# 2N4123, 2N4124, 2N4125, 2N4126

T-29-19

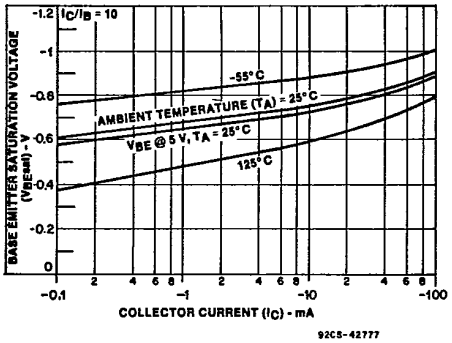


*Fig. 9—Typical base-to-emitter saturation voltage characteristics for 2N3905 and 2N3906.*

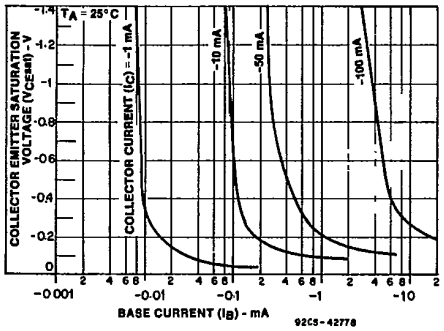


*Fig. 10—Typical collector-to-emitter saturation voltage characteristics for 2N3905 and 2N3906.*

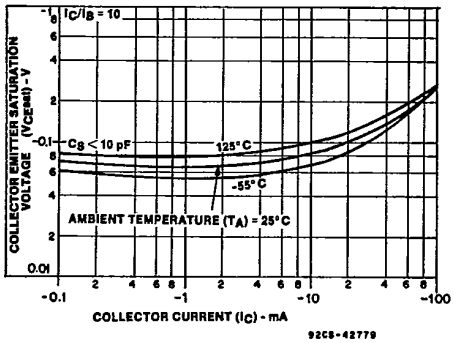


*Fig. 11—Typical collector-to-emitter saturation voltage characteristics for 2N3905.*

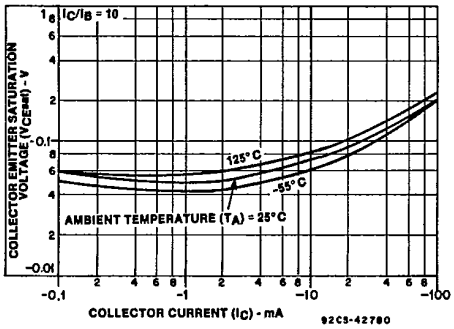


*Fig. 12—Typical collector-to-emitter saturation voltage characteristics for 2N3906.*

**TERMINAL CONNECTIONS**

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

# 2N4123, 2N4124, 2N4125, 2N4126

## Silicon Transistors

TO-92

The GE/RCA 2N4123, 2N4124 NPN types and 2N4125, 2N4126 PNP types are planar epitaxial passivated silicon transistors designed for general purpose amplifier applications. PNP values are negative; observe proper polarity.

These types are supplied in JEDEC TO-92 package.

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

| | 2N4123 | 2N4124 | 2N4125 | 2N4126 | |
|---|---|---|---|---|---|
| COLLECTOR TO EMITTER VOLTAGE ($V_{CEO}$) | 30 | 25 | −30 | −25 | V |
| COLLECTOR TO BASE VOLTAGE ($V_{CBO}$) | 40 | 30 | −30 | −25 | V |
| EMITTER TO BASE VOLTAGE ($V_{EBO}$) | 5 | 5 | −4 | −4 | V |
| CONTINUOUS COLLECTOR CURRENT ($I_C$) | | 200 | | | mA |
| TOTAL POWER DISSIPATION ($T_A \leq 25°C$) | | 350 | | | mW |
| TOTAL POWER DISSIPATION ($T_C \leq 25°C$) ($P_T$) | | 1 | | | W |
| DERATE FACTOR $T_A > 25°C$ | | 2.8 | | | mW/°C |
| DERATE FACTOR $T_C > 25°C$ | | 8 | | | mW/°C |
| OPERATING TEMPERATURE ($T_J$) | | −55 to +150 | | | °C |
| STORAGE TEMPERATURE ($T_{STG}$) | | −55 to +150 | | | °C |
| LEAD TEMPERATURE, 1/16" ± 1/32" (1.58mm ± 0.8mm) from case for 10s max. ($T_L$) | | +260 | | | °C |

