



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

2SC5245A — NPN Epitaxial Planar Silicon Transistor UHF to S-Band Low-Noise Amplifier OSC Applications

Features

- Low-noise : NF=0.9dB typ (f=1GHz)
: NF=1.4dB typ (f=1.5GHz)
- High gain : $|S_{21e}|^2=10\text{dB typ (f=1.5GHz)}$
- High cut-off frequency : $f_T=8\text{GHz typ}$
- Low-voltage, low-current operation (VCE=1V, IC=1mA)
: $f_T=3.5\text{GHz typ}$
: $|S_{21e}|^2=5.5\text{dB typ (f=1.5GHz)}$

Specifications

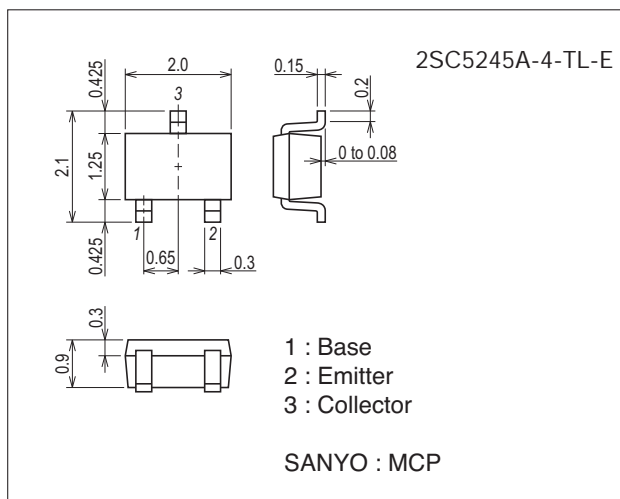
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V _{CBO}		20	V
Collector-to-Emitter Voltage	V _{CEO}		10	V
Emitter-to-Base Voltage	V _{EBO}		1.5	V
Collector Current	I _C		30	mA
Collector Dissipation	P _C		150	mW
Junction Temperature	T _J		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C

Package Dimensions

unit : mm (typ)

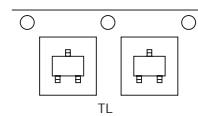
7023A-009



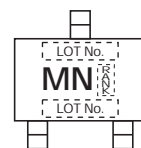
Product & Package Information

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

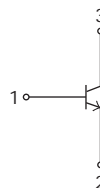
Packing Type: TL



Marking



Electrical Connection



2SC5245A

Electrical Characteristics at Ta=25°C

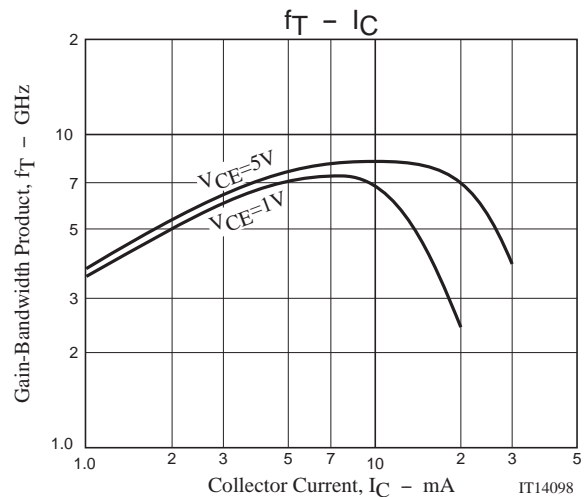
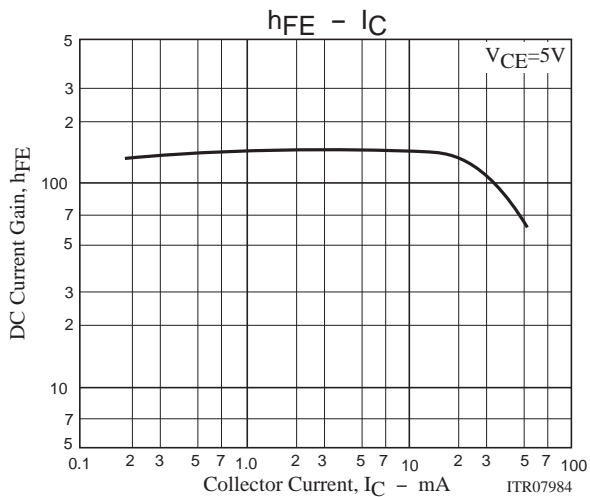
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	ICBO	V _{CB} =10V, I _E =0A			1.0	μA
Emitter Cutoff Current	IEBO	V _{EB} =1V, I _C =0A			10	μA
DC Current Gain	h _{FE}	V _{CE} =5V, I _C =10mA	60*		270*	
Gain-Bandwidth Product	f _{T1}	V _{CE} =5V, I _C =10mA	5	8		GHz
	f _{T2}	V _{CE} =1V, I _C =1mA		3.5		GHz
Output Capacitance	C _{ob}	V _{CB} =10V, f=1MHz		0.45	0.7	pF
Reverse Transfer Capacitance	C _{re}				0.30	
Forward Transfer Gain	S _{21e} ² ₁	V _{CE} =5V, I _C =10mA, f=1.5GHz	8	10		dB
	S _{21e} ² ₂	V _{CE} =1V, I _C =1mA, f=1.5GHz		5.5		dB
Noise Figure	NF1	V _{CE} =5V, I _C =5mA, f=1.5GHz		1.4	3.0	dB
	NF2	V _{CE} =2V, I _C =3mA, f=1GHz		0.9		dB

