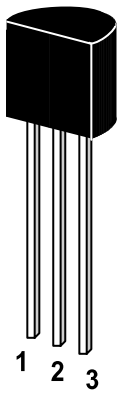
ST 2N4400 / 2N4401

NPN Epitaxial Silicon Transistor
General purpose transistor

Collector Emitter Voltage: V_{CEO} = 40 V
Collector Dissipation: P_C (max) = 625 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 °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 °C

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

●Electrical characteristic curves

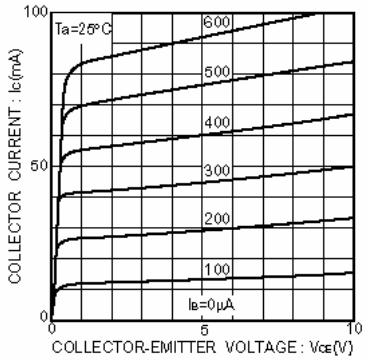


Fig.1 Grounded emitter output characteristics

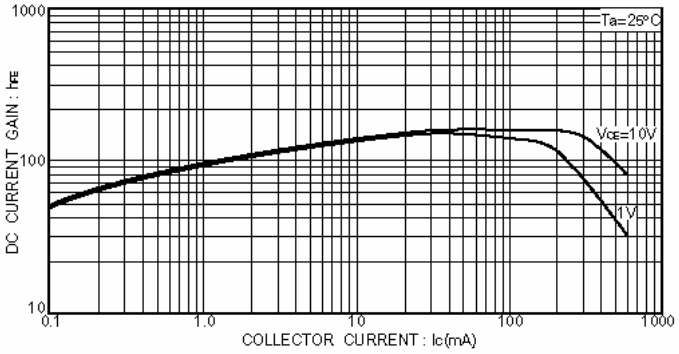


Fig.3 DC current gain vs. collector current(I)

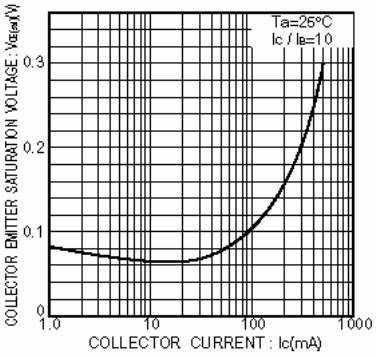


Fig.2 Collector-emitter saturation voltage vs. collector current

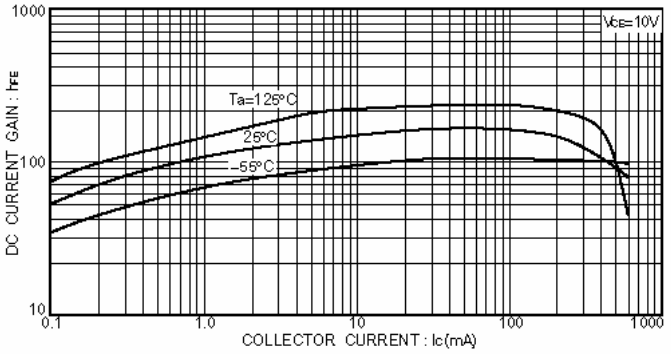


Fig.4 DC current gain vs. collector current(II)

