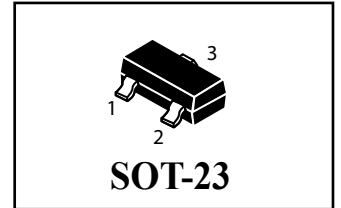
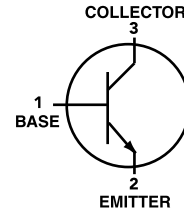


NPN General Purpose Transistors

 Lead(Pb)-Free



MAXIMUM RATINGS(Ta=25°C)

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	32	V
Collector-Base Voltage	V_{CBO}	40	V
Emitter-Base Voltage	V_{EBO}	5.0	V
Collector Current - Continuous	I_C	500	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 $I_C = 1\text{mA}, I_B = 0$	$V_{(BR)CEO}$	32	-	-	V
Collector-Base Breakdown Voltage $I_C = 100\mu\text{A}, I_E = 0$	$V_{(BR)CBO}$	40	-	-	V
Emitter-Base Breakdown Voltage $I_E = 100\mu\text{A}, I_C = 0$	$V_{(BR)EBO}$	5.0	-	-	V
Collector Cutoff Current $V_{CB} = 20\text{V}, I_E = 0$	I_{CBO}	-	-	1.0	μA
Emitter Cutoff Current $V_{EB} = 4\text{V}, I_C = 0$	I_{EBO}	-	-	1.0	μA

ON CHARACTERISTICS

Collector-Emitter Saturation Voltage $I_C = 500\text{mA}, I_B = 50\text{mA}$	$V_{CE(sat)}$	-	-	0.4	V
DC Current Transfer Ratio $V_{CE} = 3\text{V}$	h_{FE}	82	-	390	

SMALL-SIGNAL CHARACTERISTICS

Transition frequency $V_{CE} = 5\text{V}, I_E = -20\text{mA}, f = 100\text{MHz}$	f_T	-	250	-	MHz
Output Capacitance $V_{CB} = 10\text{V}, I_E = 0\text{mA}, f = 1\text{MHz}$	C_{ob}	-	6.0	-	pF

CLASSIFICATION h_{FE}

Rank	P	Q	R	S
Range	82-180	120-270	180-390	270-560
Marking	CP	CQ	CR	CRS

Electrical characteristic curves ($T_A = 25^\circ\text{C}$)

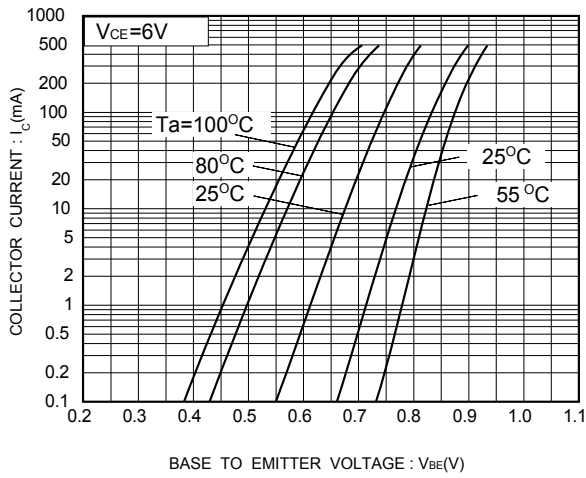


Fig.1 Grounded emitter propagation characteristics

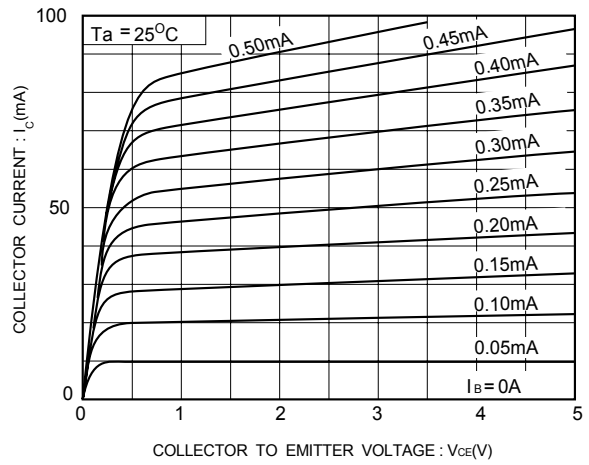


Fig.2 Grounded emitter output characteristics (I)

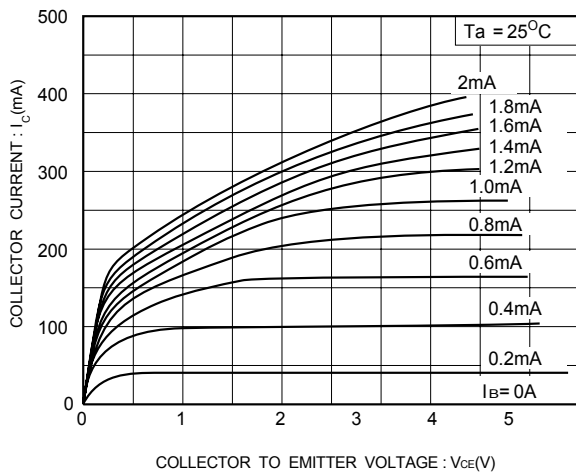


Fig.3 Grounded emitter output characteristics (II)

