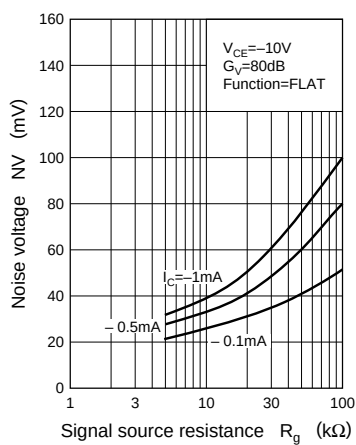


$f_T - I_E$



$C_{ob} - V_{CB}$



NV —  $V_{CE}$ NV —  $V_{CE}$ NV —  $I_C$ NV —  $I_C$ NV —  $R_g$ NV —  $R_g$ 