

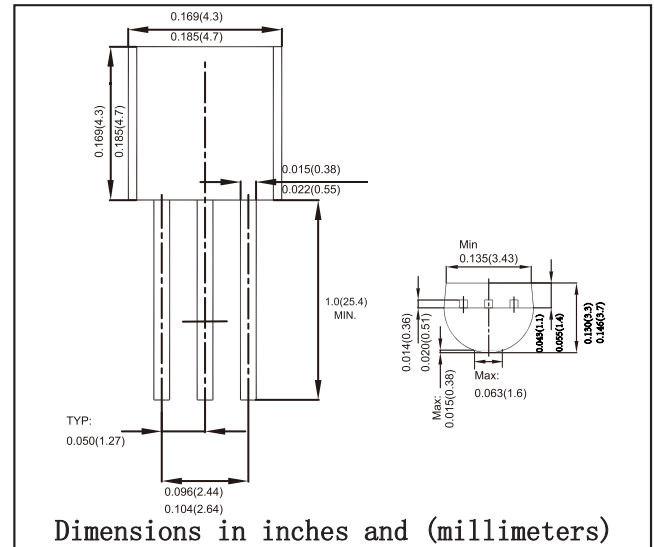
TO-92 Plastic-Encapsulate Transistors

FEATURES

- Switching and amplification in high voltage
- Applications such as telephony
- Low current
- High voltage
- PNP Transistors

MECHANICAL DATA

- Case style: TO-92 molded plastic
- Mounting position: any



MAXIMUM RATINGS AND CHARACTERISTICS

@ 25°C Ambient Temperature (unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	VCBO	-40	V
Collector-Emitter Voltage	VCEO	-40	V
Emitter-Base Voltage	VEBO	-5	V
Collector Current -Continuous	IC	-0.6	A
Collector Power Dissipation	KD	625	mW
Thermal Resistance, junction to Ambient	RKJA	200	°C /W
Junction Temperature	Tj	150	°C
Storage Temperature	Tsrg	-55~+150	°C

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = -0.1mA, I_E = 0$	-40			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = -1mA, I_B = 0$	-40			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = -0.1mA, I_C = 0$	-5			V
Collector cut-off current	I_{CBO}	$V_{CB} = -40V, I_E = 0$			-0.1	
Emitter cut-off current	I_{EBO}	$V_{EB} = -4V, I_C = 0$			-0.1	
DC current gain	h_{FE}	$V_{CE} = -1V, I_C = -1mA$	30			
		$V_{CE} = -1V, I_C = -10mA$	50			
		$V_{CE} = -2V, I_C = -150mA$	50		150	
		$V_{CE} = -2V, I_C = -500mA$	20			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -150mA, I_B = -15mA$			-0.4	V
		$I_C = -500mA, I_B = -50mA$			-0.75	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = -150mA, I_B = -15mA$	-0.75		-0.95	V
		$I_C = -500mA, I_B = -50mA$			-1.3	V
Collector output capacitance	C_{ob}	$V_{CB} = -10V, I_E = 0, f = 1MHz$			8.5	pF
Emitter input capacitance	C_{ib}	$V_{EB} = -0.5V, I_C = 0, f = 1MHz$			30	pF
Transition frequency	f_T	$V_{CE} = -10V, I_C = -20mA, f = 100MHz$	150			MHz

*Pulse test: pulse width $\leq 300\mu s$, duty cycles $\leq 2.0\%$.