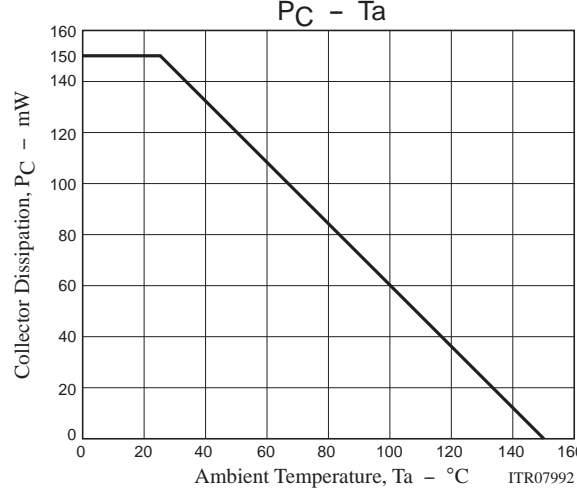
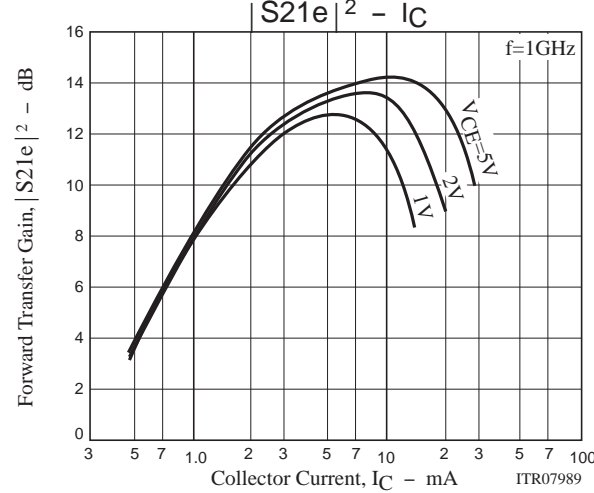
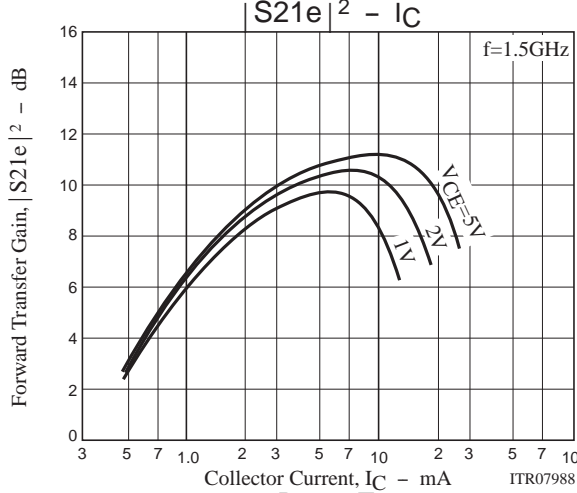
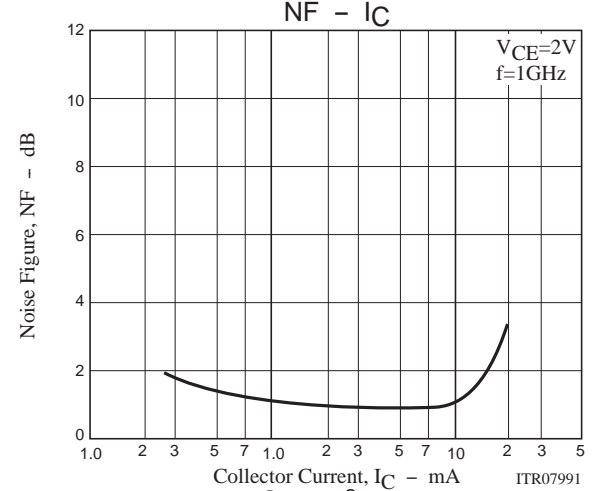
