



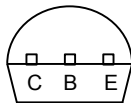
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2N4123
2N4124

Features

- Through Hole TO-92 Package
- Capable of 625mWatts of Power Dissipation

Pin Configuration
 Bottom View



**NPN Silicon General
 Purpose Transistor**
625mW

Mechanical Data

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

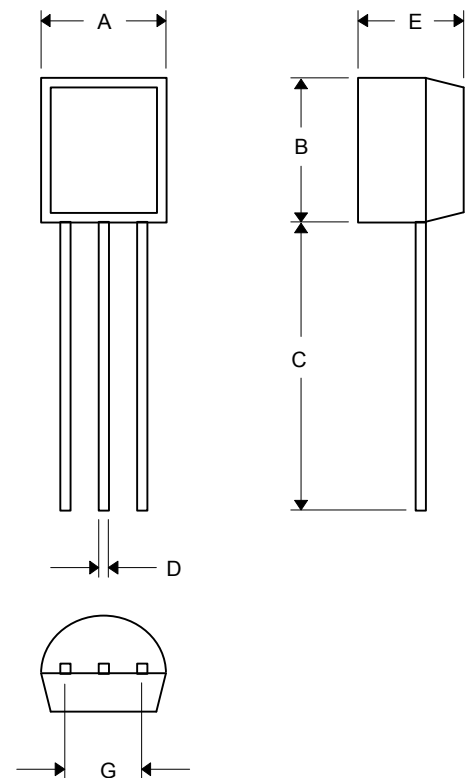
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Maximum Ratings @ 25°C Unless Otherwise Specified

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

TO-92



DIM	DIMENSIONS				NOTE
	INCHES		MM		
A	.175	.185	4.45	4.70	
B	.175	.185	4.46	4.70	
C	.500	---	12.7	---	
D	.016	.020	0.41	0.63	
E	.135	.145	3.43	3.68	
G	.095	.105	2.42	2.67	

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ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector–Emitter Breakdown Voltage ⁽¹⁾ ($I_C = 1.0\text{ mAdc}$, $I_E = 0$)	$V_{(BR)CEO}$	30 25	— —	Vdc
Collector–Base Breakdown Voltage ($I_C = 10\ \mu\text{Adc}$, $I_E = 0$)	$V_{(BR)CBO}$	40 30	— —	Vdc
Emitter–Base Breakdown Voltage ($I_E = 10\ \mu\text{Adc}$, $I_C = 0$)	$V_{(BR)EBO}$	5.0	—	Vdc
Collector Cutoff Current ($V_{CB} = 20\text{ Vdc}$, $I_E = 0$)	I_{CBO}	—	50	nAdc
Emitter Cutoff Current ($V_{EB} = 3.0\text{ Vdc}$, $I_C = 0$)	I_{EBO}	—	50	nAdc

ON CHARACTERISTICS(1)

DC Current Gain ($I_C = 2.0\text{ mAdc}$, $V_{CE} = 1.0\text{ Vdc}$) ($I_C = 50\text{ mAdc}$, $V_{CE} = 1.0\text{ Vdc}$)	h_{FE}	50 120 25 60	— —	
Collector–Emitter Saturation Voltage ($I_C = 50\text{ mAdc}$, $I_B = 5.0\text{ mAdc}$)	$V_{CE(sat)}$	—	0.3	Vdc
Base–Emitter Saturation Voltage ($I_C = 50\text{ mAdc}$, $I_B = 5.0\text{ mAdc}$)	$V_{BE(sat)}$	—	0.95	Vdc

SMALL-SIGNAL CHARACTERISTICS

Current-Gain-Bandwidth Product ($I_C = 10\text{ mAdc}$, $V_{CE} = 20\text{ Vdc}$, $f = 100\text{ MHz}$)	f_T	250 300	— —	MHz
Input Capacitance ($V_{EB} = 0.5\text{ Vdc}$, $I_C = 0$, $f = 1.0\text{ MHz}$)	C_{ibo}	—	8.0	pF
Collector–Base Capacitance ($V_{CB} = 5.0\text{ Vdc}$, $I_E = 0$, $f = 1.0\text{ MHz}$)	C_{cb}	—	4.0	pF
Small-Signal Current Gain ($I_C = 2.0\text{ mAdc}$, $V_{CE} = 10\text{ Vdc}$, $R_S = 10\text{ kohm}$, $f = 1.0\text{ kHz}$)	h_{fe}	50 120	200 480	—
Current Gain-High Frequency ($I_C = 10\text{ mAdc}$, $V_{CE} = 20\text{ Vdc}$, $f = 100\text{ kHz}$) ($I_C = 2.0\text{ mAdc}$, $V_{CE} = 10\text{ Vdc}$, $f = 1.0\text{ kHz}$)	h_{fcl}	2.5 3.0 50 120	— — 200 480	—
Noise Figure ($I_C = 100\ \mu\text{Adc}$, $V_{CE} = 5.0\text{ Vdc}$, $R_S = 1.0\text{ kohm}$, $f = 1.0\text{ kHz}$)	NF	— —	6.0 5.0	dB