File Number **2057**

Signal Transistors

# 2N4123, 2N4124, 2N4125, 2N4126

T-29-19

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

| CHARACTERISTICS | SYMBOL | LIMITS | | | | | | | | UNITS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 2N4123 | | 2N4124 | | 2N4125 | | 2N4126 | | |
| | | MIN. | MAX. | MIN. | MAX | MIN. | MAX. | MIN. | MAX | |
| Collector-Emitter Breakdown Voltage ($I_C$ = 1 mA, $I_B$ = 0) | $V_{(BR)CEO}$ | 30 | – | – | – | –30 | – | – | – | V |
| ($I_C$ = 1 mA, $V_{BE}$ = 0) | | – | – | 25 | – | – | – | –25 | – | |
| Collector-Base Breakdown Voltage ($I_C$ = 10μA, $I_E$ = 0) | $V_{(BR)CBO}$ | 40 | – | 30 | – | –30 | – | –25 | – | |
| Emitter-Base Breakdown Voltage ($I_E$ = 10μA, $I_C$ = 0) | $V_{(BR)EBO}$ | 5 | – | 5 | – | –4 | – | –4 | – | |
| Collector Cutoff Current ($V_{CB}$ = 20V, $I_E$ = 0) | $I_{CBO}$ | – | 50 | – | 50 | – | –50 | – | –50 | nA |
| Emitter-Base Reverse Current ($V_{EB}$ = 3V, $I_C$ = 0) | $I_{EBO}$ | – | 50 | – | 50 | – | –50 | – | –50 | |
| DC Forward Current Transfer Ratio ($V_{CE}$ = 1V, $I_C$ = 2mA) | $h_{FE}$ | 50 | 150 | 120 | 360 | –50 | –150 | –120 | –360 | – |
| ($V_{CE}$ = 1V, $I_C$ = 50mA)* | | 25 | – | 60 | – | –25 | – | –60 | – | |
| Small-Signal Forward Current Transfer Ratio ($V_{CE}$ = 20V, $I_C$ = 10mA, f = 100 MHz) | $h_{fe}$ | 2.5 | – | 3 | – | 2 | – | 2.5 | – | – |
| ($V_{CE}$ = 1V, $I_C$ = 2 mA, f = 1 kHz) | | 50 | 200 | 120 | 480 | 50 | 200 | 120 | 480 | |
| Collector-Emitter Saturation Voltage ($I_C$ = 50mA, $I_B$ = 5mA)* | $V_{CE(SAT)}$ | – | 0.3 | – | 0.3 | – | –0.4 | – | –0.4 | V |
| Base Emitter Saturation Voltage ($I_C$ = 50mA, $I_B$ = 5mA)* | $V_{BE(SAT)}$ | – | 0.95 | – | 0.95 | – | –0.95 | – | –0.95 | |
| Collector-Base Capacitance ($V_{CB}$ = 5V, $I_F$ = 0, f = 100 kHz) | $C_{ob}$ | – | 4 | – | 4 | – | 4.5 | – | 4.5 | pF |
| Emitter-Base Capacitance ($V_{EB}$ = 0.5V, $I_C$ = 0, f = 100 kHz) | $C_{ib}$ | – | 8 | – | 8 | – | 10 | – | 10 | |
| Gain Bandwidth Product ($V_{CE}$ = 20V, $I_E$ = 10mA, f = 100 MHz) | $f_T$ | 250 | – | 300 | – | 200 | – | 250 | – | MHz |
| Noise Figure (Broad Band) ($I_C$ = 100mA, $V_{CE}$ = 5V, $R_S$ = 1kΩ Bandwidth = 10 Hz to 15.7 kHz) | NF | – | 6 | – | 5 | – | 5 | – | 4 | dB |

* Pulse Conditions: ≤ 300μs Pulse width, ≤ 2% Duty Cycle.

