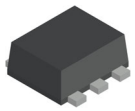
RF Transistor

8 V, 150 mA, f_T = 16 GHz NPN Dual MCPH6

MCH6001



SC−88FL / MCPH6
CASE 419AS

Features

- Low Noise Use: NF = 1.2 dB typ. (f = 1 GHz)
- High Cut−off Frequency: f_T = 16 GHz typ. (V_{CE} = 5 V)
- High Gain: $|S21e|^2$ = 16 dB typ. (f = 1 GHz)
- Composite Type with 2 RF Transistor MCH4020 in One Package Facilitating High−density Mounting
- These Devices are Pb−Free and are RoHS Compliant

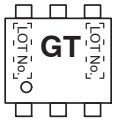
Specifications

ABSOLUTE MAXIMUM RATINGS at T_A = 25°C

Parameter	Symbol	Conditions	Value	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 1 unit	400	mW
Total Dissipation	P_T	When mounted on glass epoxy substrate	600	mW
Junction Temperature	T_J		150	°C
Storage Temperature	Tstg		−55 to +150	°C

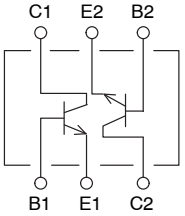
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

MARKING DIAGRAM



GT = Specific Device Code

ELECTRICAL CONNECTION



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

ORDERING INFORMATION

Device	Package	Shipping†
MCH6001−TL−E	MCPH6 / SC−88FL (Pb−Free)	3000 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

ELECTRICAL CHARACTERISTICS at T_A = 25°C

Parameter	Symbol	Conditions	Ratings			Unit
			Min	Typ	Max	
Collector Cutoff Current	I_{CBO}	V_{CB} = 5 V, I_E = 0 A	–	–	1.0	μA
Emitter Cutoff Current	I_{EBO}	V_{EB} = 1 V, I_C = 0 A	–	–	1.0	μA
DC Current Gain	h_{FE}	V_{CE} = 5 V, I_C = 50 mA	60	–	150	
Gain−Bandwidth Product	f_T	V_{CE} = 5 V, I_C = 50 mA	13	16	–	GHz
Forward Transfer Gain	$\|S21e\|^2$	V_{CE} = 5 V, I_C = 50 mA, f = 1 GHz	–	16	–	dB
Noise Figure	NF	V_{CE} = 1 V, I_C = 10 mA, f = 1 GHz	–	1.2	1.8	dB

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

NOTE: Pay attention to handling since it is liable to be affected by static electricity due to the high−frequency process adopted.

