



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}=3V)
- Low operating voltage
- High gain : $|\text{S}_{21e}|^2=16\text{dB}$ typ (f=2GHz)

Specifications

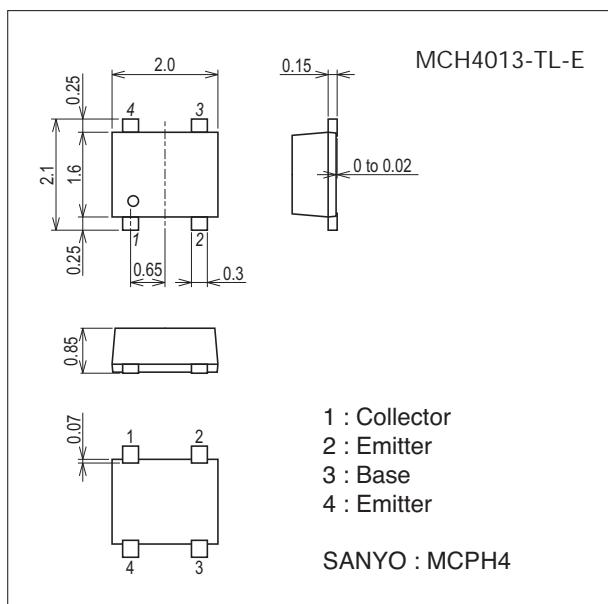
Absolute Maximum Ratings at T_a=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V _{CB0}		10	V
Collector-to-Emitter Voltage	V _{C0}		3.5	V
Emitter-to-Base Voltage	V _{E0}		2.5	V
Collector Current	I _C		15	mA
Collector Dissipation	P _C		50	mW
Junction Temperature	T _j		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C

Package Dimensions

unit : mm (typ)

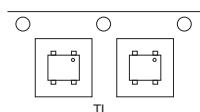
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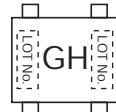
Product & Package Information

