

# RF Transistor

10 V, 70 mA,  $f_T = 7$  GHz, NPN Single MCP

## 2SC5226A

### 特長

- 低雑音である:  $NF = 1.0$  dB Typ ( $f = 1$  GHz)
- 高利得である:  $|S_{21e}|^2 = 12$  dB Typ ( $f = 1$  GHz)
- しゃ断周波数が高い:  $f_T = 7$  GHz Typ
- これは鉛フリーのデバイスです

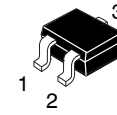
### 絶対最大定格 ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ )

記号	項目	定格値	Unit
$V_{CBO}$	コレクタ・ベース電圧	20	V
$V_{CEO}$	コレクタ・エミッタ電圧	10	V
$V_{EBO}$	エミッタ・ベース電圧	2	V
$I_C$	コレクタ電流	70	mA
$P_C$	コレクタ損失	150	mW
$T_j$	接合部温度	150	$^\circ\text{C}$
Tstg	保存周囲温度	-55 to +150	$^\circ\text{C}$

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.

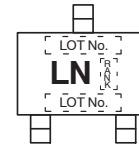
(参考訳)

最大定格を超えるストレスは、デバイスにダメージを与える危険性があります。これらの定格値を超えた場合は、デバイスの機能性を損ない、ダメージが生じたり、信頼性に影響を及ぼす危険性があります。



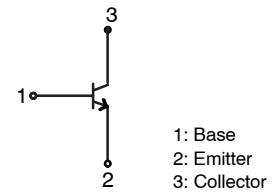
SC-70 / MCP3  
CASE 419AJ

### マーキング



LN = Specific Device Code

### 電氣的接続図



### ORDERING INFORMATION

Device	Package	Shipping <sup>†</sup>
2SC5226A-4-TL-E	MCP3 (Pb-Free)	3,000 / Tape & Reel
2SC5226A-5-TL-E	MCP3 (Pb-Free)	3,000 / Tape & Reel

<sup>†</sup>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](#).

## 2SC5226A

### 電氣的特性 ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ )

項目	記号	条件	Min	Typ	Max	Unit
コレクタしゃ断電流	$I_{CBO}$	$V_{CB} = 10\text{ V}, I_E = 0\text{ A}$	-	-	1.0	$\mu\text{A}$
エミッタしゃ断電流	$I_{EBO}$	$V_{EB} = 1\text{ V}, I_C = 0\text{ A}$	-	-	10	$\mu\text{A}$
直流電流増幅率	$h_{FE}$	$V_{CE} = 5\text{ V}, I_C = 20\text{ mA}$	60 ※	-	270 ※	
利得帯域幅積	$f_T$	$V_{CE} = 5\text{ V}, I_C = 20\text{ mA}$	5	7	-	GHz
出力容量	$C_{ob}$	$V_{CB} = 10\text{ V}, f = 1\text{ MHz}$	-	0.75	1.2	pF
帰還容量	$C_{re}$		-	0.5	-	pF
順方向伝達利得	$ S_{21e} ^{21}$	$V_{CE} = 5\text{ V}, I_C = 20\text{ mA}, f = 1\text{ GHz}$	9	12	-	dB
	$ S_{21e} ^{22}$	$V_{CE} = 2\text{ V}, I_C = 3\text{ mA}, f = 1\text{ GHz}$	-	8	-	dB
雑音指数	NF	$V_{CE} = 5\text{ V}, I_C = 7\text{ mA}, f = 1\text{ GHz}$	-	1.0	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.

