



SANYO Semiconductors

DATA SHEET

EC4H09C — NPN Epitaxial Planar Silicon Transistor

UHF to X Band Low-Noise Amplifier and OSC Applications

Features

- High cut-off frequency : $f_T=26\text{GHz}$ typ ($V_{CE}=3\text{V}$).
- Low operating voltage.
- High gain : $|S_{21e}|^2=16.5\text{dB}$ typ ($f=2\text{GHz}$).
- Halogen free compliance (UL94 HB).

Specifications

Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to- Base Voltage	V_{CBO}		10	V
Collector-to-Emitter Voltage	V_{CEO}		3.5	V
Emitter-to-Base Voltage	V_{EBO}		2.5	V
Collector Current	I_C		40	mA
Collector Dissipation	P_C		120	mW
Junction Temperature	T_J		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

Electrical Characteristics at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=5\text{V}, I_E=0\text{A}$			1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=1\text{V}, I_C=0\text{A}$			1	μA
DC Current Gain	h_{FE}	$V_{CE}=1\text{V}, I_C=5\text{mA}$	70		150	
Gain-Bandwidth Product	f_T	$V_{CE}=3\text{V}, I_C=20\text{mA}$	20	26		GHz
Reverse Transfer Capacitance	C_{re}	$V_{CB}=1\text{V}, f=1\text{MHz}$		0.12		pF

Marking : M

Continued on next page.

Notre) Pay attention to handling since it is liable to be affected by static electricity due to the high-frequency process adopted.

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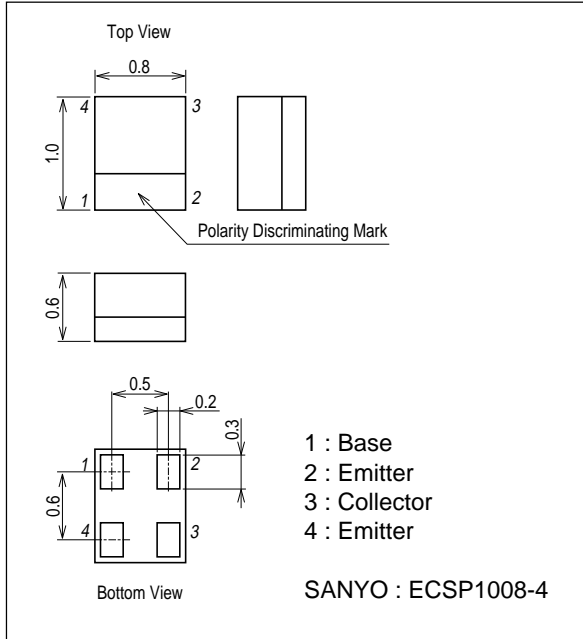
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Forward Transfer Gain	$ S_{21e} ^{21}$	$V_{CE}=1V, I_C=10mA, f=2GHz$		15		dB
	$ S_{21e} ^{22}$	$V_{CE}=3V, I_C=20mA, f=2GHz$	13	16.5		dB
Noise Figure	NF	$V_{CE}=1V, I_C=5mA, f=2GHz$		1.3	1.8	dB

