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We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## 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	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=1\text{V}, I_C=0\text{A}$			1	$\mu\text{A}$
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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# EC4H09C

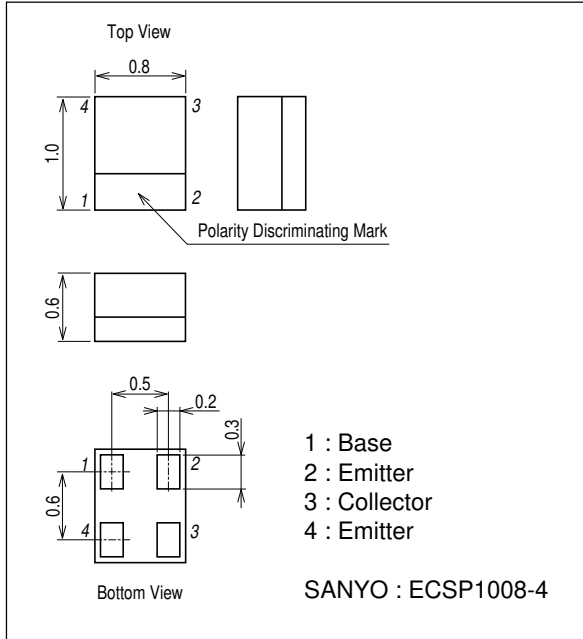
Continued from preceding page.

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

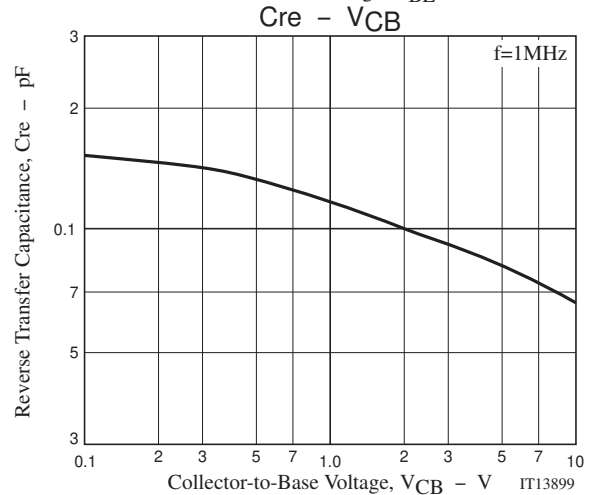
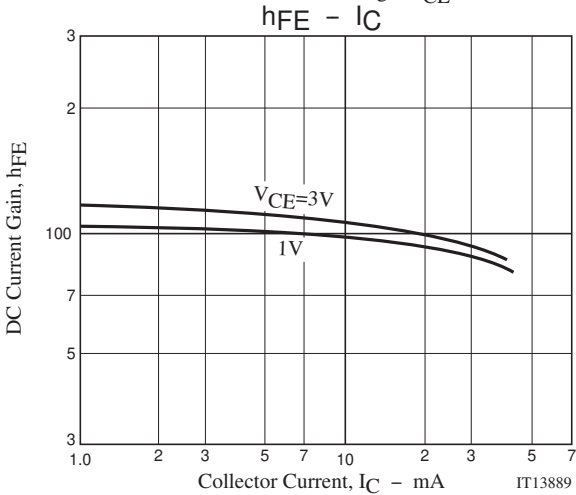
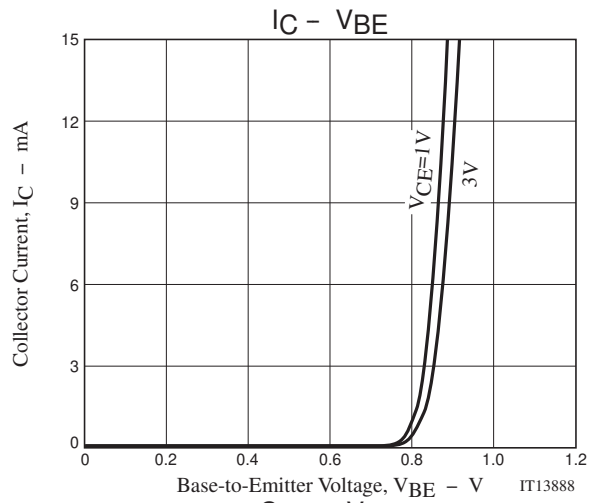
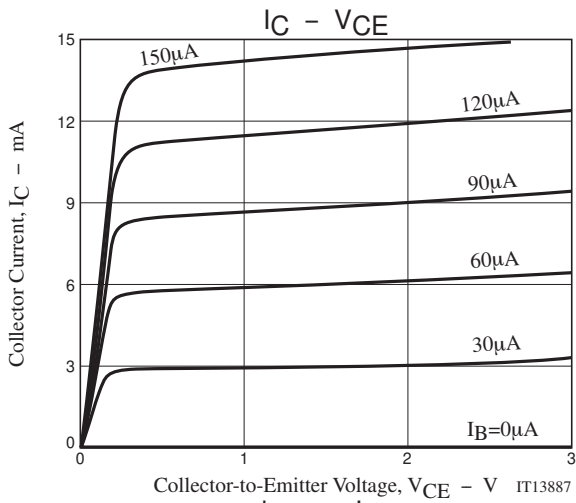
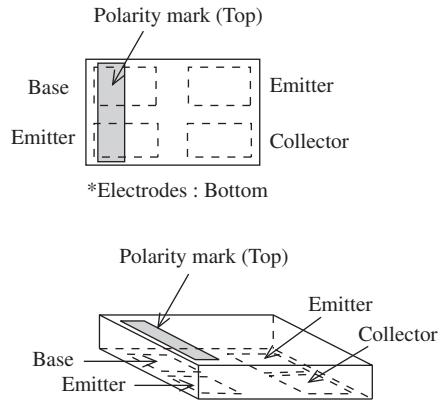
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unit : mm (typ)