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

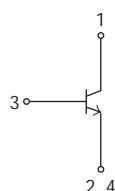
Packing Type : TL



Marking



Electrical Connection



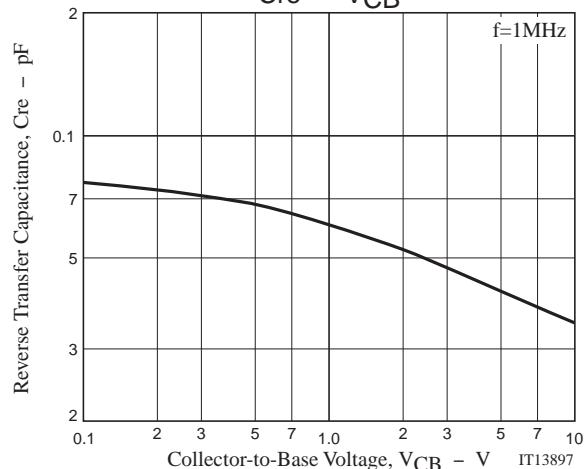
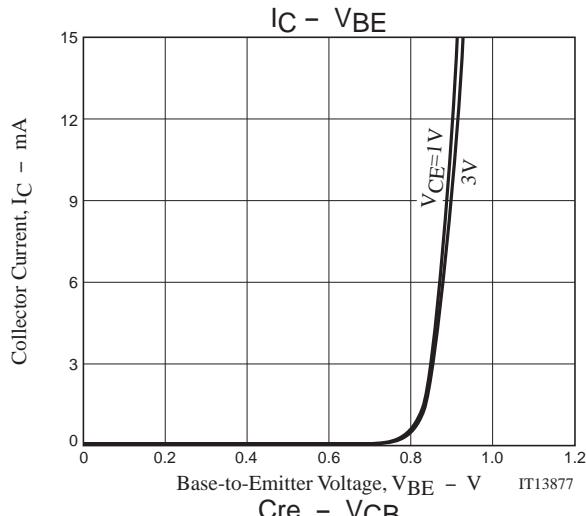
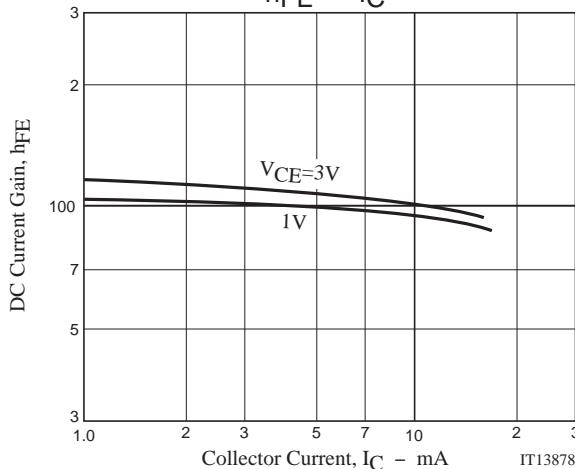
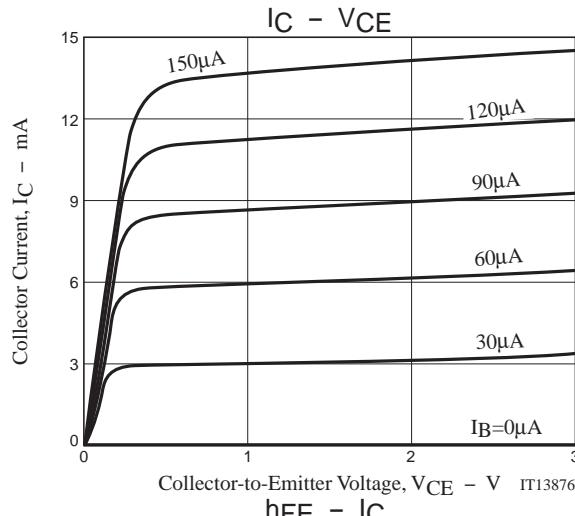
Electrical Characteristics at $T_a=25^\circ C$