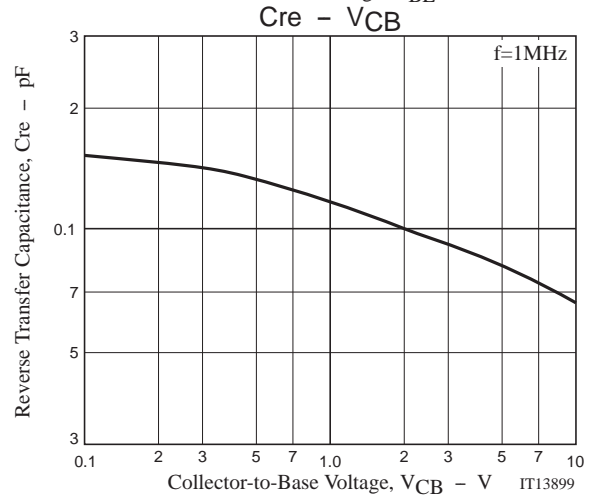
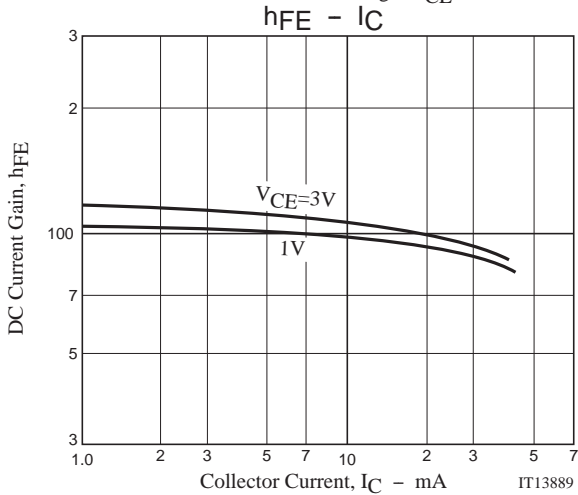
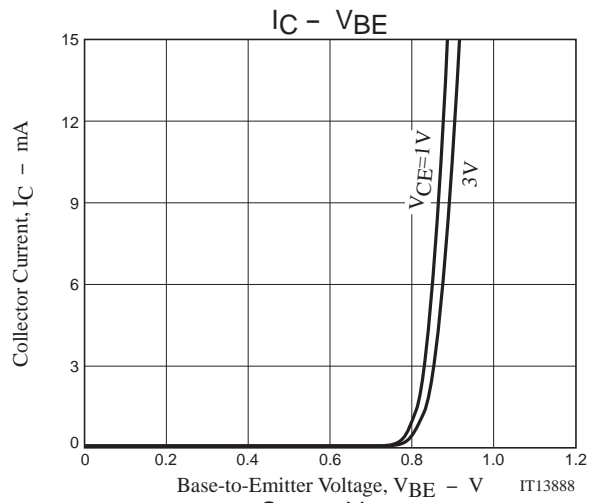
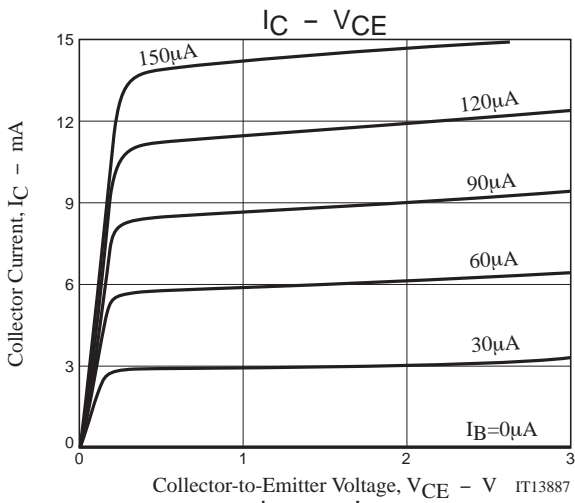
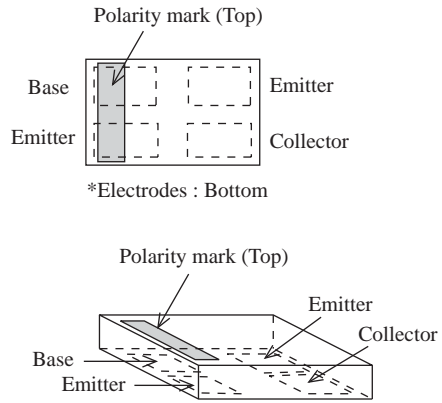
Package Dimensions

