



SANYO Semiconductors

DATA SHEET

MCH4013 — NPN Epitaxial Planar Silicon Transistor

UHF to X Band Low-Noise Amplifier and OSC Applications

Features

- High cut-off frequency : $f_T=22.5\text{GHz}$ typ ($V_{CE}=3\text{V}$).
- Low operating voltage.
- High gain : $|S_{21e}|^2=16\text{dB}$ typ ($f=2\text{GHz}$).

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		15	mA
Collector Dissipation	P_C		50	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}	$V_{CB}=5\text{V}, I_E=0\text{A}$			1.0	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=1\text{V}, I_C=0\text{A}$			1.0	μA
DC Current Gain	h_{FE}	$V_{CE}=1\text{V}, I_C=5\text{mA}$	70		150	
Gain-Bandwidth Product	f_T	$V_{CE}=3\text{V}, I_C=10\text{mA}$	17	22.5		GHz
Reverse Transfer Capacitance	C_{re}	$V_{CB}=1\text{V}, f=1\text{MHz}$		0.06		pF
Forward Transfer Gain	$ S_{21e} ^2$	$V_{CE}=3\text{V}, I_C=10\text{mA}, f=2\text{GHz}$	12	16		dB
Noise Figure	NF	$V_{CE}=1\text{V}, I_C=2\text{mA}, f=2\text{GHz}$		1.5	2.0	dB

