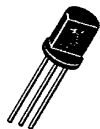


## Silicon Transistors



TO-98

This GE/RCA series of economy transistors are planar epitaxial passivated PNP silicon devices. These units feature low collector saturation voltage, good current gain linearity over a wide collector current range, high gain-bandwidth

product, and low noise. These characteristics make these units excellent for use in general purpose consumer and industrial amplifier and switching applications. These types are supplied in JEDEC TO-98 package.

Devices in TO-98 package are supplied with and without seating flange (see Dimensional Outline).

**MAXIMUM RATINGS, Absolute-Maximum Values:**

|                                                                                          |                  |
|------------------------------------------------------------------------------------------|------------------|
| COLLECTOR TO EMITTER VOLTAGE ( $V_{CE0}$ )                                               | 40 V             |
| COLLECTOR TO BASE VOLTAGE ( $V_{CBO}$ )                                                  | 4 V              |
| EMITTER TO BASE VOLTAGE ( $V_{EB0}$ )                                                    | 40 V             |
| CONTINUOUS COLLECTOR CURRENT ( $I_C$ )                                                   | 300 mA           |
| COLLECTOR CURRENT (Pulsed) ( $I_C$ )                                                     | 700 mA           |
| TOTAL POWER DISSIPATION ( $T_A \leq 25^\circ\text{C}$ )**                                | 360 mW           |
| TOTAL POWER DISSIPATION ( $T_A \leq 55^\circ\text{C}$ )**                                | 260 mW           |
| OPERATING TEMPERATURE ( $T_J$ )                                                          | - 65 to + 125 °C |
| STORAGE TEMPERATURE ( $T_{STG}$ )                                                        | - 65 to + 150 °C |
| LEAD TEMPERATURE, $1/16" \pm 1/32"$ (1.58mm $\pm$ 0.8mm) from case at 10s max. ( $T_L$ ) | + 260 °C         |

\* Pulsed conditions: 10 $\mu$ s pulse width,  $\leq$  2% duty cycle.

\*\* Derate 3.6mW/°C increase in ambient temperature above 25°C.

ELECTRICAL CHARACTERISTICS, At Ambient Temperature ( $T_A$ ) = 25°C Unless Otherwise Specified

| CHARACTERISTICS                                                                                               | SYMBOL        | LIMITS |      |       |        |      |       | UNITS         |
|---------------------------------------------------------------------------------------------------------------|---------------|--------|------|-------|--------|------|-------|---------------|
|                                                                                                               |               | 2N5365 |      |       | 2N5366 |      |       |               |
|                                                                                                               |               | MIN.   | TYP. | MAX.  | MIN.   | TYP. | MAX.  |               |
| Collector-Emitter Breakdown Voltage<br>( $I_C = 10 \text{ mA}$ )                                              | $V_{(BR)CEO}$ | -40    | —    | —     | -40    | —    | —     | V             |
| Collector Cutoff Current<br>( $V_{CB} = -40\text{V}$ )                                                        | $I_{CBO}$     | —      | —    | -100  | —      | —    | -100  | nA            |
| ( $V_{CB} = -40\text{V}, T_A = 100^\circ\text{C}$ )                                                           |               | —      | —    | -10   | —      | —    | -10   | $\mu\text{A}$ |
| Cutoff Current ( $V_{EB} = -4\text{V}$ )                                                                      | $I_{EBO}$     | —      | —    | -10   | —      | —    | -10   |               |
| DC Forward Current Transfer Ratio<br>( $V_{CE} = -10\text{V}, I_C = -2\text{mA}$ )                            | $h_{FE}$      | 32     | —    | —     | 80     | —    |       | —             |
| ( $V_{CE} = -10, I_C = -50\text{mA}$ )                                                                        |               | 40     | —    | 120   | 100    | —    | 300   |               |
| ( $V_{CE} = -5\text{V}, I_C = -300\text{mA}$ )                                                                |               | 20     | —    | —     | 40     | —    |       |               |
| Small-Signal Forward Current Transfer Ratio<br>( $V_{CE} = -10\text{V}, I_C = -2\text{mA}, f = 1\text{kHz}$ ) | $h_{fe}$      | 32     | —    | 180   | 80     | —    | 450   | —             |
| Collector-Emitter Saturation Voltage<br>( $I_C = -50\text{mA}, I_B = -2.5\text{mA}$ )                         | $V_{CE(SAT)}$ | —      | —    | -0.25 | —      | —    | -0.25 | V             |
| ( $I_C = -300\text{mA}, I_B = -30\text{mA}$ )                                                                 | $V_{CE(SAT)}$ | —      | —    | -1    | —      | —    | -1    |               |
| Base-Emitter Voltage<br>( $V_{CE} = -10\text{V}, I_C = -2\text{mA}$ )                                         | $V_{BE}$      | -0.5   | —    | -0.8  | -0.5   | —    | -0.8  | pF            |
| Output Capacitance, Common Base<br>( $V_{EB} = -0.5\text{V}, I_E = 0, f = 1\text{MHz}$ )                      | $C_{cb}$      | —      | —    | 8     | —      | —    | 8     |               |
| Input Capacitance, Common Base<br>( $V_{EB} = -0.5\text{V}, I_C = 0, f = 1\text{MHz}$ )                       | $C_{eb}$      | —      | —    | 35    | —      | —    | 35    |               |
| Gain Bandwidth Product<br>( $V_{CE} = -10\text{V}, I_C = -2\text{mA}$ )                                       | $f_T$         | —      | 250  | —     | —      | 250  | —     | MHz           |

