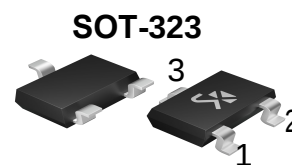


PNP Silicon Epitaxial Planar Transistor

Features

- The transistor is subdivided into three groups Q, R and S according to its DC current gain.



1. BASE
2. EMITTER
3. COLLECTOR

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

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	-60	V
V_{CEO}	Collector-Emitter Voltage	-50	V
V_{EBO}	Emitter-Base Voltage	-6	V
I_C	Collector Current -Continuous	-150	mA
P_C	Collector Power Dissipation	150	mW
T_j	Junction Temperature	150	$^{\circ}\text{C}$
T_{stg}	Storage Temperature	-55 to +150	$^{\circ}\text{C}$

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

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = -50\mu\text{A}$, $I_E = 0$	-60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = -1\text{mA}$, $I_B = 0$	-50			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = -50\mu\text{A}$, $I_C = 0$	-6			V
Collector cut-off current	I_{CBO}	$V_{CB} = -60\text{V}$, $I_E = 0$			-0.1	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = -6\text{V}$, $I_C = 0$			-0.1	μA
DC current gain	h_{FE}	$V_{CE} = -6\text{V}$, $I_C = -1\text{mA}$	120		560	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -50\text{mA}$, $I_B = -5\text{mA}$			-0.5	V
Transition frequency	f_T	$V_{CE} = -12\text{V}$, $I_C = -2\text{mA}$, $f = 30\text{MHz}$		140		MHz
Collector output capacitance	C_{ob}	$V_{CE} = -12\text{V}$, $f = 1\text{MHz}$			5	pF

CLASSIFICATION OF $h_{FE(1)}$

RANK	Q	R	S
RANGE	120 - 270	180 - 390	270 - 560
MARKING	FQ	FR	FS

Typical Characteristics

Fig.1 Grounded emitter propagation characteristics

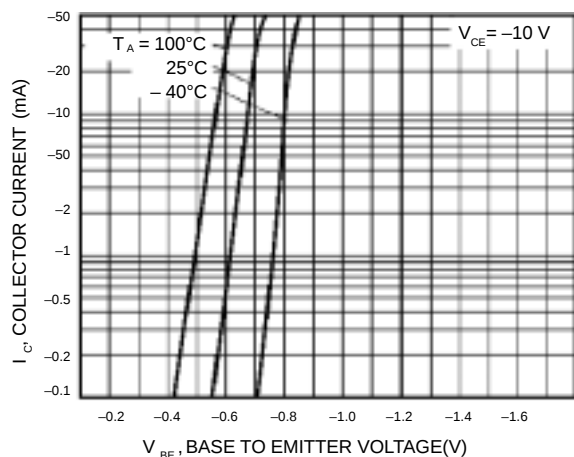


Fig.2 Grounded emitter output characteristics(I)

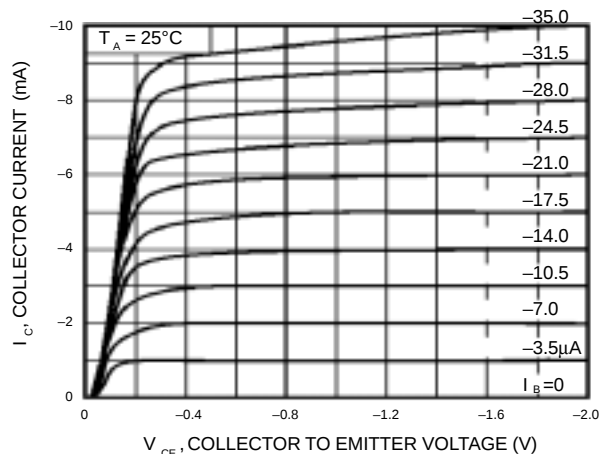


Fig.3 Grounded emitter output characteristics(II)

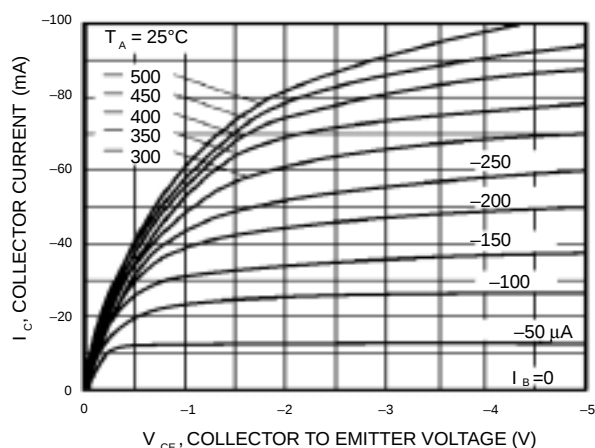


Fig.4 DC current gain vs. collector current (I)