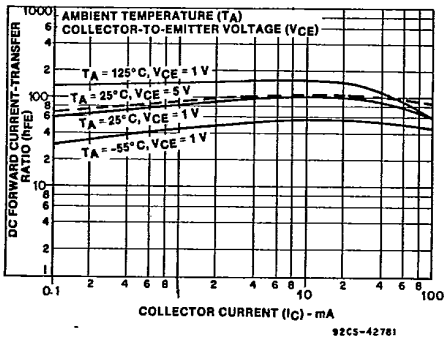


*Fig. 1—Typical dc forward current transfer ratio characteristics for 2N4123.*

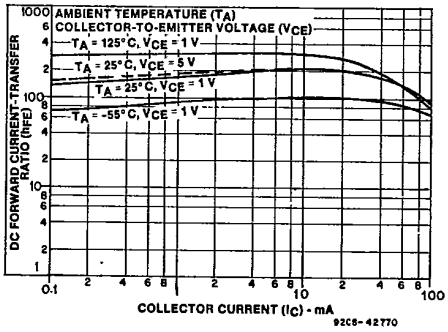


*Fig. 2—Typical dc forward current transfer ratio characteristics for 2N4124.*

# 2N4123, 2N4124, 2N4125, 2N4126

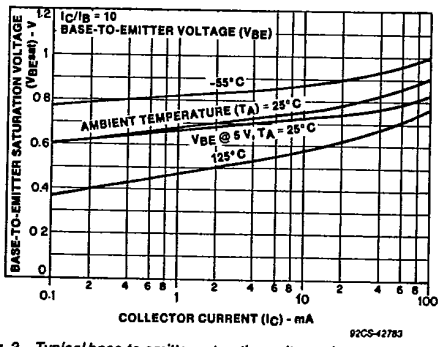


*Fig. 3—Typical base-to-emitter saturation voltage characteristics for 2N4123 and 2N4124.*

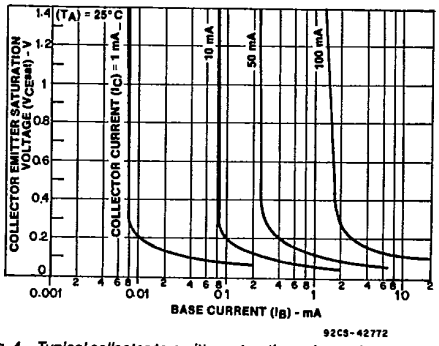


*Fig. 4—Typical collector-to-emitter saturation voltage characteristics for 2N4124 and 2N4123.*

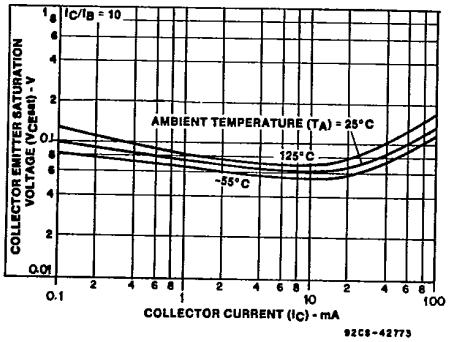


*Fig. 5—Typical collector-to-emitter saturation voltage characteristics for 2N4123.*

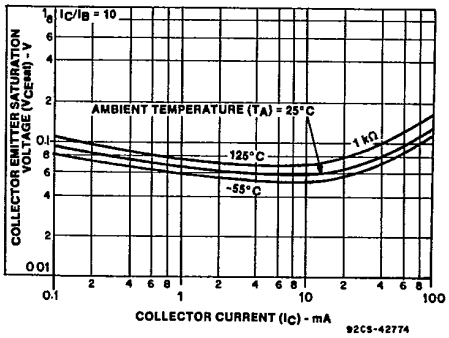


*Fig. 6—Typical collector-to-emitter saturation voltage characteristics for 2N4124.*