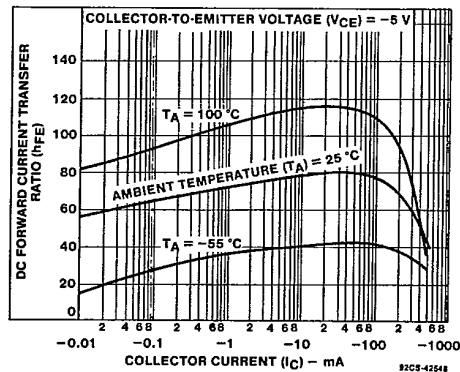


Fig. 1—Typical dc forward current transfer ratio characteristics for 2N5365.

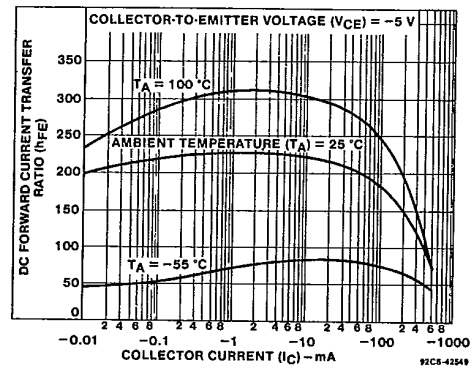


Fig. 2—Typical dc forward-current transfer ratio characteristics for 2N5366.

## Signal Transistors

2N5365, 2N5366

T-29-19

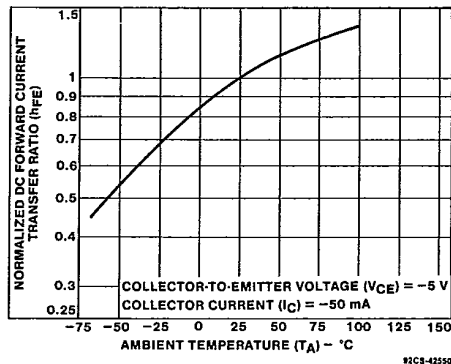


Fig. 3—Normalized dc forward-current transfer ratio characteristics for both types.

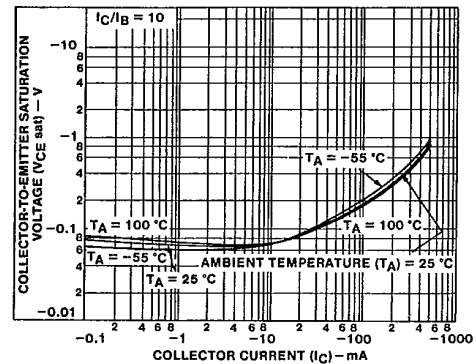


Fig. 4—Typical collector-to-emitter saturation voltage characteristics for 2N5365.