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

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Figure 1. Capacitance

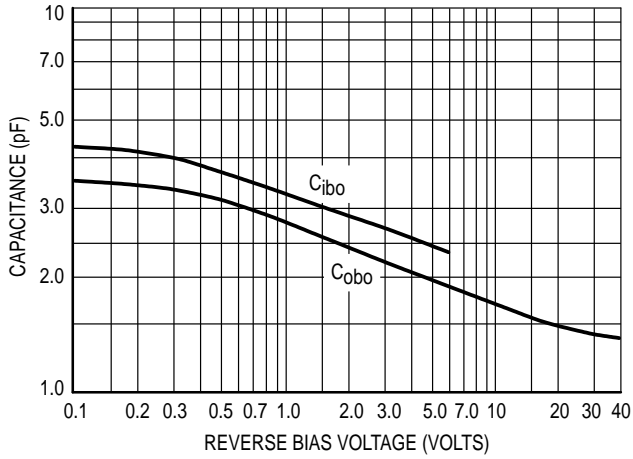


Figure 2. Switching Times

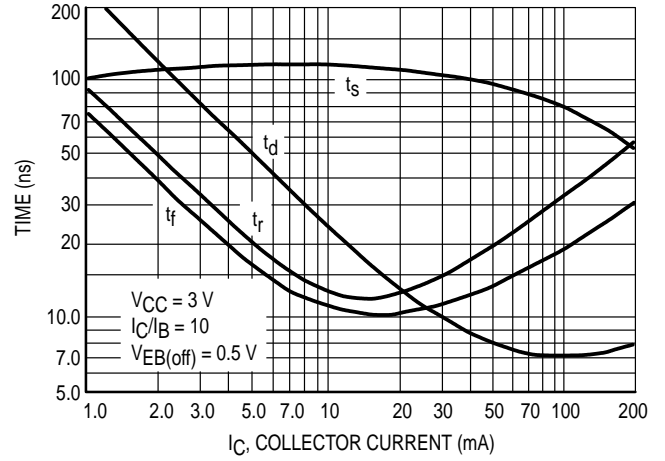


Figure 3. Frequency Variations

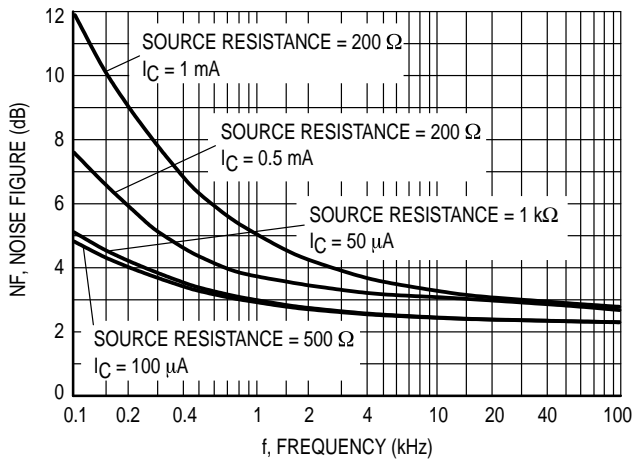


Figure 4. Source Resistance

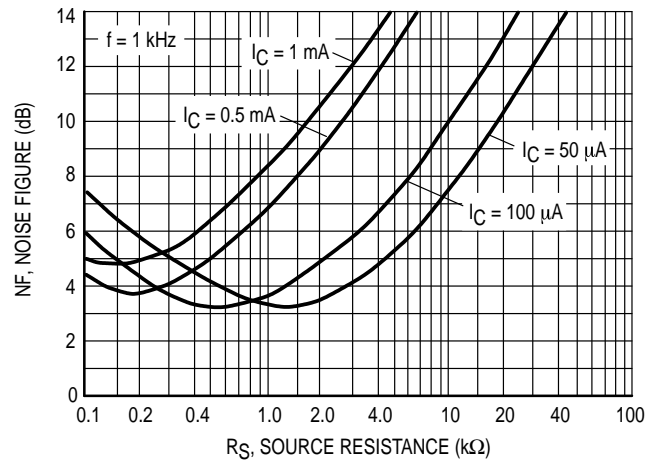


Figure 5. Current Gain

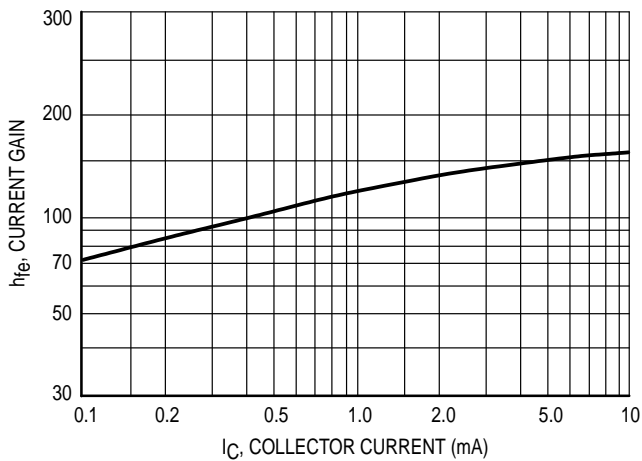
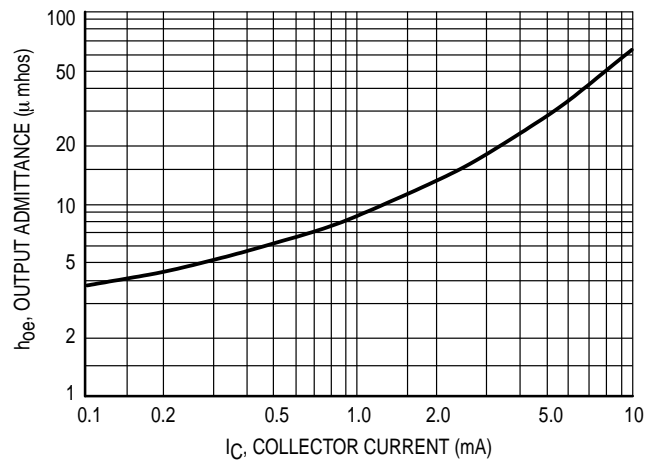


