



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## 2SC4853A — NPN Epitaxial Planar Silicon Transistor Low-Voltage, Low-Current High-Frequency Amplifier Applications

### Features

- Low-voltage, low-current operation :  $f_T=5\text{GHz}$  typ  
 $(V_{CE}=1\text{V}, I_C=1\text{mA})$  :  $|S_{21e}|^2=7\text{dB}$  typ ( $f=1\text{GHz}$ )  
 :  $NF=2.6\text{dB}$  typ ( $f=1\text{GHz}$ )

### Specifications

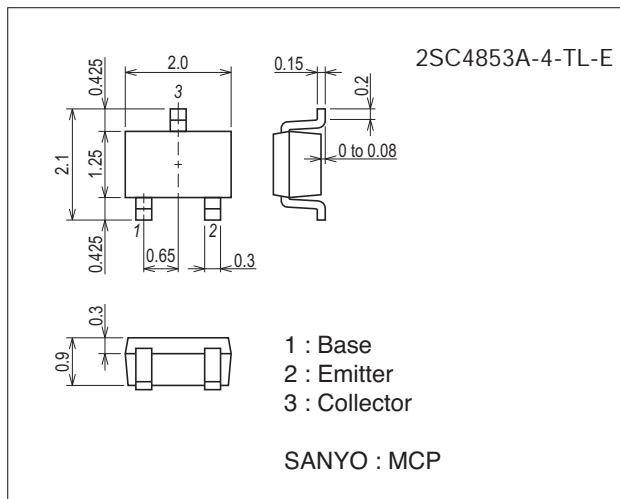
Absolute Maximum Ratings at  $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CBO}$		12	V
Collector-to-Emitter Voltage	$V_{CEO}$		6	V
Emitter-to-Base Voltage	$V_{EBO}$		1.5	V
Collector Current	$I_C$		15	mA
Collector Dissipation	$P_C$		90	mW
Junction Temperature	$T_j$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

### Package Dimensions

unit : mm (typ)

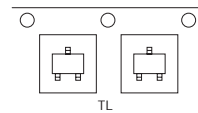
7023A-009



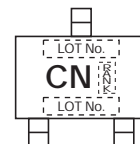
### Product & Package Information

- Package : MCP
- JEITA, JEDEC : SC-70, SOT-323
- Minimum Packing Quantity : 3,000 pcs./reel