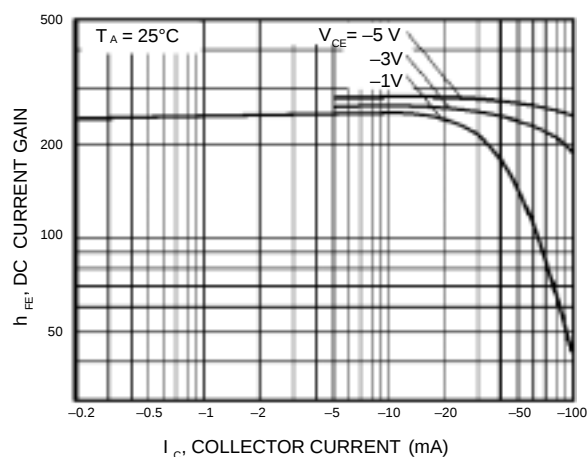


Fig.5 DC current gain vs. collector current (II)

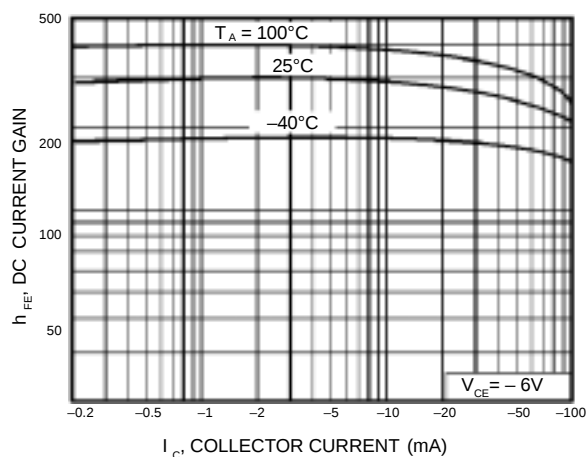


Fig.6 Collector-emitter saturation voltage vs. collector current (I)

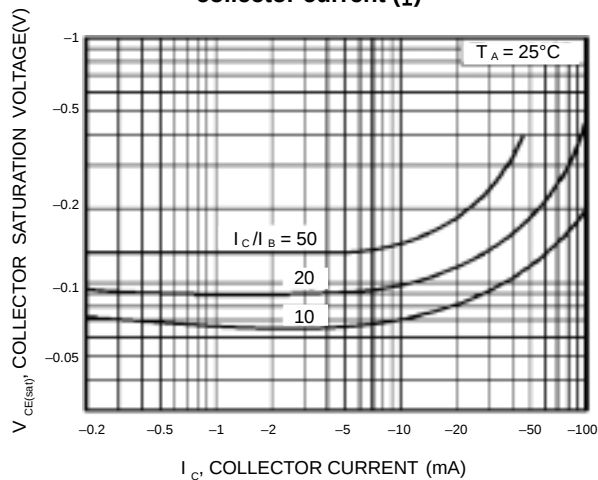


Fig.7 Collector-emitter saturation voltage vs. collector current (II)

