



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

NPN Epitaxial Planar Silicon Transistor

MCH4013 — 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

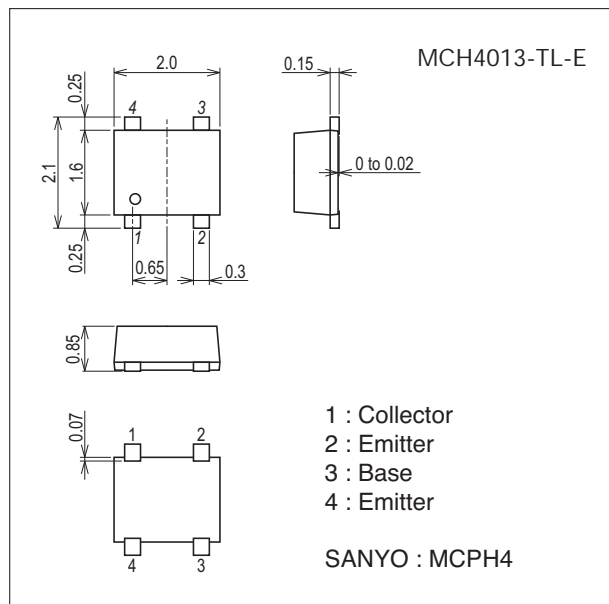
Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

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	$^\circ\text{C}$

Package Dimensions

unit : mm (typ)

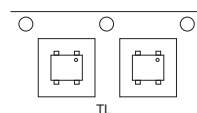
7020A-002



Product & Package Information

- Package : MCPH4
- JEITA, JEDEC : SC-82, SC-82AB, SOT-343
- Minimum Packing Quantity : 3,000 pcs./reel

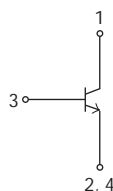
Packing Type : TL



Marking



Electrical Connection



MCH4013

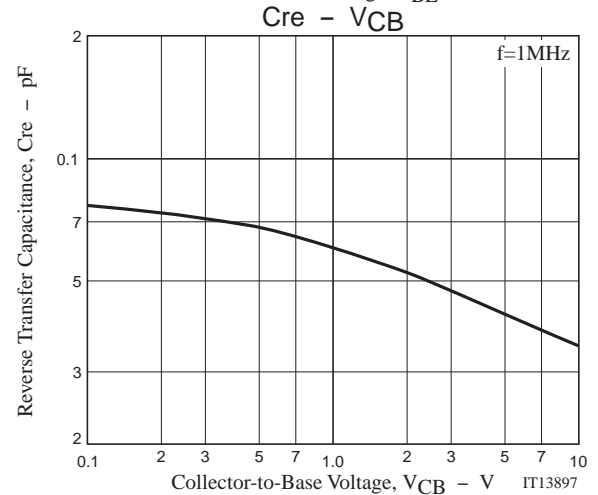
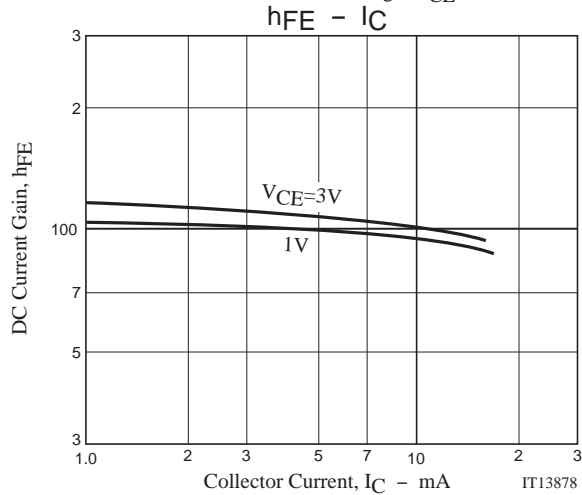
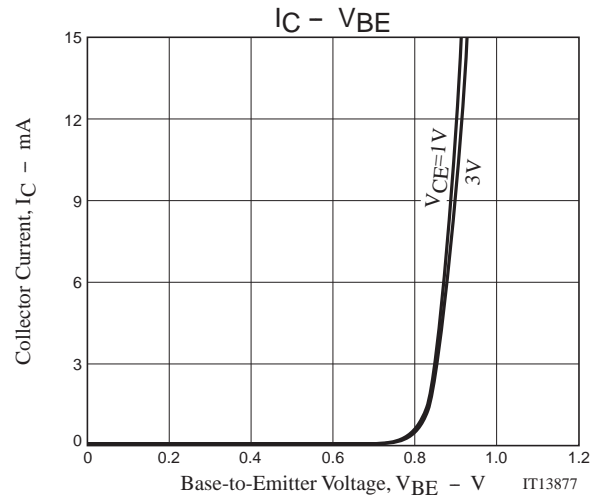
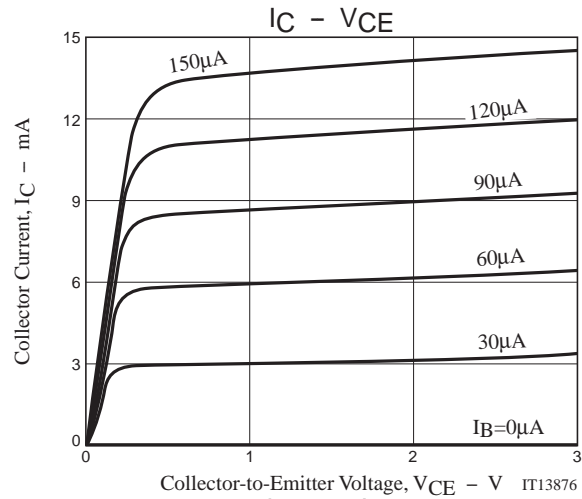
Electrical Characteristics at Ta=25°C

