



TO-92 Plastic-Encapsulate Transistors

2N4403

TRANSISTOR (PNP)

FEATURES

Power dissipation

MAXIMUM RATINGS* $T_A=25^{\circ}\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	-40	V
V_{CEO}	Collector-Emitter Voltage	-40	V
V_{EBO}	Emitter-Base Voltage	-5	V
I_C	Collector Current -Continuous	-600	mA
P_C^*	Collector Power dissipation	0.625	W
T_J	Junction Temperature	150	$^{\circ}\text{C}$
T_{stg}	Storage Temperature	-55to +150	$^{\circ}\text{C}$
$R_{\theta JA}$	Thermal Resistance, junction to Ambient	357	$^{\circ}\text{C}/\text{mW}$

TO—92

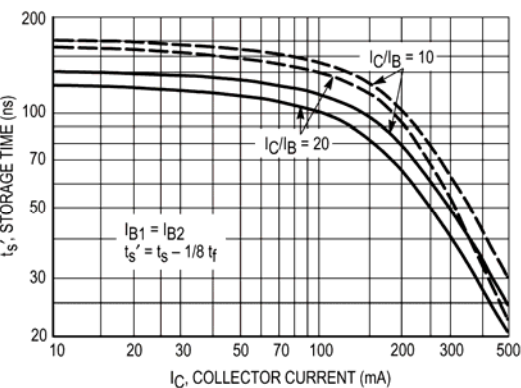
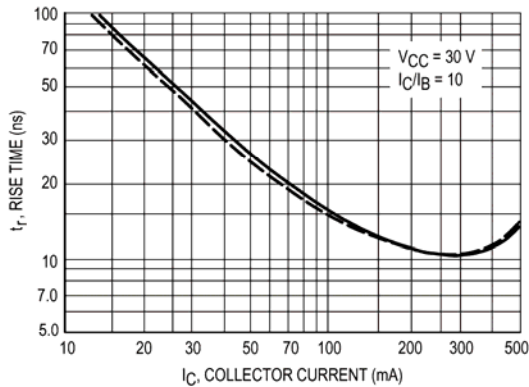
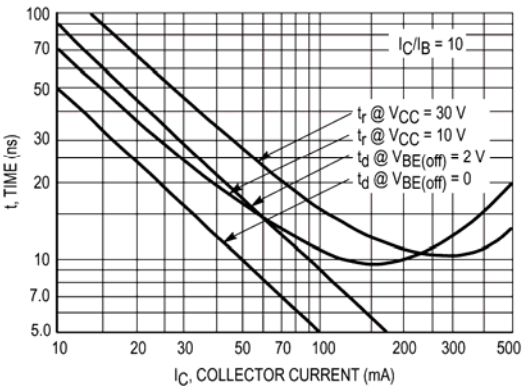
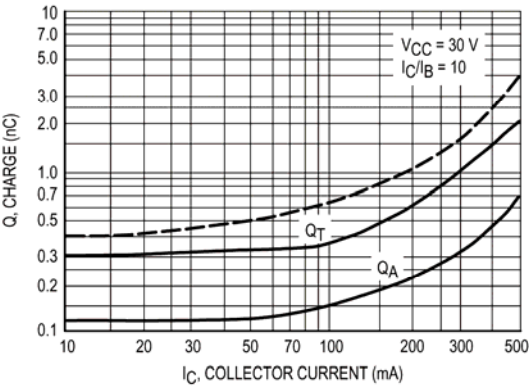
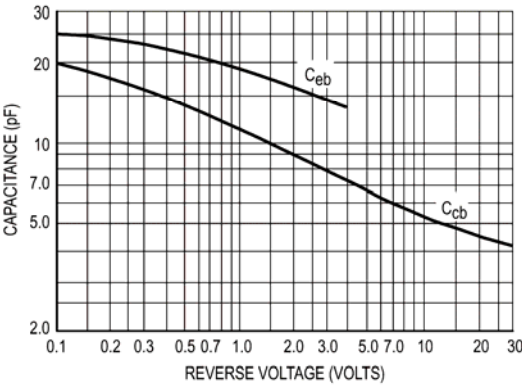
1. EMITTER
2. BASE
3. COLLECTOR