(参考訳)

製品パラメータは、特別な記述が無い限り、記載されたテスト条件に対する電氣的特性で示しています。異なる条件下で製品動作を行った時には、電氣的特性で示している特性を得られない場合があります。

※ 2SC5226A は、20 mA  $h_{FE}$  により次のように分類している

ランク	3	4	5
$h_{FE}$	60 ~ 120	90 ~ 180	135 ~ 270

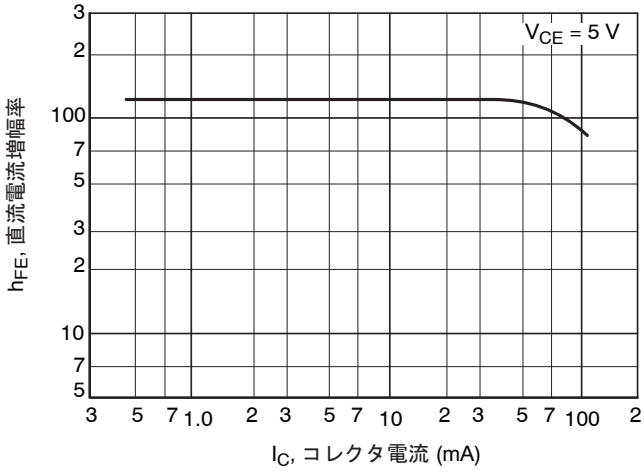


図 1.  $h_{FE} - I_C$

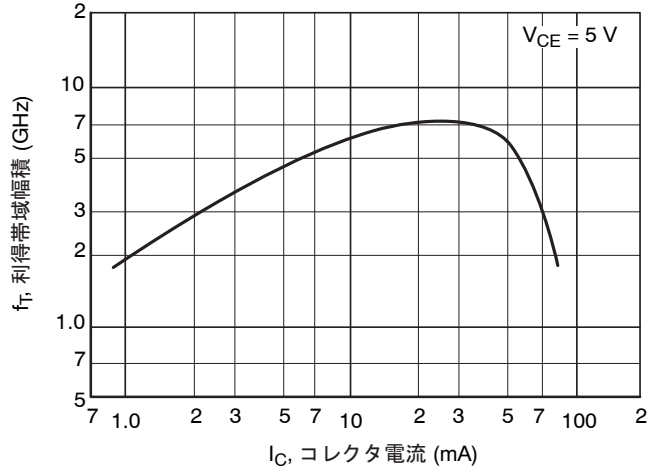


図 2.  $f_T - I_C$

