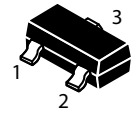
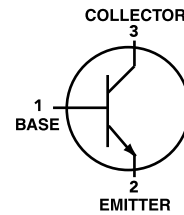


NPN General Purpose Transistors
 **Lead(Pb)-Free**

SOT-23
MAXIMUM RATINGS(T_a=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}	7	V
Collector Current - Continuous	I _C	150	mA
Total Device Dissipation FR-5 Board T _A =25°C Derate above 25°C	P _D	225 1.8	mW mW/°C
Thermal Resistance, Junction to Ambient	R _{θJA}	556	°C/W
Total Device Dissipation Alumina Substrate, T _A =25°C Derate above 25°C	P _D	300 2.4	mW mW/°C
Thermal Resistance, Junction to Ambient	R _{θJA}	417	°C/W
Junction Temperature	T _j	-55 to+150	°C
Storage Temperature	T _{stg}	-55 to +150	°C

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min	Typ	Max	Unit
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OFF CHARACTERISTICS

Collector Cutoff Current $V_{CB} = 60V, I_E = 0$	I_{CBO}	-	-	0.1	μA
Emitter Cutoff Current $V_{EB} = 5V, I_C = 0$	I_{EBO}	-	-	0.1	μA

ON CHARACTERISTICS

Collector-Emitter Saturation Voltage $I_C = 100mA, I_B = 10mA$	$V_{CE(sat)}$	-	0.15	0.3	V
Base-Emitter Saturation Voltage $I_C = 100mA, I_B = 10mA$	$V_{BE(sat)}$	-	0.86	1.0	V
Base-Emitter On Voltage $I_C = 1mA, V_{CE} = 6.0V$	V_{BE}	0.55	0.62	0.65	V
DC Current Transfer Ratio $V_{CE} = 6V, I_C = 1mA$	h_{FE}	120	-	560	

SMALL-SIGNAL CHARACTERISTICS

Transition frequency $V_{CE} = 6V, I_C = 10mA$	f_T	-	250	-	MHz
Output Capacitance($V_{CE} = 6V, I_E = 0, f = 1.0MHz$)	C_{ob}	-	3	-	Pf

CLASSIFICATION h_{FE}

Rank	Q	R	S
Range	120-270	180-390	270-560
Marking	L5	L6	L7

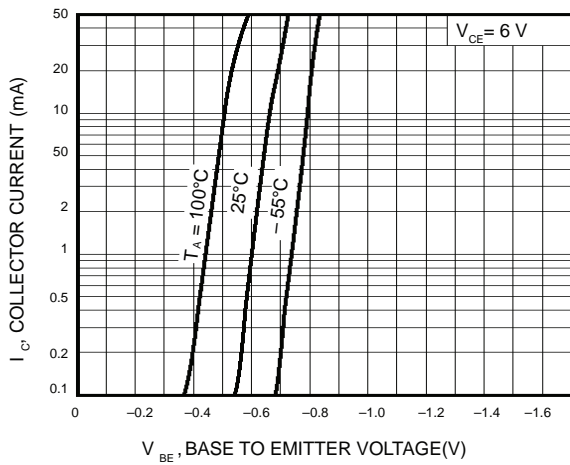


Fig.1 Grounded emitter propagation characteristics

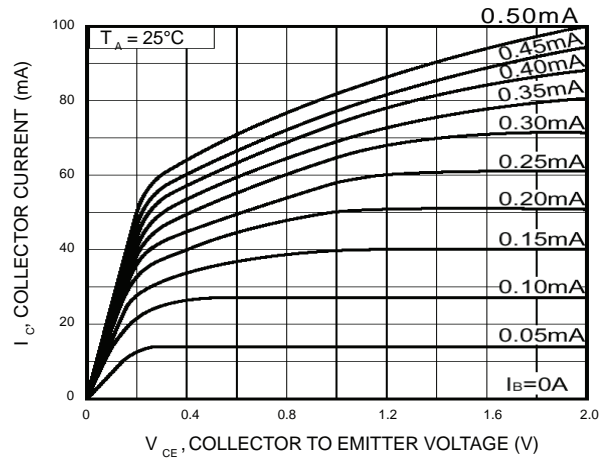


Fig.2 Grounded emitter output characteristics(I)

