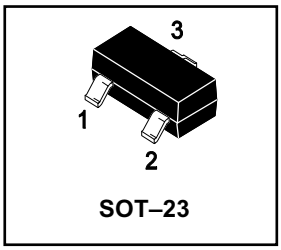
General Purpose Transistors

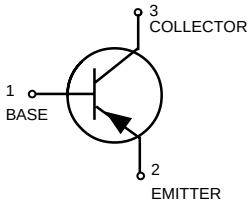
2SA812Q Series
S-2SA812Q Series



SOT–23

FEATURE

- High Voltage: V_{CEO} = -50 V.
- Epitaxial planar type.
- NPN complement: 2SC1623
- We declare that the material of product compliance with RoHS requirements.
- S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.



DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
2SA812Q S-2SA812Q	M8	3000/Tape&Reel
2SA812R S-2SA812R	M6	3000/Tape&Reel
2SA812S S-2SA812S	M7	3000/Tape&Reel

MAXIMUM RATINGS

Rating	Symbol	L2SA812	Unit
Collector-Emitter Voltage	V_{CEO}	-50	V
Collector-Base Voltage	V_{CBO}	-60	V
Emitter-Base Voltage	V_{EBO}	-6	V
Collector current-continuoun	I_C	-150	mAdc

THERMAL CHARATEERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board, (1) T_A=25°C Derate above 25°C	P_D	 200 1.8	 mW mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	°C/W
Total Device Dissipation Alumina Substrate, (2) T_A=25 °C Derate above 25°C	P_D	 200 2.4	 mW mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417	°C/W
Junction and Storage Temperature	Tj ,Tstg	-55 to +150	°C

ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (I_C=-1mA)	$V_{(BR)CEO}$	-50	-	-	V
Emitter-Base Breakdown Voltage (I_E=-50 μA)	$V_{(BR)EBO}$	-6	-	-	V
Collector-Base Breakdown Voltage (I_C=-50 μA)	$V_{(BR)CBO}$	-60	-	-	V
Collector Cutoff Current (V_{CB}=-50V)	I_{CBO}	-	-	-0.1	μA
Emitter Cutoff Current (V_{BE}=-6V)	I_{EBO}			-0.1	μA
ON CHARACTERISTICS					
DC Current Gain (I_C=−1mA,V_{CE}=−6.0V)	h_{FE}	120	-	560	
Collector-Emitter Saturation Voltage (I_C=−100mA,I_B=−10mA)	$V_{CE(sat)}$	-	-0.18	-0.3	V
Base -Emitter On Voltage I_E=−1.0mA,V_{CE}=−6.0V)	V_{BE}	-0.58	-0.62	-0.68	V
SMALL-SIGNAL CHARACTERISTICS					
Current-Gain-Bandwidth Product (V_{CE}=−6.0V,I_E =−10mA)	Ft	-	180	-	MHz
Output Capacitance(V_{CE} = −10V, I_E=0, f=1.0MHz)	Cobo	-	4.5	-	pF

h_{FE} Values are classified as followes

NOTE:

*	Q	R	S
h_{FE}	120~270	180~390	270~560

Fig.1 Grounded emitter propagation characteristics

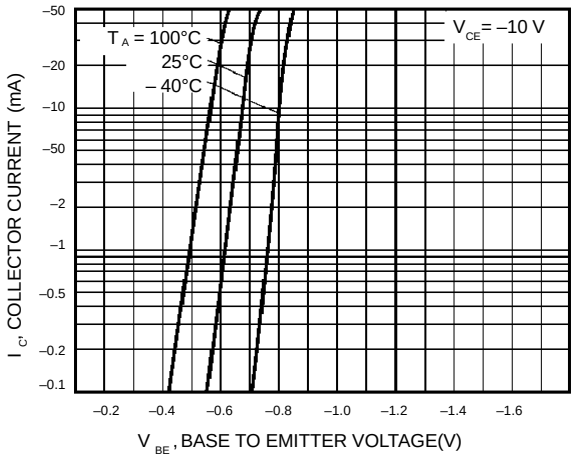


Fig.2 Grounded emitter output characteristics(Ⅰ)