Marking : GH

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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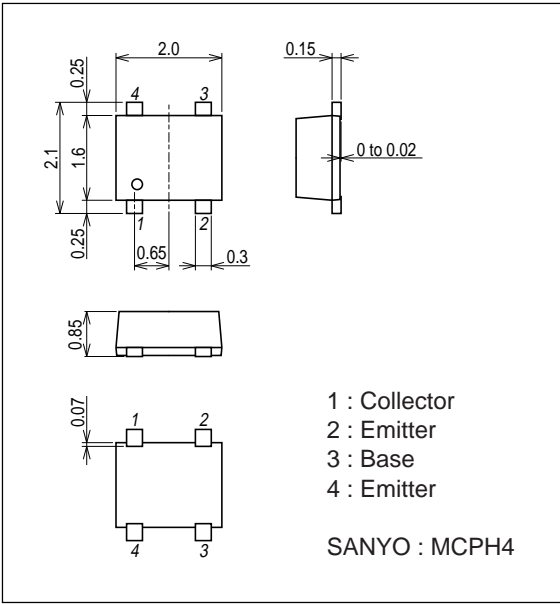
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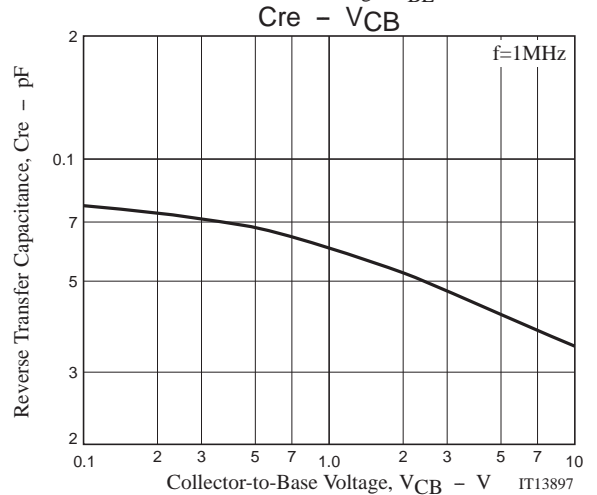
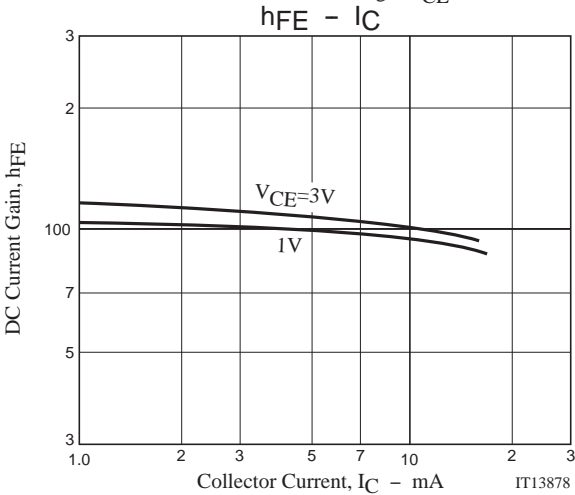
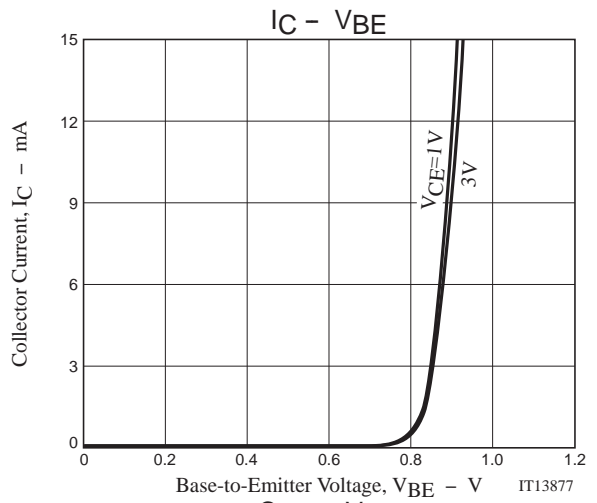
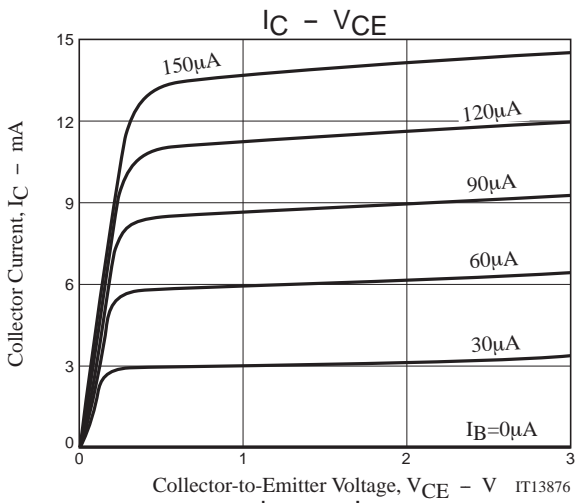
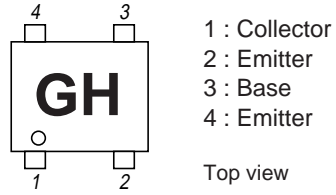
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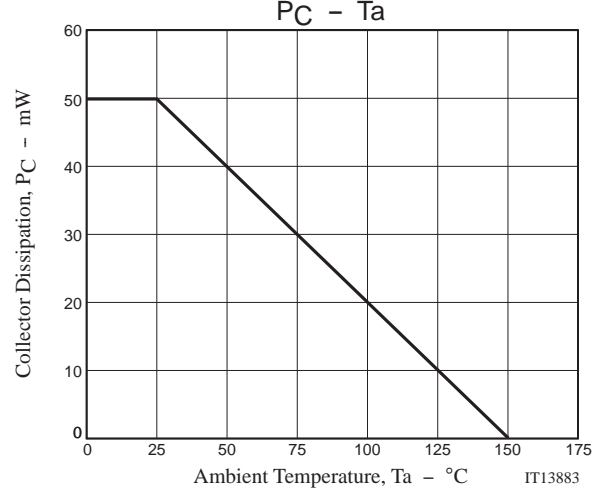
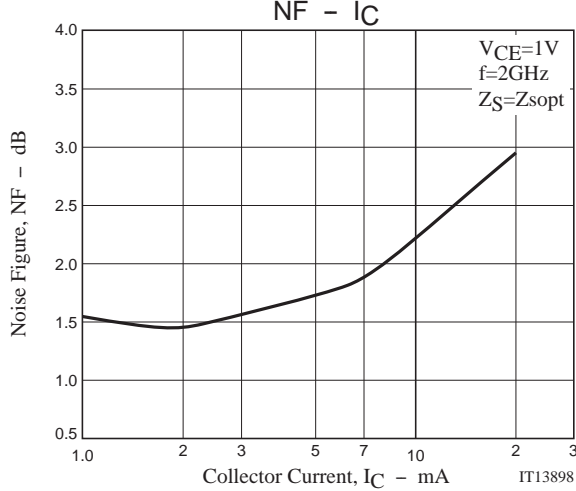
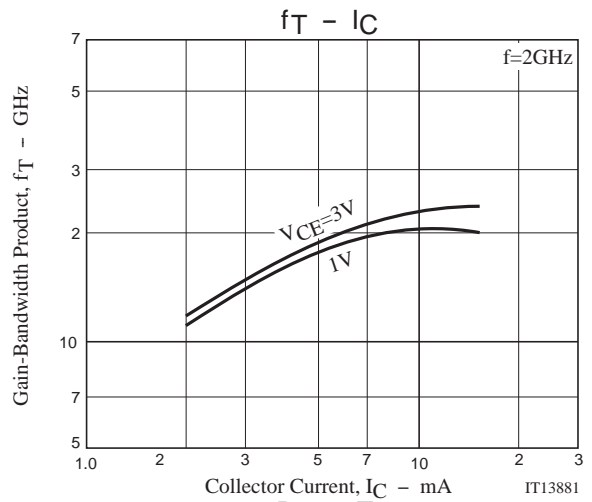
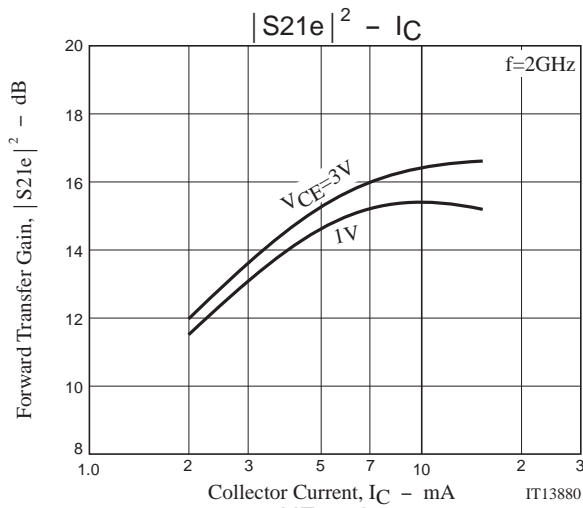
Package Dimensions

unit : mm (typ)
7020A-002



Type No. Indication





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