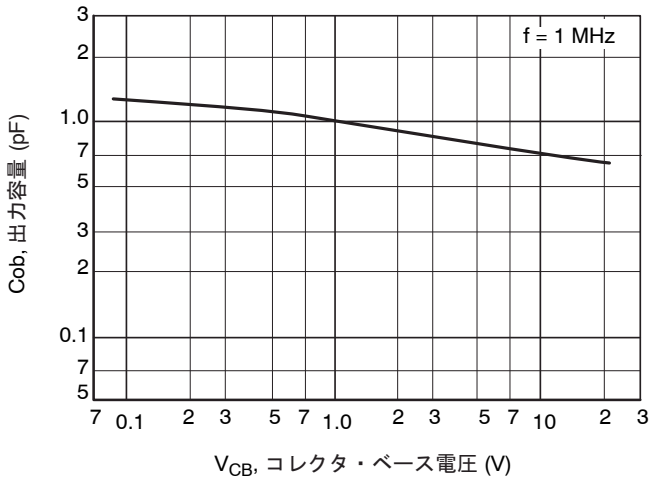


図 3.  $C_{ob} - V_{CB}$

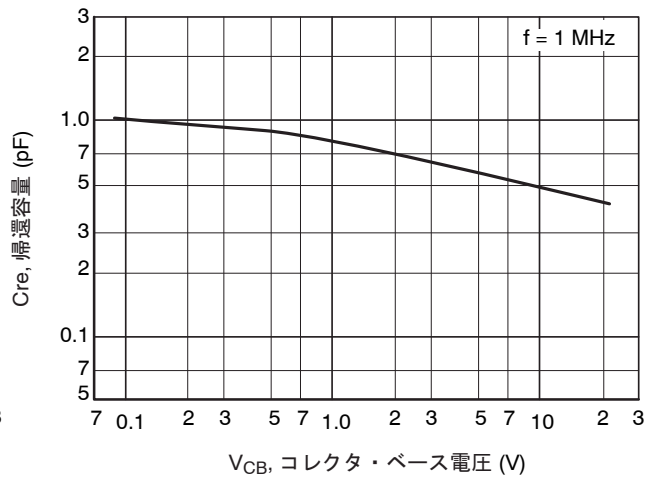


図 4.  $C_{re} - V_{CB}$

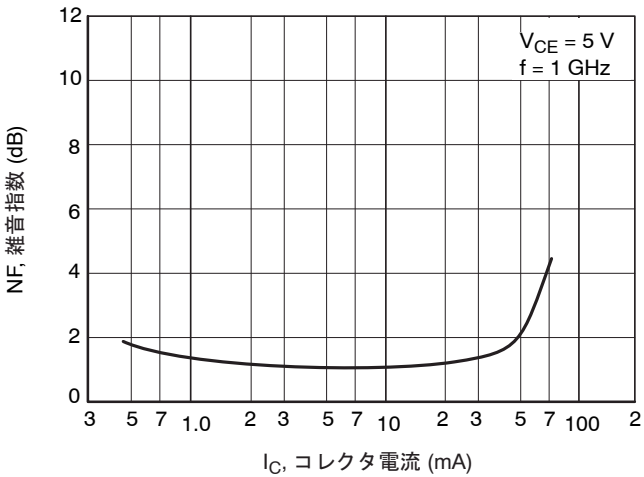


図 5.  $NF - I_C$

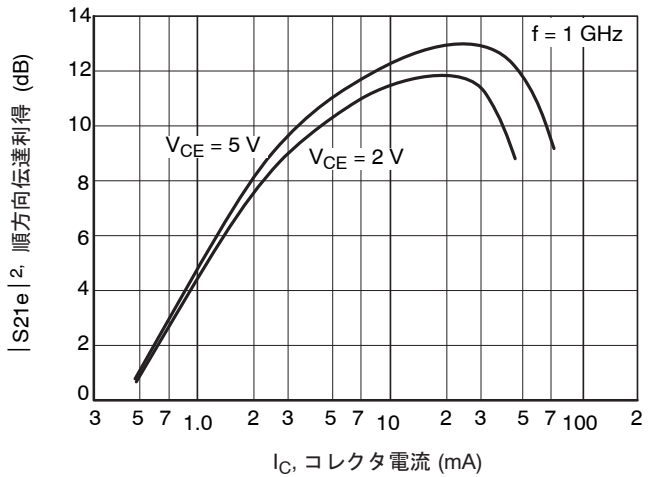


図 6.  $|S_{21e}|^2 - I_C$

# 2SC5226A

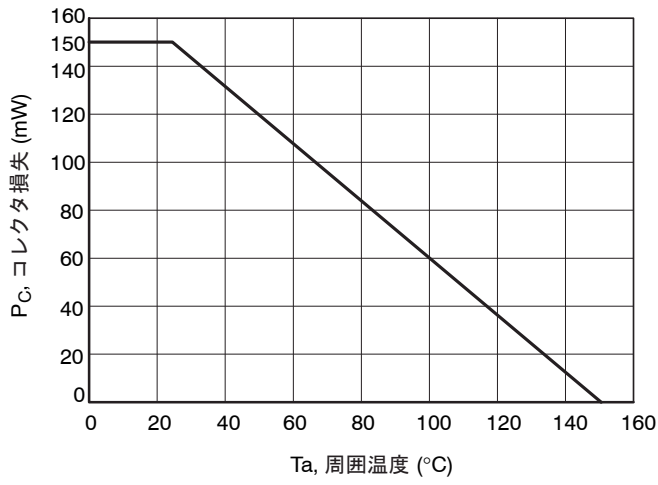
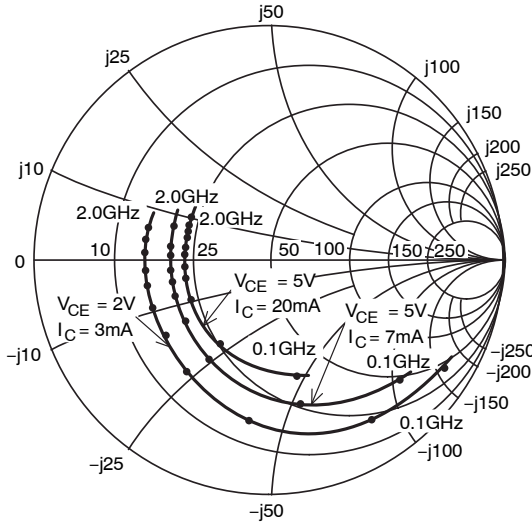


