

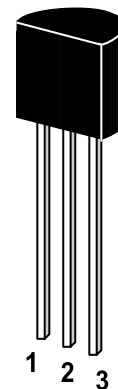
NPN Epitaxial Silicon Transistor

General purpose transistor

Collector Emitter Voltage: $V_{CEO} = 40\text{ V}$

Collector Dissipation: $P_C(\text{max}) = 625\text{ mW}$

On special request, these transistors can be manufactured in different pin configurations.



1. Emitter 2. Base 3. Collector

TO-92 Plastic Package
Weight approx. 0.19g

Absolute Maximum Ratings ($T_a = 25\text{ °C}$)

Parameter	Symbol	Value	Unit
Collector Base Voltage	V_{CBO}	60	V
Collector Emitter Voltage	V_{CEO}	40	V
Emitter Base Voltage	V_{EBO}	6	V
Collector Current	I_C	600	mA
Power Dissipation	P_{tot}	625	mW
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_s	-55 to +150	°C

Characteristics at $T_{amb} = 25\text{ }^{\circ}\text{C}$

Parameter	Symbol	Min.	Max.	Unit
DC Current Gain				
at $V_{CE}=1\text{V}$, $I_C=0.1\text{mA}$	ST 2N4401 h_{FE}	20	-	-
at $V_{CE}=1\text{V}$, $I_C=1\text{mA}$	ST 2N4400 h_{FE}	20	-	-
	ST 2N4401 h_{FE}	40	-	-
at $V_{CE}=1\text{V}$, $I_C=10\text{mA}$	ST 2N4400 h_{FE}	40	-	-
	ST 2N4401 h_{FE}	58	-	-
at $V_{CE}=1\text{V}$, $I_C=150\text{mA}$	ST 2N4400 h_{FE}	50	150	-
	ST 2N4401 h_{FE}	100	300	-
at $V_{CE}=2\text{V}$, $I_C=500\text{mA}$	ST 2N4400 h_{FE}	20	-	-
	ST 2N4401 h_{FE}	40	-	-
Collector Cutoff Current at $V_{CB}=35\text{V}$	I_{CBO}	-	100	nA
Emitter Cutoff Current at $V_{EB}=5\text{V}$	I_{EBO}	-	100	nA
Collector Emitter Breakdown Voltage at $I_C=1\text{mA}$	$V_{(BR)CEO}$	40	-	V
Collector Base Breakdown Voltage at $I_C=100\mu\text{A}$	$V_{(BR)CBO}$	60	-	V
Emitter Base Breakdown Voltage at $I_E=100\mu\text{A}$	$V_{(BR)EBO}$	6	-	V
Collector Emitter Saturation Voltage at $I_C=150\text{mA}$, $I_B=15\text{mA}$	V_{CEsat}	-	0.4	V
at $I_C=500\text{mA}$, $I_B=50\text{mA}$	V_{CEsat}	-	0.75	V
Collector Saturation Voltage at $I_C=150\text{mA}$, $I_B=15\text{mA}$	V_{BEsat}	0.75	0.95	V
at $I_C=500\text{mA}$, $I_B=50\text{mA}$	V_{BEsat}	-	1.2	V
Gain Bandwidth Product at $V_{CE}=10\text{V}$, $I_C=20\text{mA}$, $f=100\text{MHz}$	ST 2N4400 f_T	200	-	MHz
	ST 2N4401 f_T	250	-	MHz
Collector Base Capacitance at $V_{CB}=5\text{V}$, $f=100\text{MHz}$	C_{CBO}	-	6.5	pF
Turn On Time at $V_{CC}=30\text{V}$, $V_{BE}=2\text{V}$, $I_C=150\text{mA}$, $I_{B1}=15\text{mA}$	t_{on}	-	35	ns
Turn Off Time at $V_{CC}=30\text{V}$, $I_C=150\text{mA}$, $I_{B1}=I_{B2}=15\text{mA}$	t_{off}	-	255	ns