Figure 6. Output Admittance



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Figure 7. Input Impedance

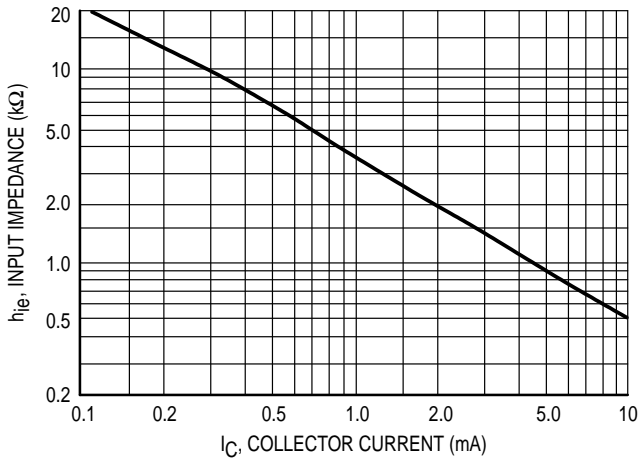


Figure 8. Voltage Feedback Ratio

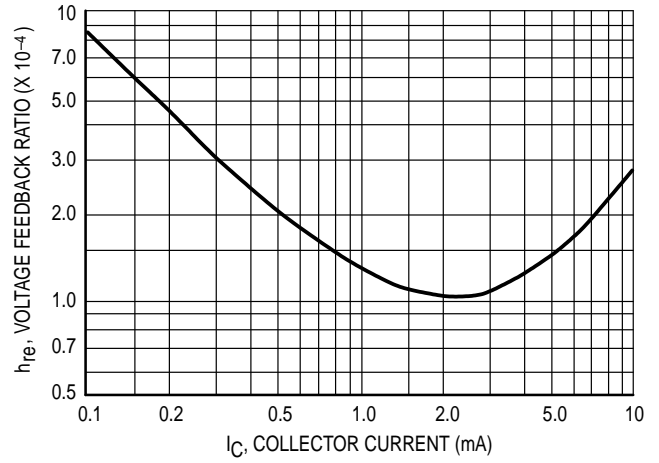


Figure 9. DC Current Gain