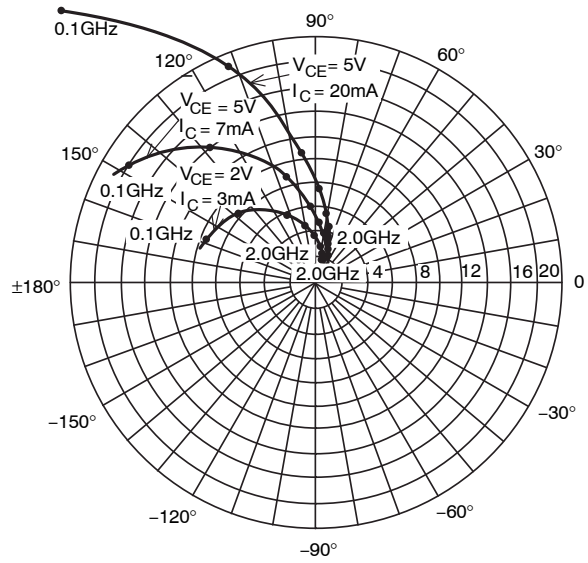
図 7.  $P_C - T_a$

# 2SC5226A



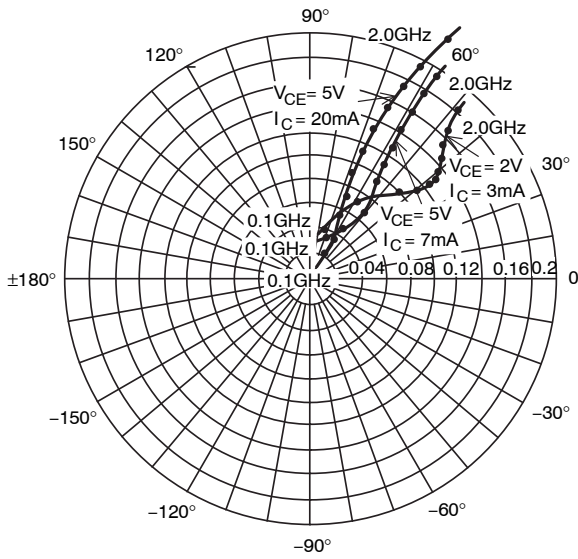
f = 100 MHz, 200 MHz ~ 2000 MHz (200 MHz Step)

图 8.



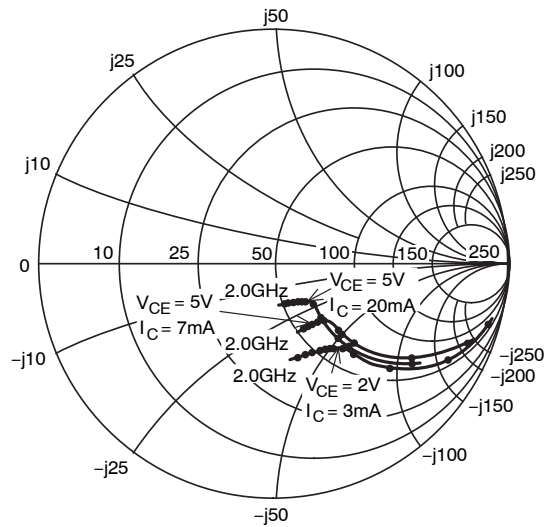
f = 100 MHz, 200 MHz ~ 2000 MHz (200 MHz Step)

图 9.



f = 100 MHz, 200 MHz ~ 2000 MHz (200 MHz Step)

图 10.



f = 100 MHz, 200 MHz ~ 2000 MHz (200 MHz Step)

图 11.