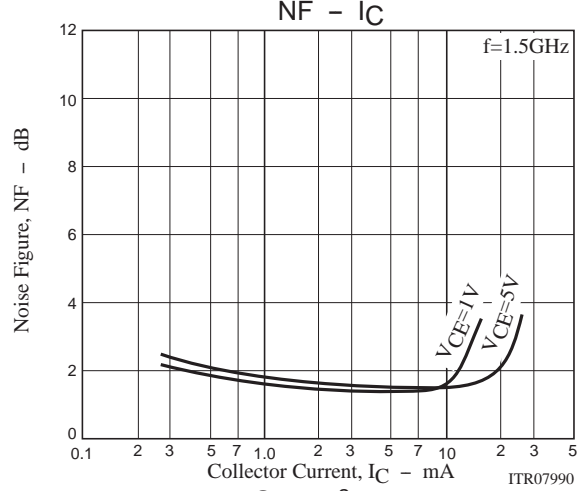
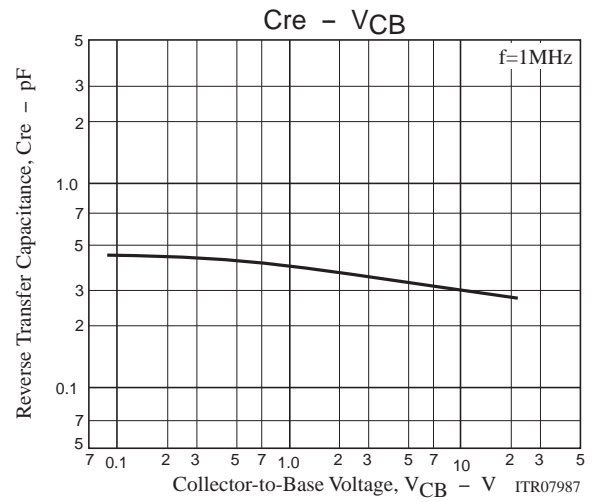
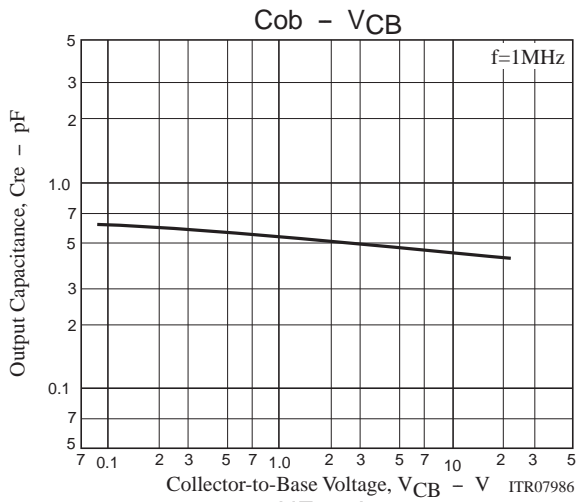
* : The 2SC5245A is classified by 10mA h_{FE} as follows :