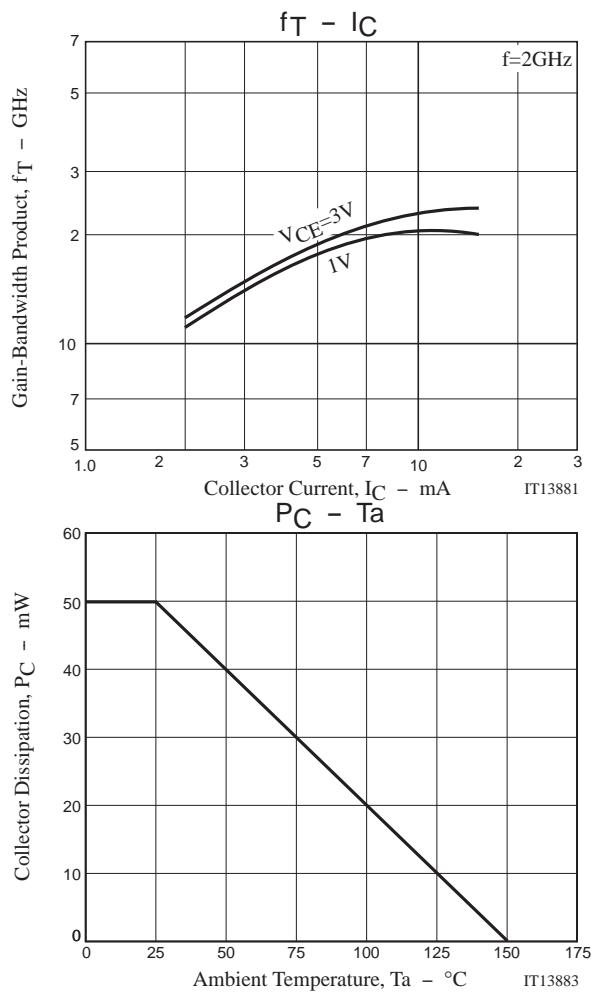
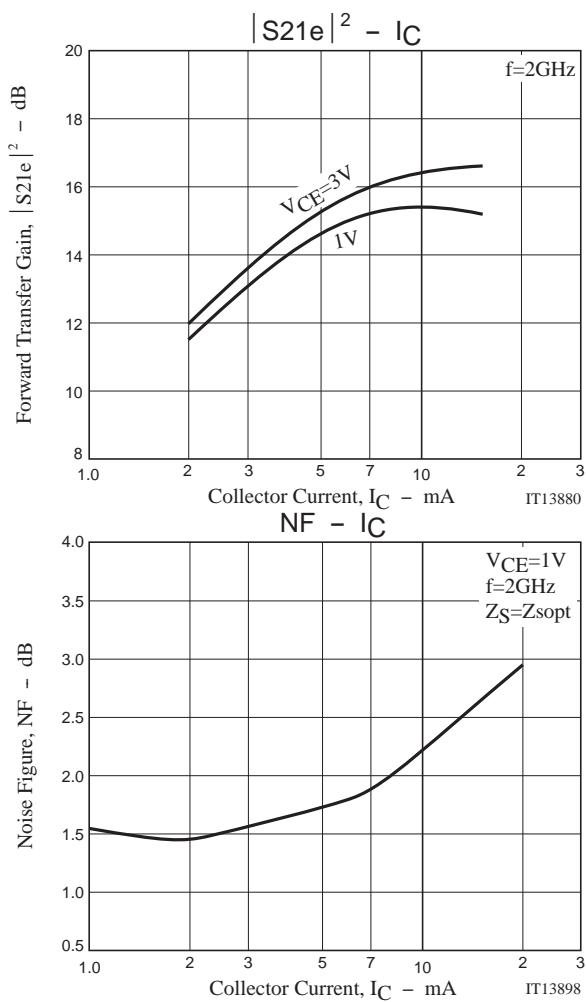
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=5V, I_E=0A$			1.0	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=1V, I_C=0A$			1.0	μA
DC Current Gain	h_{FE}	$V_{CE}=1V, I_C=5mA$	70		150	
Gain-Bandwidth Product	f_T	$V_{CE}=3V, I_C=10mA$	17	22.5		GHz
Reverse 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