## 2SC5226A

### S パラメータ (エミッタ接地)

$V_{CE} = 5\text{ V}$ ,  $I_C = 7\text{ mA}$ ,  $Z_O = 50\ \Omega$

Freq(MHz)	S11	$\angle S11$	S21	$\angle S21$	S12	$\angle S12$	S22	$\angle S22$
100	0.720	-46.0	17.973	148.5	0.030	68.5	0.880	-23.6
200	0.612	-80.9	13.927	127.3	0.047	57.1	0.697	-37.6
400	0.497	-121.3	8.656	105.0	0.066	51.3	0.479	-47.6
600	0.456	-143.5	6.080	92.8	0.079	52.9	0.382	-50.5
800	0.440	-157.6	4.725	84.3	0.094	55.4	0.339	-51.8
1000	0.436	-167.5	3.864	77.0	0.110	56.8	0.323	-53.4
1200	0.434	-176.1	3.258	70.3	0.126	57.9	0.312	-55.8
1400	0.433	176.6	2.847	64.5	0.143	58.4	0.304	-58.3
1600	0.433	170.9	2.329	57.4	0.160	58.9	0.296	-62.0
1800	0.434	165.0	2.252	54.2	0.178	58.6	0.293	-65.0
2000	0.439	159.6	2.057	49.2	0.197	58.1	0.294	-68.1

$V_{CE} = 5\text{ V}$ ,  $I_C = 20\text{ mA}$ ,  $Z_O = 50\ \Omega$

Freq(MHz)	S11	$\angle S11$	S21	$\angle S21$	S12	$\angle S12$	S22	$\angle S22$
100	0.481	-78.8	29.795	132.9	0.022	63.9	0.707	-38.2
200	0.420	-119.2	19.008	112.2	0.033	60.8	0.470	-51.1
400	0.391	-151.6	10.416	95.4	0.052	64.7	0.296	-55.3
600	0.386	-166.4	7.084	86.6	0.071	67.2	0.236	-56.1
800	0.381	-175.9	5.407	80.1	0.092	68.4	0.213	-56.6
1000	0.382	178.2	4.401	74.1	0.114	67.8	0.208	-57.9
1200	0.385	172.1	3.701	68.5	0.134	66.8	0.204	-60.7
1400	0.388	166.7	3.217	63.6	0.156	65.6	0.202	-63.5
1600	0.390	162.1	2.839	58.8	0.176	64.0	0.199	-67.9
1800	0.391	156.7	2.534	54.3	0.197	62.4	0.197	-71.2
2000	0.394	152.1	2.319	50.1	0.219	60.6	0.197	-74.2

$V_{CE} = 2\text{ V}$ ,  $I_C = 3\text{ mA}$ ,  $Z_O = 50\ \Omega$

Freq(MHz)	S11	$\angle S11$	S21	$\angle S21$	S12	$\angle S12$	S22	$\angle S22$
100	0.858	-32.4	9.413	157.2	0.040	72.6	0.945	-16.5
200	0.782	-60.7	8.187	138.5	0.070	59.2	0.833	-29.3
400	0.653	-101.1	5.855	113.8	0.101	44.5	0.637	-43.2
600	0.588	-126.5	4.337	98.4	0.114	39.1	0.515	-50.0
800	0.557	-143.7	3.444	87.7	0.122	38.0	0.454	-53.8
1000	0.543	-156.3	2.871	78.5	0.130	38.6	0.426	-57.1
1200	0.536	-166.8	2.446	70.5	0.137	40.3	0.407	-60.3
1400	0.533	-175.5	2.145	63.5	0.146	42.5	0.393	-63.8
1600	0.527	177.0	1.904	57.1	0.155	45.0	0.382	-68.0
1800	0.525	170.3	1.714	51.7	0.168	47.3	0.379	-72.0
2000	0.528	163.8	1.564	45.9	0.183	49.2	0.378	-75.8