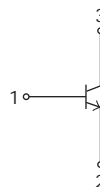
### Packing Type: TL



### Marking



### Electrical Connection



# 2SC4853A

## Electrical Characteristics at Ta=25°C

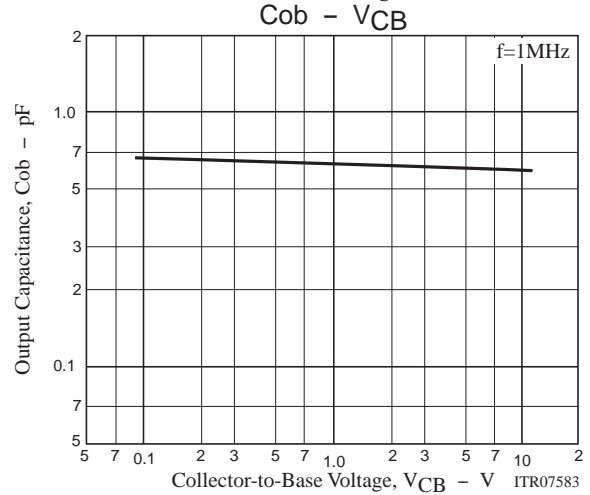
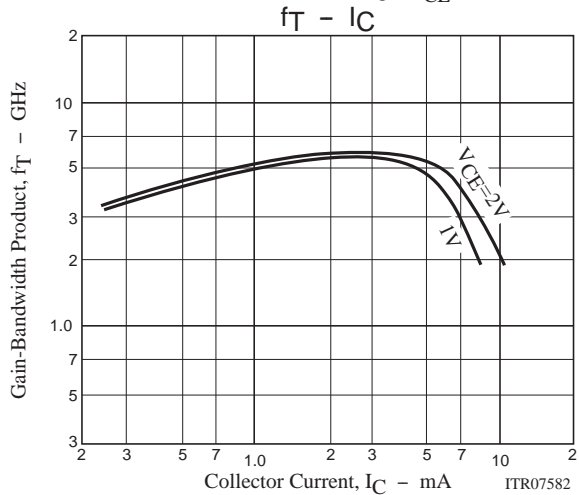
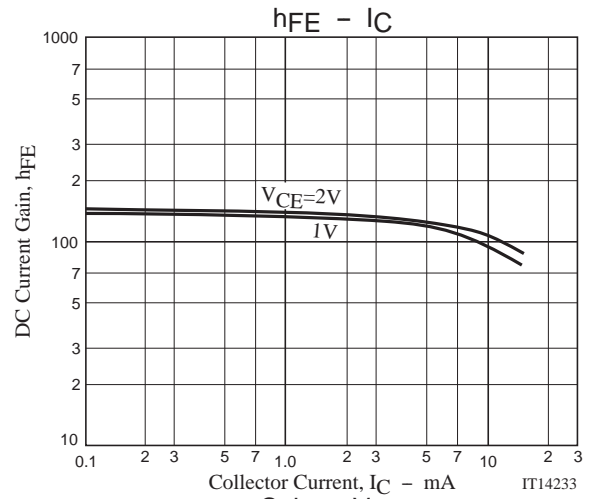
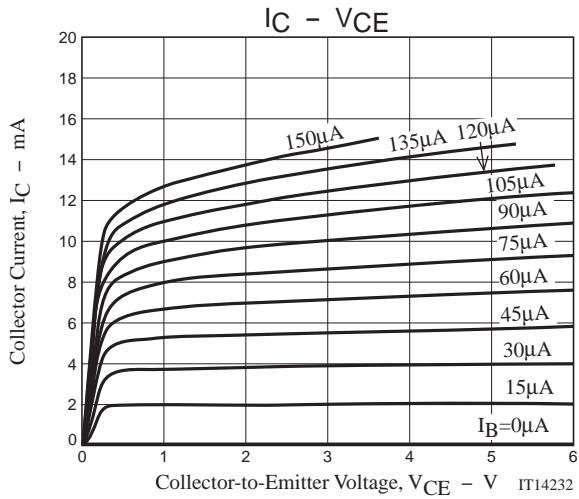
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=5V, I_E=0A$			1.0	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=1V, I_C=0A$			10	$\mu A$
DC Current Gain	$h_{FE}$	$V_{CE}=1V, I_C=1mA$	60*		270*	
Gain-Bandwidth Product	$f_T$	$V_{CE}=1V, I_C=1mA$		5		GHz
Output Capacitance	$C_{ob}$	$V_{CB}=1V, f=1MHz$		0.6	1.0	pF
Forward Transfer Gain	$ S_{21e} ^2_1$	$V_{CE}=1V, I_C=1mA, f=1GHz$	4.5	7		dB
	$ S_{21e} ^2_2$	$V_{CE}=2V, I_C=3mA, f=1GHz$		10.5		dB
Noise Figure	NF1	$V_{CE}=1V, I_C=1mA, f=1GHz$		2.6	4.5	dB
	NF2	$V_{CE}=2V, I_C=3mA, f=1GHz$		1.9		dB