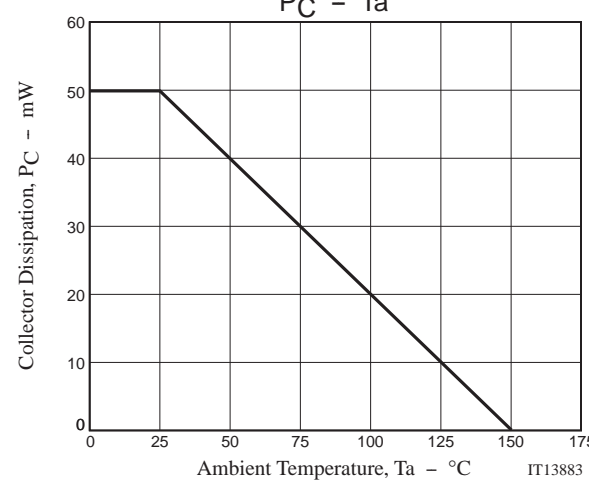
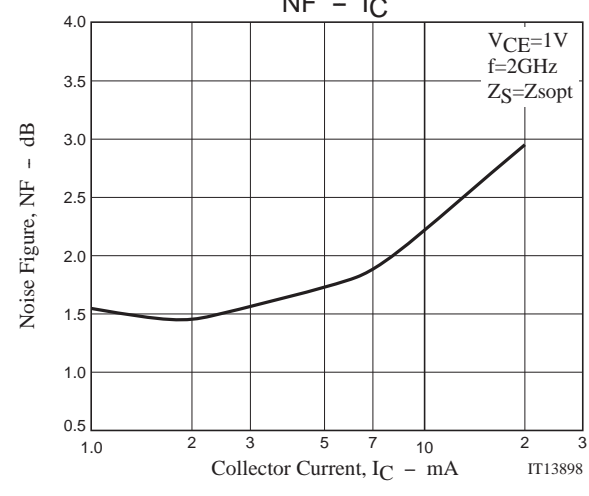
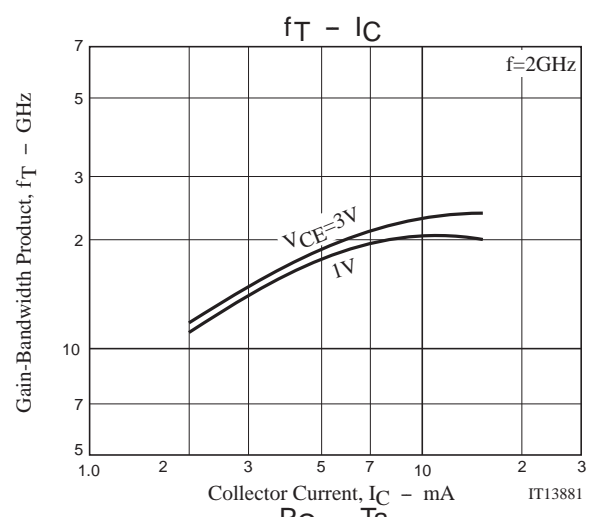
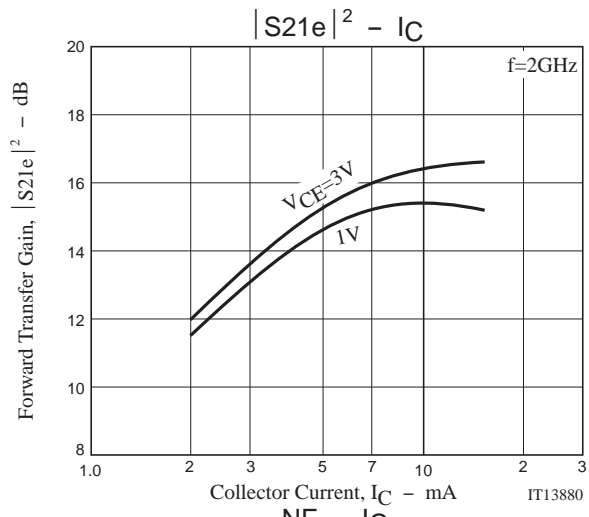
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	ICBO	V _{CB} =5V, I _E =0A			1.0	μA
Emitter Cutoff Current	IEBO	V _{EB} =1V, I _C =0A			1.0	μA
DC Current Gain	h _{FE}	V _{CE} =1V, I _C =5mA	70		150	
Gain-Bandwidth Product	f _T	V _{CE} =3V, I _C =10mA	17	22.5		GHz
Reverse Transfer Capacitance	C _{re}	V _{CB} =1V, f=1MHz		0.06		pF
Forward Transfer Gain	S _{21e} ²	V _{CE} =3V, I _C =10mA, f=2GHz	12	16		dB
Noise Figure	NF	V _{CE} =1V, I _C =2mA, f=2GHz		1.5	2.0	dB