Note) 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



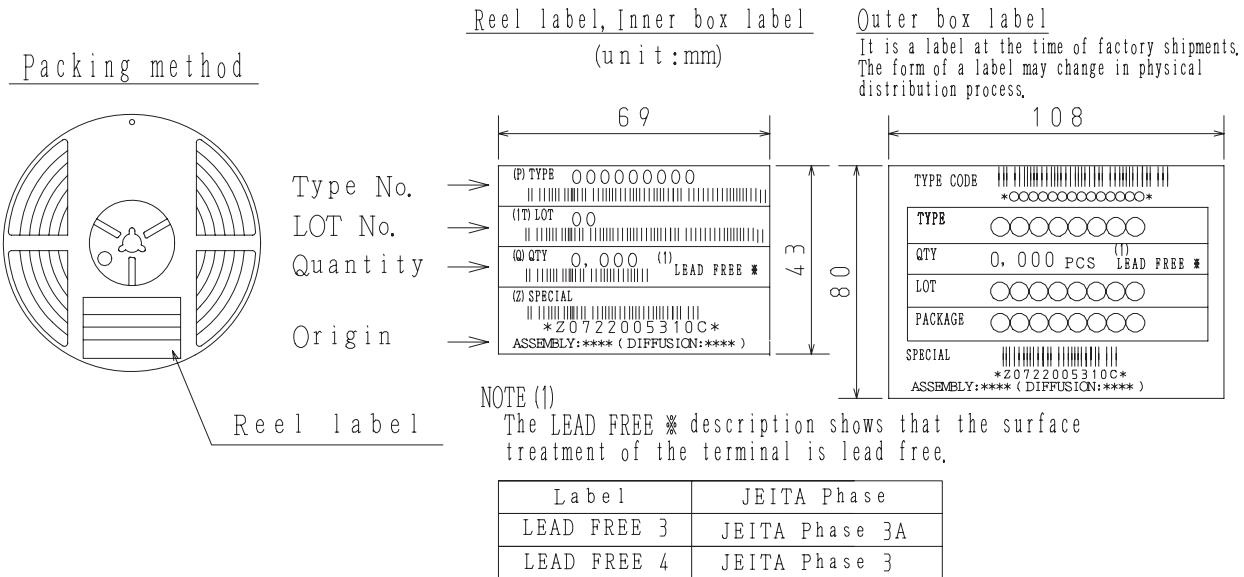


Embossed Taping Specification

MCH4013-TL-E

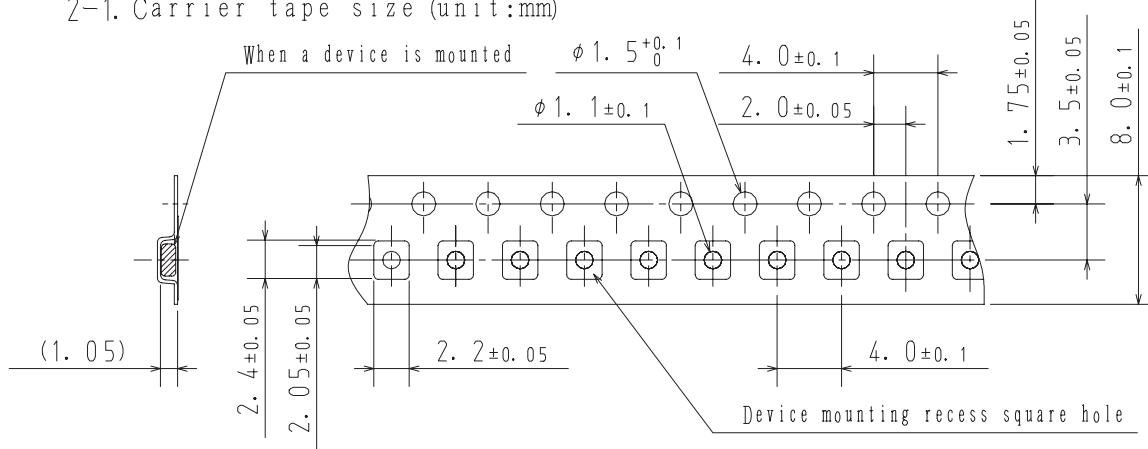
1. Packing Format

Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
MCPH4	MCP 4	3,000	15,000	90,000	5 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

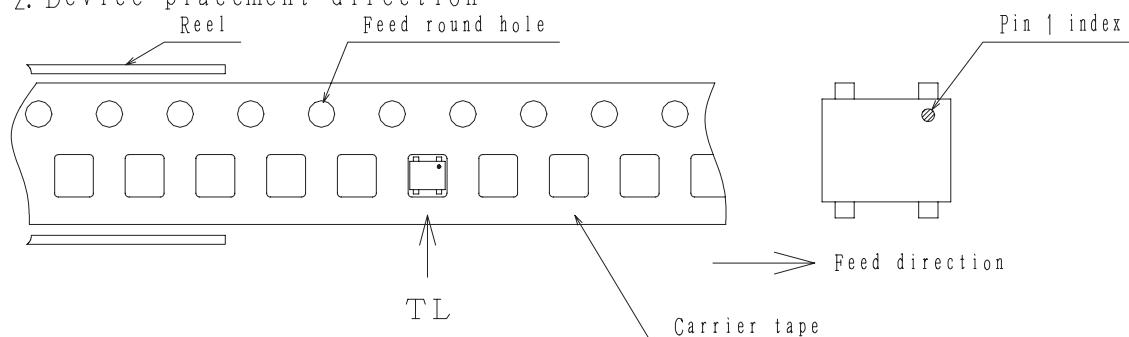


2. Taping configuration

2-1. Carrier tape size (unit:mm)

