Micro Commercial Components

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# 2N4920

## PNP General Purpose Power Transistors

## Features

- Designed for driver circuits, switching, and amplifier applications. These high-performance plastic devices feature.
- Medium-Power Plastic PNP Silicon Transistors.
- Low Saturation Voltage: $V_{CE(sat)}$=0.6V(Max) @ $I_C$=1.0A
- Excellent Power Dissipation Due to Thermopad Construction: $P_D$=30W @ $T_C$=25°C
- Marking:2N4920
- Gain Specified to $I_C$=1.0A
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0

## Maximum Ratings*

| Symbol | Rating | Rating | Unit |
|---|---|---|---|
| $V_{CEO}$ | Collector-Emitter Voltage | 80 | V |
| $V_{CBO}$ | Collector-Base Voltage | 80 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 5.0 | V |
| $I_C$ | Collector Current, Continuous(1) | 1.0<br>3.0 | A |
| $I_B$ | Base Current | 1.0 | A |
| $P_D$ | Total Device Dissipation<br>Derate above 25°C | 30<br>0.24 | W<br>W/°C |
| $T_J$ | Operating Junction Temperature | -55 to +150 | °C |
| $T_{STG}$ | Storage Temperature | -55 to +150 | °C |

## Thermal Characteristics(2)

| Symbol | Rating | Max | Unit |
|---|---|---|---|
| $R_{\theta JC}$ | Thermal Resistance, Junction to Case | 4.16 | °C/W |

## Electrical Characteristics @ 25°C Unless Otherwise Specified

| Symbol | Parameter | Min | Max | Units |
|---|---|---|---|---|
| OFF CHARACTERISTICS | | | | |
| $V_{CEO(sus)}$ | Collector-Emitter Breakdown Voltage(3)<br>($I_C$=0.1Adc, $I_B$=0) | 80 | --- | Vdc |
| $I_{CEO}$ | Collector Cutoff Current<br>($V_{CE}$=40Vdc, $I_B$=0) | --- | 0.5 | mAdc |
| $I_{CEX}$ | Collector Cutoff Current<br>($V_{CE}$=Rated $V_{CEO}$, $V_{EB(off)}$=1.5Vdc) | --- | 0.1 | mAdc |
| $I_{CBO}$ | Collector Cutoff Current<br>($V_{CB}$=Rated $V_{CEO}$, $I_E$=0) | --- | 0.1 | mAdc |
| $I_{EBO}$ | Emitter Cutoff Current<br>($V_{BE}$=5.0Vdc, $I_C$=0) | --- | 1.0 | mAdc |

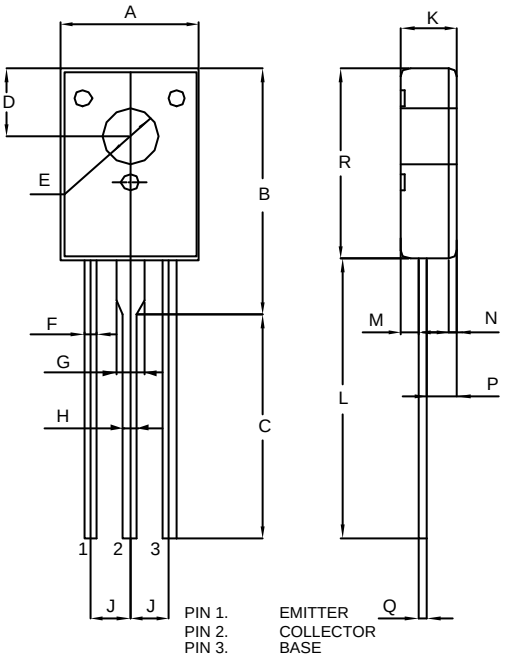
* Indicates JEDEC Registered Data for 2N4918 Series

(1) The 1.0A maximum IC value is based upon JEDEC current gain requirements. The 3.0A maximum value is based upon actual current-handling capability of the device.

(2) Recommend use of thermal compound for lowest thermal resistance.

