



# 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

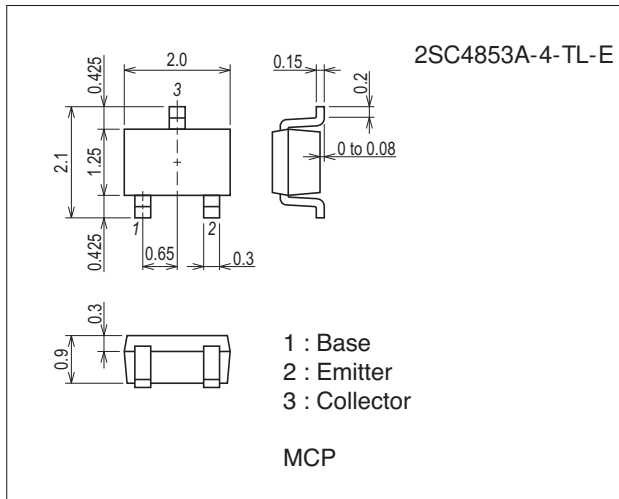
#### Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

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

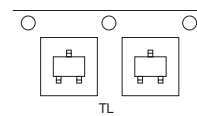
unit : mm (typ)  
7023A-009



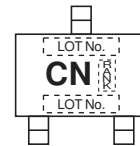
### Product & Package Information

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

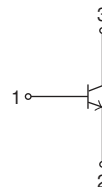
### Packing Type: TL



### Marking



### Electrical Connection



# 2SC4853A

## Electrical Characteristics at Ta=25°C

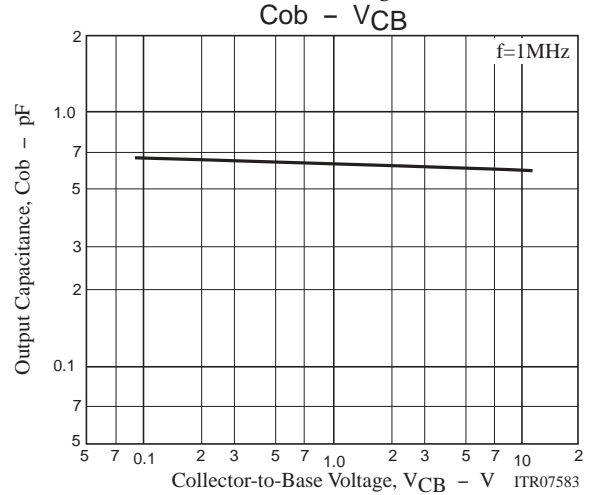
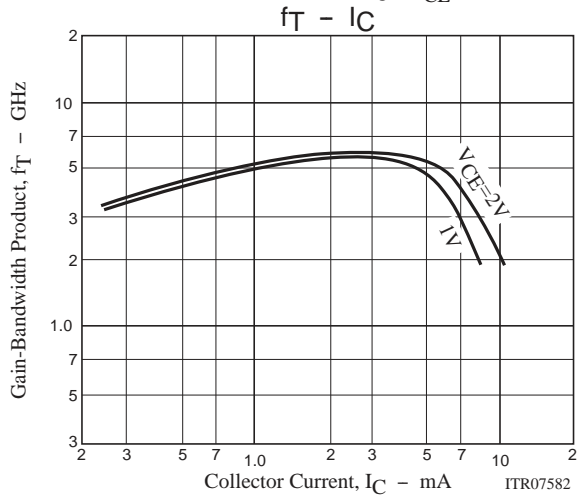
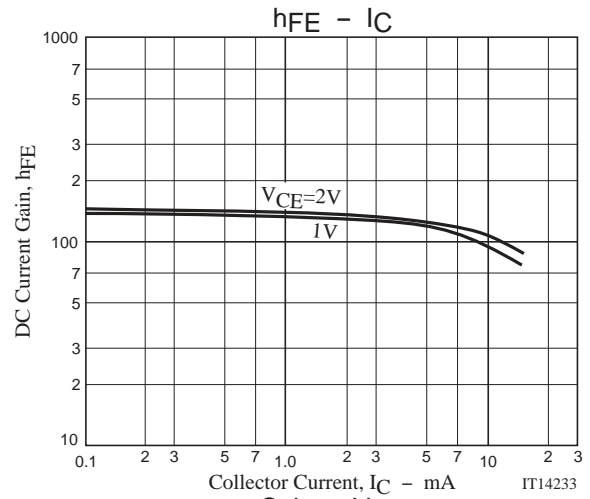
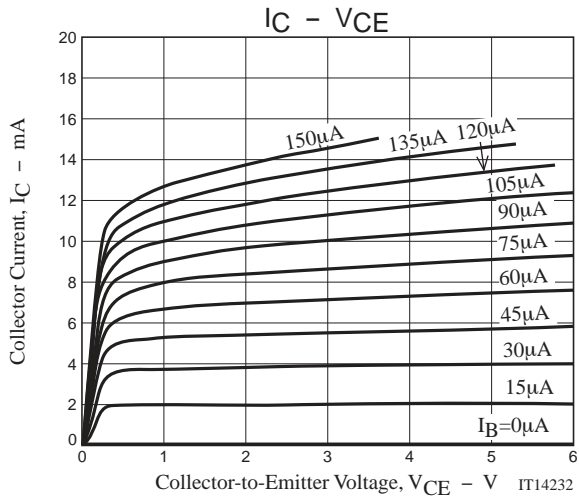
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	ICBO	V <sub>CB</sub> =5V, I <sub>E</sub> =0A			1.0	μA
Emitter Cutoff Current	IEBO	V <sub>EB</sub> =1V, I <sub>C</sub> =0A			10	μA
DC Current Gain	h <sub>FE</sub>	V <sub>CE</sub> =1V, I <sub>C</sub> =1mA	60*		270*	
Gain-Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> =1V, I <sub>C</sub> =1mA		5		GHz
Output Capacitance	Cob	V <sub>CB</sub> =1V, f=1MHz		0.6	1.0	pF
Forward Transfer Gain	S <sub>21e</sub>   <sup>2</sup> <sub>1</sub>	V <sub>CE</sub> =1V, I <sub>C</sub> =1mA, f=1GHz	4.5	7		dB
	S <sub>21e</sub>   <sup>2</sup> <sub>2</sub>	V <sub>CE</sub> =2V, I <sub>C</sub> =3mA, f=1GHz		10.5		dB
Noise Figure	NF1	V <sub>CE</sub> =1V, I <sub>C</sub> =1mA, f=1GHz		2.6	4.5	dB
	NF2	V <sub>CE</sub> =2V, I <sub>C</sub> =3mA, f=1GHz		1.9		dB

\* : The 2SC4853A is classified by 1mA h<sub>FE</sub> as follows :