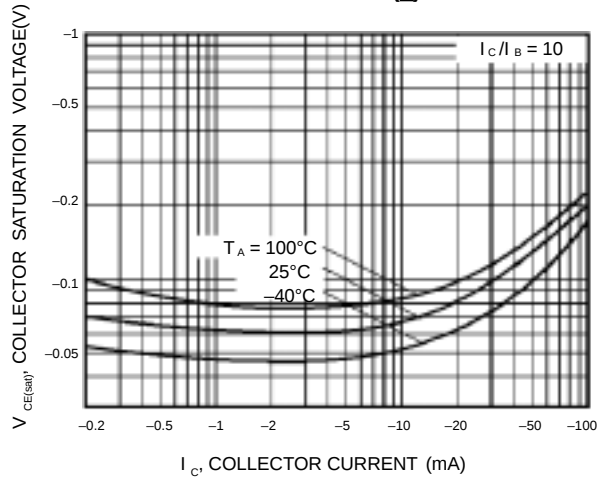
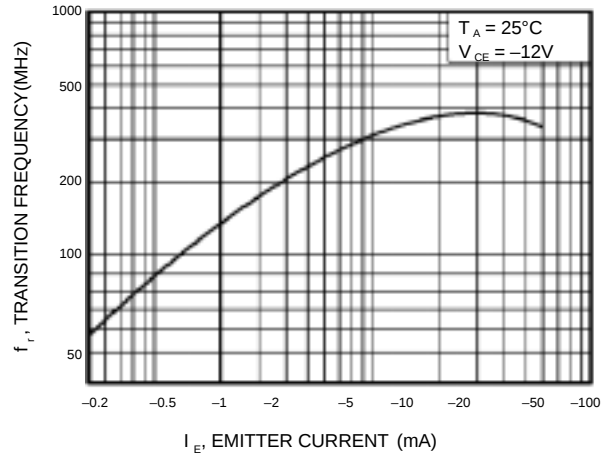
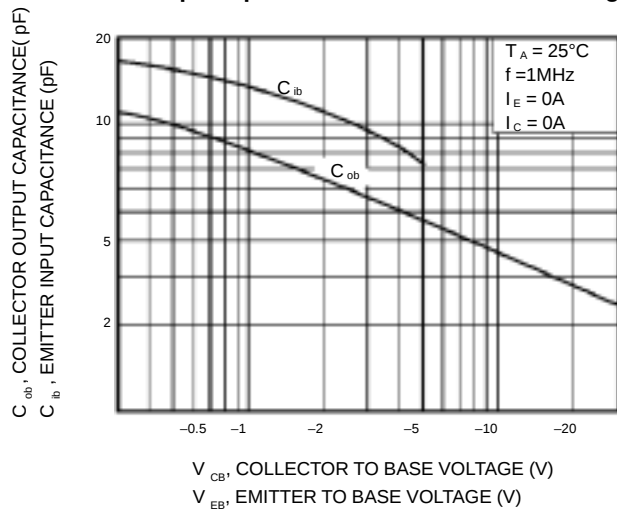


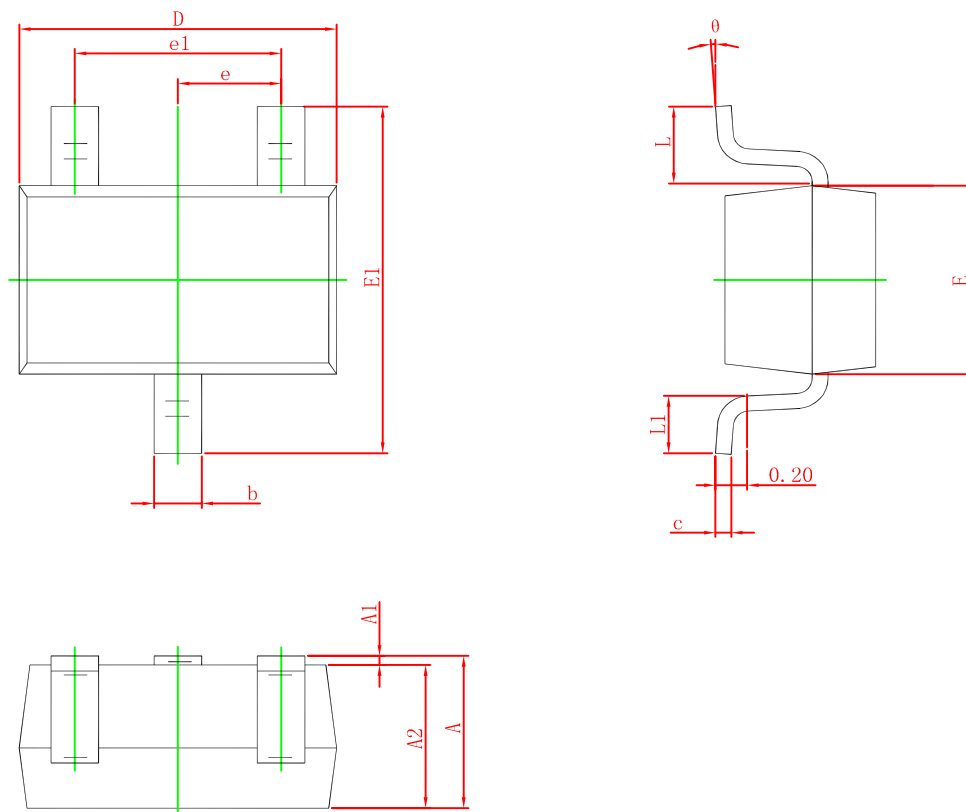
Fig.8 Gain bandwidth product vs. emitter current



**Fig.9 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage**



SOT-323 PACKAGE OUTLINE



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP.		0.026 TYP.	
e1	1.200	1.400	0.047	0.055
L	0.525 REF.		0.021 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°