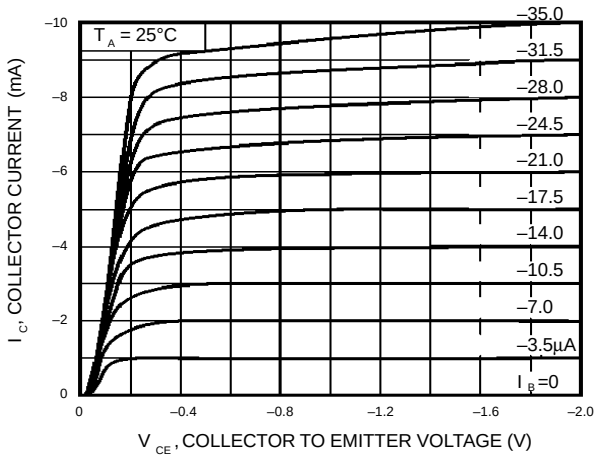


Fig.3 Grounded emitter output characteristics(Ⅱ)

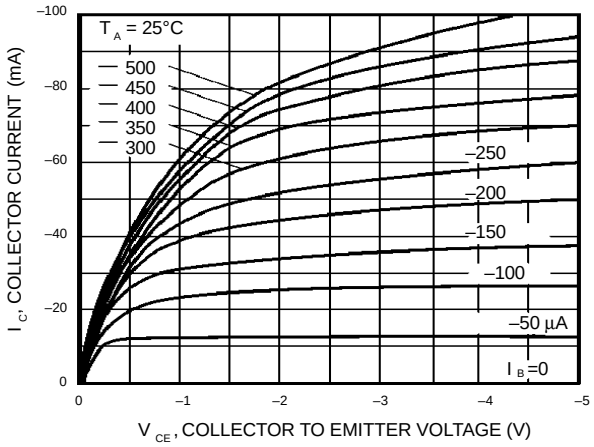


Fig.4 DC current gain vs. collector current (Ⅰ)

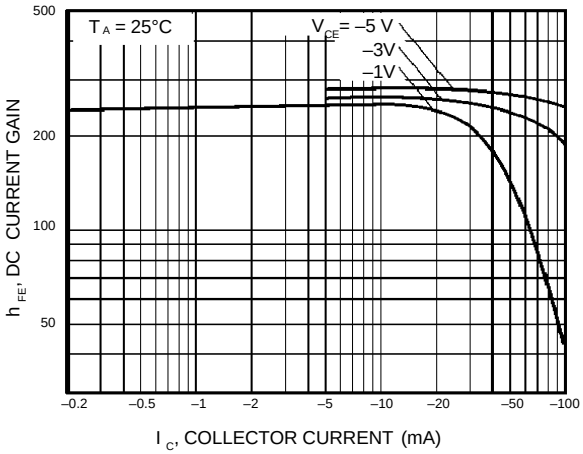


Fig.5 DC current gain vs. collector current (Ⅱ)

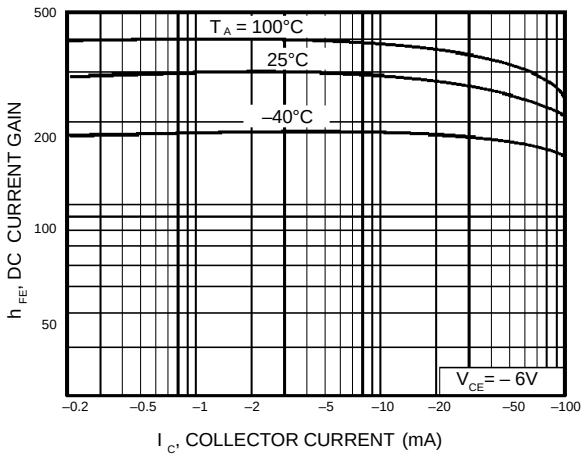


Fig.6 Collector-emitter saturation voltage vs. collector current (Ⅰ)

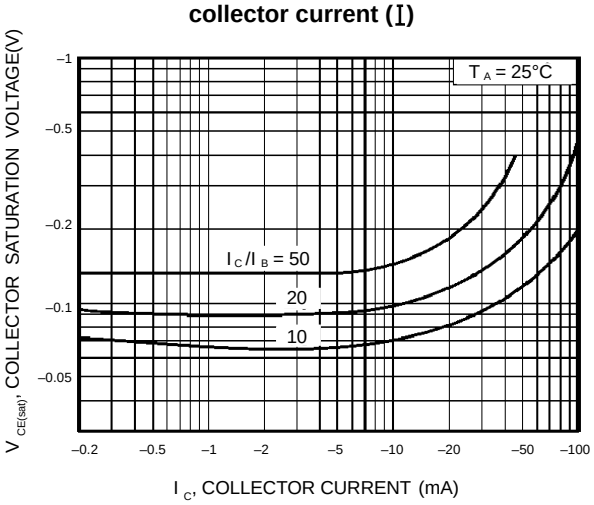


Fig.7 Collector-emitter saturation voltage vs. collector current (Ⅱ)

