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2SC4853A

RF Transistor 6V, 15mA, $f_T=5\text{GHz}$, NPN Single MCP

ON Semiconductor®

<http://onsemi.com>

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

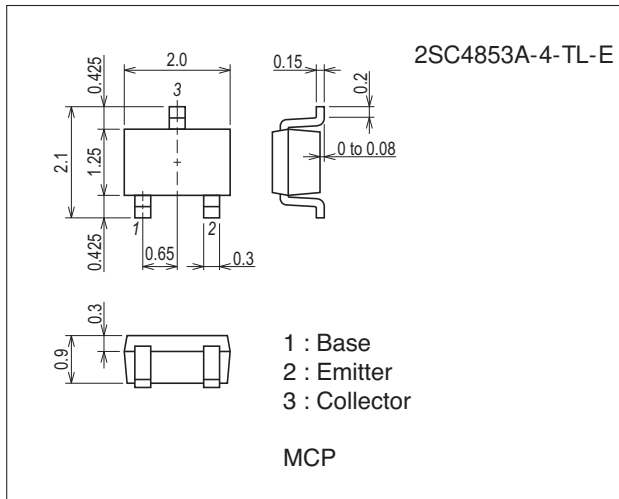
Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

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	$^\circ\text{C}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Package Dimensions

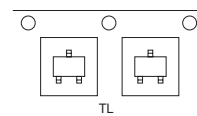
unit : mm (typ)
7023A-009



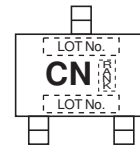
Product & Package Information

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

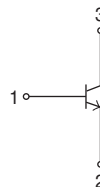
Packing Type: TL



Marking



Electrical Connection



2SC4853A

Electrical Characteristics at Ta=25°C

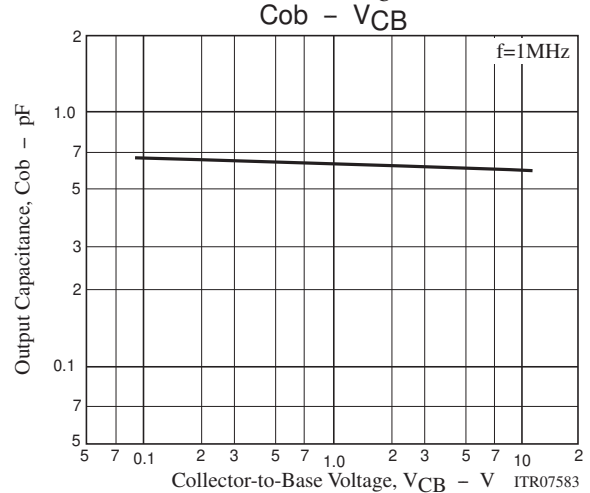
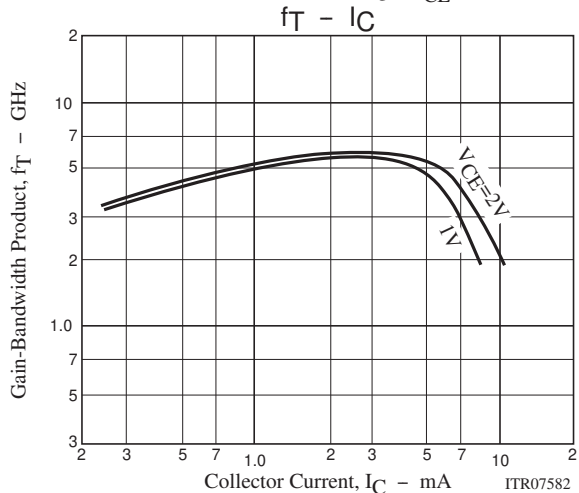
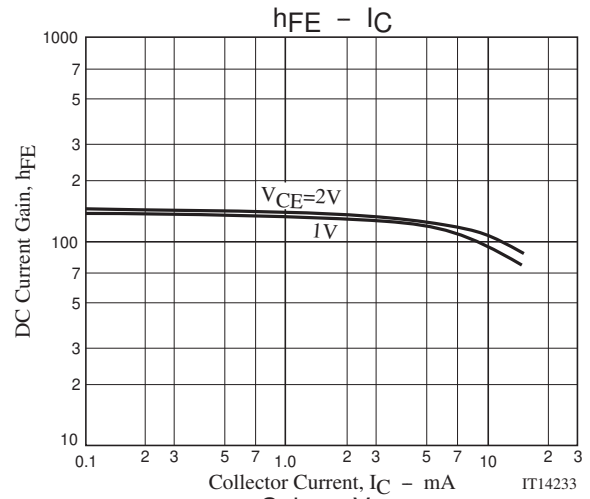
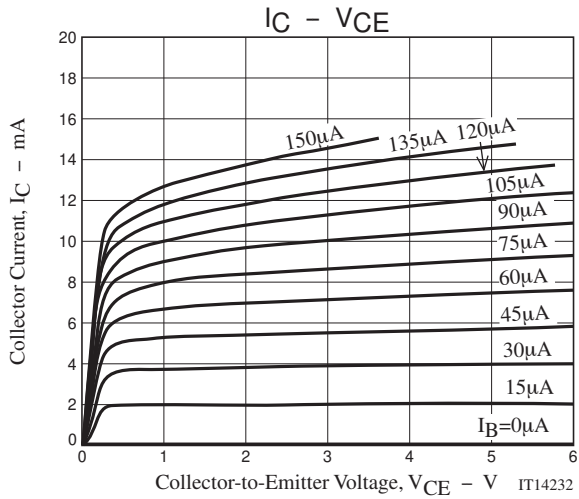
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	ICBO	V _{CB} =5V, I _E =0A			1.0	μA
Emitter Cutoff Current	IEBO	V _{EB} =1V, I _C =0A			10	μA
DC Current Gain	h _{FE}	V _{CE} =1V, I _C =1mA	60*		270*	
Gain-Bandwidth Product	f _T	V _{CE} =1V, I _C =1mA		5		GHz
Output Capacitance	Cob	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 :