RATINGS AND CHARACTERISTIC CURVES

SWITCHING TIME EQUIVALENT TEST CIRCUIT

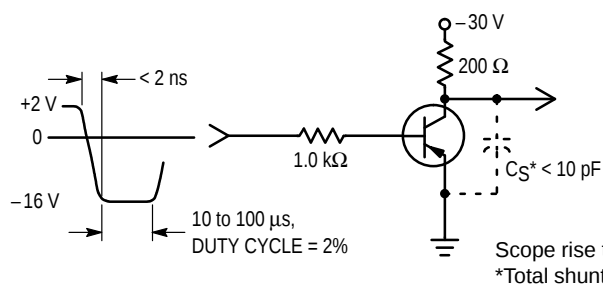


Figure 1. Turn-On Time

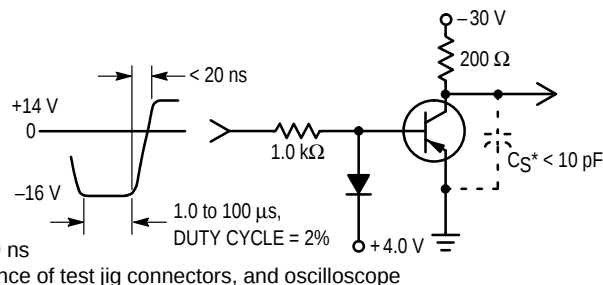


Figure 2. Turn-Off Time

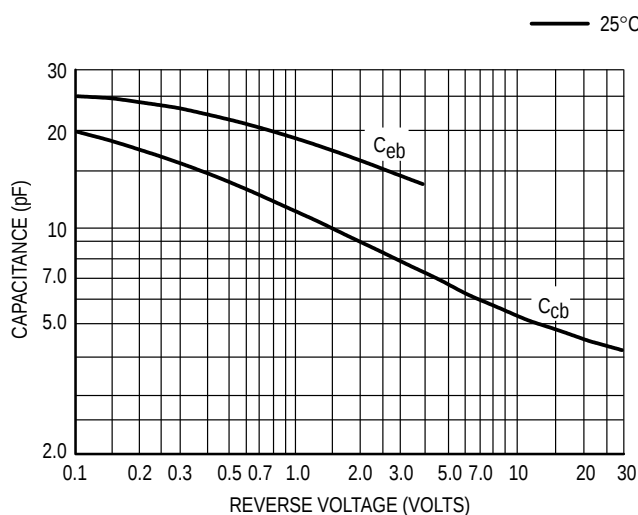


Figure 3. Capacitances

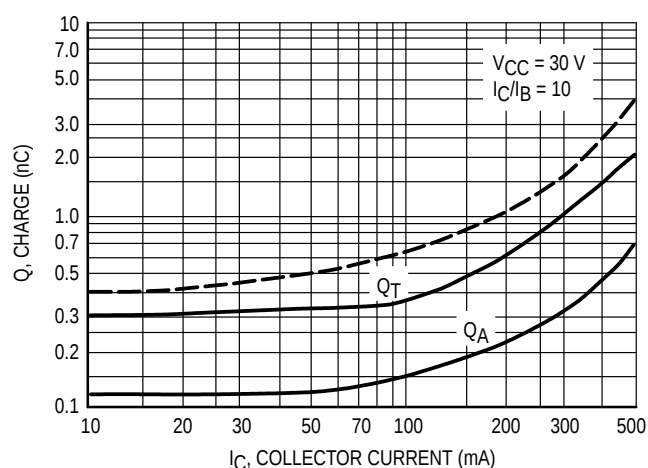


Figure 4. Charge Data

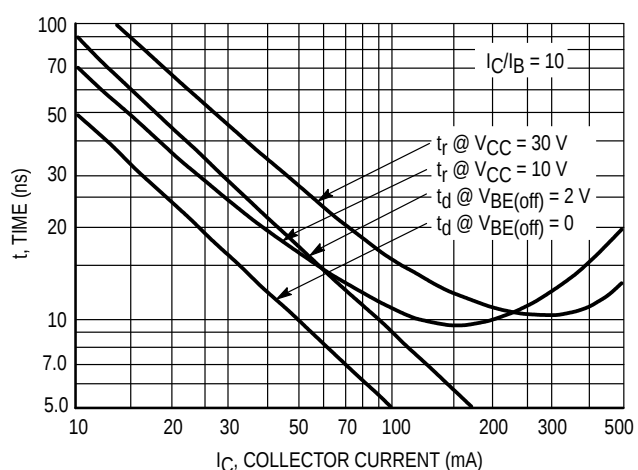


Figure 5. Turn-On Time

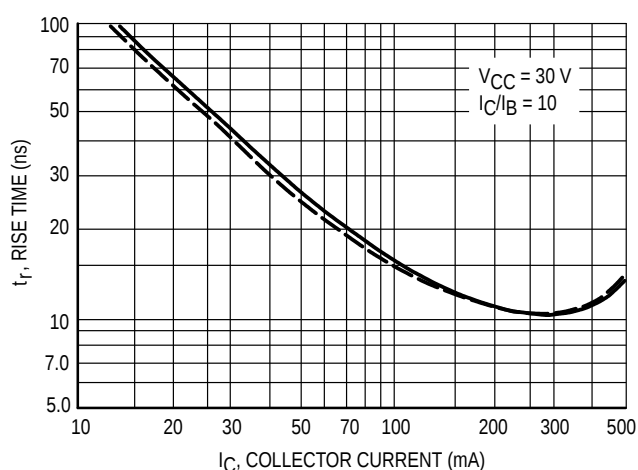


Figure 6. Rise Time

RATINGS AND CHARACTERISTIC CURVES

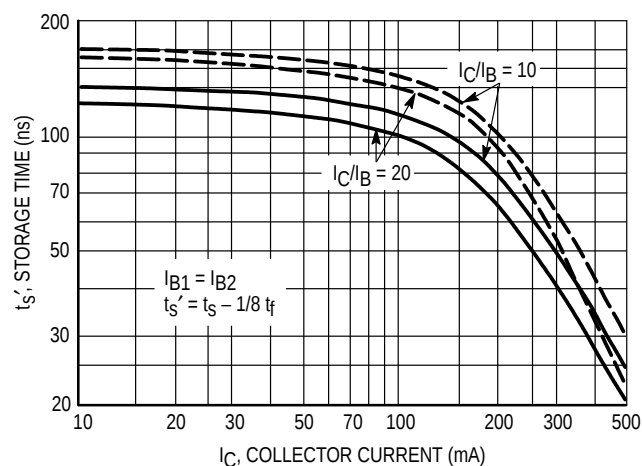


Figure 7. Storage Time

$V_{CE} = -10 \text{ Vdc}$, $T_A = 25^\circ\text{C}$