● Electrical characteristic curves

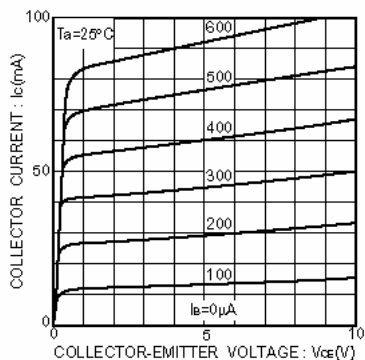


Fig.1 Grounded emitter output characteristics

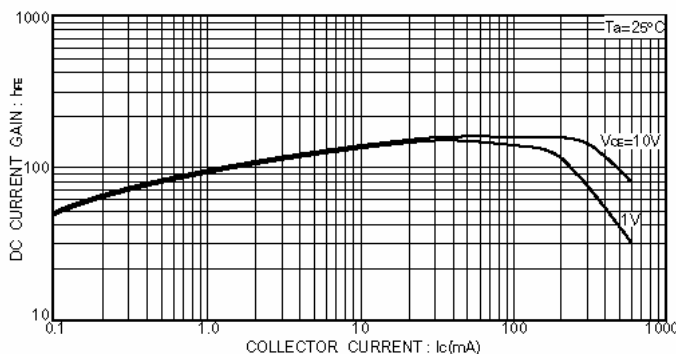


Fig.3 DC current gain vs. collector current(I)

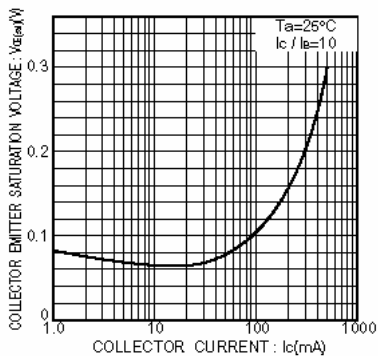


Fig.2 Collector-emitter saturation voltage vs. collector current

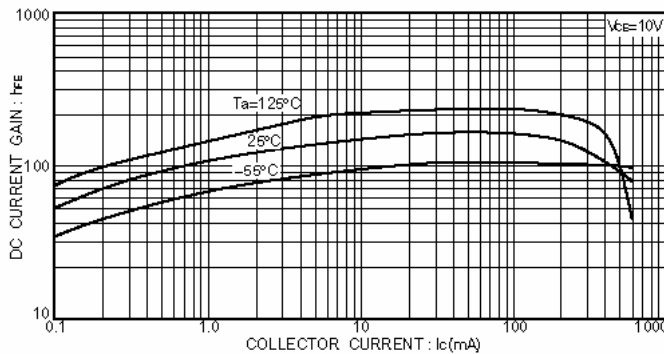


Fig.4 DC current gain vs. collector current(II)