(3) Pulse Test: PW=300us, Duty Cycle=2.0%

## TO-126




| DIMENSIONS | | | | | |
|---|---|---|---|---|---|
| | INCHES | | MM | | |
| DIM | MIN | MAX | MIN | MAX | NOTE |
| A | 0.30 | 0.33 | 7.70 | 8.30 | |
| B | | 0.56 | | 14.20 | |
| C | 0.50 | 0.53 | 12.76 | 13.36 | |
| D | 0.15 | 0.16 | 3.80 | 4.0 | |
| E | 0.12 | 0.13 | 3.10 | 3.30 | |
| F | 0.025 | 0.033 | 0.65 | 0.85 | |
| G | 0.06 | 0.07 | 1.50 | 1.70 | |
| H | 0.025 | 0.033 | 0.65 | 0.85 | |
| J | 0.08 | 0.10 | 2.08 | 2.48 | |
| K | 0.12 | 0.14 | 3.05 | 3.45 | |
| L | 0.63 | 0.64 | 15.90 | 16.30 | |
| M | | 0.04 | | 1.0 | |
| N | | 0.02 | | 0.5 | |
| P | 0.06 | 0.08 | 1.55 | 1.95 | |
| Q | 0.018 | 0.023 | 0.45 | 0.60 | |
| R | 0.43 | 0.44 | 10.80 | 11.20 | |

| Symbol | Parameter | Min | Max | Units |
|---|---|---|---|---|
| ON CHARACTERISTICS | | | | |
| $h_{FE}$ | DC Current Gain (1)<br>($V_{CE}$=1.0Vdc, $I_C$=50mAdc)<br>($V_{CE}$=1.0Vdc, $I_C$=500mAdc)<br>($V_{CE}$=1.0Vdc, $I_C$=1.0Adc) | <br>40<br>30<br>10 | <br><br>150 | <br><br>--- |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage (1)<br>($I_C$=1.0Adc, $I_B$=0.1Adc) | --- | 0.6 | Vdc |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage (1)<br>($I_C$=1.0Adc, $I_B$=0.1Adc) | --- | 1.3 | Vdc |
| $V_{BE(on)}$ | Base-Emitter On Voltage (1)<br>($I_C$=1.0Adc, $V_{CE}$=1.0Vdc) | --- | 1.3 | Vdc |
| SMALL-SIGNAL CHARACTERISTICS | | | | |
| $f_T$ | Current-Gain Bandwidth Product<br>($I_C$=250mAdc, $V_{CE}$=10Vdc, f=1.0MHz) | 3.0 | --- | MHz |
| $C_{OB}$ | Output Capacitance<br>($V_{CB}$=10Vdc, $I_E$=0, f=100KHz) | --- | 100 | pF |
| $h_{fe}$ | Small-Signal Current Gain<br>($I_C$=250mAdc, $V_{CE}$=10Vdc, f=1.0KHz) | 25 | --- | --- |

