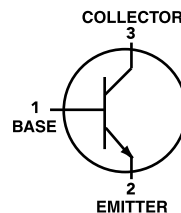


NPN General Purpose Transistors
 **Lead(Pb)-Free**

MAXIMUM RATINGS(Ta=25°C)

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	50	V
Collector-Base Voltage	V_{CBO}	60	V
Emitter-Base Voltage	V_{EBO}	5.0	V
Collector Current - Continuous	I_C	100	mA
Total Device Dissipation $T_A=25^\circ\text{C}$	P_D	200	mW
Junction Temperature	T_j	+150	°C
Storage Temperature	T_{stg}	-55 to +150	°C

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min	Typ	Max	Unit
Collector-Emitter Breakdown Voltage $I_C = 1\text{mA}, I_B = 0$	$V_{(BR)CEO}$	50	-	-	V
Collector-Base Breakdown Voltage $I_C = 100\mu\text{A}, I_E = 0$	$V_{(BR)CBO}$	60	-	-	V
Emitter-Base Breakdown Voltage $I_E = 100\mu\text{A}, I_C = 0$	$V_{(BR)EBO}$	5.0	-	-	V
Collector Cutoff Current $V_{CB} = 60\text{V}, I_E = 0$	I_{CBO}	-	-	0.1	μA
Emitter Cutoff Current $V_{EB} = 5\text{V}, I_C = 0$	I_{EBO}	-	-	0.1	μA

ON CHARACTERISTICS

Collector-Emitter Saturation Voltage $I_C = 100\text{mA}, I_B = 10\text{mA}$	$V_{CE(sat)}$	-	-	0.3	V
Base-Emitter Saturation Voltage $I_C = 100\text{mA}, I_B = 10\text{mA}$	$V_{BE(sat)}$	-	-	1.0	V
DC Current Transfer Ratio $V_{CE} = 6\text{V}, I_C = 1\text{mA}$	h_{FE}	90	-	600	

SMALL-SIGNAL CHARACTERISTICS

Transition frequency $V_{CE} = 6\text{V}, I_C = 10\text{mA}$	f_T	-	250	-	MHz
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CLASSIFICATION h_{FE}

Rank	L4	L5	L6	L7
Range	90-180	135-270	200-400	300-600
Marking	L4	L5	L6	L7

Electrical characteristic curves

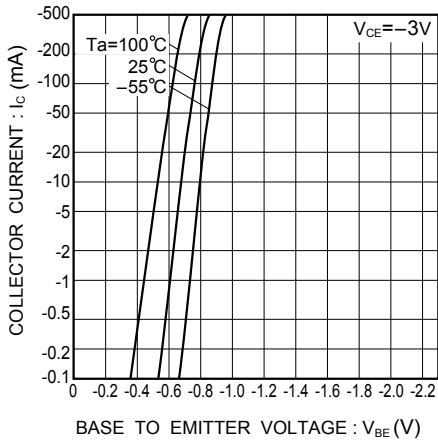


Fig.1 Grounded emitter propagation

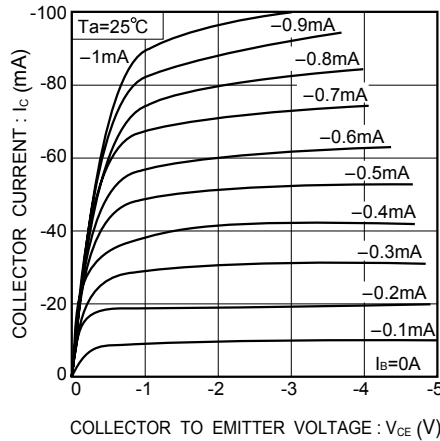


Fig.2 Grounded emitter output characteristics (I)

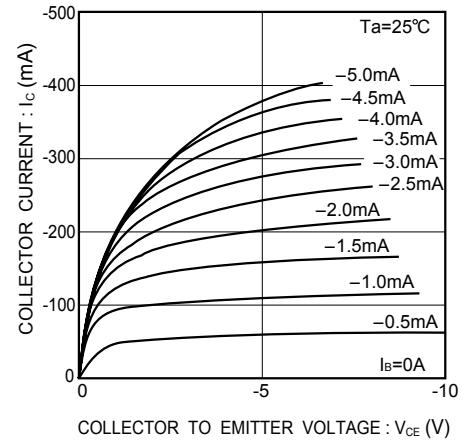


Fig.3 Ground emitter output characteristics (II)

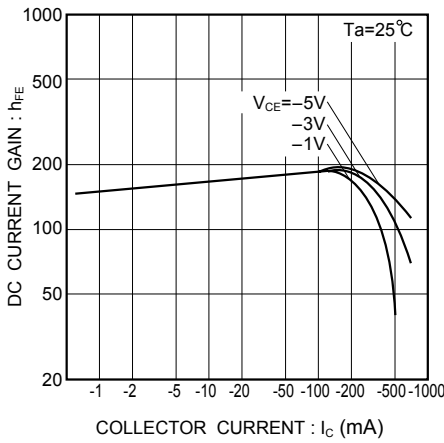


Fig.4 DC current gain vs collector current (I)