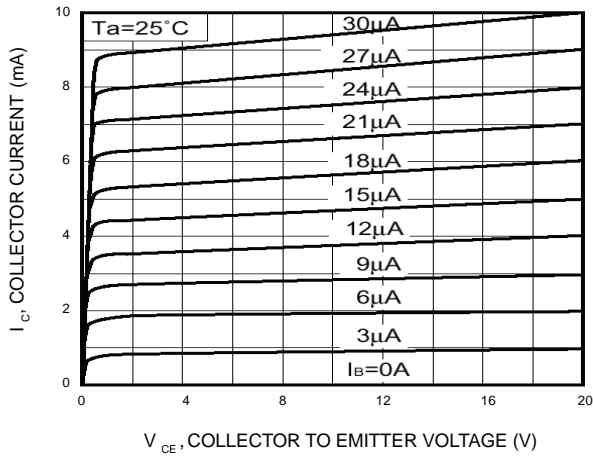


Fig.3 Grounded emitter output characteristics(II)

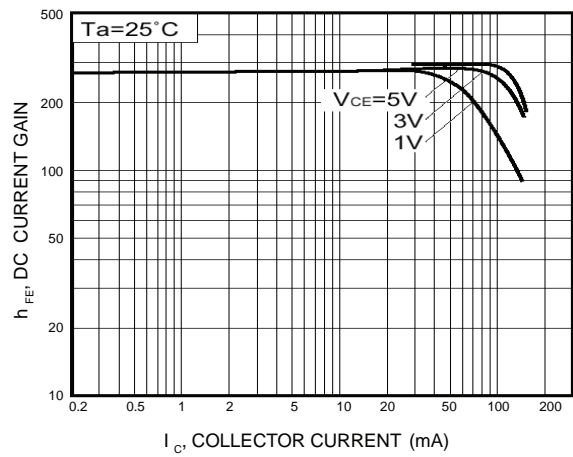


Fig.4 DC current gain vs. collector current (I)

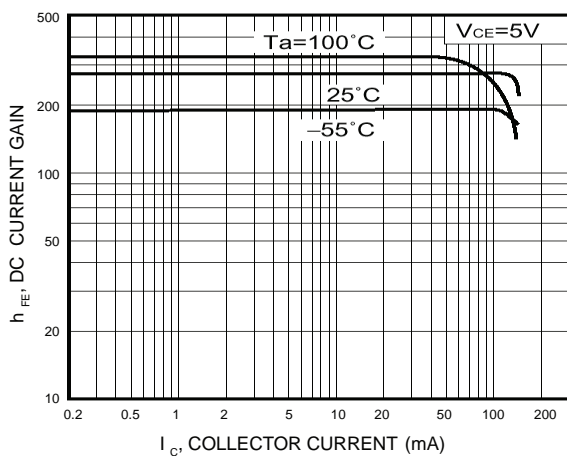


Fig.5 DC current gain vs. collector current (II)

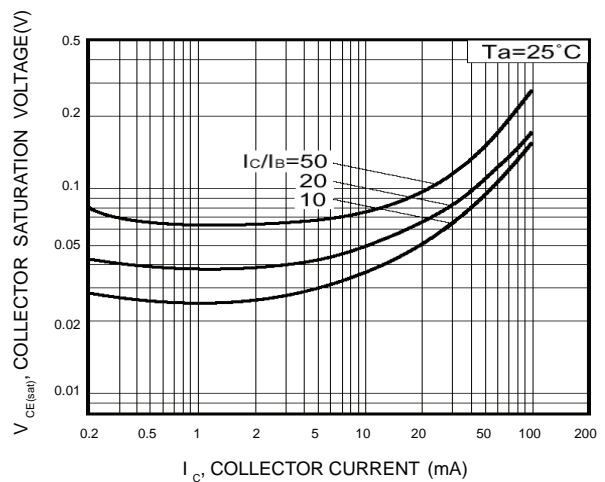


Fig.6 Collector-emitter saturation voltage vs. collector current

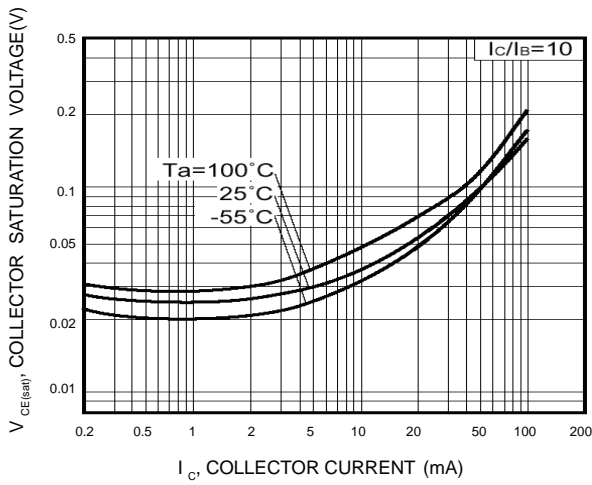


Fig.7 Collector-emitter saturation voltage vs. collector current (I)

