Ordering number : ENA1601

SANYO Semiconductors

DATA SHEET

MCH6001 — NPN Epitaxial Planar Silicon Composite Transistor
High Frequency Low-Noise Amplifier

Features

- Low-noise use : NF=1.2dB typ (f=1GHz).
- High cut-off frequency : f_T=16GHz typ (V_{CE}=5V).
- High gain : $|S21e|^2$=16dB typ (f=1GHz).
- Composite type with 2 RF transistor MCH4020 in one package facilitating high-density mounting.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		15	V
Collector-to-Emitter Voltage	V_{CEO}		8	V
Emitter-to-Base Voltage	V_{EBO}		2	V
Collector Current	I_C		150	mA
Collector Dissipation	P_C	When mounted on glass epoxy substrate 1unit	400	mW
Total Dissipation	P_T	When mounted on glass epoxy substrate	600	mW
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		-55 to +150	°C

Electrical Characteristics at Ta=25°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}=5V, I_C=50mA	60		150	
Gain-Bandwidth Product	f_T	V_{CE}=5V, I_C=50mA	13	16		GHz

Marking : GT

Continued on next page.

Note) 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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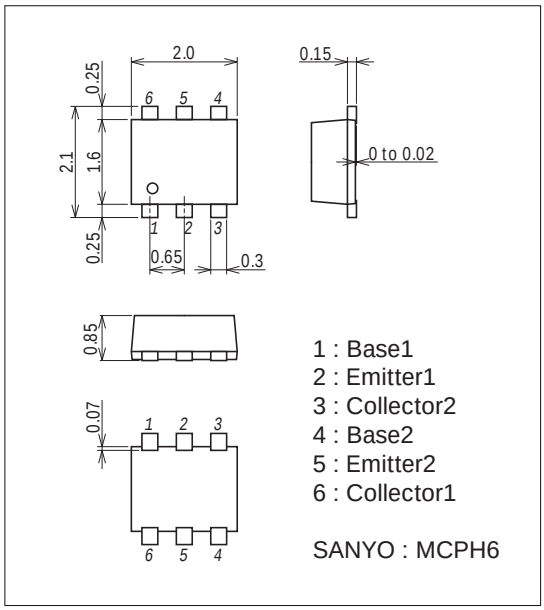
Continued from preceding page.

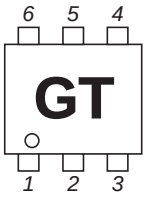
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Forward Transfer Gain	$\|S21e\|^2$	V_{CE}=5V, I_C=50mA, f=1GHz		16		dB
Noise Figure	NF	V_{CE}=1V, I_C=10mA, f=1GHz		1.2	1.8	dB

Package Dimensions

unit : mm (typ)
7022A-019



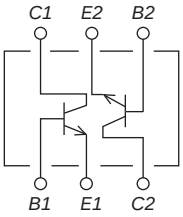
Marking



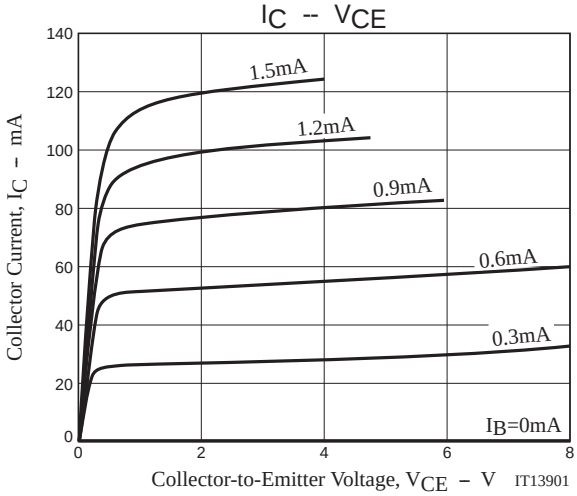
1 : Base1
2 : Emitter1
3 : Collector2
4 : Base2
5 : Emitter2
6 : Collector1