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

Ordering Information

Device	Package	Shipping	memo
2SC5245A-4-TL-E	MCP	3,000pcs./reel	Pb Free

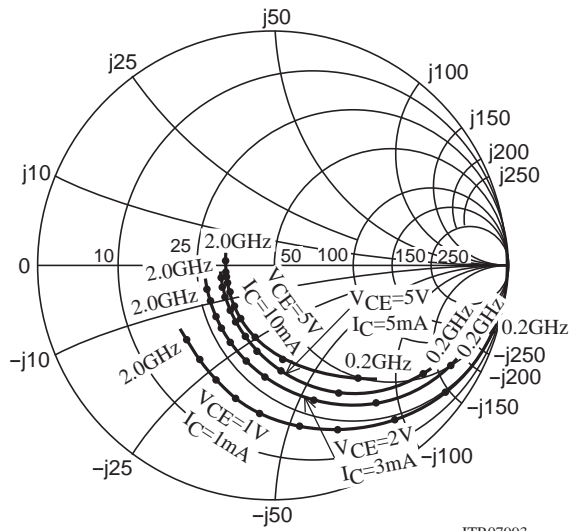




2SC5245A

S11e

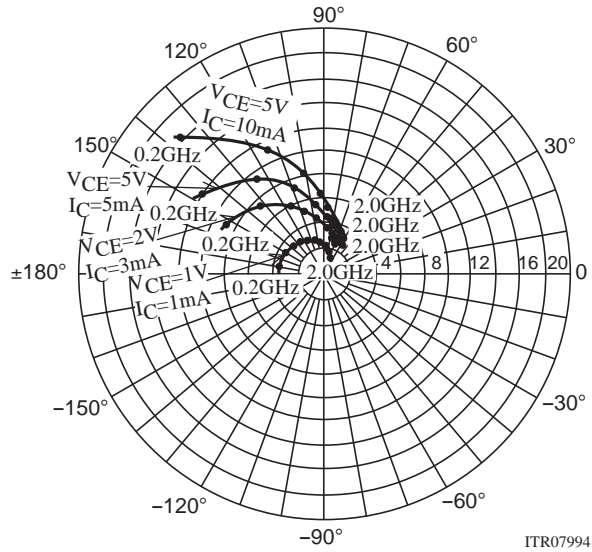
f=200MHz to 2000MHz(200MHz Step)



ITR07993

S21e

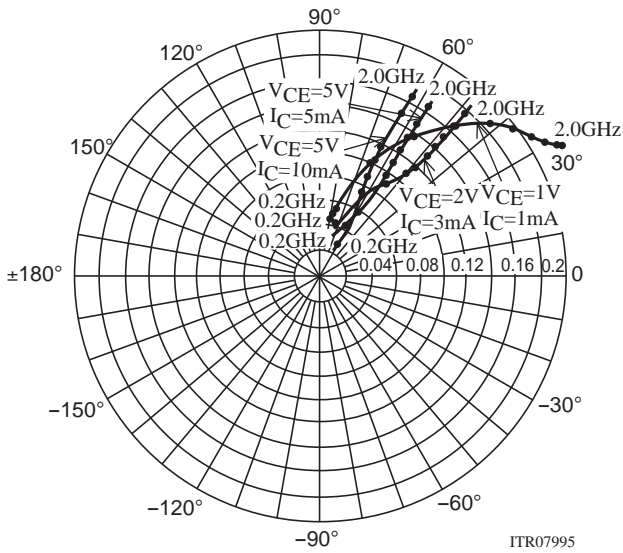
f=200MHz to 2000MHz(200MHz Step)



ITR07994

S12e

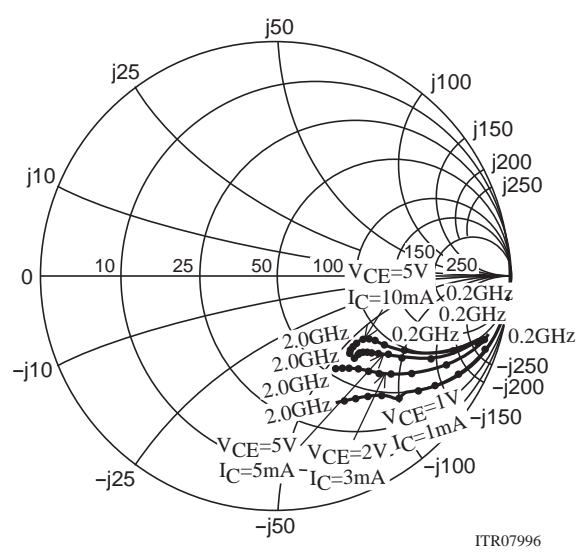
f=200MHz to 2000MHz(200MHz Step)



