Micro Commercial Components
20736 Marilla Street Chatsworth
CA 91311
Phone: (818) 701-4933
Fax: (818) 701-4939

# 2N4123
# 2N4124

## NPN Silicon General Purpose Transistor
## 625mW

## Features

- Halogen free available upon request by adding suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
- Through Hole TO-92 Package
- Capable of 625mWatts of Power Dissipation
- Epoxy meets UL 94 V-0 flammability rating
- Moisure Sensitivity Level 1

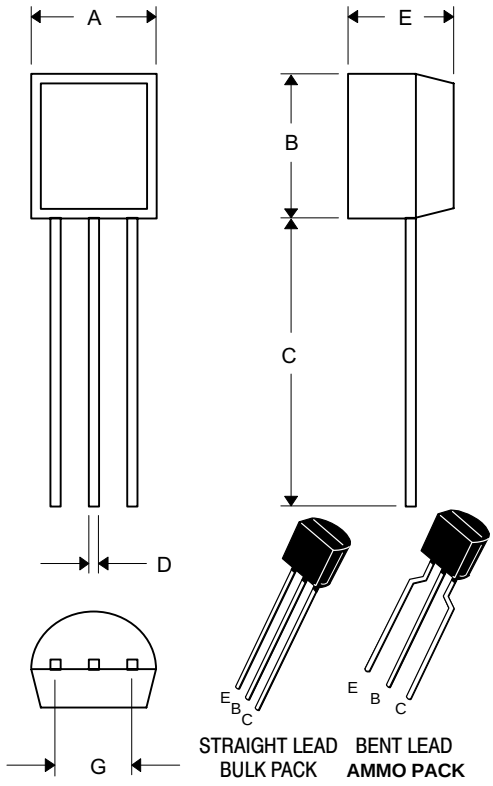
## Mechanical Data

- Case: TO-92, Molded Plastic
- Marking: Part Number

### Maximum Ratings @ 25°C Unless Otherwise Specified

| Charateristic | | Symbol | Value | Unit |
|---|---|---|---|---|
| Collector-Emitter Voltage | 2N4123<br>2N4124 | $V_{CEO}$ | 30<br>25 | V |
| Collector-Base Voltage | 2N4123<br>2N4124 | $V_{CBO}$ | 40<br>30 | V |
| Emitter-Base Voltage | 2N4123<br>2N4124 | $V_{EBO}$ | 5 | V |
| Collector Current(DC) | | $I_C$ | 200 | mA |
| Power Dissipation@$T_A$=25°C | | $P_d$ | 625<br>5.0 | mW<br>mW/°C |
| Power Dissipation@$T_C$=25°C | | $P_d$ | 1.5<br>12 | W<br>mW/°C |
| Thermal Resistance, Junction to Ambient Air | | $R_{\Theta JA}$ | 200 | °C/W |
| Thermal Resistance, Junction to Case | | $R_{\Theta JA}$ | 83.3 | °C/W |
| Operating & Storage Temperature | | $T_j$, $T_{STG}$ | -55~150 | °C |

TO-92




| DIMENSIONS | | | | | |
|---|---|---|---|---|---|
| | INCHES | | MM | | |
| DIM | MIN | MAX | MIN | MAX | NOTE |
| A | .175 | .185 | 4.45 | 4.70 | |
| B | .175 | .185 | 4.45 | 4.70 | |
| C | .500 | --- | 12.70 | --- | |
| D | .016 | .020 | 0.41 | 0.63 | |
| E | .135 | .145 | 3.43 | 3.68 | |
| G | .095 | .105 | 2.42 | 2.67 | Straight Lead |
| | .173 | .220 | 4.40 | 5.60 | Bent Lead |

* For ammo packing detailed specification, click here to visit our website of product packaging for details.