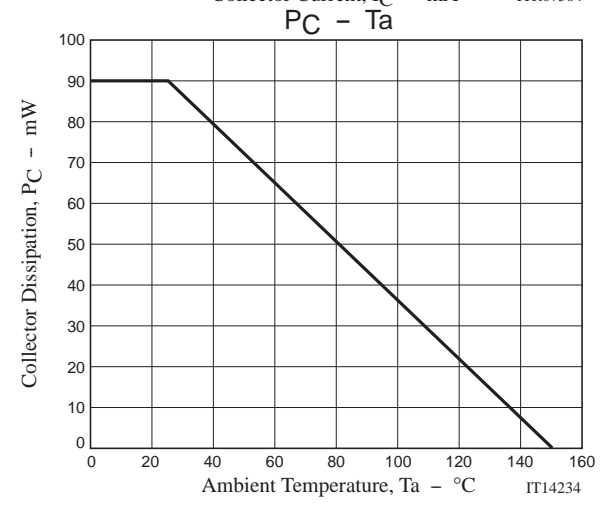
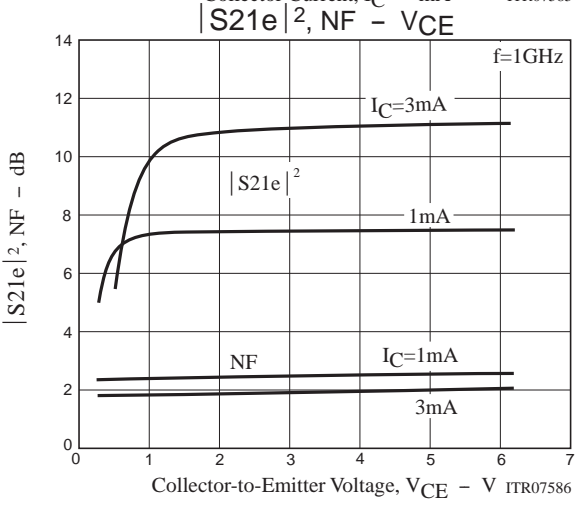
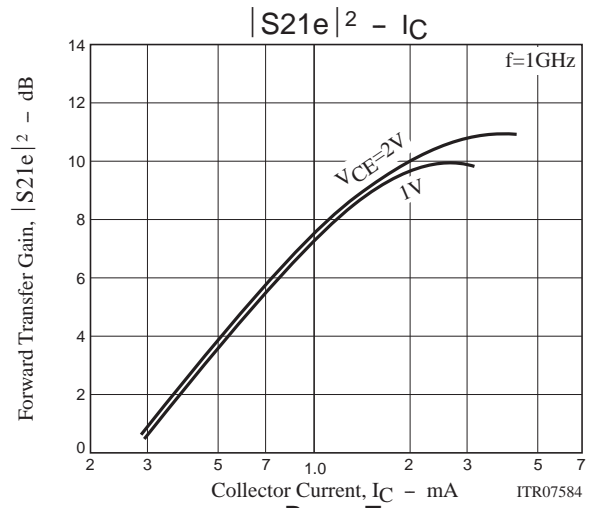
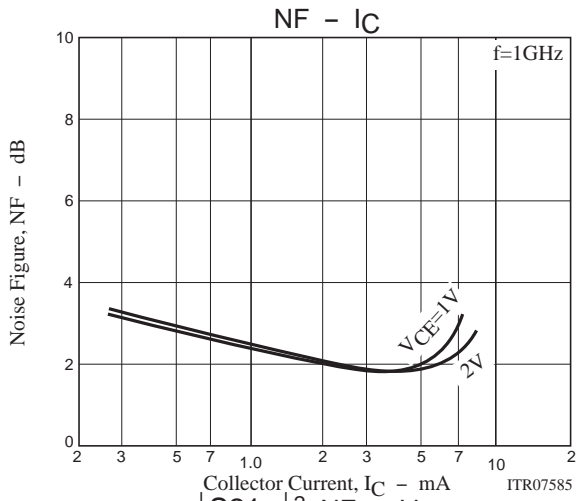
\* : The 2SC4853A is classified by 1mA  $h_{FE}$  as follows :