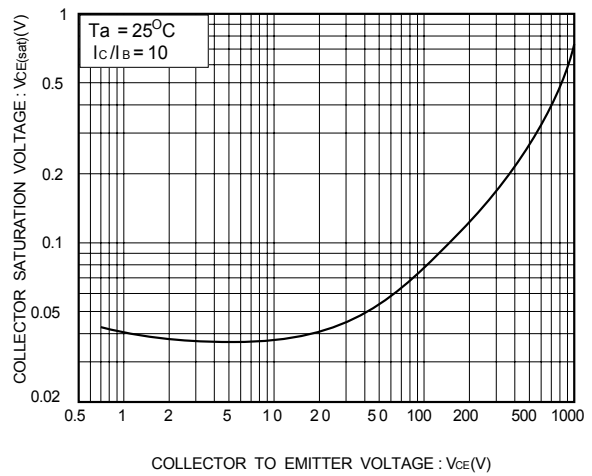


Fig.4 Collector-emitter saturation voltage vs. collector current

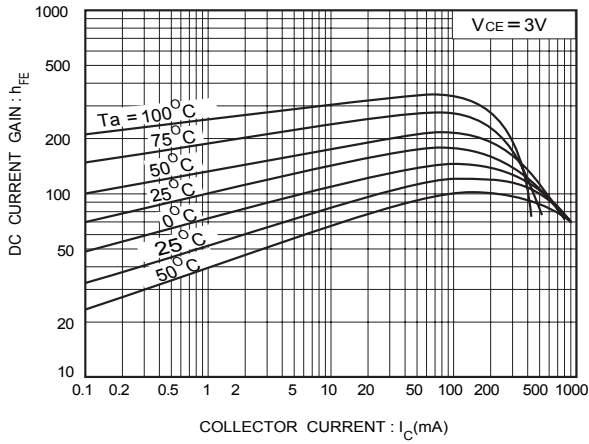


Fig.5 DC current gain vs. collector current

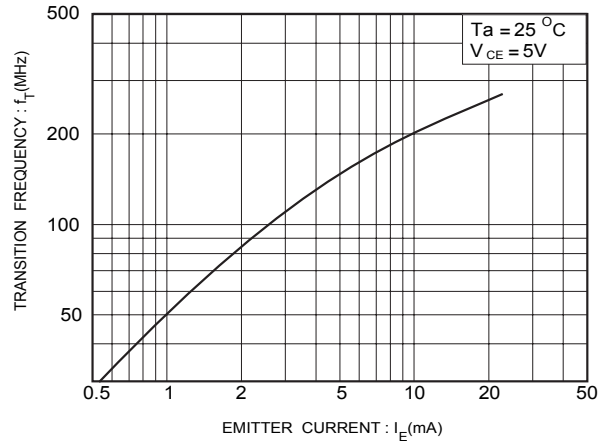


Fig.6 Gain bandwidth product vs. emitter current

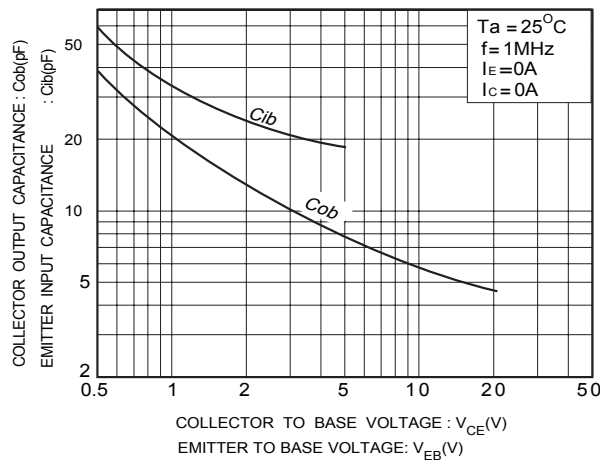
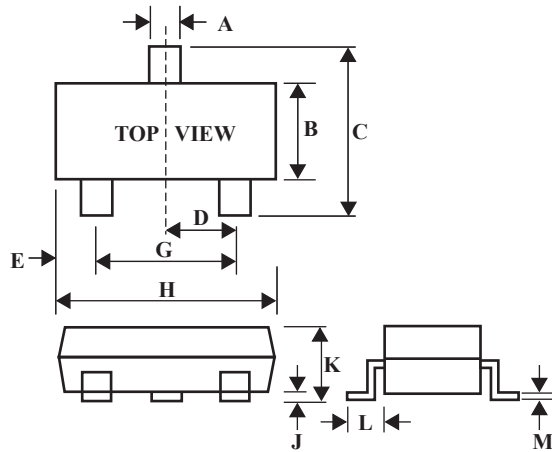


Fig.7 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

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