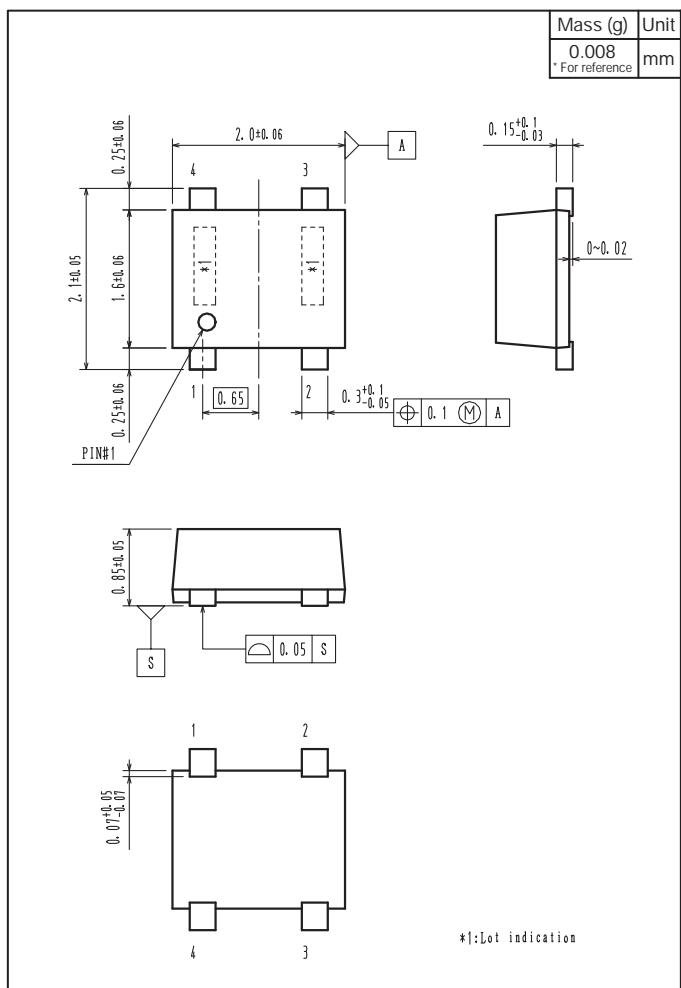


2-2. Device placement direction

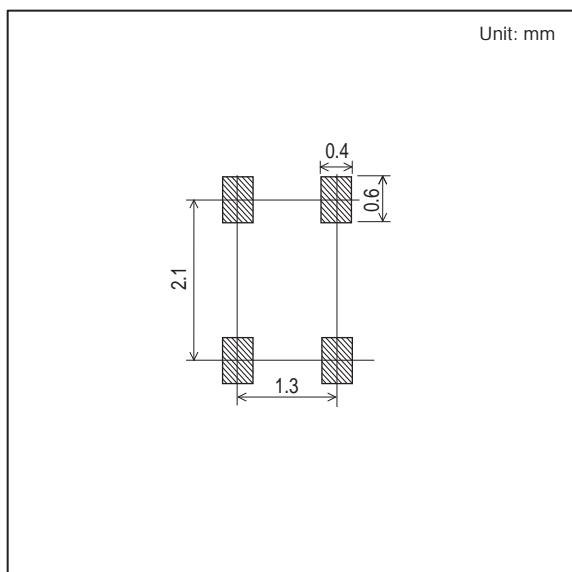


Outline Drawing

MCH4013-TL-E



Land Pattern Example



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