Bandwidth = 1.0 Hz

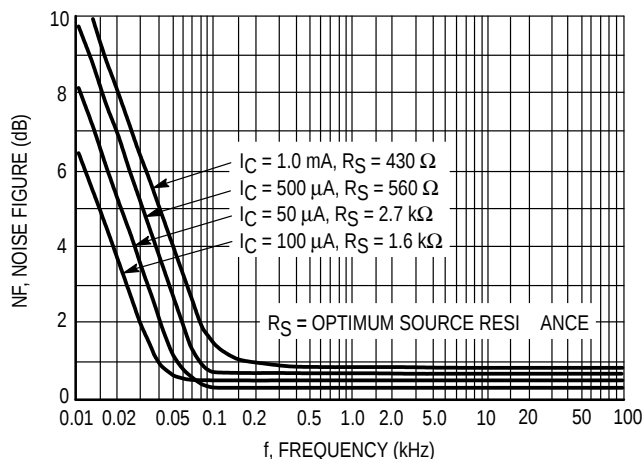


Figure 8. Frequency Effects

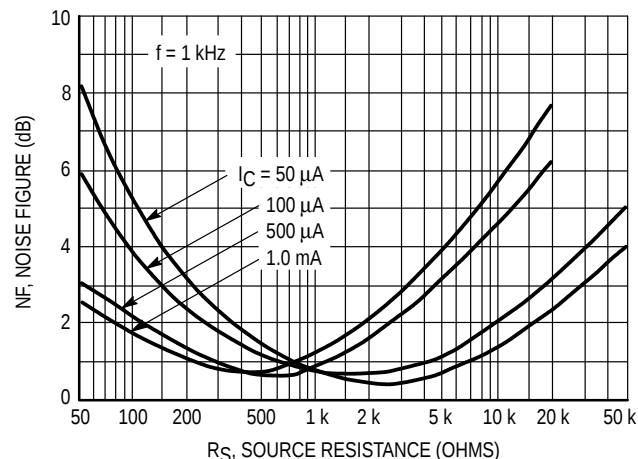


Figure 9. Source Resistance Effects

h PARAMETERS

$V_{CE} = -10 \text{ Vdc}$, $f = 1.0 \text{ kHz}$, $T_A = 25^\circ\text{C}$

This group of graphs illustrates the relationship between h_{fe} and other "h" parameters for this series of transistors. To obtain these curves, a high-gain and a low-gain unit were

selected from both the 2N4402 and 2N4403 lines, and the same units were used to develop the correspondingly-numbered curves on each graph.