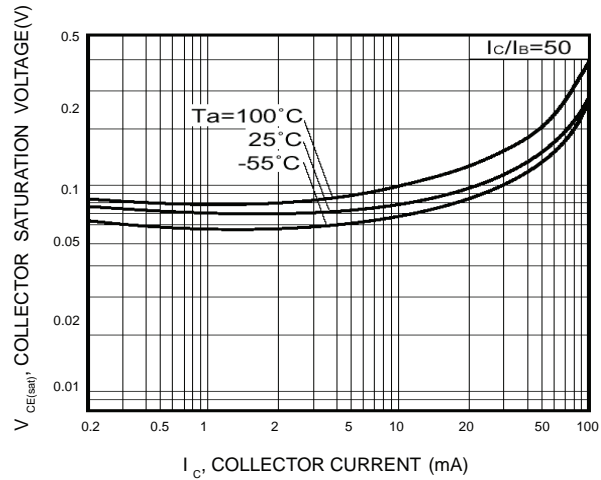


Fig.8 Collector-emitter saturation voltage vs. collector current (II)

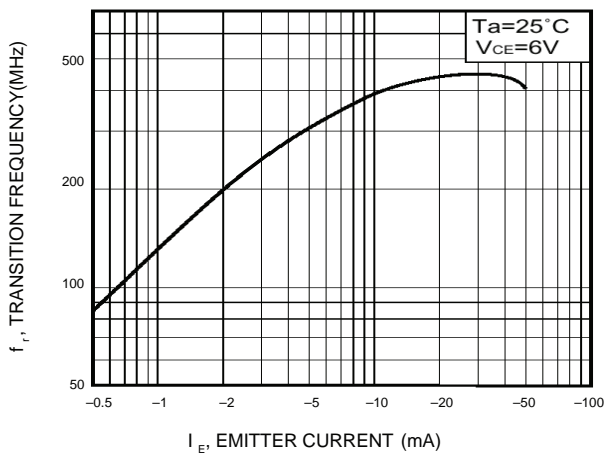
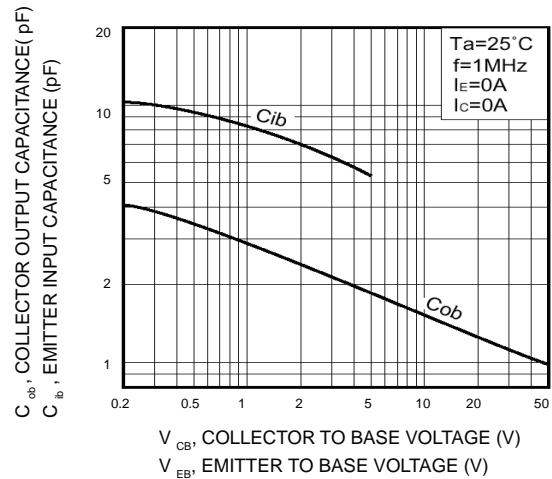


Fig.9 Gain bandwidth product vs. emitter current



**Fig.10 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage**

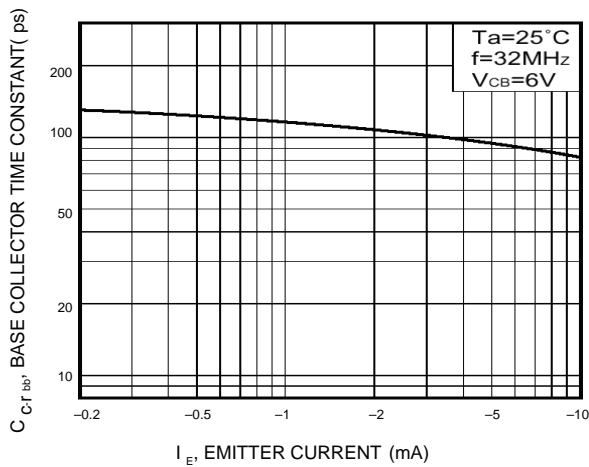
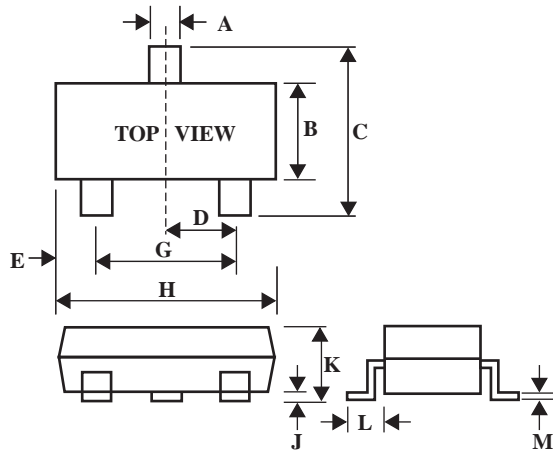


Fig.11 Base-collector time constant vs. emitter current

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