Rank	3	4	5
$h_{FE}$	60 to 120	90 to 180	135 to 270

## Ordering Information

Device	Package	Shipping	memo
2SC4853A-4-TL-E	MCP	3,000pcs./reel	Pb Free



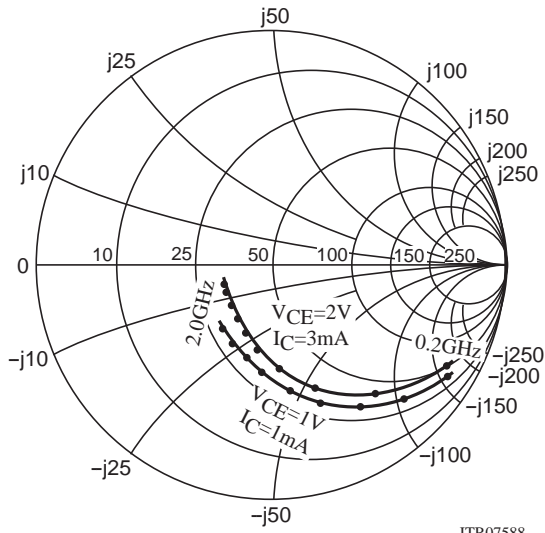


# 2SC4853A

## S Parameters

S11e

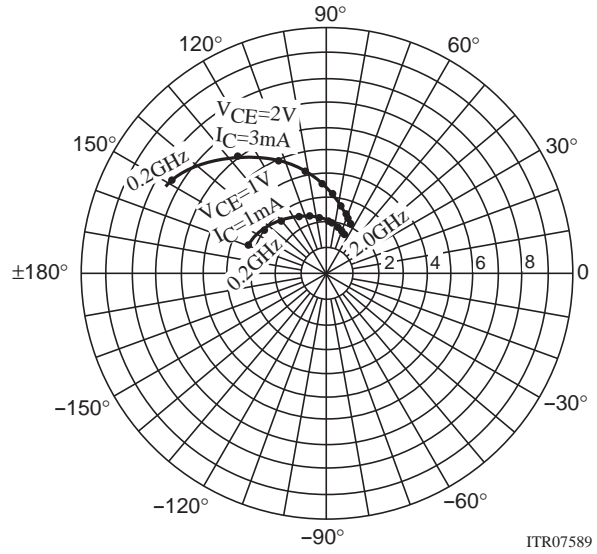
f=200MHz to 2000MHz(200MHz Step)



ITR07588

S21e

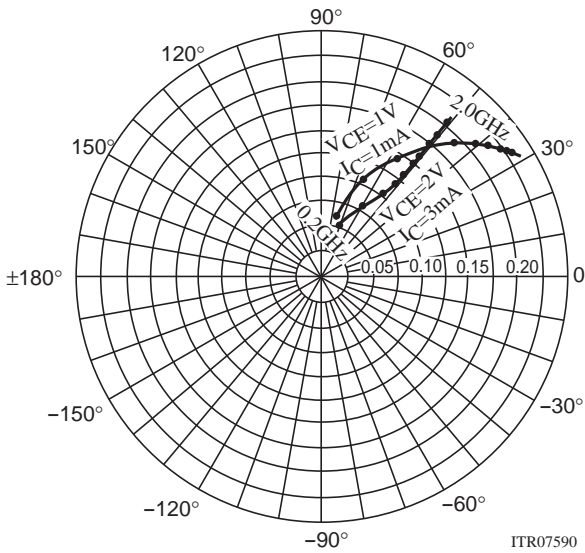
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ITR07589

S12e

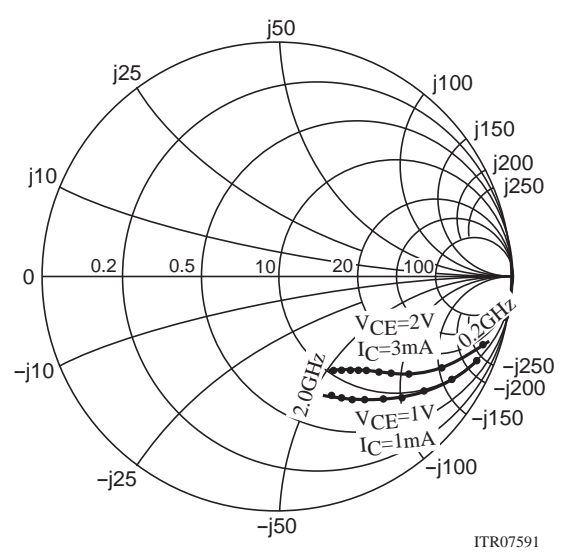
f=200MHz to 2000MHz(200MHz Step)



ITR07590

S22e

f=200MHz to 2000MHz(200MHz Step)



ITR07591

## 2SC4853A

### S Parameters (Common emitter)

$V_{CE}=1V$ ,  $I_C=1mA$ ,  $Z_O=50\Omega$

Freq(MHz)	S11	$\angle S11$	S21	$\angle S21$	S12	$\angle S12$	S22	$\angle S22$
200	0.940	-17.9	3.228	159.6	0.058	77.1	0.972	-12.2
400	0.863	-33.7	2.983	143.7	0.107	66.6	0.914	-22.7
600	0.778	-48.0	2.732	129.9	0.145	58.1	0.844	-31.7
800	0.698	-60.5	2.469	117.7	0.173	50.9	0.773	-39.6
1000	0.608	-73.5	2.320	106.2	0.195	45.4	0.717	-46.0
1200	0.546	-84.7	2.106	96.3	0.210	40.9	0.668	-51.7
1400	0.470	-96.2	1.977	87.1	0.129	37.6	0.624	-56.5
1600	0.418	-106.4	1.826	78.8	0.224	35.3	0.590	-60.6
1800	0.388	-117.3	1.700	72.2	0.230	33.8	0.562	-64.3
2000	0.354	-127.0	1.615	65.9	0.234	32.9	0.546	-67.5