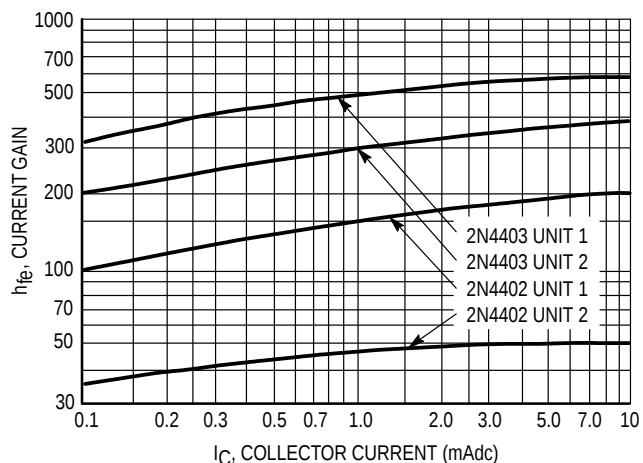


Figure 10. Current Gain

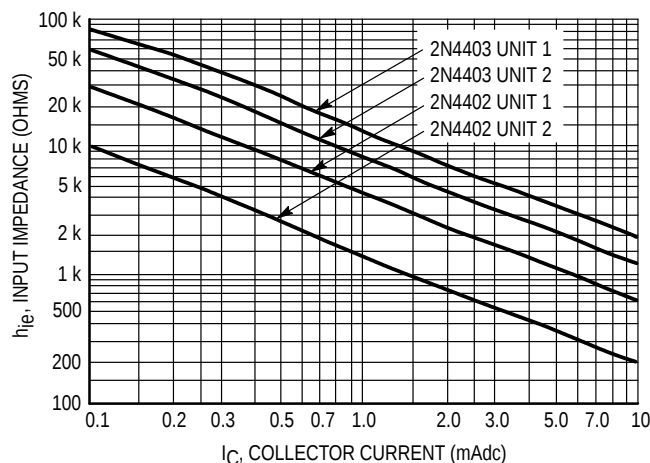


Figure 11. Input Impedance

RATINGS AND CHARACTERISTIC CURVES

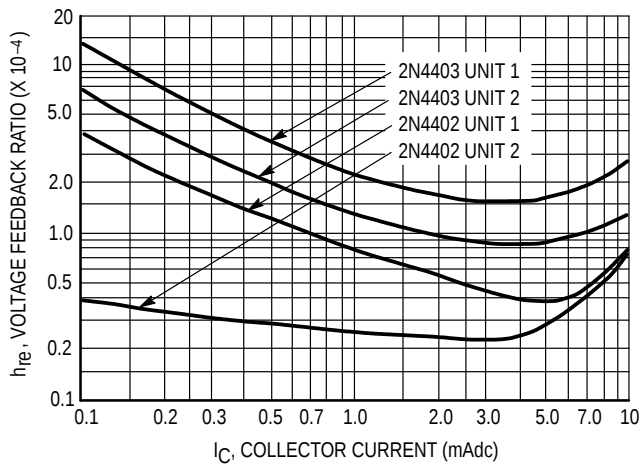


