2SB1412 TRANSISTOR (PNP)

1.BASE

2.COLLECTOR

3.EMITTER

TO-252

FEATURES

- Power Amplifier Applications

MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

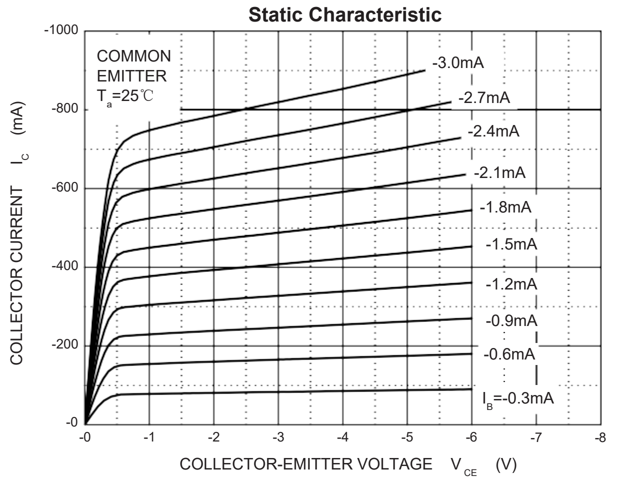
Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	-30	V
V_{CEO}	Collector-Emitter Voltage	-20	V
V_{EBO}	Emitter-Base Voltage	-6	V
I_C	Collector Current –Continuous	-5	A
P_C	Collector Power Dissipation	1	W
T_J,T_{stg}	Operation Junction and Storage Temperature Range	-55-150	℃

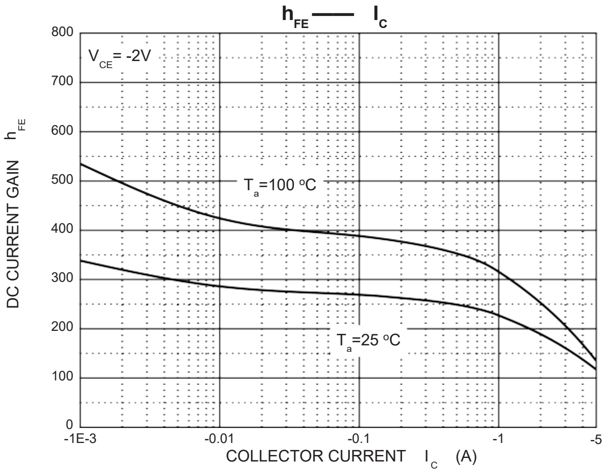
ELECTRICAL CHARACTERISTICS (T_a=25℃ unless otherwise specified)

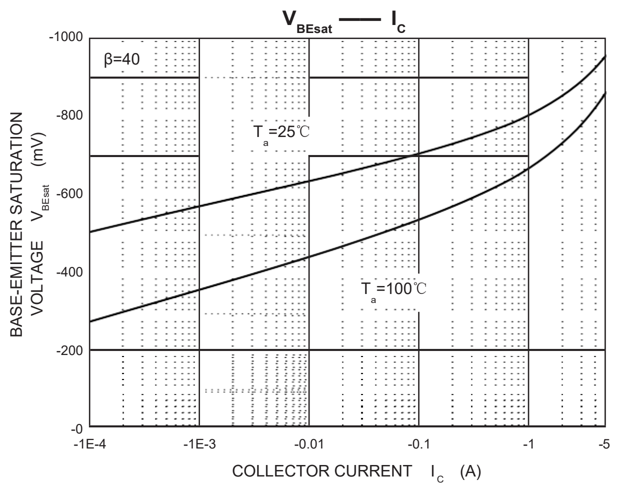
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C=-50μA,I_E=0	-30			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C=-1mA,I_B=0	-20			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E=-50μA,I_C=0	-6			V
Collector cut-off current	I_{CBO}	V_{CB}=-20V,I_E=0			-0.5	μA
Emitter cut-off current	I_{EBO}	V_{EB}=-5V,I_C=0			-0.5	μA
DC current gain	h_{FE}	V_{CE}=-2V,I_C=-500mA	82		390	
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C=-4A,I_B=-100mA			-1	V
Transition frequency	f_T	V_{CE}=-6V,I_C=-50mA,f=30MHz		120		MHz
Collector output capacitance	C_{ob}	V_{CB}=-20V,I_E=0,f=1MHz	60			pF