TYPICAL CHARACTERISTICS

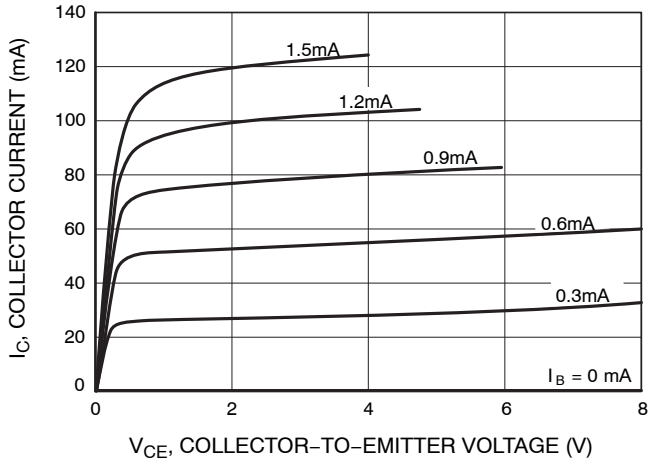


Figure 1. I_C – V_{CE}

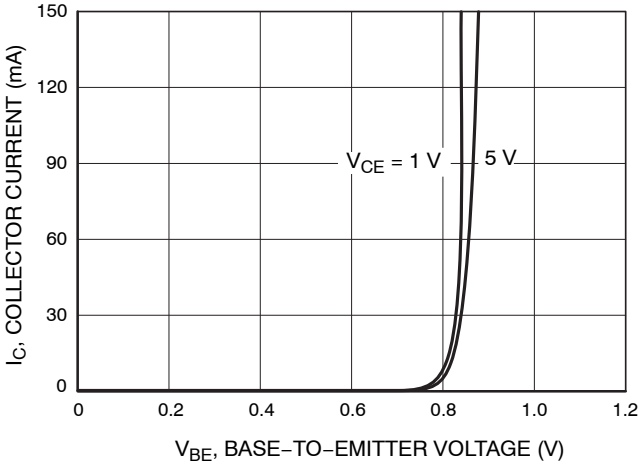


Figure 2. I_C – V_{BE}

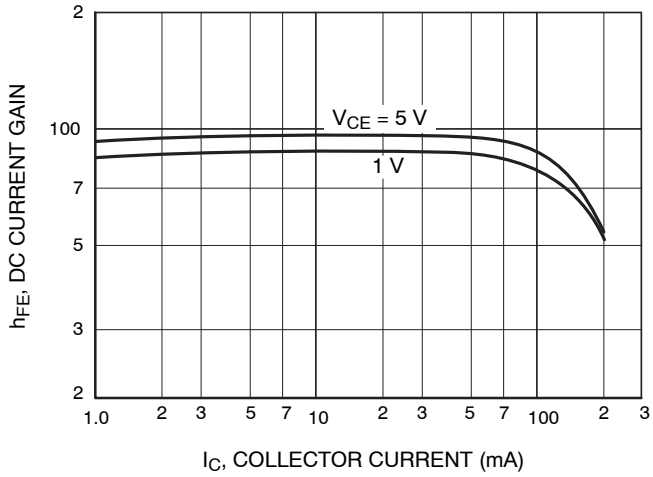


Figure 3. h_{FE} – I_C

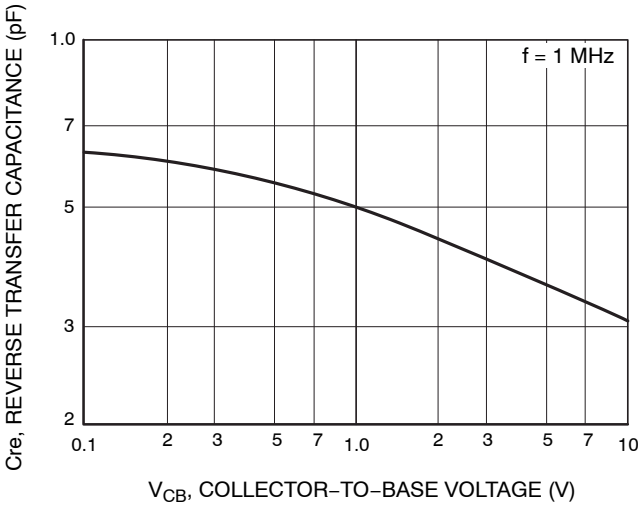


Figure 4. Cre – V_{CB}

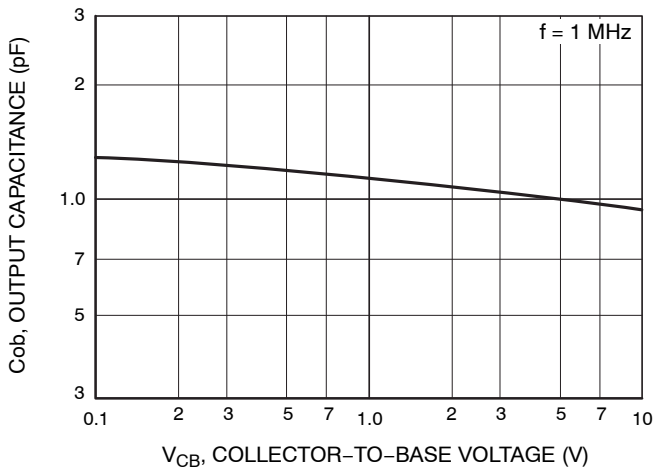


Figure 5. Cob – V_{CB}

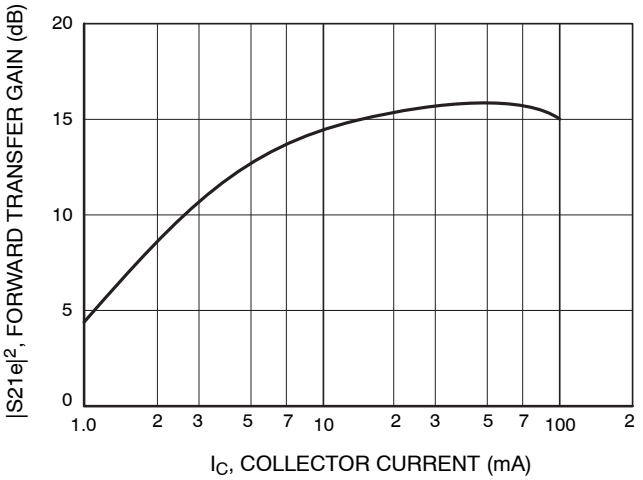


Figure 6. $|S21e|^2$ – I_C

TYPICAL CHARACTERISTICS (CONTINUED)