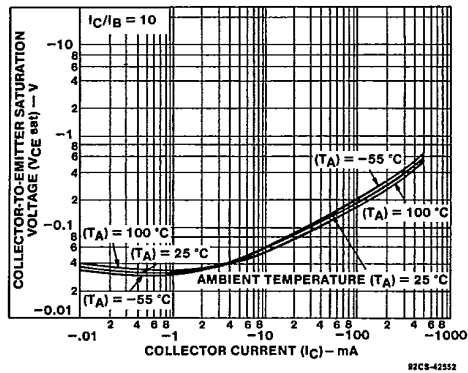


Fig. 5—Typical collector-to-emitter saturation voltage characteristics for 2N5366.

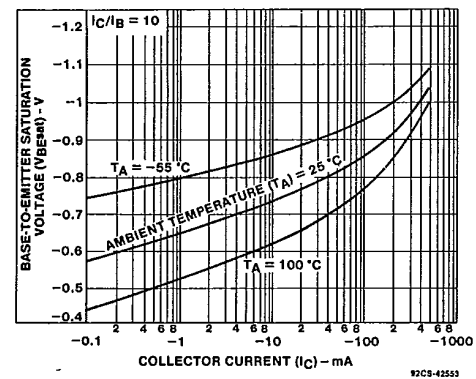


Fig. 6—Typical base-to-emitter saturation voltage characteristics for both types.

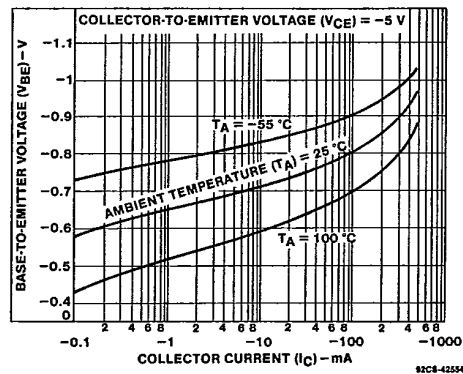


Fig. 7—Typical base-to-emitter voltage characteristics for 2N5365.

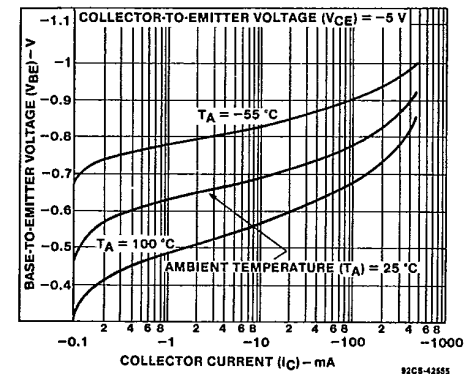


Fig. 8—Typical base-to-emitter voltage characteristics for 2N5366.

T-29-19

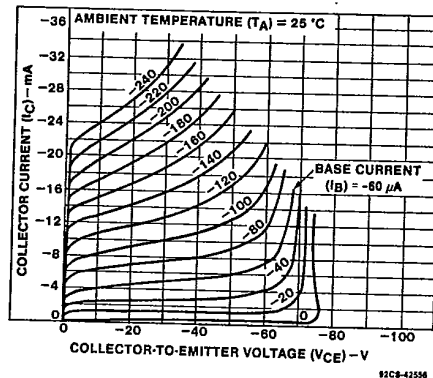


Fig. 9—Typical collector current characteristics for 2N5365.

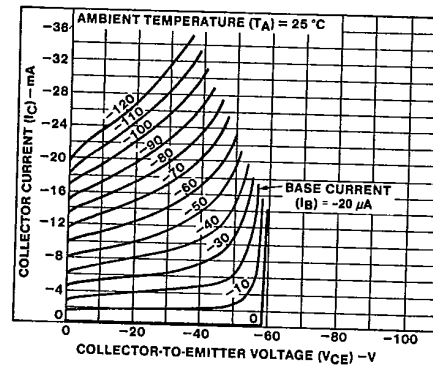


Fig. 10—Typical collector current characteristics for 2N5366.