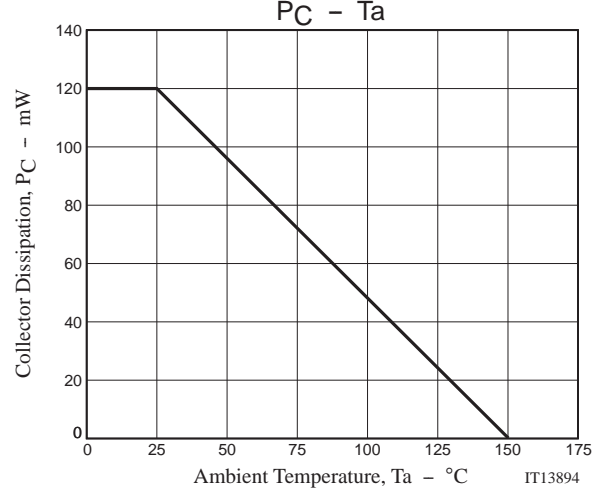
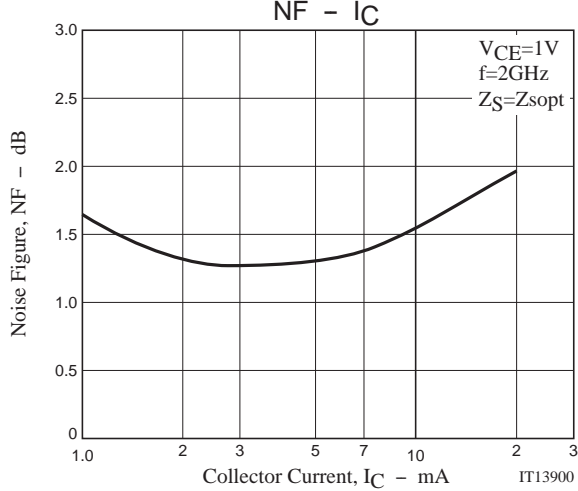
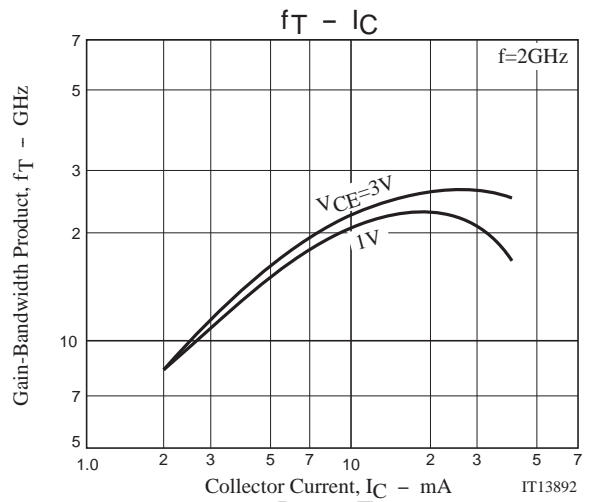
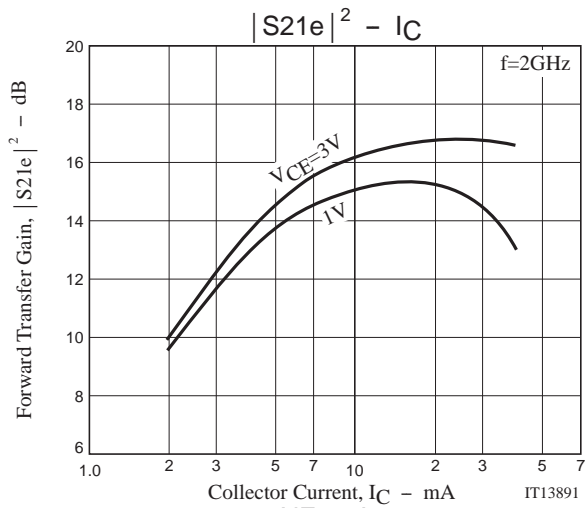
unit : mm (typ)

7036-002



Electrical Connection (Top view)





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