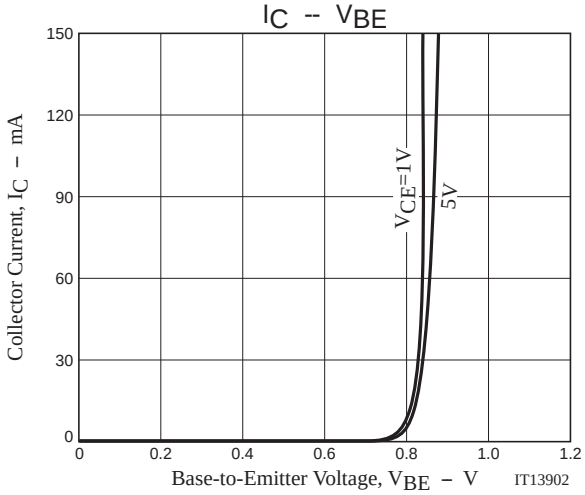
Top view

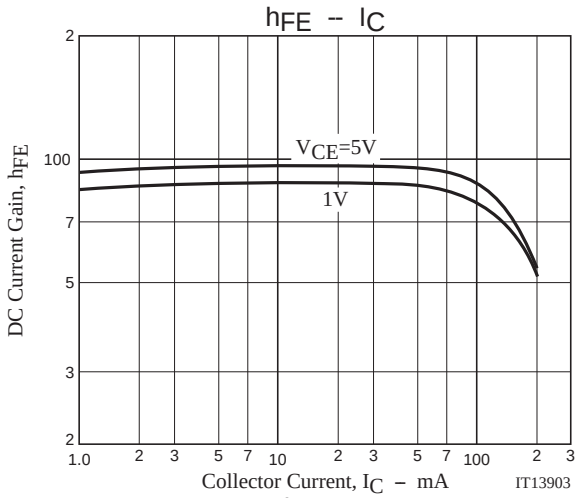
Electrical Connection

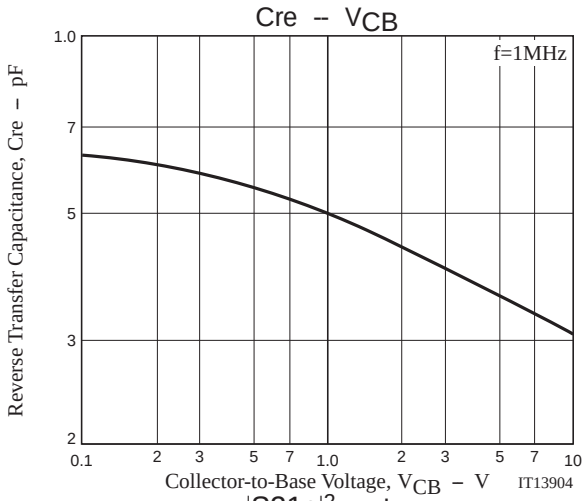


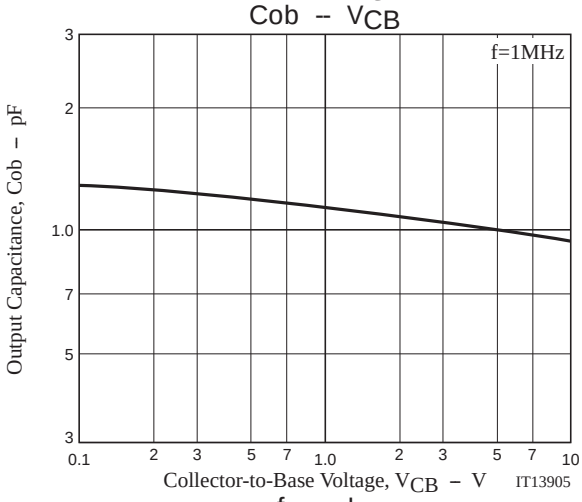
(Top view)