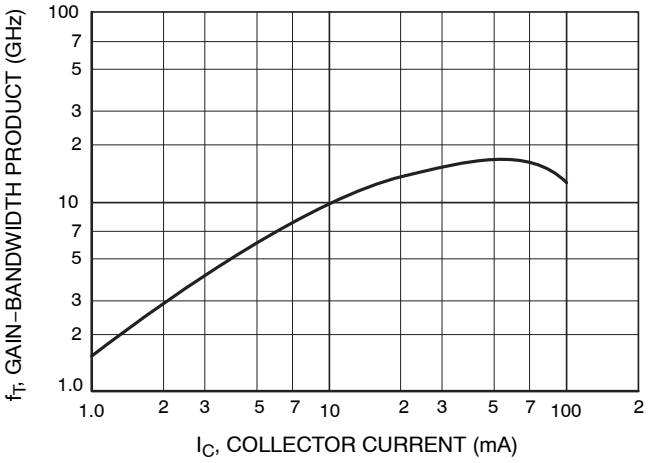


Figure 7. f_T – I_C

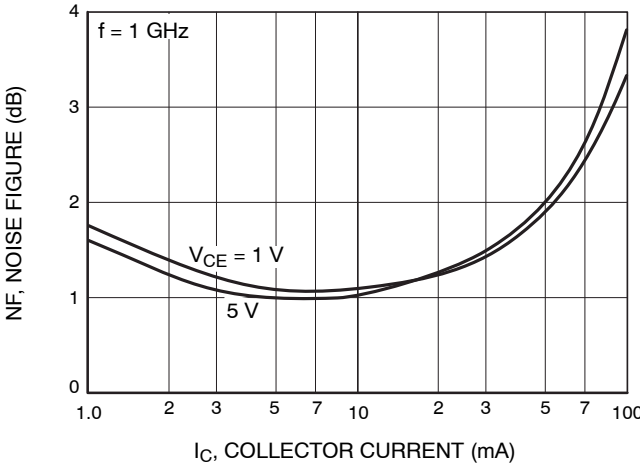


Figure 8. NF – I_C

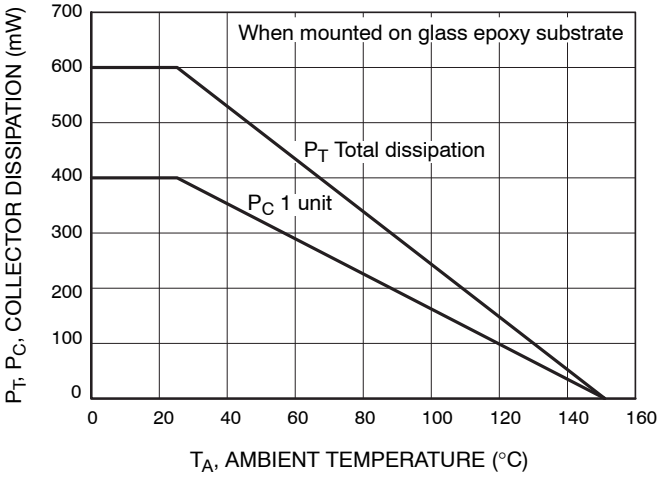


Figure 9. P_T, P_C – T_A

LAND PATTERN EXAMPLE

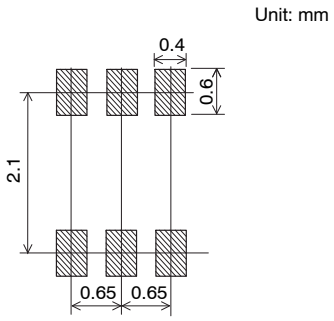
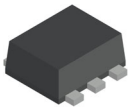


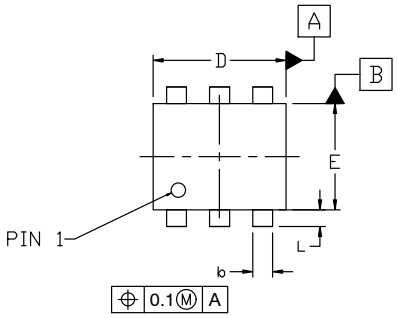
Figure 10. Land Pattern Example

MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

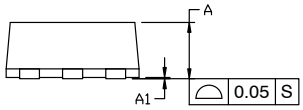


SC−88FL / MCPH6
CASE 419AS
ISSUE A

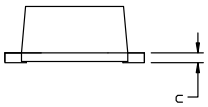
DATE 28 SEP 2022



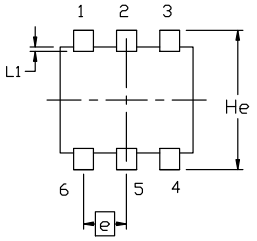
TOP VIEW



SIDE VIEW



FRONT VIEW



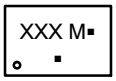
BOTTOM VIEW

NOTES:

1. NO INDUSTRY STANDARD APPLIES TO THIS PACKAGE.
2. ALL DIMENSIONS ARE IN MILLIMETERS.
3. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND THE BAR PROTRUSIONS.

DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.80	0.85	0.90
A1	0.00	---	0.02
b	0.25	0.30	0.40
c	0.12	0.15	0.25
D	1.94	2.00	2.06
E	1.54	1.60	1.66
He	2.05	2.10	2.15
L	0.19	0.25	0.31
L1	0.00	0.07	0.12
e	0.65 BSC		

GENERIC MARKING DIAGRAM*



XXX = Specific Device Code
M = Date Code
▪ = Pb−Free Package

(Note: Microdot may be in either location)

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “▪”, may or may not be present. Some products may not follow the Generic Marking.

DOCUMENT NUMBER:	**98AON65646E**	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped “CONTROLLED COPY” in red.	
DESCRIPTION:	**SC−88FL / MCPH6**		**PAGE 1 OF 1**

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:
Technical Library: www.onsemi.com/design/resources/technical−documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support
For additional information, please contact your local Sales Representative at www.onsemi.com/support/sales