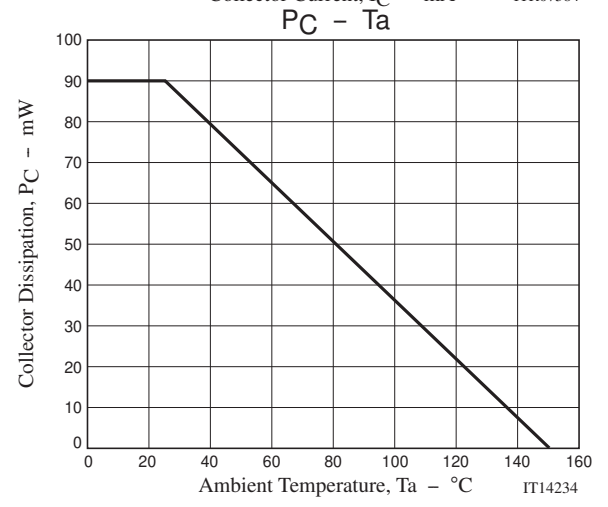
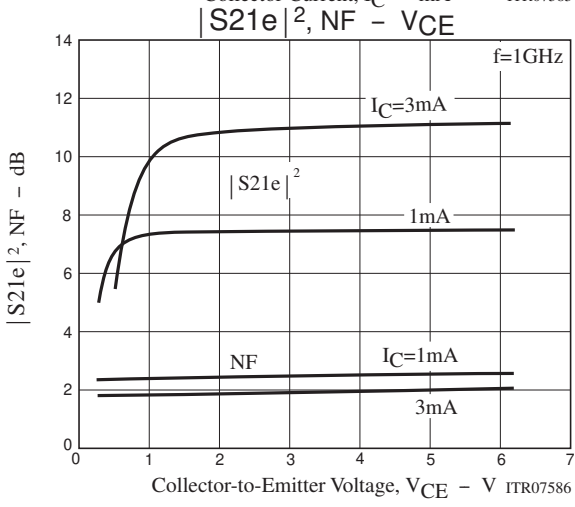
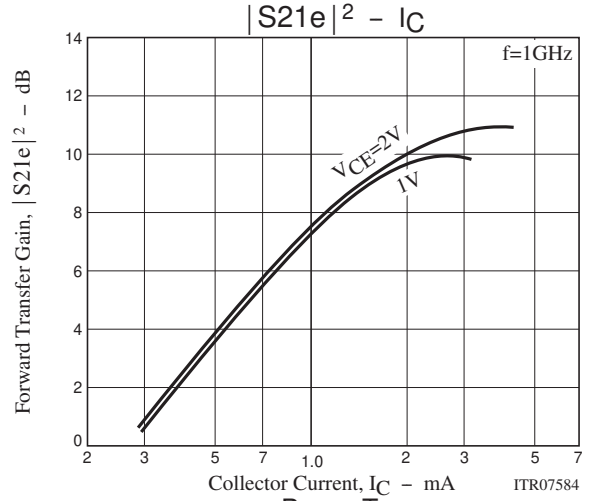
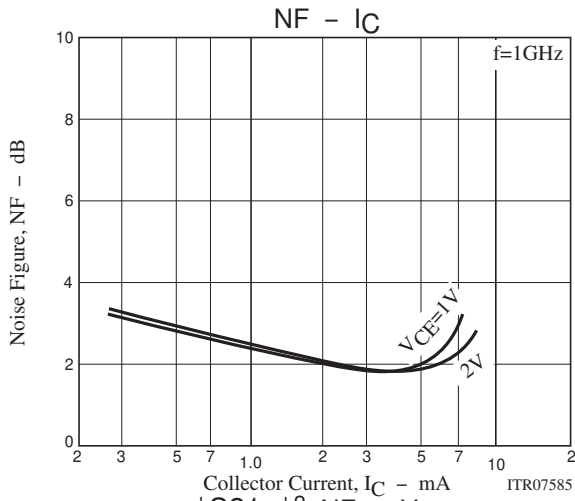
Rank	3	4	5
h _{FE}	60 to 120	90 to 180	135 to 270