ITR07995

S22e

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



ITR07996

2SC5245A

S Parameters (Common emitter)

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

Freq(MHz)	S11	$\angle S11$	S21	$\angle S21$	S12	$\angle S12$	S22	$\angle S22$
200	0.763	-37.5	11.926	146.9	0.036	70.7	0.892	-19.1
400	0.590	-65.4	9.202	124.3	0.058	60.9	0.740	-29.1
600	0.456	-85.5	7.173	109.4	0.073	57.4	0.631	-33.7
800	0.374	-102.0	5.743	98.7	0.086	56.7	0.566	-35.8
1000	0.323	-115.0	4.785	90.5	0.098	56.7	0.528	-37.2
1200	0.288	-127.5	4.105	83.6	0.110	57.2	0.505	-38.4
1400	0.264	-137.7	3.599	77.5	0.123	57.7	0.488	-39.6
1600	0.248	-147.4	3.213	71.3	0.136	57.6	0.476	-41.2
1800	0.239	-156.9	2.905	66.4	0.150	57.6	0.466	-43.3
2000	0.235	-165.7	2.651	61.3	0.165	57.2	0.462	-45.4

$V_{CE}=5V, I_C=10mA, Z_O=50\Omega$

Freq(MHz)	S11	$\angle S11$	S21	$\angle S21$	S12	$\angle S12$	S22	$\angle S22$
200	0.605	-52.6	16.354	136.2	0.031	67.5	0.804	-23.9
400	0.417	-84.6	11.011	113.3	0.048	62.4	0.622	-30.5
600	0.319	-106.3	8.026	100.5	0.062	62.2	0.533	-32.0
800	0.266	-124.6	6.250	91.3	0.076	63.4	0.491	-32.4
1000	0.238	-136.5	5.115	84.7	0.090	64.3	0.469	-33.2
1200	0.225	-148.9	4.336	78.8	0.104	64.4	0.458	-34.6
1400	0.215	-158.3	3.813	73.4	0.119	64.5	0.449	-35.8
1600	0.213	-167.3	3.365	68.1	0.135	63.8	0.443	-37.7
1800	0.212	-175.6	3.030	63.5	0.150	63.1	0.436	-39.6
2000	0.216	-177.5	2.754	58.9	0.166	62.5	0.438	-41.9

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

Freq(MHz)	S11	$\angle S11$	S21	$\angle S21$	S12	$\angle S12$	S22	$\angle S22$
200	0.842	-30.7	8.491	153.0	0.044	72.5	0.931	-17.1
400	0.704	-56.3	7.161	131.9	0.075	60.9	0.808	-28.8
600	0.579	-76.1	5.879	116.3	0.095	54.1	0.696	-36.2
800	0.480	-93.1	4.882	104.2	0.109	51.0	0.615	-40.6
1000	0.417	-106.3	4.154	95.0	0.121	49.3	0.564	-43.5
1200	0.376	-119.6	3.597	87.1	0.132	48.7	0.526	-45.8
1400	0.343	-130.2	3.212	80.2	0.143	48.6	0.496	-47.5
1600	0.319	-140.5	2.875	73.4	0.154	48.7	0.475	-49.6
1800	0.303	-150.0	2.604	67.7	0.166	48.6	0.461	-51.6
2000	0.298	-160.0	2.383	62.1	0.179	48.9	0.451	-52.9

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

Freq(MHz)	S11	$\angle S11$	S21	$\angle S21$	S12	$\angle S12$	S22	$\angle S22$
200	0.945	-18.9	3.296	162.5	0.054	77.2	0.980	-11.0
400	0.884	-37.3	3.206	145.9	0.102	65.9	0.934	-20.5
600	0.810	-53.6	2.942	131.2	0.139	56.3	0.870	-29.0
800	0.728	-69.4	2.711	117.8	0.166	48.6	0.811	-35.5
1000	0.667	-82.5	2.449	107.0	0.187	42.5	0.763	-40.9
1200	0.605	-95.8	2.252	96.9	0.199	37.3	0.715	-45.7
1400	0.561	-106.1	2.061	88.1	0.207	33.5	0.673	-49.4
1600	0.518	-117.2	1.909	79.5	0.212	30.6	0.638	-53.4
1800	0.492	-127.5	1.766	72.2	0.215	28.6	0.611	-56.5
2000	0.465	-137.9	1.658	65.2	0.217	27.6	0.592	-59.9