Land Pattern Example

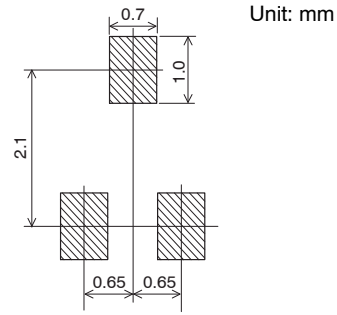
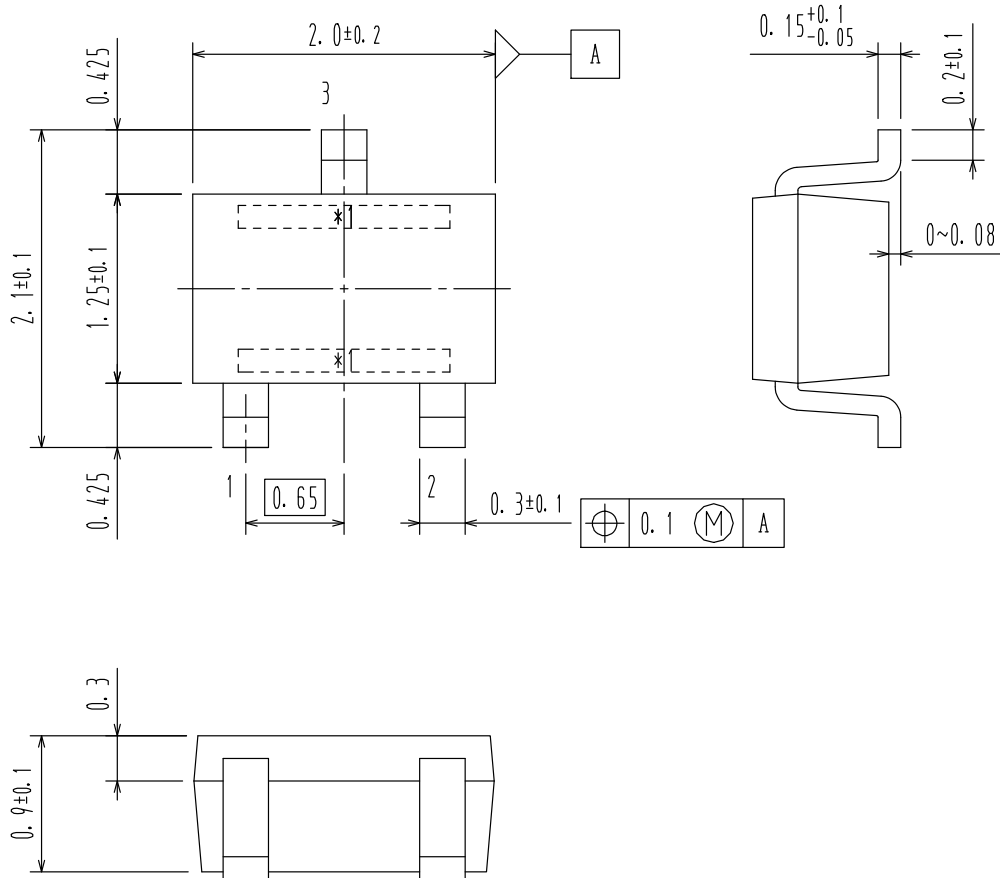


図 12. Land Pattern Example

**MECHANICAL CASE OUTLINE**  
**PACKAGE DIMENSIONS**

**SC-70 / MCP3**  
**CASE 419AJ**  
**ISSUE O**

DATE 30 NOV 2011



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