BRIGHT SEMICONDUCTOR

HSA812Q / HSA812R / HSA812S

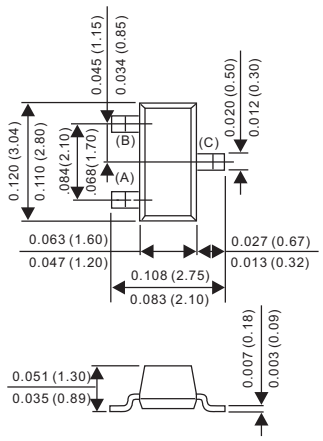
General Purpose Transistors
PNP Silicon

Features

- High Voltage: V_{CEO} = -50 V
- Epitaxial planar type
- We declare that the material of product compliance with RoHS requirements

Package outline

SOT-23



Dimensions in inches and (millimeters)

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-23
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 0.008 gram

Maximum ratings (AT T_A=25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	-50	V
Collector-Base Voltage	V_{CBO}	-60	V
Emitter-Base Voltage	V_{EBO}	-6.0	V
Collector current-continuoun	I_C	-150	mAdc

Thermal characteristics

PARAMETER		Symbol	MIN.	TYP.	MAX.	UNIT
Total device dissipation FR-5 board (1)	T_A = 25°C	P_D			200	mW
	Derate above 25°C				1.8	mW/°C
Thermal resistance	Junction to ambient	$R_{\theta JA}$			556	°C/W
Total device dissipation alumina substrate(2)	T_A = 25°C	P_D			200	mW
	Derate above 25°C				2.4	mW/°C
Thermal resistance	Junction to ambient	$R_{\theta JA}$			417	°C/W
Operating junction temperature range		T_J	-55		+150	°C
Storage temperature range		T_{STG}	-55		+150	°C

1.FR-5 = 1.0 X 0.75 X0.062 in.
2.Alumina = 0.4 X 0.3 X 0.024 in. 99.5% alumina.

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Electrical characteristics (AT T_A=25°C unless otherwise noted)

Off characteristics

Characteristic	Conditions	Symbol	Min.	Typ.	Max.	Unit
Collector–Emitter Breakdown Voltage	I_C=-1mA	$V_{(BR)CEO}$	-50			V
Emitter–Base Breakdown Voltage	I_E=-50uA	$V_{(BR)EBO}$	-6			V
Collector–Base Breakdown Voltage	I_C=-50uA	$V_{(BR)CBO}$	-60			V
Collector Cutoff Current	V_{CB}=-50V	I_{CBO}			-0.1	uA
Emitter cutoff current	V_{BE}=-6V	I_{EBO}			-0.1	uA

On characteristics

Collector-Emitter Saturation Voltage	I_C=-100mA , I_B=-10mA	$V_{CE(sat)}$		-0.18	-0.3	V
DC Current Gain	V_{CE}=-6V, I_C=-1mA	h_{FE}	120		560	
Base -Emitter On Voltage	V_{CE}=-6V, I_E=-1mA	V_{BE}	-0.58	-0.62	-0.68	V

Small-signal characteristics

Current-Gain-Bandwidth Product	V_{CE}=-6V, I_E=-10mA	f_T		180		MHZ
Output Capacitance	V_{CE}=-10V, I_E=0, f=1MHz	C_{obo}		4.5		pF

h_{FE} values are classified as follows:

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

Rating and characteristic curves (HSA812Q / HSA812R / HSA812S)

Fig.1 Grounded emitter propagation characteristics

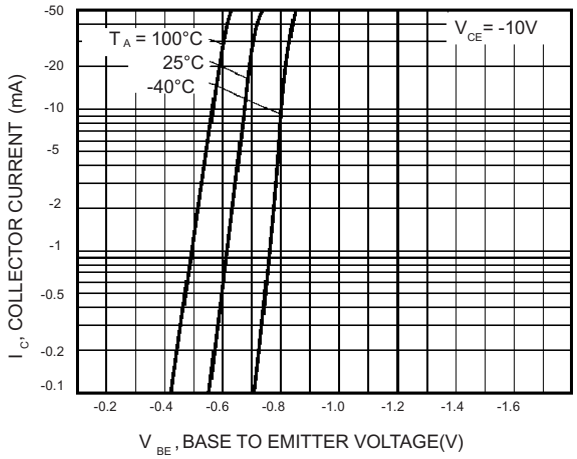


Fig.2 Grounded emitter output characteristics(Ⅰ)