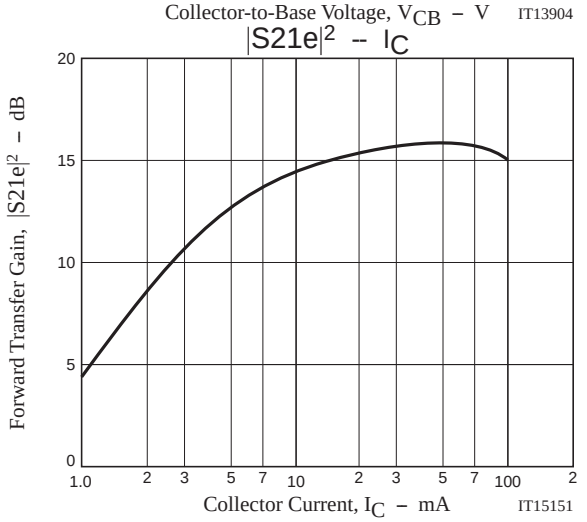


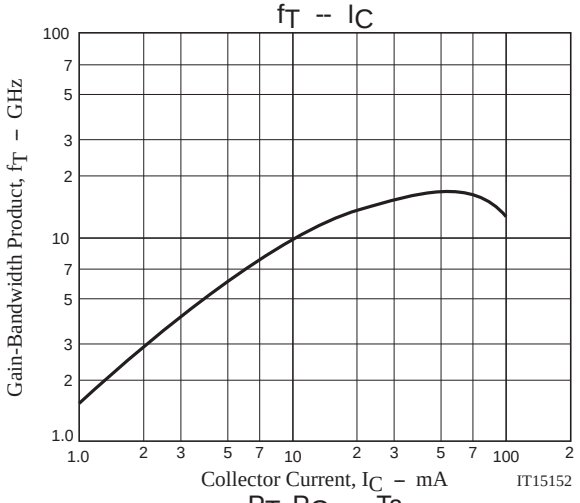


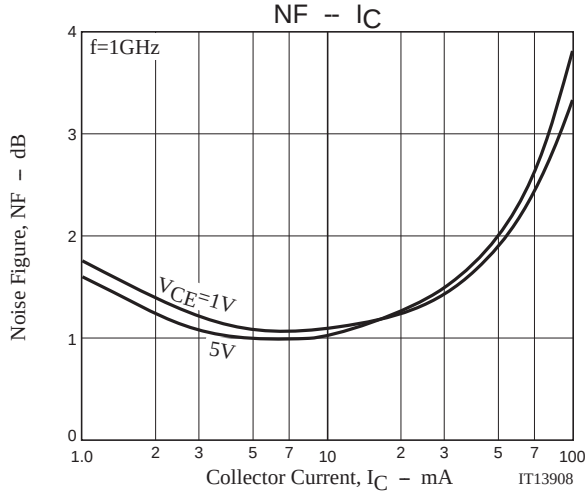

hFE -- IC
DC Current Gain, hFE
VCE=5V
1V
Collector Current, IC – mA
IT13903

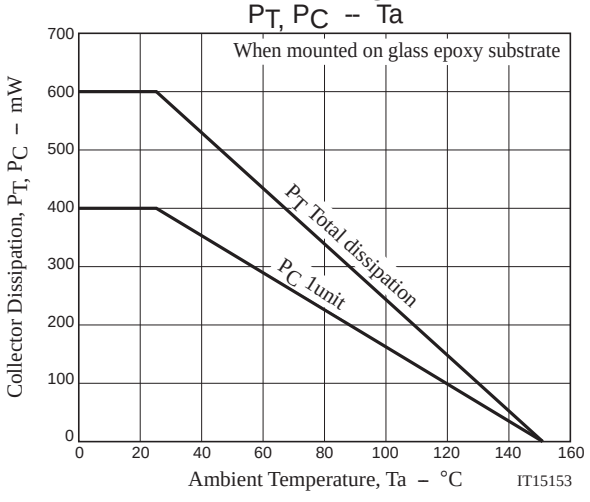

Cre -- VCB
f=1MHz
Reverse Transfer Capacitance, Cre – pF
Collector-to-Base Voltage, VCB – V
IT13904


Cob -- VCB
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT13905


|S21e|2 -- IC
Forward Transfer Gain, |S21e|2 – dB
Collector Current, IC – mA
IT15151


fT -- IC
Gain-Bandwidth Product, fT – GHz
Collector Current, IC – mA
IT15152


NF -- IC
f=1GHz
VCE=1V
5V
Noise Figure, NF – dB
Collector Current, IC – mA
IT13908


PT, PC -- Ta
When mounted on glass epoxy substrate
PT Total dissipation
PC 1unit
Collector Dissipation, PT, PC – mW
Ambient Temperature, Ta – °C
IT15153

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