* Pulse Test: Pulse Width=300us, Duty Cycle=2.0%

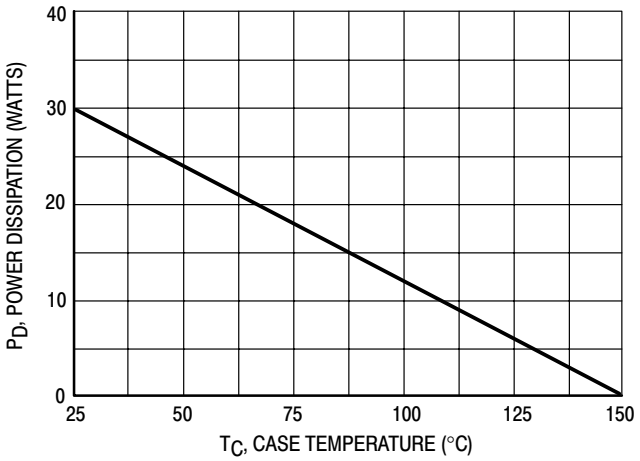



**Figure 1. Power Derating**

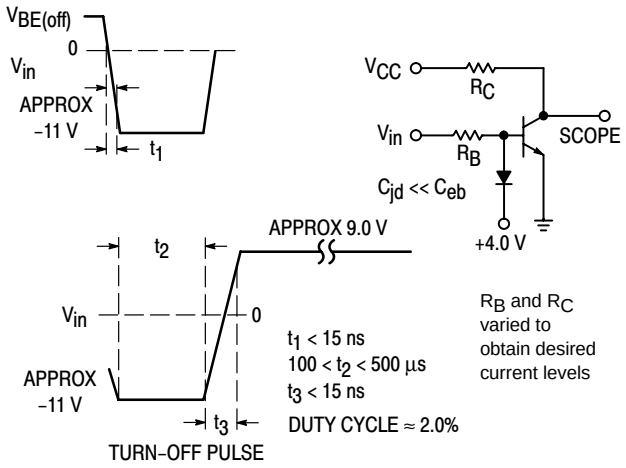



**Figure 2. Switching Time Equivalent Test Circuit**

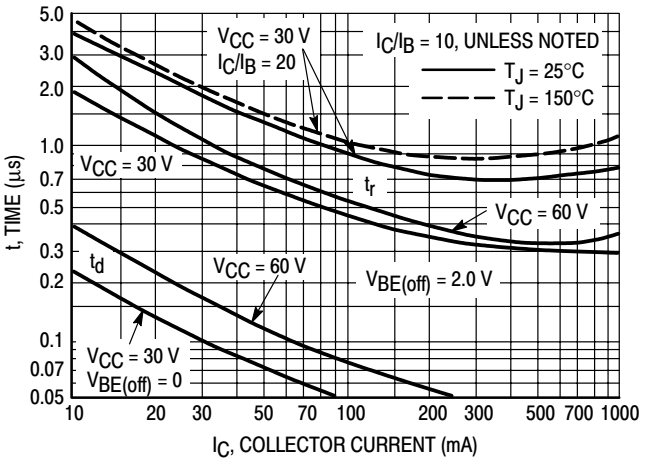



**Figure 3. Turn–On Time**

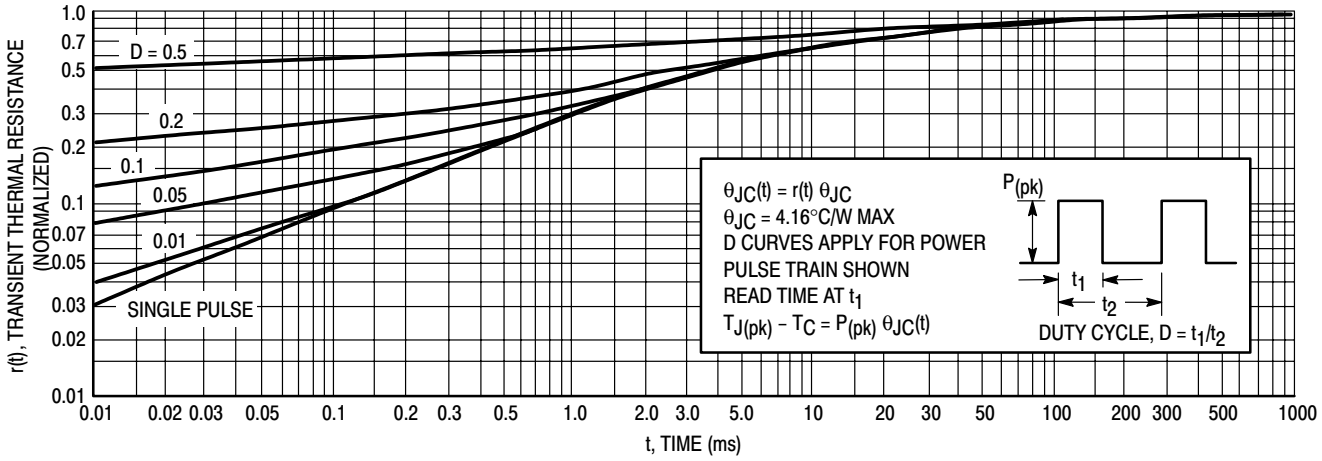



**Figure 4. Thermal Response**

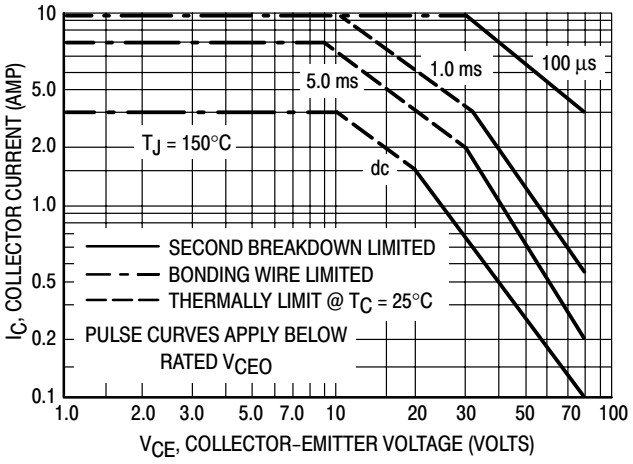