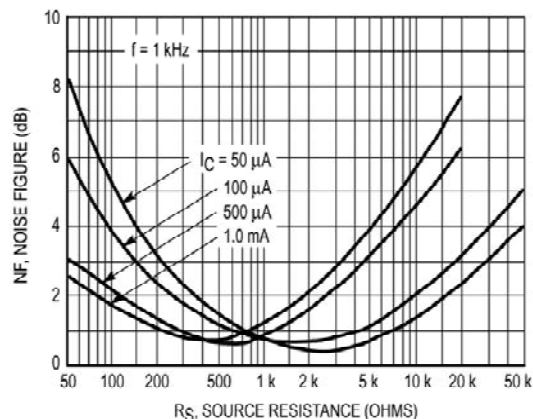
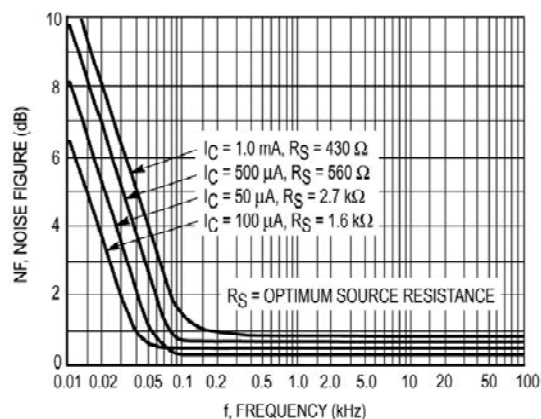
**ELECTRICAL CHARACTERISTICS ($T_{amb}=25^{\circ}\text{C}$ unless otherwise specified)**

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=-100\mu\text{A}, I_E=0$	-40			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=-1\text{mA}, I_B=0$	-40			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=-100\mu\text{A}, I_C=0$	-6			V
Collector cut-off current	I_{CBO}	$V_{CB}=-35\text{V}, I_E=0$			-100	nA
Emitter cut-off current	I_{EBO}	$V_{EB}=-5\text{V}, I_C=0$			-100	nA
DC current gain	$h_{FE(1)}$	$V_{CE}=-1\text{V}, I_C=-0.1\text{mA}$	30			
	$h_{FE(2)}$	$V_{CE}=-1\text{V}, I_C=-1\text{mA}$	60			
	$h_{FE(3)}$	$V_{CE}=-1\text{V}, I_C=-10\text{mA}$	100			
	$h_{FE(4)}$	$V_{CE}=-1\text{V}, I_C=-150\text{mA}$	100		300	
	$h_{FE(5)}$	$V_{CE}=-2\text{V}, I_C=-500\text{mA}$	20			
Collector-emitter saturation voltage	$V_{CE(sat)1}$	$I_C=-150\text{mA}, I_B=-15\text{mA}$			-0.4	V
	$V_{CE(sat)2}$	$I_C=-500\text{mA}, I_B=-50\text{mA}$			-0.75	V
Base-emitter saturation voltage	$V_{BE(sat)1}$	$I_C=-150\text{mA}, I_B=-15\text{mA}$	-0.75		-0.95	V
	$V_{BE(sat)2}$	$I_C=-500\text{mA}, I_B=-50\text{mA}$			-1.3	V
Transition frequency	f_T	$V_{CE}=-10\text{V}, I_C=-20\text{mA}, f=100\text{MHz}$	200			MHz
Collector capacitance	C_{ob}	$V_{CB}=-10\text{V}, I_E=0, f=100\text{KHz}$			8.5	pF
Delay time	t_d	$V_{CC}=-30\text{V}, I_C=-150\text{mA}$ $I_{B1}=-I_{B2}=-15\text{mA}$			15	nS
Rise time	t_r				20	nS
Storage time	t_s				225	nS
Fall time	t_f				30	nS

Typical Characteristics

2N4403





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

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 the MMBT4403LT1 lines, and the same units were used to develop the correspondingly-numbered curves on each graph.