Ordering Information

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



2SC4853A

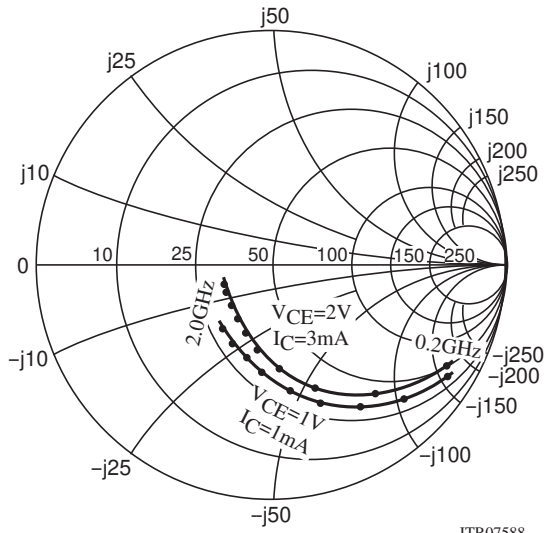


2SC4853A

S Parameters

S11e

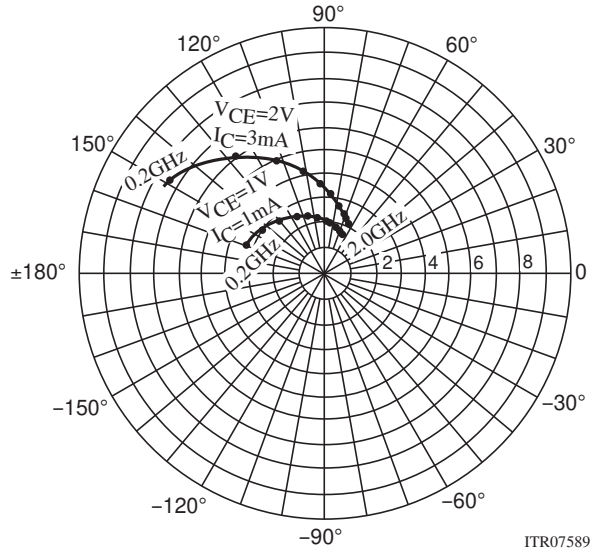
f=200MHz to 2000MHz(200MHz Step)



ITR07588

S21e

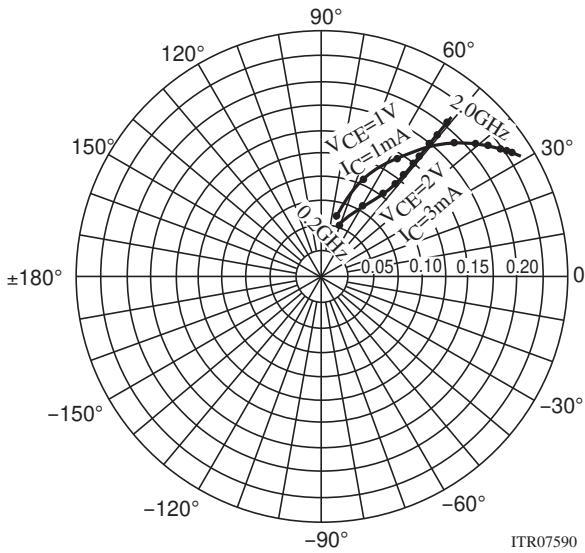
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ITR07589

S12e

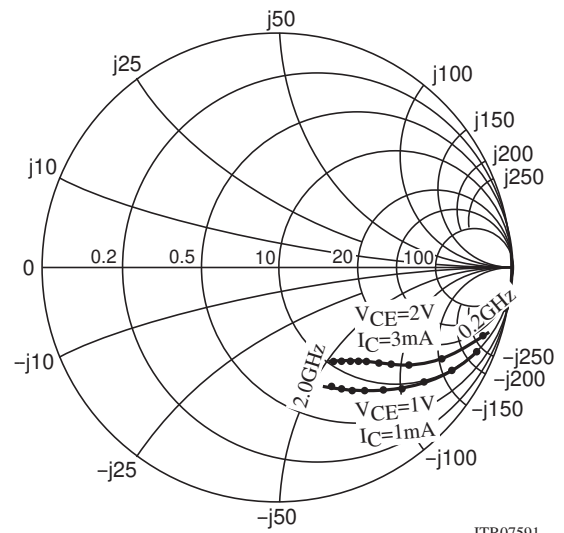
f=200MHz to 2000MHz(200MHz Step)



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

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