Figure 12. Voltage Feedback Ratio

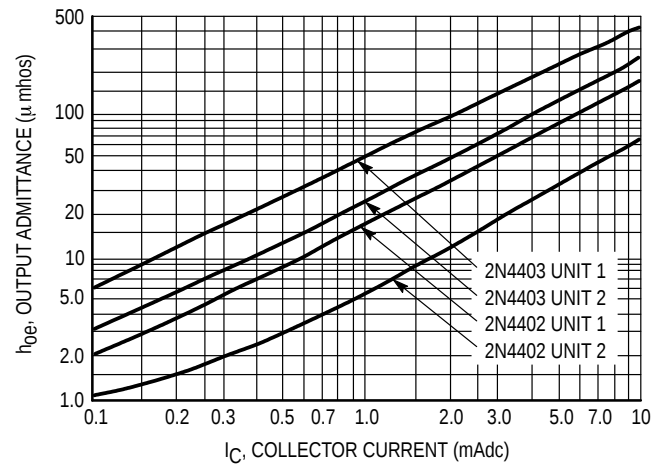


Figure 13. Output Admittance

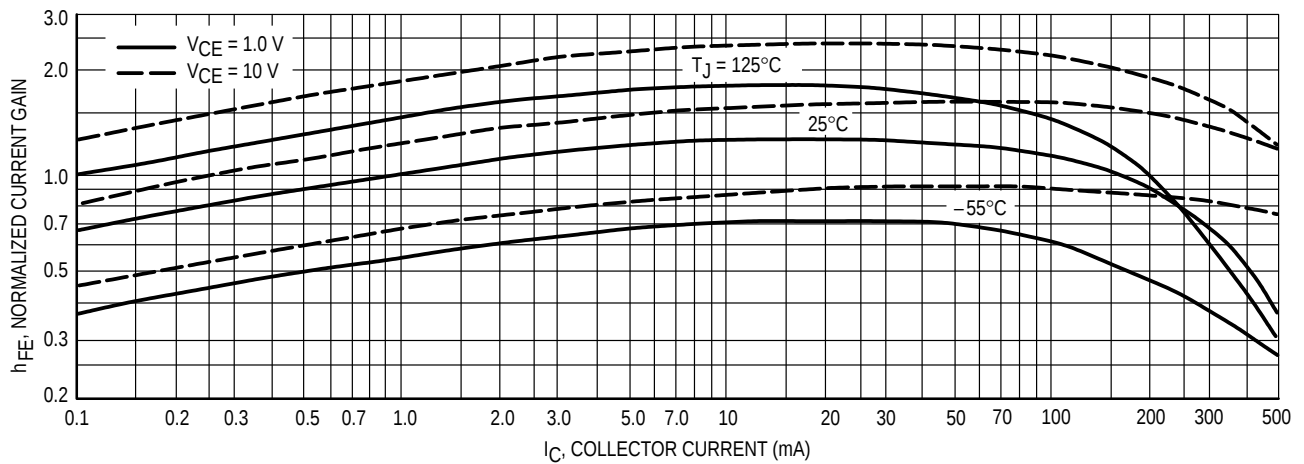


Figure 14. DC Current Gain

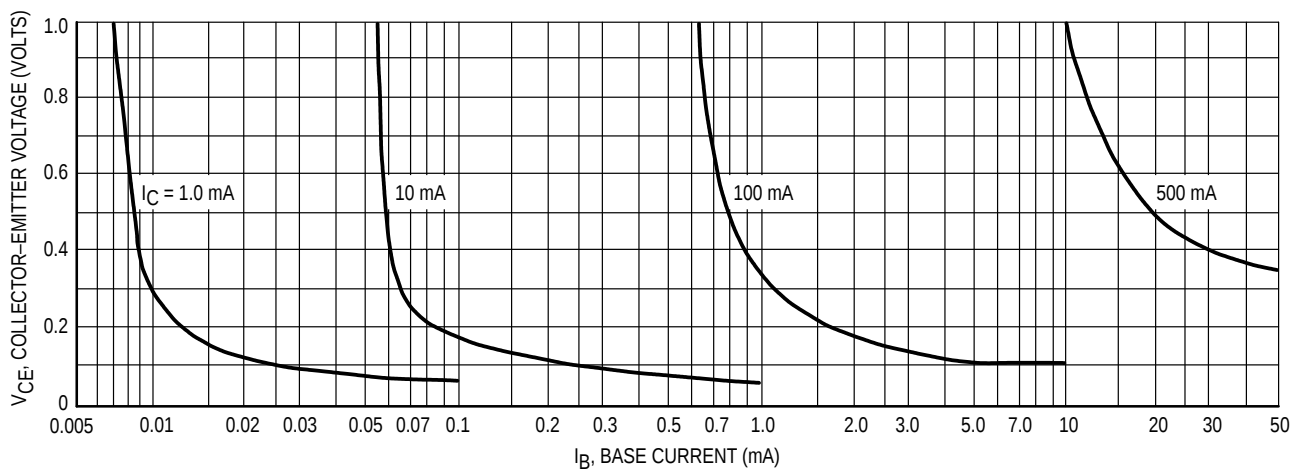