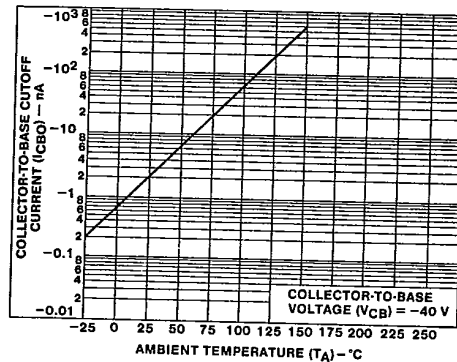


Fig. 11—Typical collector-to-base cutoff current characteristics for both types.

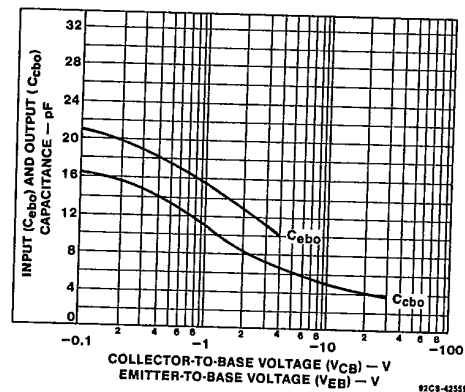


Fig. 12—Typical input and output capacitance characteristics for both types.

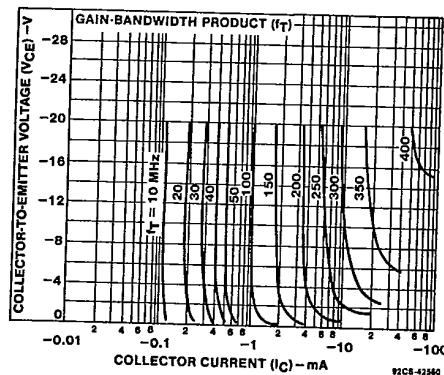


Fig. 13—Typical gain-bandwidth product characteristics for 2N5365.

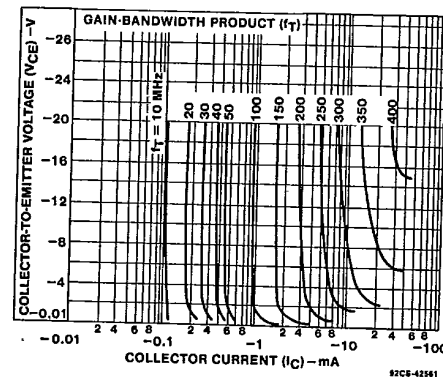


Fig. 14—Typical gain-bandwidth product characteristics for 2N5366.

Signal Transistors

**2N5365, 2N5366**

T.29-19

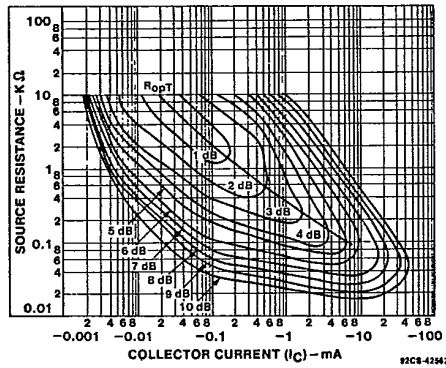


Fig. 15—Typical noise figure characteristics for 2N5365.

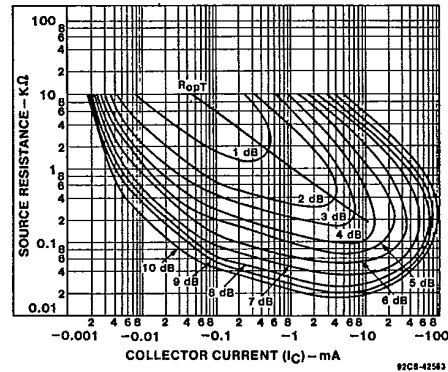


Fig. 16—Typical noise figure characteristics for 2N5366.

**TERMINAL CONNECTIONS**

Lead 1 - Emitter  
 Lead 2 - Collector  
 Lead 3 - Base