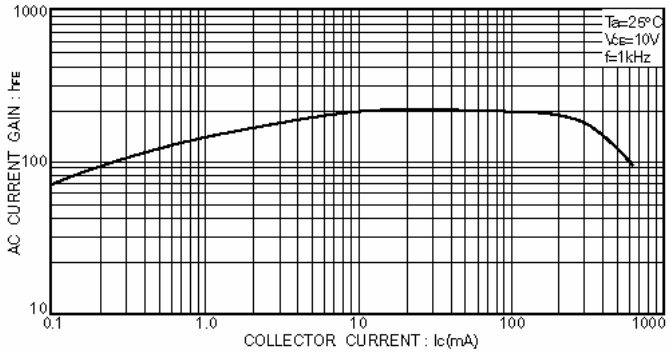


Fig.5 AC current gain vs. collector current

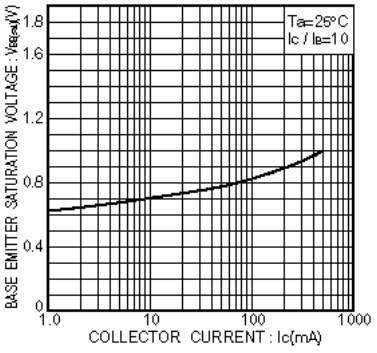


Fig.6 Base-emitter saturation voltage vs. collector current

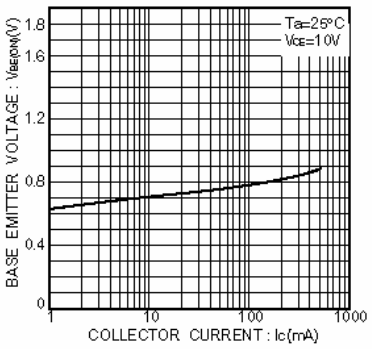


Fig.7 Grounded emitter propagation characteristics

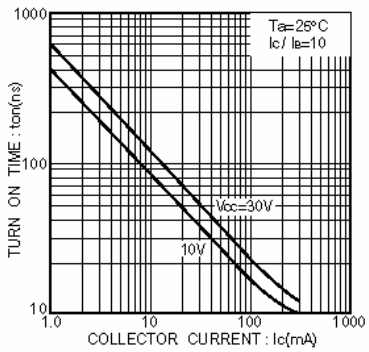


Fig.8 Turn-on time vs. collector current

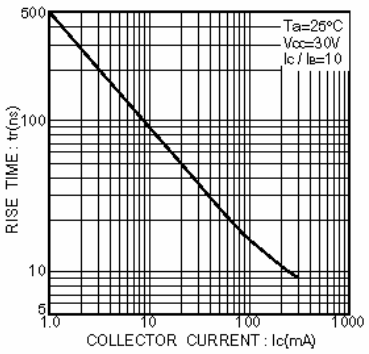


Fig.9 Rise time vs. collector current

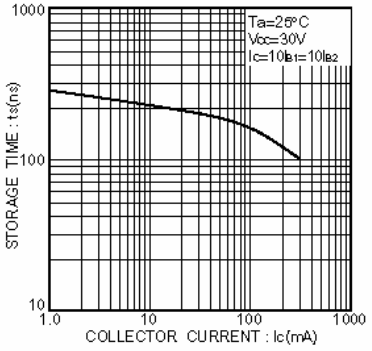


Fig.10 Storage time vs. collector current

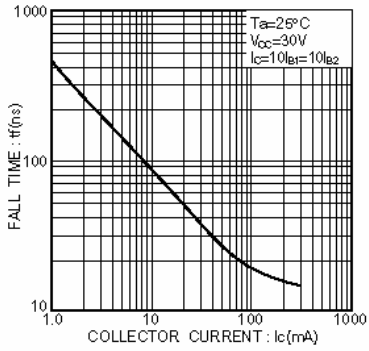


Fig.11 Fall time vs. collector current

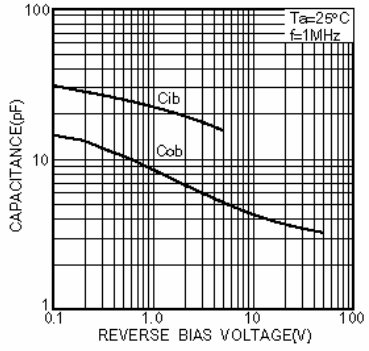


Fig.12 Input / output capacitance vs. voltage

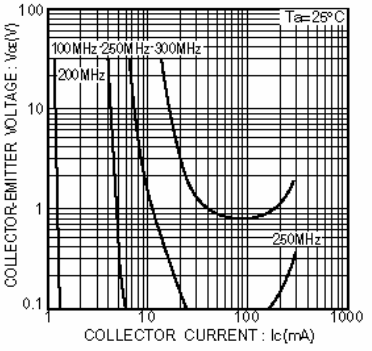


Fig.13 Gain bandwidth product

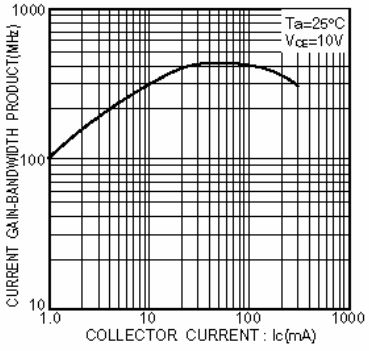


Fig.14 Gain bandwidth product vs. collector current