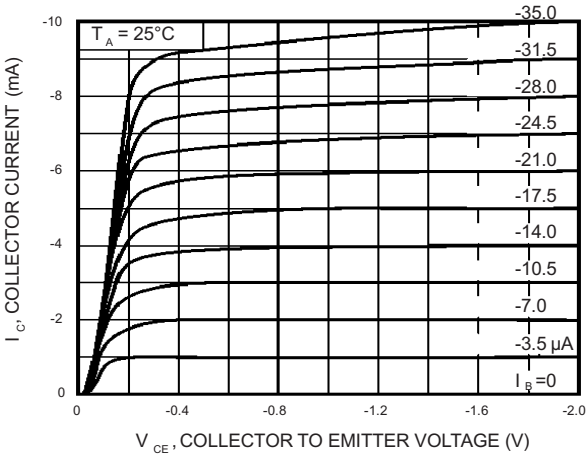


Fig.3 Grounded emitter output characteristics(Ⅱ)

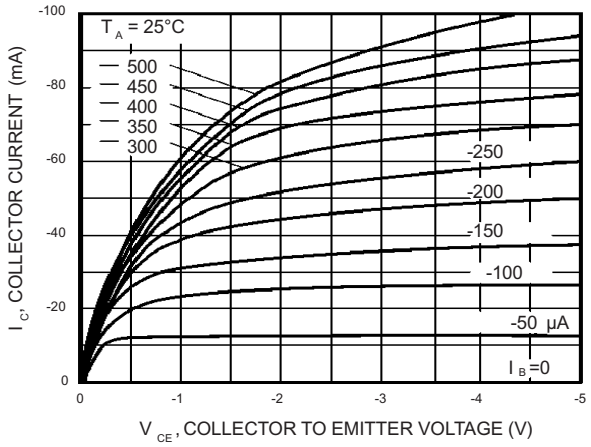


Fig.4 DC current gain vs. collector current (Ⅰ)

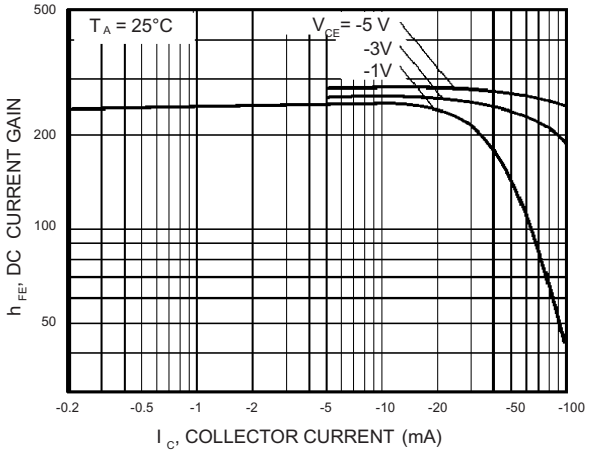


Fig.5 DC current gain vs. collector current (Ⅱ)

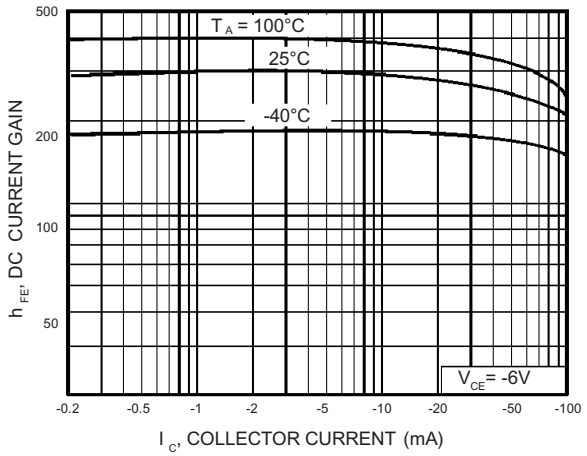
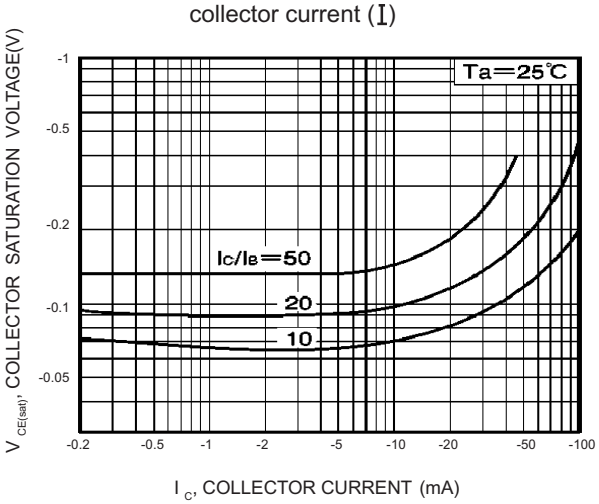