**ELECTRICAL CHARACTERISTICS** ($T_A$ = 25°C unless otherwise noted)

| Characteristic | | Symbol | Min | Max | Unit |
|---|---|---|---|---|---|
| **OFF CHARACTERISTICS** | | | | | |
| Collector–Emitter Breakdown Voltage(1) ($I_C$ = 1.0 mAdc, $I_E$= 0) | 2N4123<br>2N4124 | $V_{(BR)CEO}$ | <br>30<br>25 | <br>—<br>— | Vdc |
| Collector–Base Breakdown Voltage ($I_C$ = 10 μAdc, $I_E$ = 0) | 2N4123<br>2N4124 | $V_{(BR)CBO}$ | <br>40<br>30 | <br>—<br>— | Vdc |
| Emitter–Base Breakdown Voltage ($I_E$ = 10 μAdc, $I_C$ = 0) | | $V_{(BR)EBO}$ | 5.0 | — | Vdc |
| Collector Cutoff Current ($V_{CB}$ = 20 Vdc, $I_E$ = 0) | | $I_{CBO}$ | — | 50 | nAdc |
| Emitter Cutoff Current ($V_{EB}$ = 3.0 Vdc, $I_C$ = 0) | | $I_{EBO}$ | — | 50 | nAdc |
| **ON CHARACTERISTICS(1)** | | | | | |
| DC Current Gain ($I_C$ =2.0 mAdc, VCE = 1.0 Vdc)<br>($I_C$ = 50 mAdc, $V_{CE}$ = 1.0 Vdc) | 2N4123<br>2N4124<br>2N4123<br>2N4124 | $h_{FE}$ | 50<br>120<br>25<br>60 | —<br>—<br> | |
| Collector–Emitter Saturation Voltage ($I_C$ = 50mAdc, IB = 5.0 mAdc) | | $V_{CE(sat)}$ | — | 0.3 | Vdc |
| Base–Emitter Saturation Voltage ($I_C$ = 50mAdc, IB = 5.0 mAdc) | | $V_{BE(sat)}$ | — | 0.95 | Vdc |
| **SMALL-SIGNAL CHARACTERISTICS** | | | | | |
| Current-Gain-Bandwidth Product ($I_C$=10mAdc, $V_{CE}$=20Vdc, f=100MHz) | 2N4123<br>2N4124 | $f_T$ | 250<br>300 | ---<br>--- | MHz |
| Input Capacitance ($V_{EB}$=0.5Vdc, $I_C$=0, f=1.0MHz) | | $C_{ibo}$ | – | 8.0 | pF |
| Collector-Base Capacitance ($V_{CB}$=5.0Vdc, $I_E$=0, f=1.0MHz) | | $C_{cb}$ | – | 4.0 | pF |