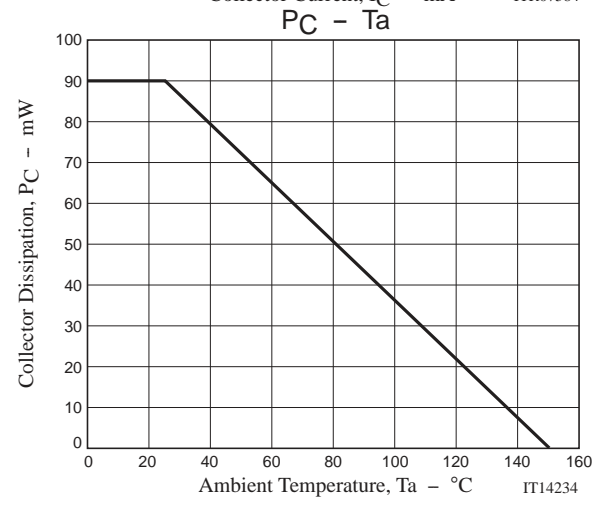
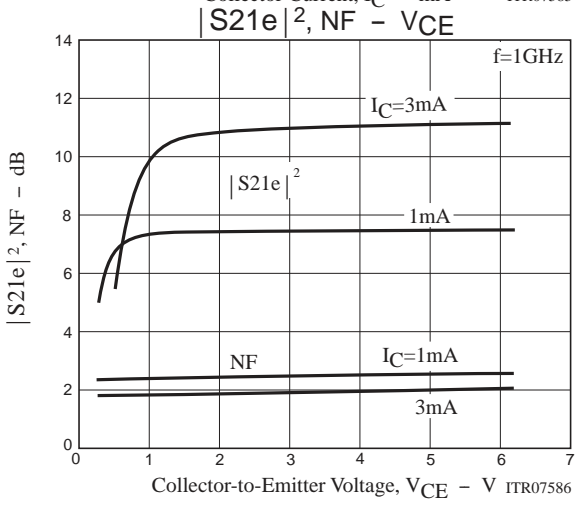
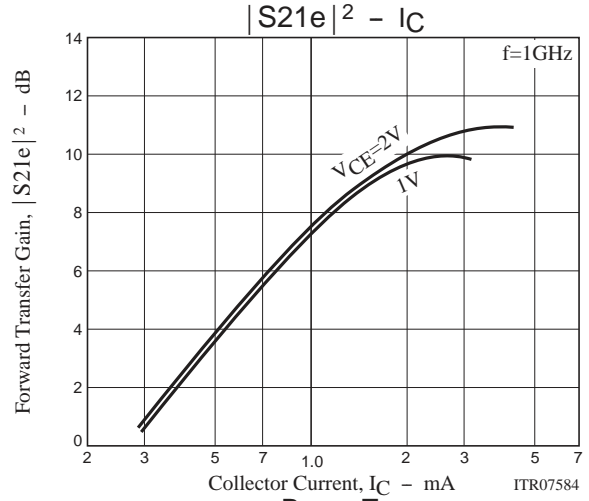
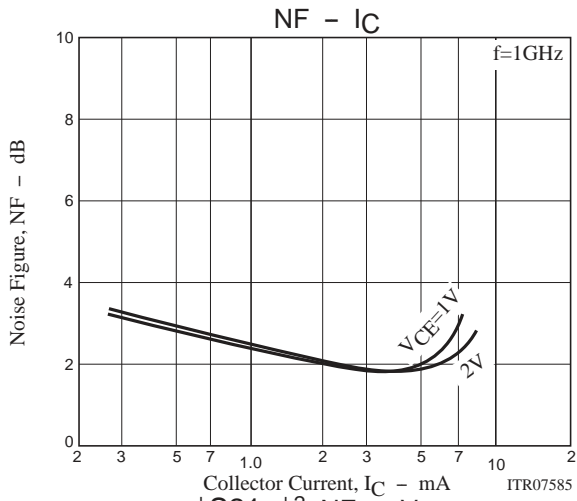
Rank	3	4	5
h <sub>FE</sub>	60 to 120	90 to 180	135 to 270