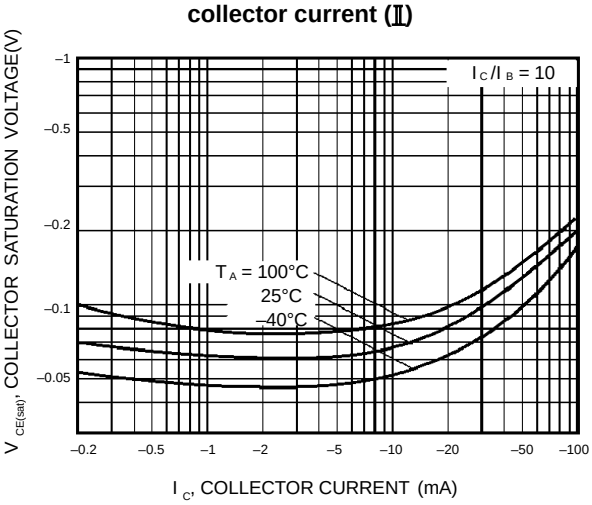


Fig.8 Gain bandwidth product vs. emitter current

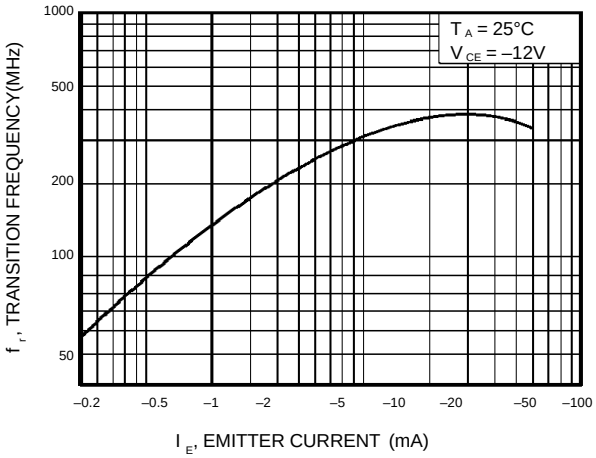
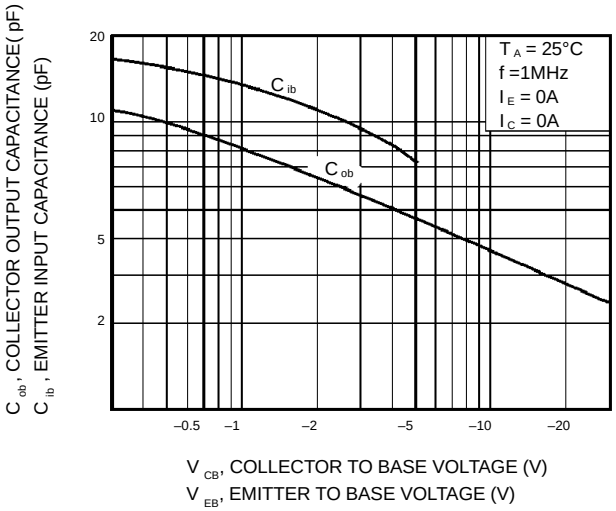
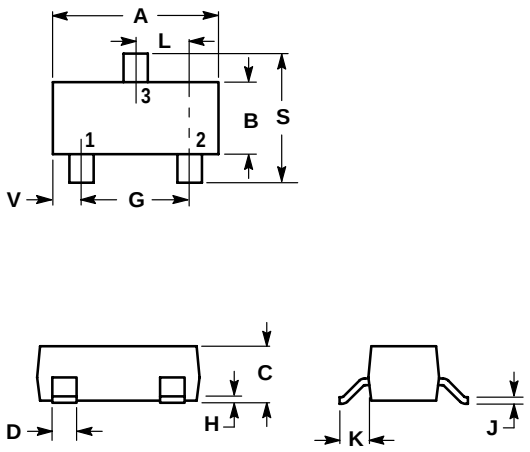


Fig.9 Collector output capacitance vs.collector-base voltage
Emitter inputcapacitance vs. emitter-base voltage



SOT−23



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M,1982
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60