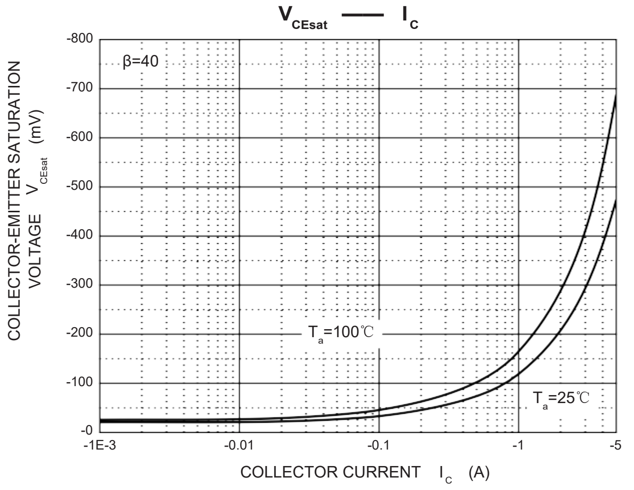
CLASSIFICATION OF h_{FE}

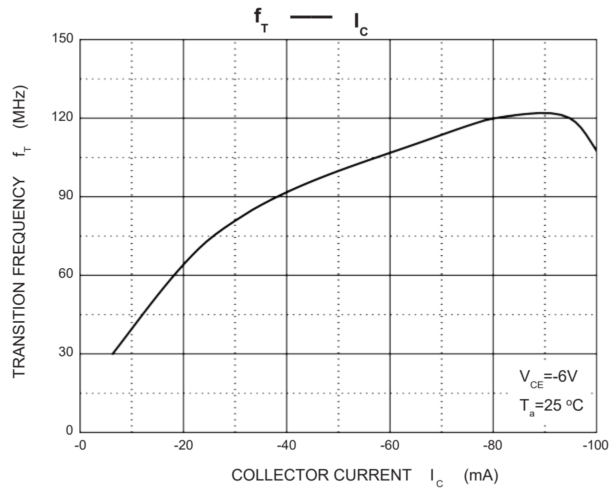
Rank	P	Q	R
Range	82-180	120-270	180-390

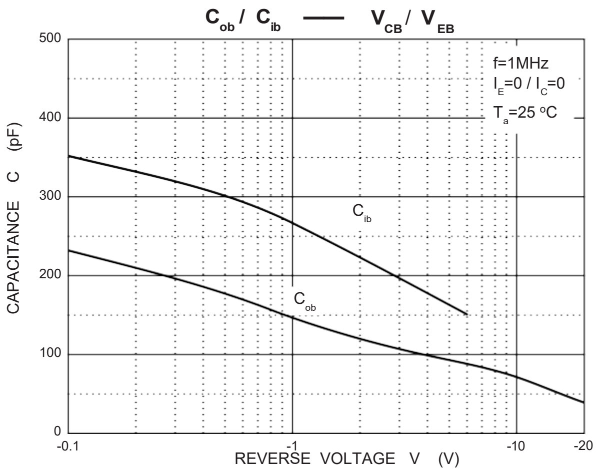

Static Characteristic
COMMON
EMITTER
T_a=25℃
-3.0mA
-2.7mA
-2.4mA
-2.1mA
-1.8mA
-1.5mA
-1.2mA
-0.9mA
-0.6mA
I_B=-0.3mA
COLLECTOR CURRENT I_C (mA)
-1000
-800
-600
-400
-200
-0
-0
-1
-2
-3
-4
-5
-6
-7
-8
COLLECTOR-EMITTER VOLTAGE V_{CE} (V)

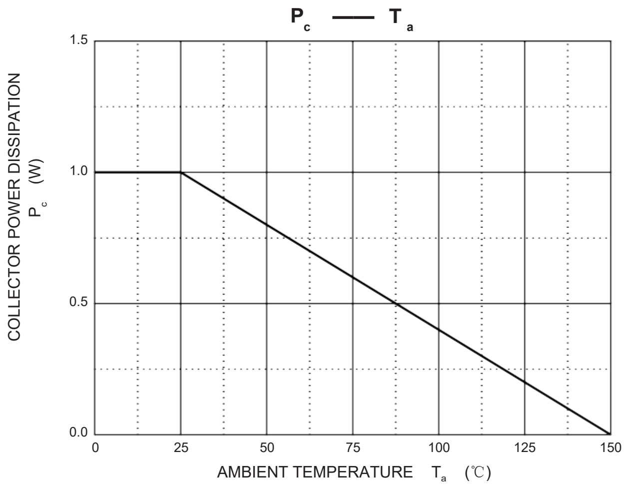

h_{FE} —— I_C
V_{CE}= -2V
T_a=100 °C
T_a=25 °C
DC CURRENT GAIN h_{FE}
800
700
600
500
400
300
200
100
0
-1E-3
-0.01
-0.1
-1
-5
COLLECTOR CURRENT I_C (A)


V_{BEsat} —— I_C
β=40
T_a=25℃
T_a=100℃
BASE-EMITTER SATURATION VOLTAGE V_{BEsat} (mV)
-1000
-800
-600
-400
-200
-0
-1E-4
-1E-3
-0.01
-0.1
-1
-5
COLLECTOR CURRENT I_C (A)


V_{CEsat} —— I_C
β=40
T_a=100℃
T_a=25℃
COLLECTOR-EMITTER SATURATION VOLTAGE V_{CEsat} (mV)
-800
-700
-600
-500
-400
-300
-200
-100
-0
-1E-3
-0.01
-0.1
-1
-5
COLLECTOR CURRENT I_C (A)


f_T —— I_C
V_{CE}=-6V
T_a=25 °C
TRANSITION FREQUENCY f_T (MHz)
150
120
90
60
30
0
-0
-20
-40
-60
-80
-100
COLLECTOR CURRENT I_C (mA)


C_{ob} / C_{ib} —— V_{CB} / V_{EB}
f=1MHz
I_E=0 / I_C=0
T_a=25 °C
C_{ib}
C_{ob}
CAPACITANCE C (pF)
500
400
300
200
100
0
-0.1
-1
-10
-20
REVERSE VOLTAGE V (V)


P_c —— T_a
COLLECTOR POWER DISSIPATION P_c (W)
1.5
1.0
0.5
0.0
0
25
50
75
100
125
150
AMBIENT TEMPERATURE T_a (℃)