## Ordering Information

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



# 2SC4853A

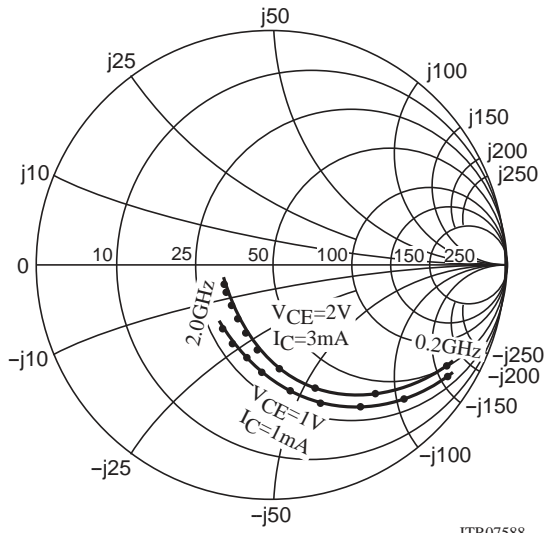


# 2SC4853A

## S Parameters

S11e

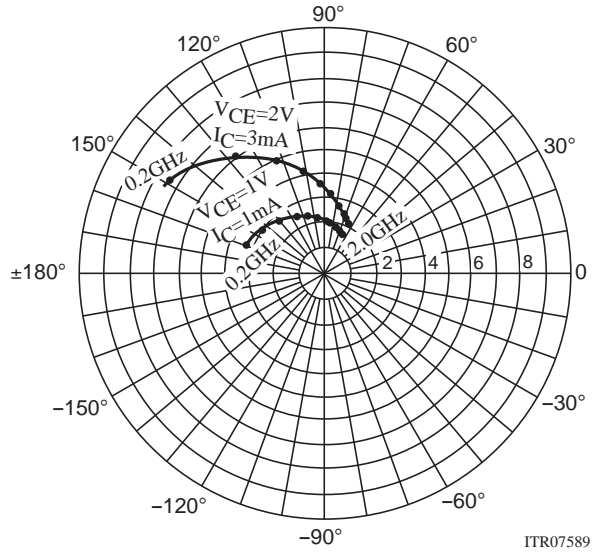
f=200MHz to 2000MHz(200MHz Step)



ITR07588

S21e

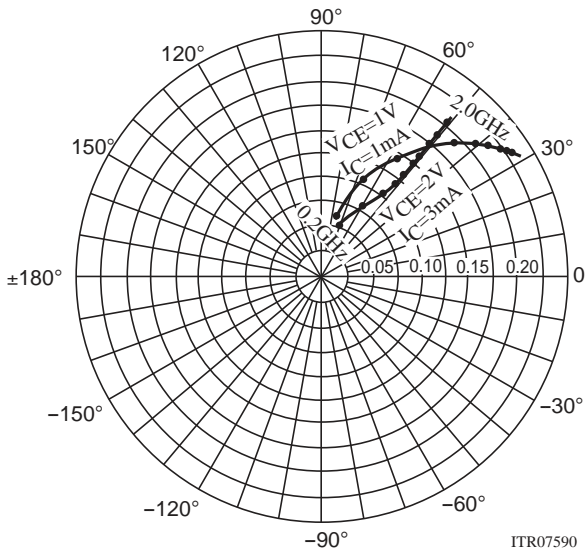
f=200MHz to 2000MHz(200MHz Step)



ITR07589

S12e

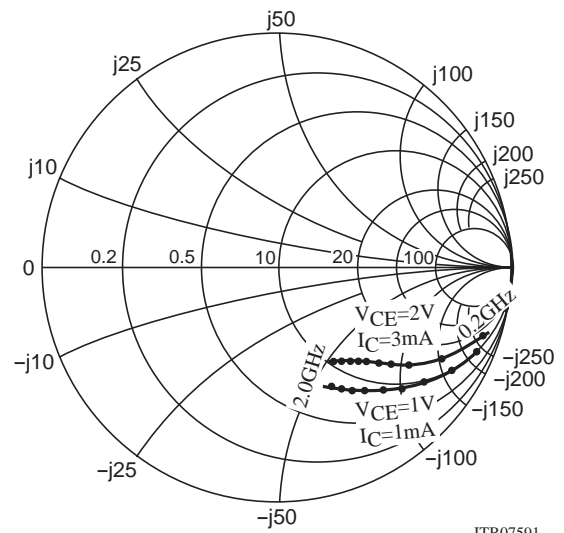
f=200MHz to 2000MHz(200MHz Step)