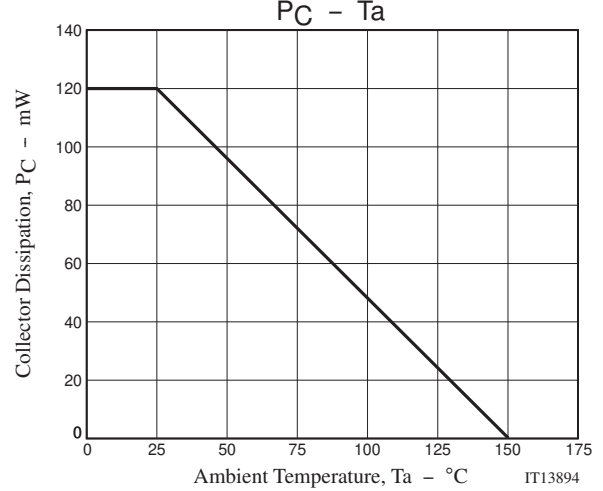
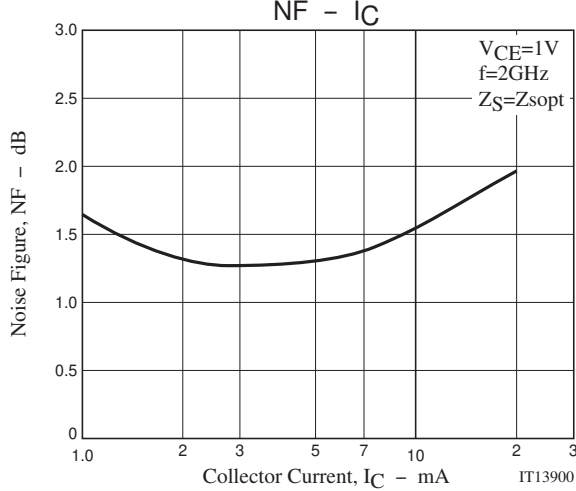
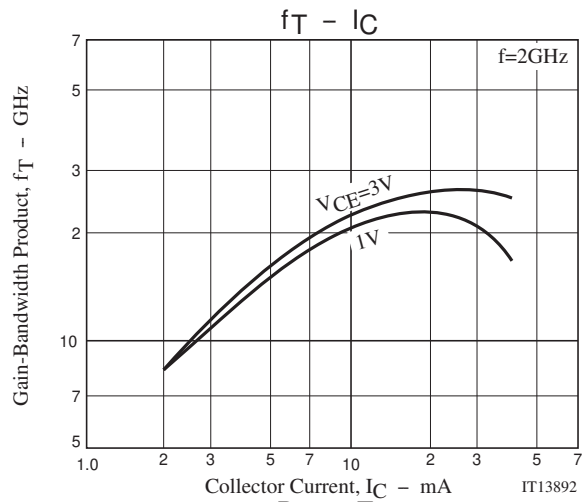
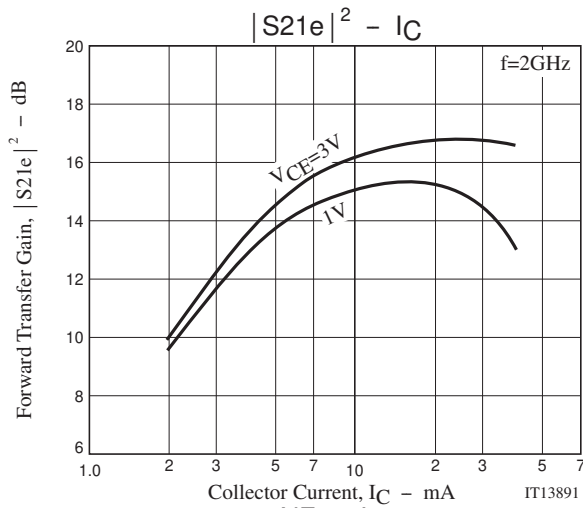
7036-002



## Electrical Connection (Top view)







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