**Figure 5. Active–Region Safe Operating Area**

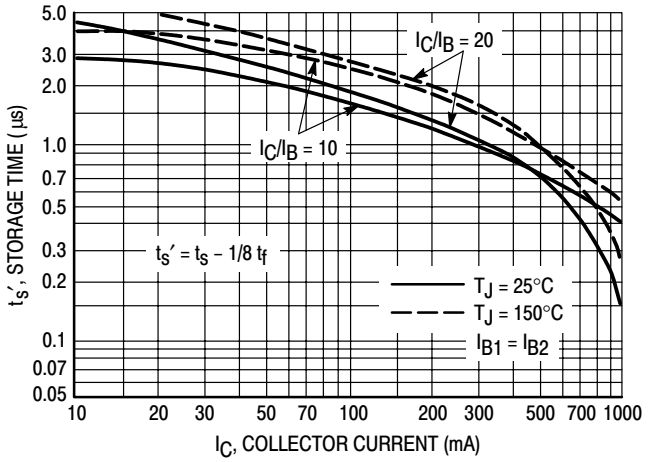



**Figure 6. Storage Time**

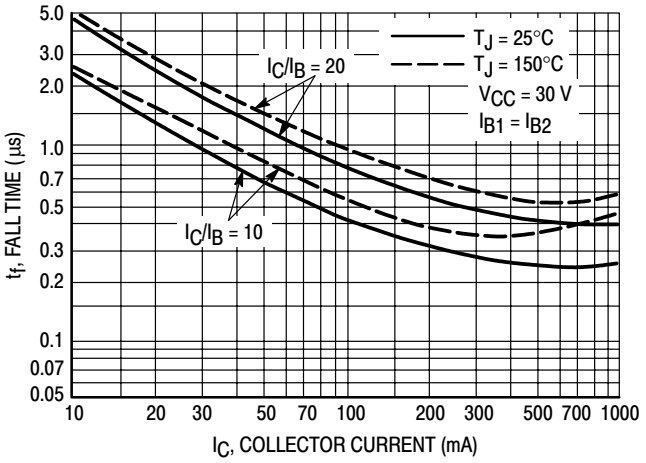



**Figure 7. Fall Time**

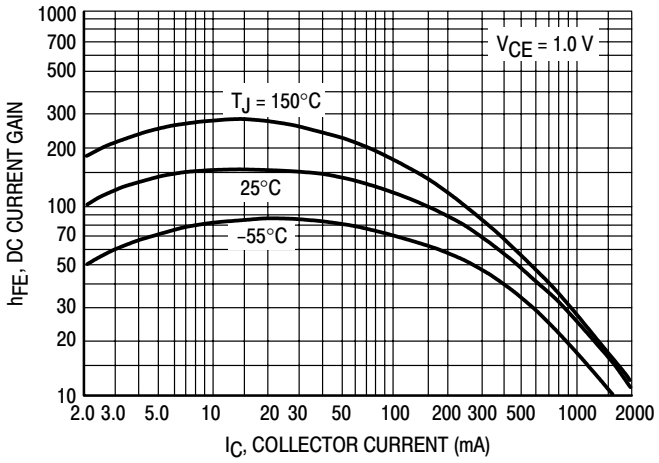



**Figure 8. Current Gain**

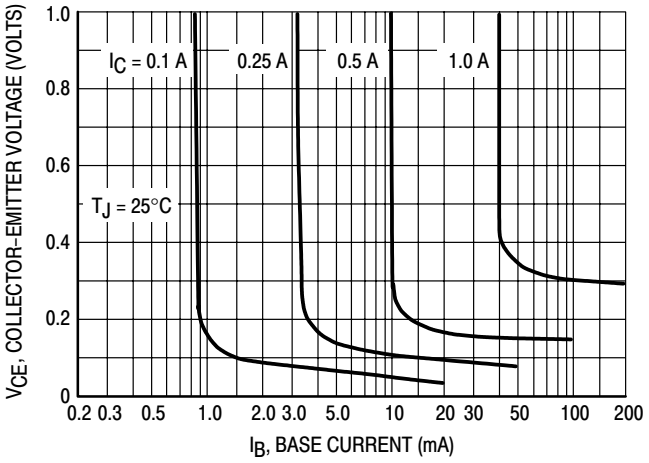



**Figure 9. Collector Saturation Region**

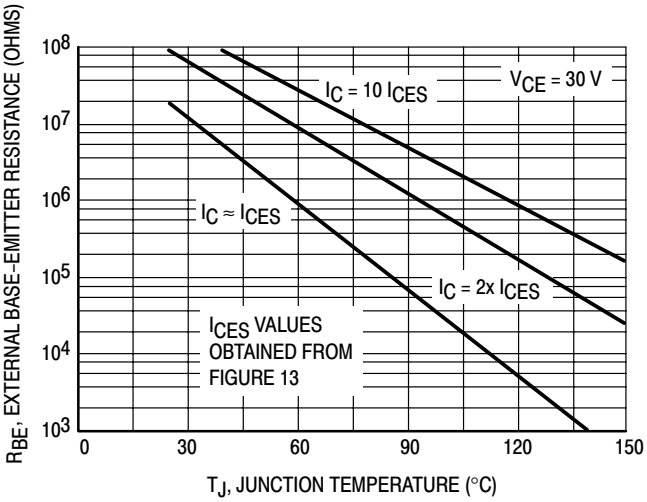