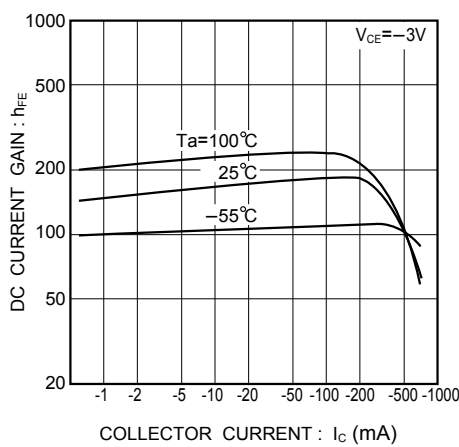


Fig.5 DC current gain vs. collector current (II)

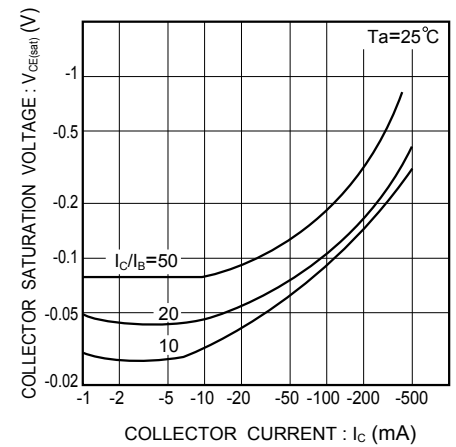


Fig.6 Collector emitter saturation voltage vs. collector current (I)

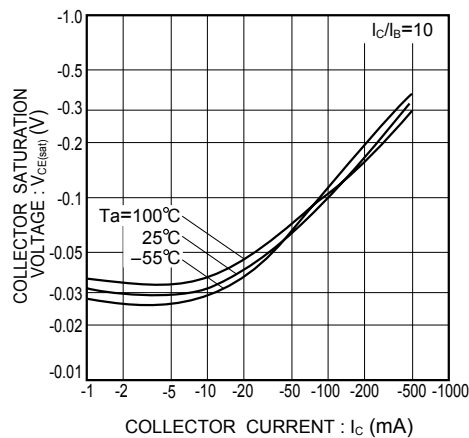


Fig.7 Collector-emitter saturation voltage vs. collector current (II)

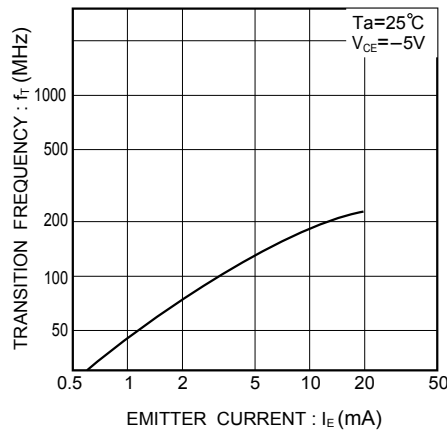


Fig.8 Gain bandwidth product vs. emitter current

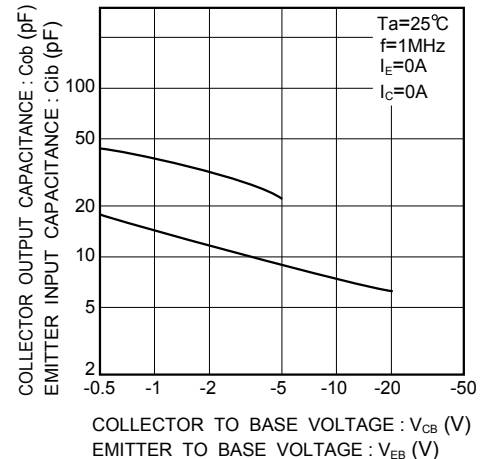
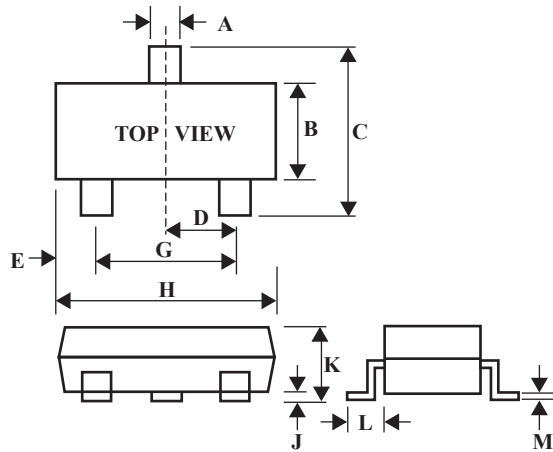


Fig.9 Collector output capacitance vs. collector-base voltage. Emitter input capacitance vs. emitter-base voltage

SOT-23 Outline Dimension



SOT-23		
Dim	Min	Max
A	0.35	0.51
B	1.19	1.40
C	2.10	3.00
D	0.85	1.05
E	0.46	1.00
G	1.70	2.10
H	2.70	3.10
J	0.01	0.13
K	0.89	1.10
L	0.30	0.61
M	0.076	0.25