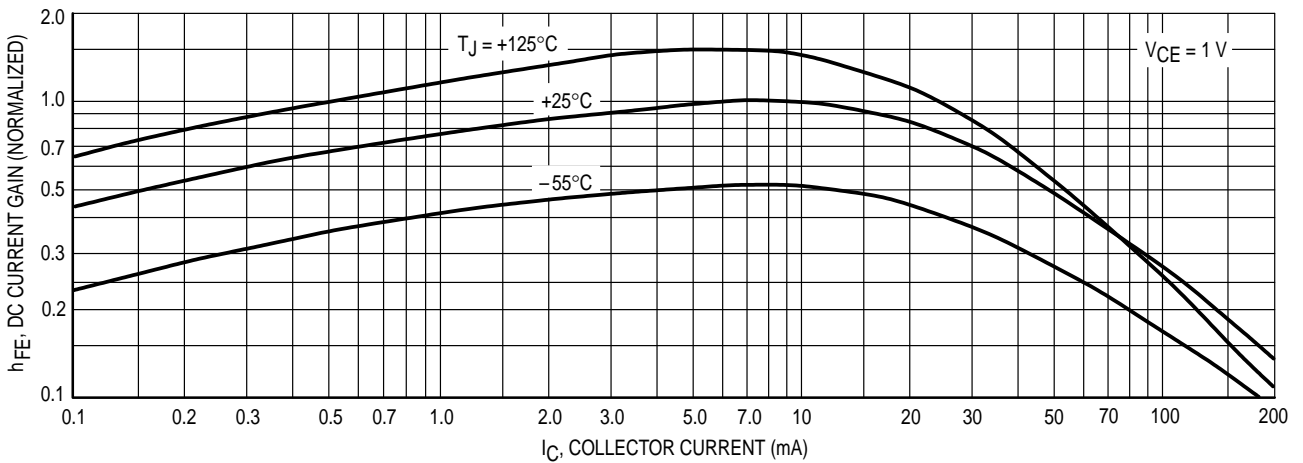
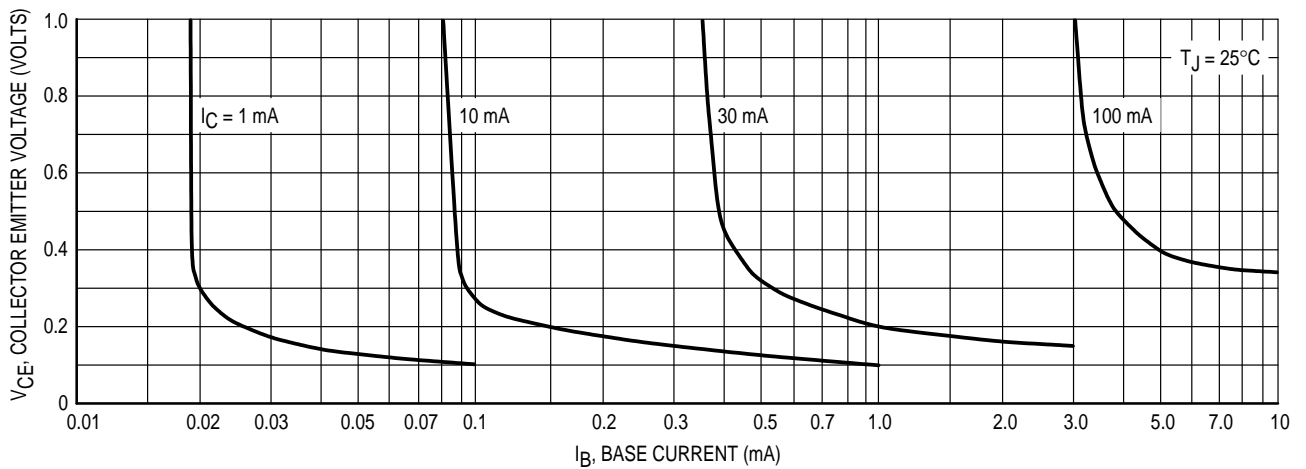


Figure 10. Collector Saturation Region



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Figure 11. "ON" Voltages

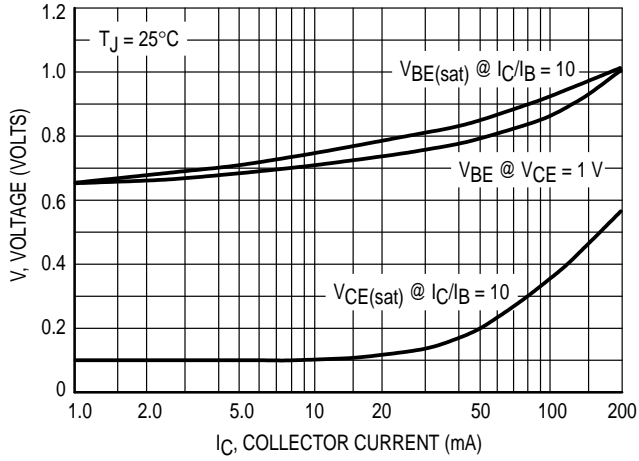


Figure 12. Temperature Coefficients