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

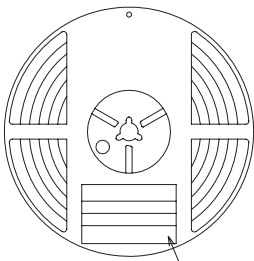
## Embossed Taping Specification

2SC4853A-4-TL-E

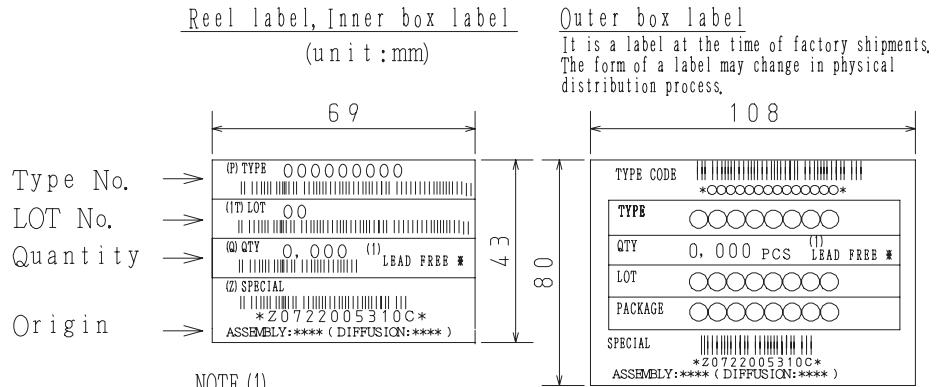
### 1. Packing Format

Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
MCP	MCP	3,000	15,000	90,000	5 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

#### Packing method



Reel label



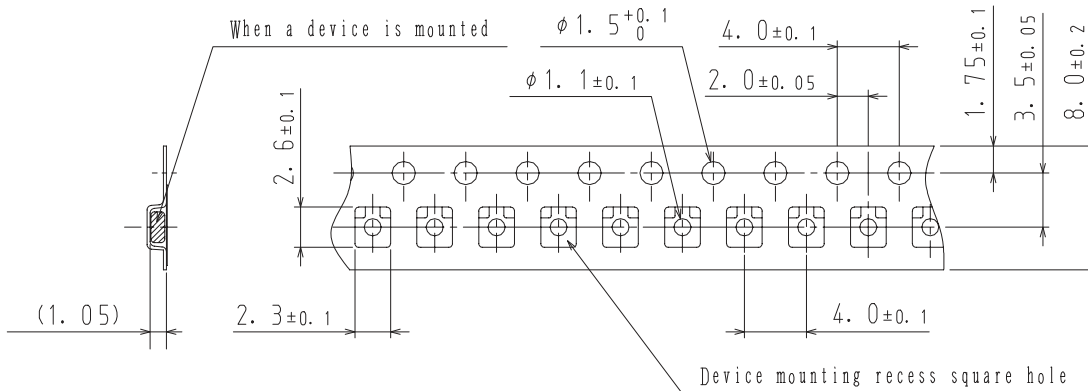
NOTE (1)

The LEAD FREE ⚡ description shows that the surface treatment of the terminal is lead free.

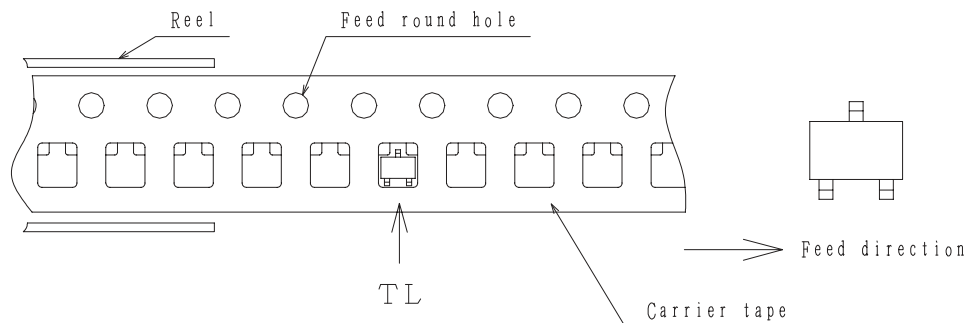
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