Figure 15. Collector Saturation Region

RATINGS AND CHARACTERISTIC CURVES

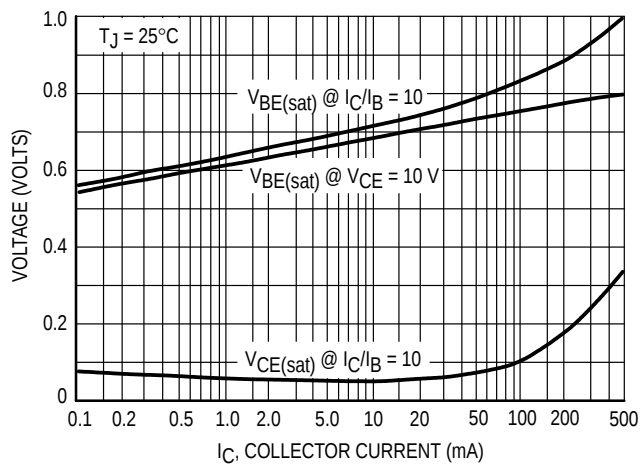


Figure 16. "On" Voltages

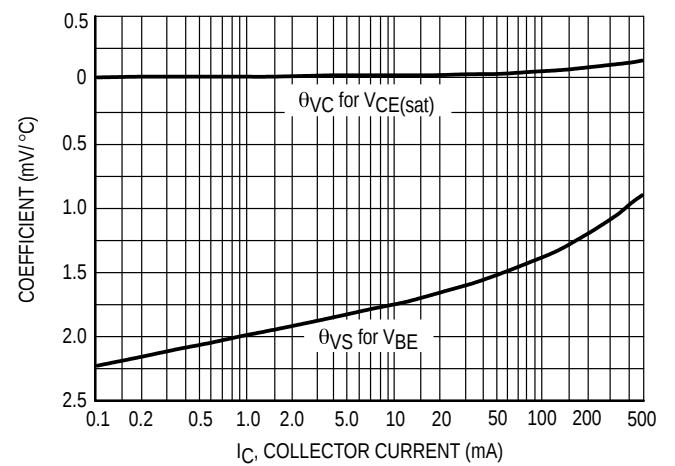


Figure 17. Temperature Coefficients