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

Ordering Information

Device	Package	Shipping	memo
MCH4013-TL-E	MCPH4	3,000pcs./reel	Pb Free

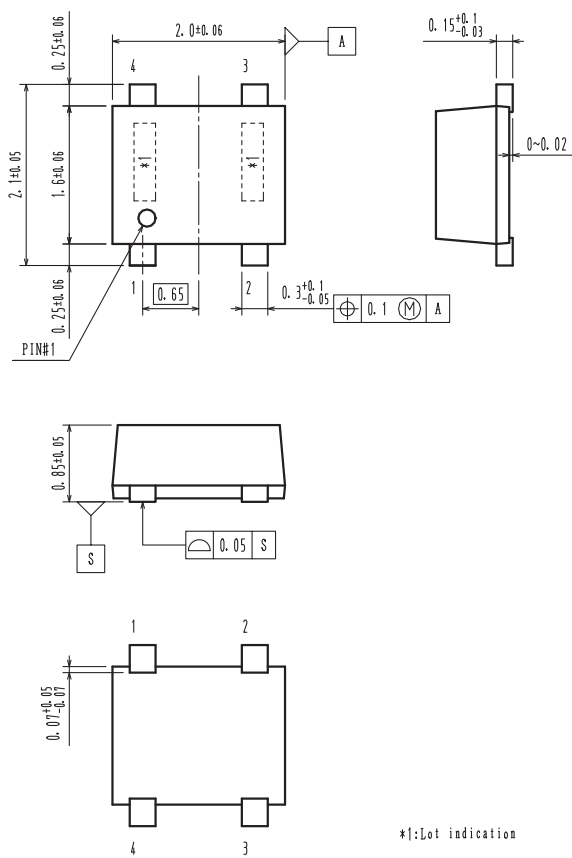




Outline Drawing
MCH4013-TL-E

Technical drawing of a square frame. The frame is composed of four hatched rectangular sections. The overall width is 1.3 and the overall height is 2.1. The top-right section has a width of 0.4 and a height of 0.6. The bottom-right section has a width of 0.6.

Mass (g)	Unit
0.008 * For reference	mm



*1: Lot indication

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