**Figure 10. Effects of Base–Emitter Resistance**

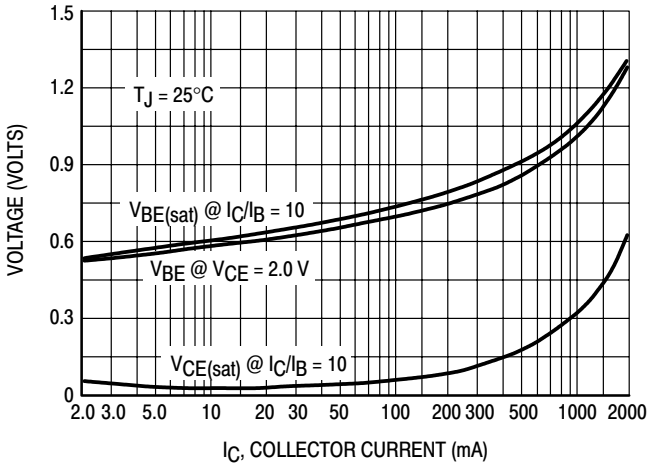



**Figure 11. “On” Voltage**

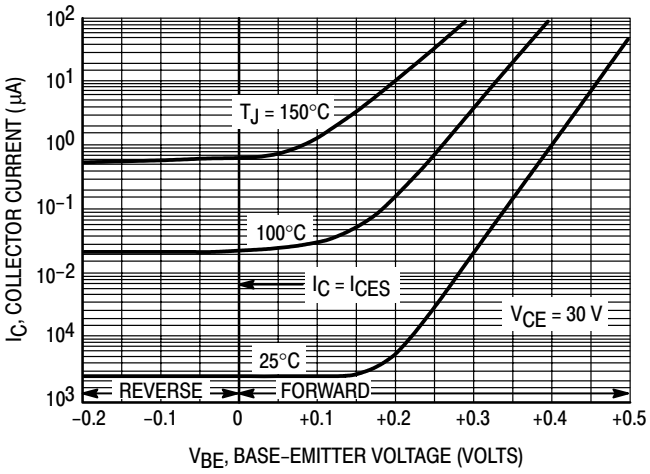



**Figure 12. Collector Cut–Off Region**

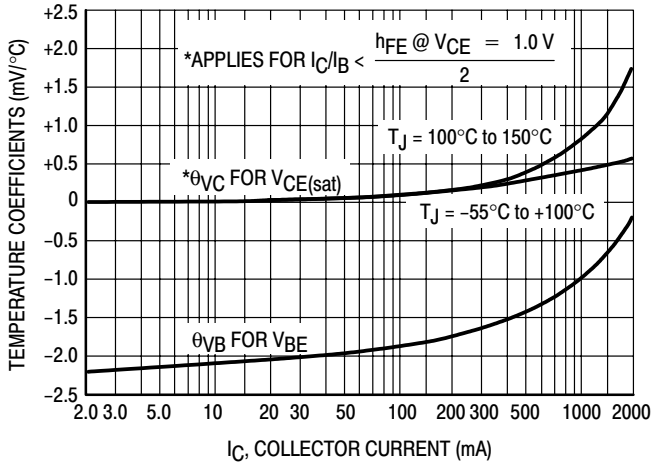



**Figure 13. Temperature Coefficients**

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