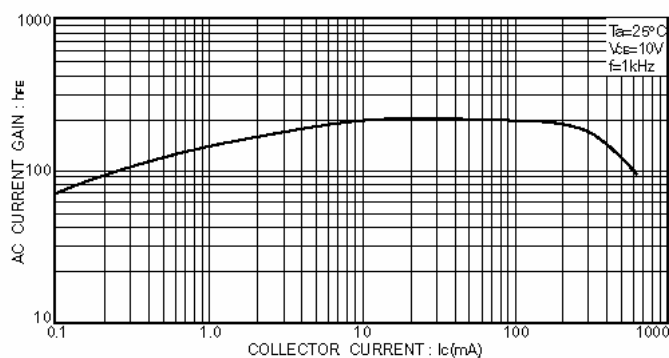


Fig.5 AC current gain vs. collector current

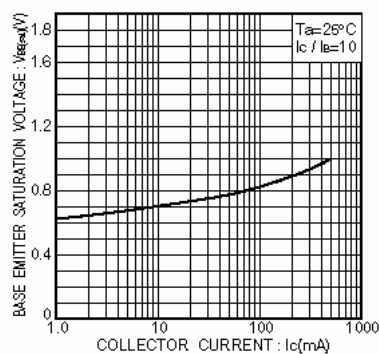


Fig.6 Base-emitter saturation voltage vs. collector current

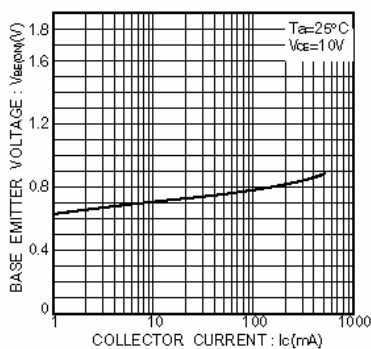


Fig.7 Grounded emitter propagation characteristics

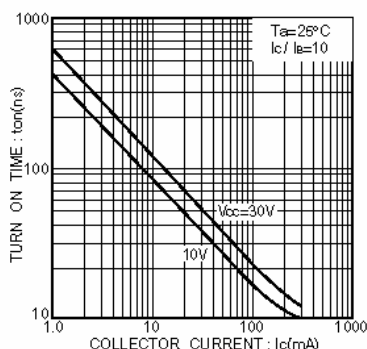


Fig.8 Turn-on time vs. collector current

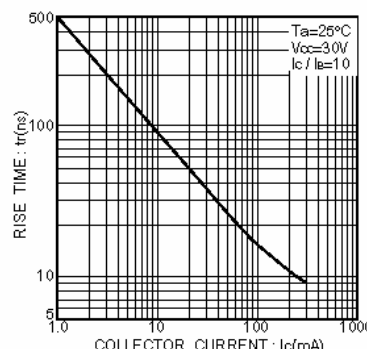


Fig.9 Rise time vs. collector current

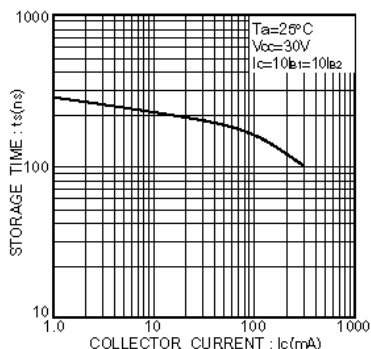


Fig.10 Storage time vs. collector current

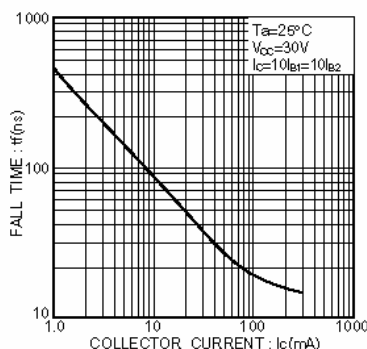


Fig.11 Fall time vs. collector current

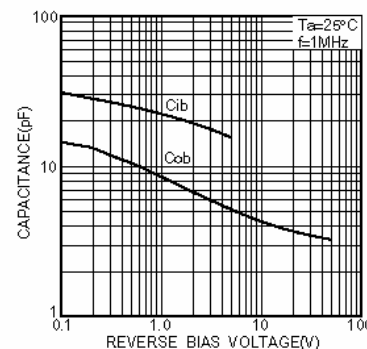


Fig.12 Input / output capacitance vs. voltage

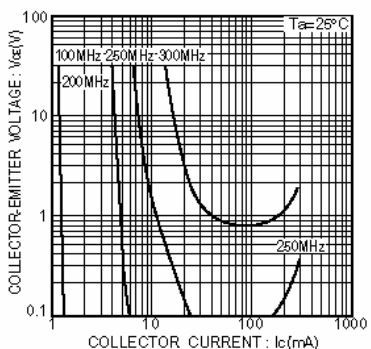


Fig.13 Gain bandwidth product

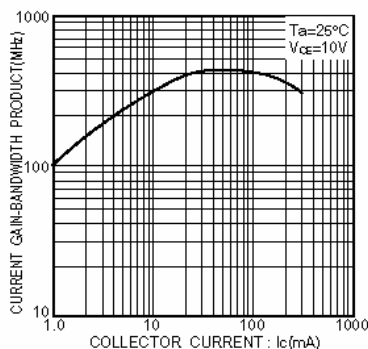


Fig.14 Gain bandwidth product vs. collector current