### 2. Taping configuration

#### 2-1. Carrier tape size (unit:mm)



#### 2-2. Device placement direction

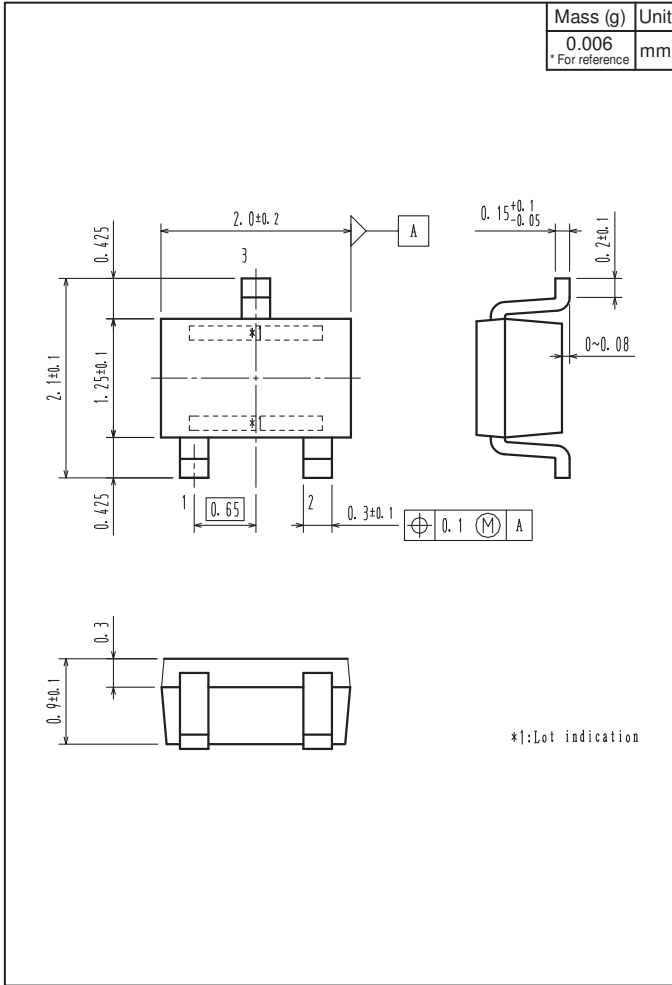


Those with oen electrode terminal on the feed hole side.....TL

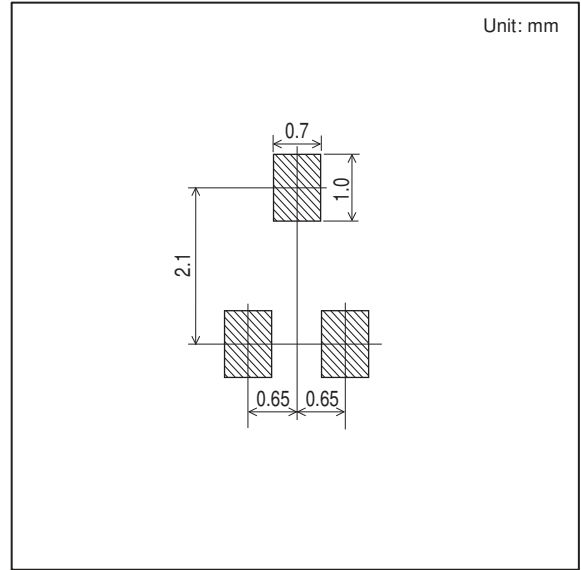
# 2SC4853A

## Outline Drawing

2SC4853A-4-TL-E



## Land Pattern Example



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