Fig.6 Collector-emitter saturation voltage vs. collector current (Ⅰ)



Rating and characteristic curves (HSA812Q / HSA812R / HSA812S)

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

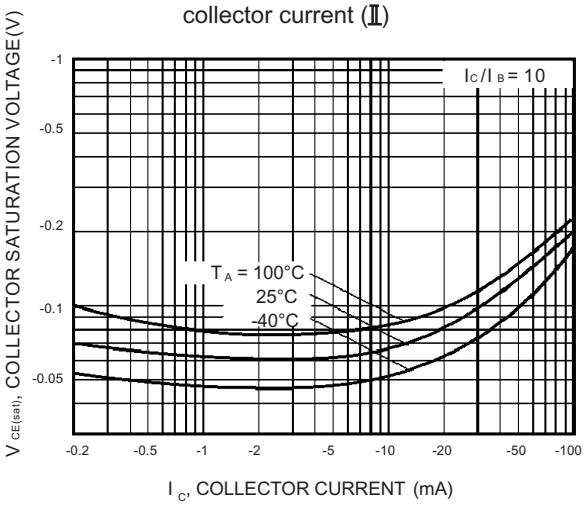


Fig.8 Gain bandwidth product vs. emitter current

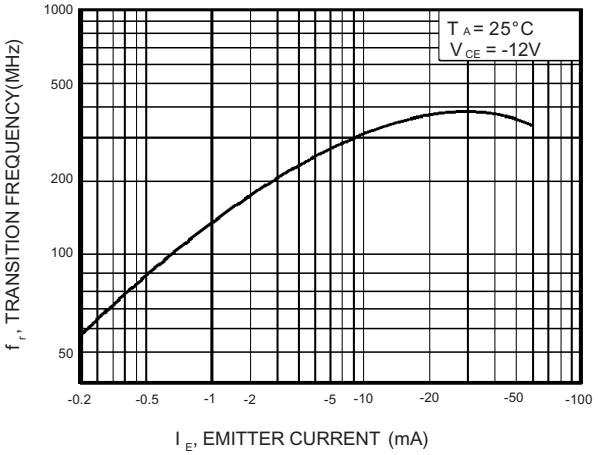
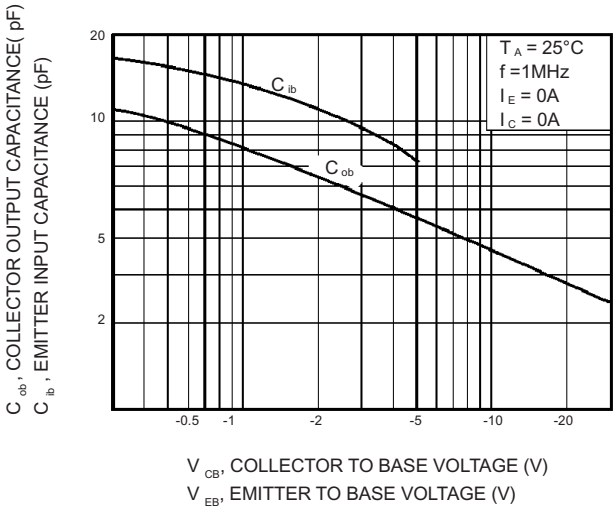
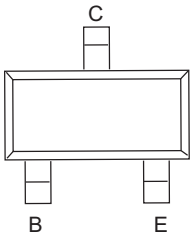
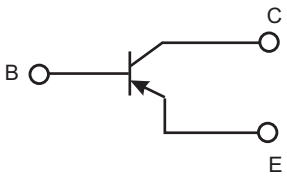


Fig.9 Collector output capacitance vs.collector-base voltage
Emitter inputcapacitance vs. emitter-base voltage



HSA812Q / HSA812R / HSA812S

Pinning information

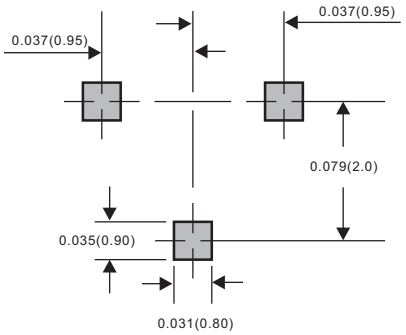
Pin	Simplified outline	Symbol
PinB Base PinC Collector PinE Emitter		

Marking

Type number	Marking code
HSA812Q	M8
HSA812R	M6
HSA812S	M7

Suggested solder pad layout

SOT-23



Dimensions in inches and (millimeters)