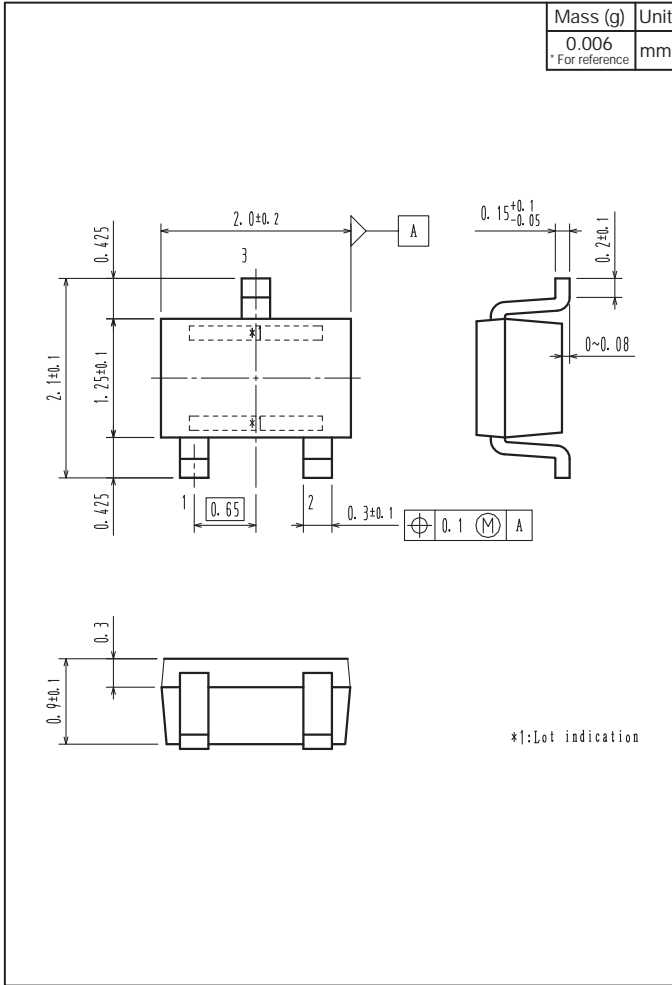
$V_{CE}=2V$ ,  $I_C=3mA$ ,  $Z_O=50\Omega$

Freq(MHz)	S11	$\angle S11$	S21	$\angle S21$	S12	$\angle S12$	S22	$\angle S22$
200	0.839	-30.6	7.428	149.3	0.050	71.4	0.916	-18.3
400	0.672	-53.7	6.016	128.5	0.083	60.6	0.778	-30.2
600	0.536	-71.7	4.908	113.6	0.105	55.1	0.672	-37.1
800	0.431	-85.7	4.073	101.9	0.121	52.5	0.597	-41.9
1000	0.360	-99.0	3.494	92.7	0.135	51.4	0.548	-45.7
1200	0.310	-111.4	3.033	84.4	0.150	50.9	0.514	-49.2
1400	0.265	-122.6	2.694	77.4	0.162	50.9	0.492	-52.3
1600	0.242	-134.7	2.422	70.9	0.175	51.0	0.475	-55.6
1800	0.228	-148.0	2.205	65.9	0.189	51.1	0.461	-59.0
2000	0.217	-157.2	2.061	60.8	0.205	51.0	0.456	-61.8

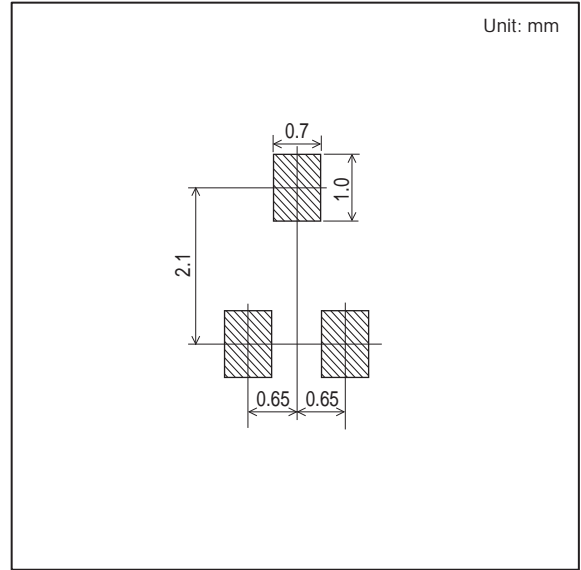


# 2SC4853A

## Outline Drawing 2SC4853A-4-TL-E



## Land Pattern Example



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