1 Pulse Test:Pulse Width = 300μs, Duty Cycle = 2.0%

Figure 1. Capacitance

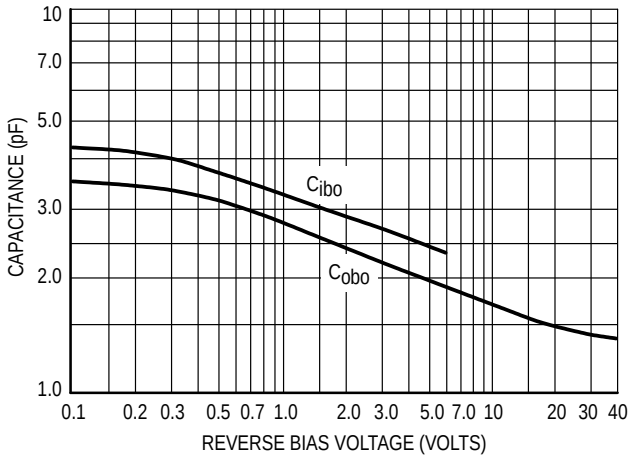



Figure 2. Switching Times

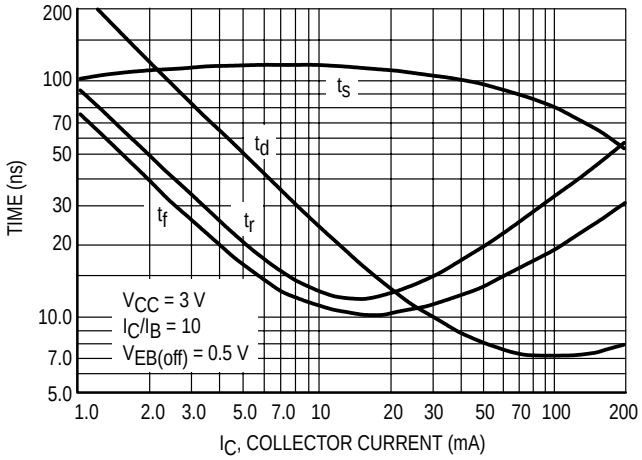



Figure 3. Frequency Variations

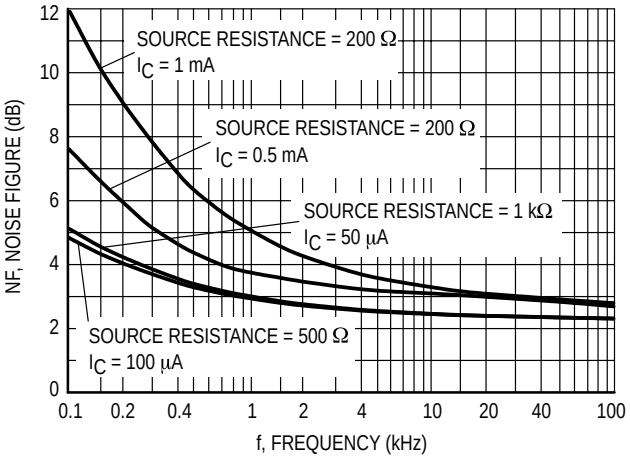



Figure 4. Source Resistance

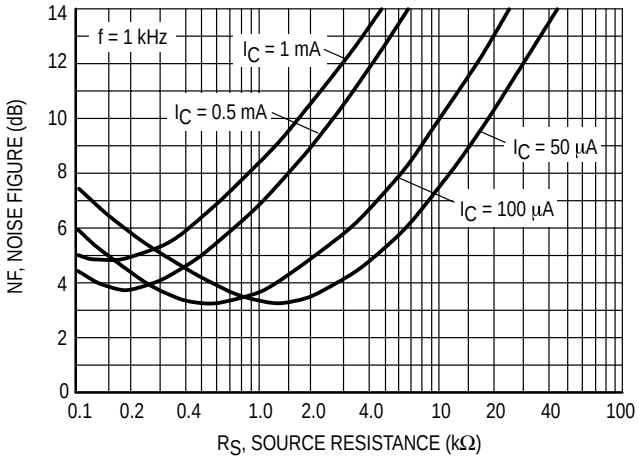



Figure 5. Current Gain

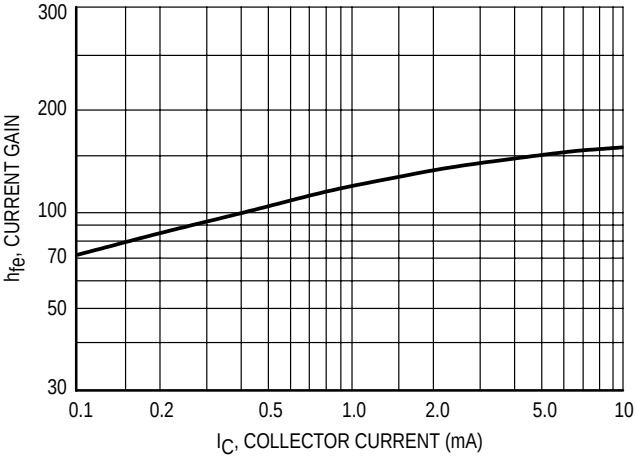



Figure 6. Qutput Admittance

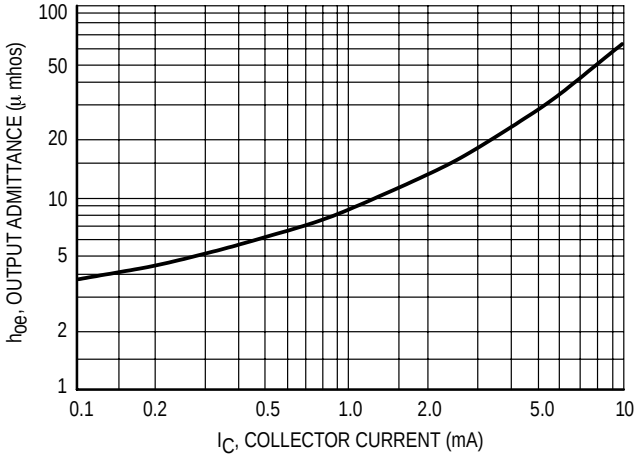


Figure 7. Input Impedance

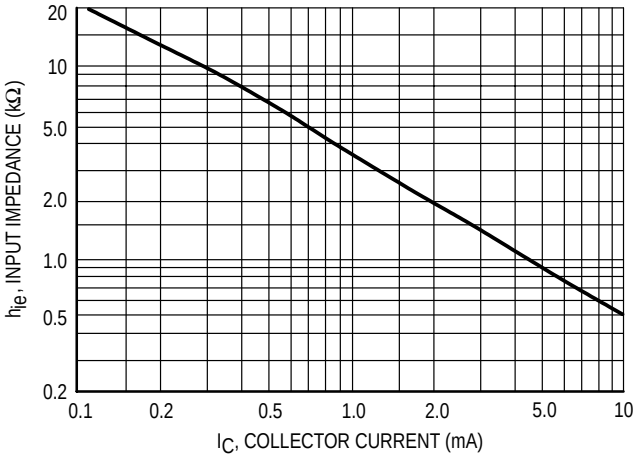



Figure 8. Voltage Feedback Ratio

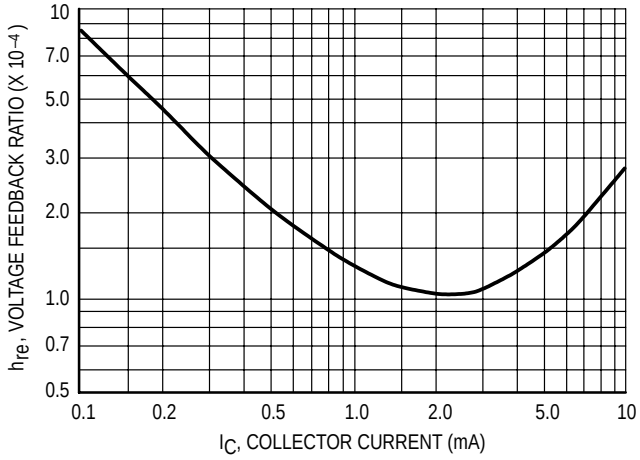



Figure 9. DC Current Gain

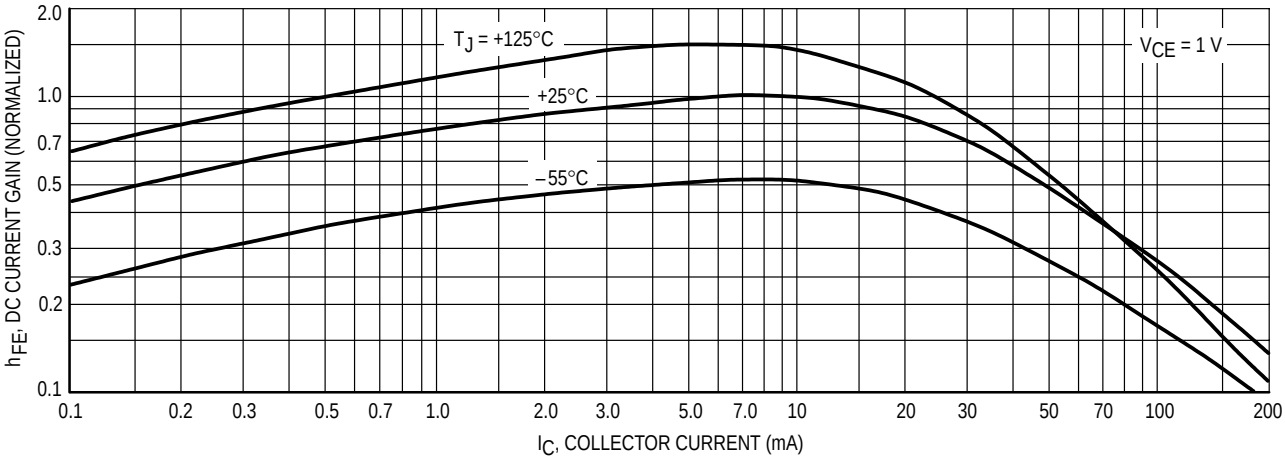



Figure 10. Collector Saturation Region

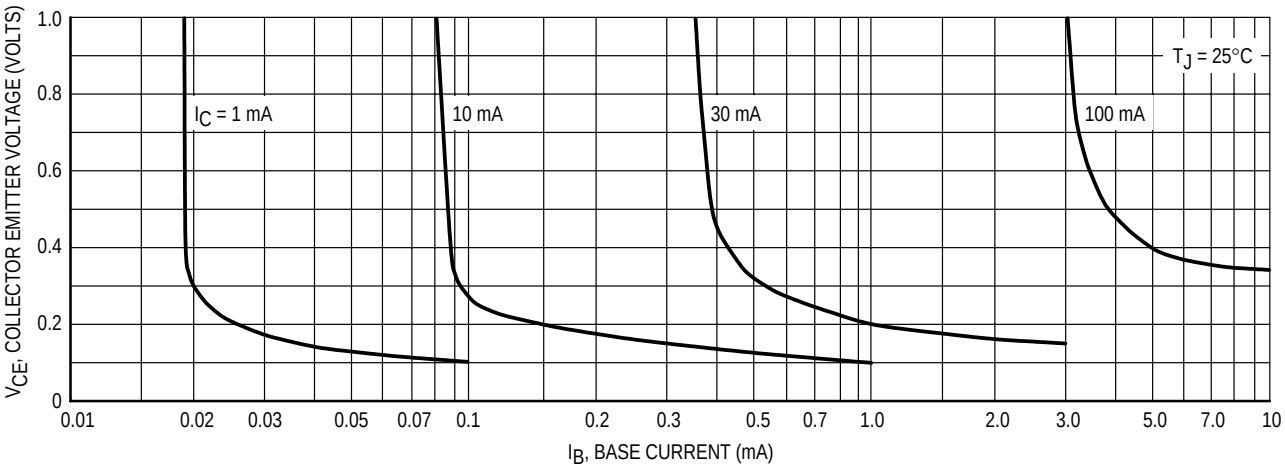


Figure 11. "ON" Voltages

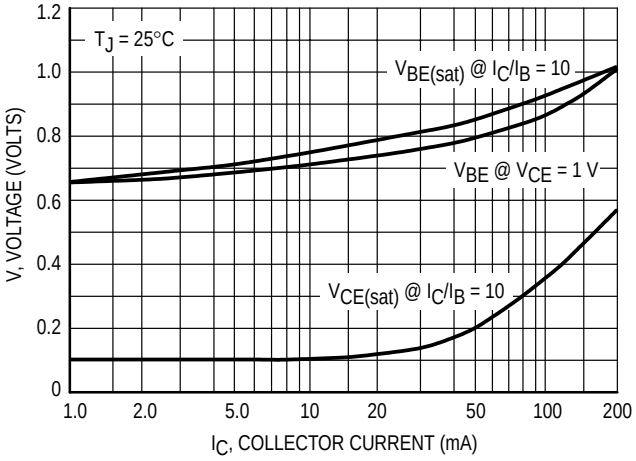
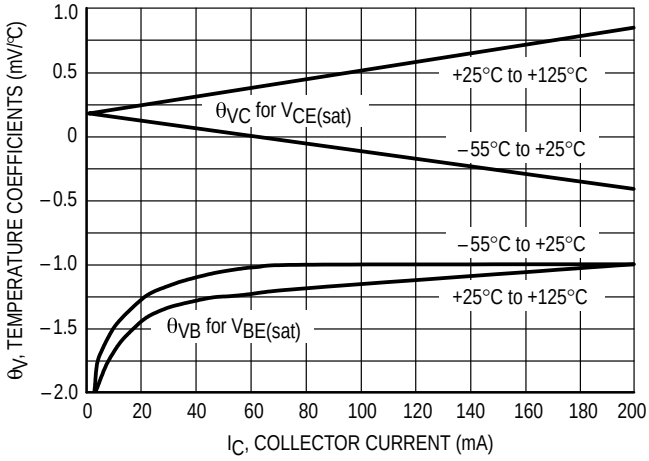



Figure 12. Temperature Coefficients