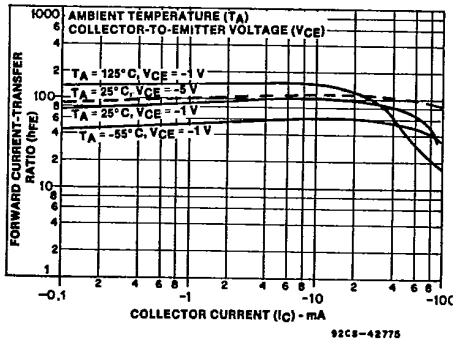


*Fig. 7—Typical dc forward-current transfer ratio characteristics for 2N4125.*

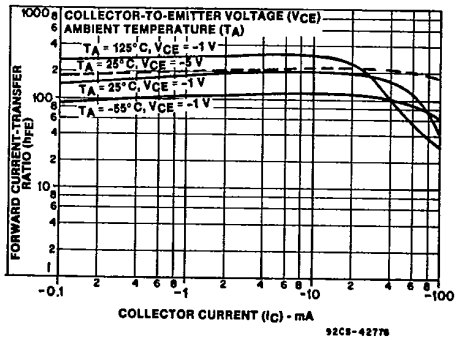


*Fig. 8—Typical dc forward-current transfer ratio characteristics for 2N4126.*

# 2N4123, 2N4124, 2N4125, 2N4126

T-29-19

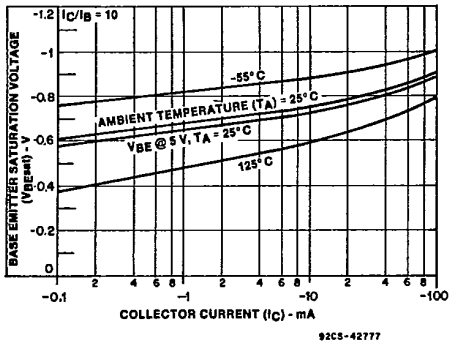


*Fig. 9—Typical base-to-emitter saturation voltage characteristics for 2N4125 and 2N4126.*

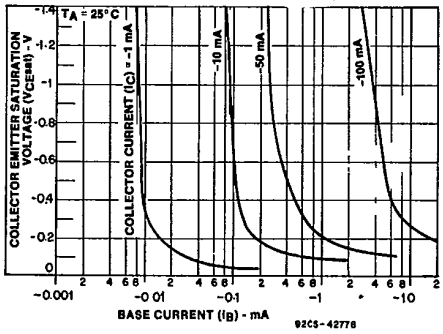


*Fig. 10—Typical collector-to-emitter saturation voltage characteristics for 2N4125 and 2N4126.*

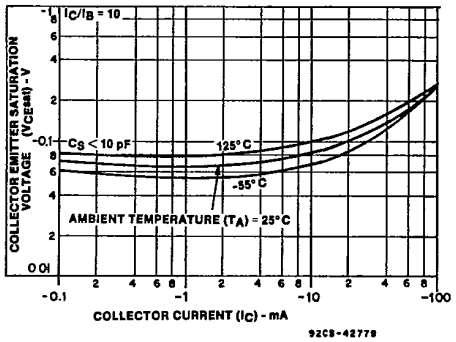


*Fig. 11—Typical collector-to-emitter saturation voltage characteristics for 2N4125.*

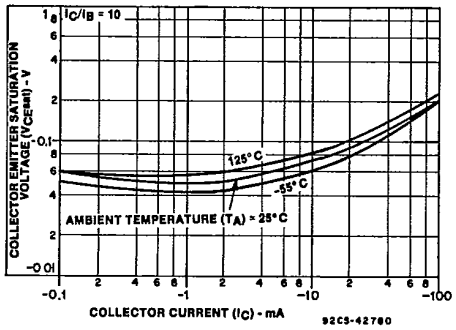


*Fig. 12—Typical collector-to-emitter saturation voltage characteristics for 2N4126.*

**TERMINAL CONNECTIONS**

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