## Ordering Information :

| Device | Packing |
|---|---|
| Part Number-AP | Ammo Packing: 20Kpcs/Carton |
| Part Number-BP | Bulk: 100Kpcs/Carton |

Note : Adding "-HF" suffix for halogen free, eg. Part Number-AP-HF

*****IMPORTANT NOTICE*****

***Micro Commercial Components Corp.*** reserves the right to make changes without further notice to any product herein to make corrections, modifications , enhancements , improvements , or other changes . ***Micro Commercial Components Corp .*** does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights ,nor the rights of others . The user of products in such applications shall assume all risks of such use and will agree to hold ***Micro Commercial Components Corp .*** and all the companies whose products are represented on our website, harmless against all damages.

*****LIFE SUPPORT*****

MCC's products are not authorized for use as critical components in life support devices or systems without the express written approval of Micro Commercial Components Corporation.

*****CUSTOMER AWARENESS*****

Counterfeiting of semiconductor parts is a growing problem in the industry. Micro Commercial Components (MCC) is taking strong measures to protect ourselves and our customers from the proliferation of counterfeit parts. MCC strongly encourages customers to purchase MCC parts either directly from MCC or from Authorized MCC Distributors who are listed by country on our web page cited below. Products customers buy either from MCC directly or from Authorized MCC Distributors are genuine parts, have full traceability, meet MCC's quality standards for handling and storage. **MCC will not provide any warranty coverage or other assistance for parts bought from Unauthorized Sources.** MCC is committed to combat this global problem and encourage our customers to do their part in stopping this practice by buying direct or from authorized distributors.