2SC5245A

Embossed Taping Specification

2SC5245A-4-TL-E

1. Packing Format

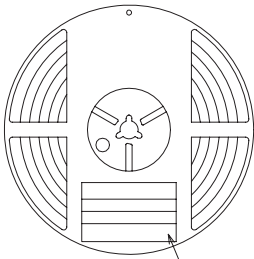
Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
MCP	MCP	3,000	15,000	90,000	5 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

Reel label, Inner box label
(unit : mm)

Outer box label

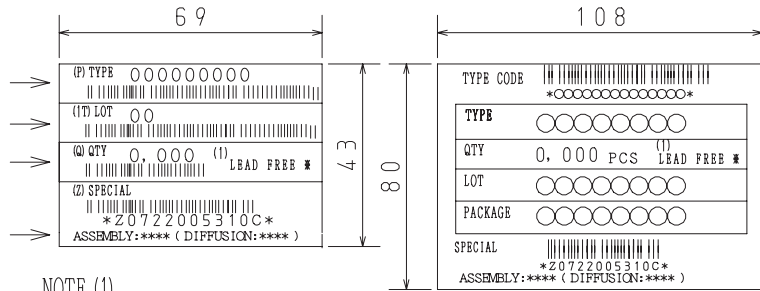
It is a label at the time of factory shipments.
The form of a label may change in physical distribution process.

Packing method



Reel label

Type No.
LOT No.
Quantity
Origin



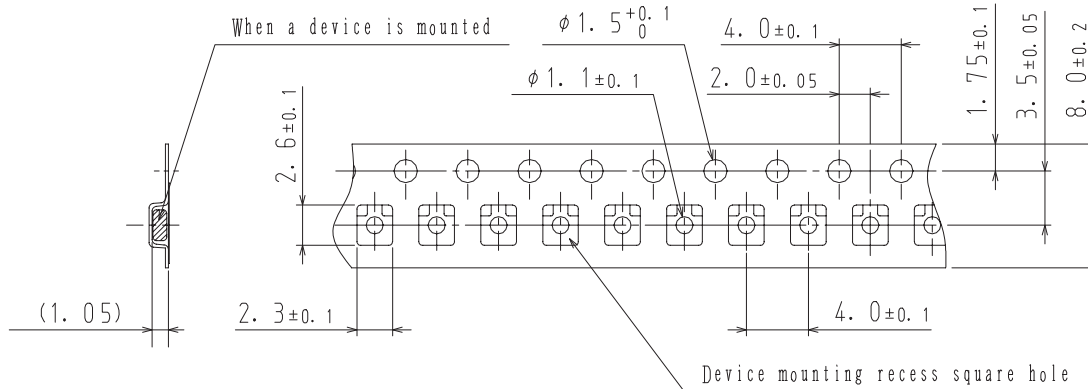
NOTE (1)

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

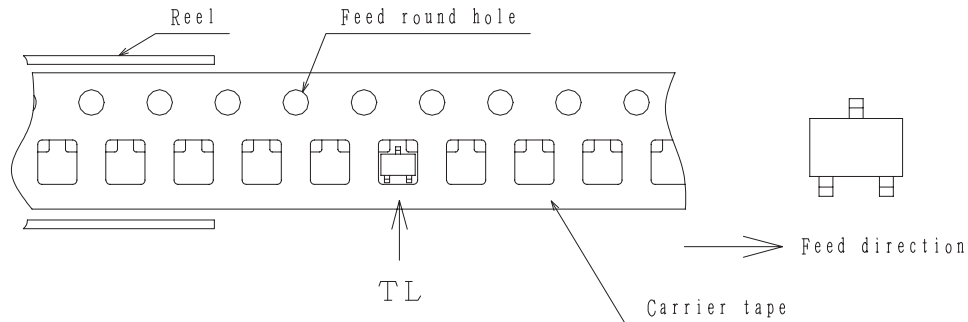
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



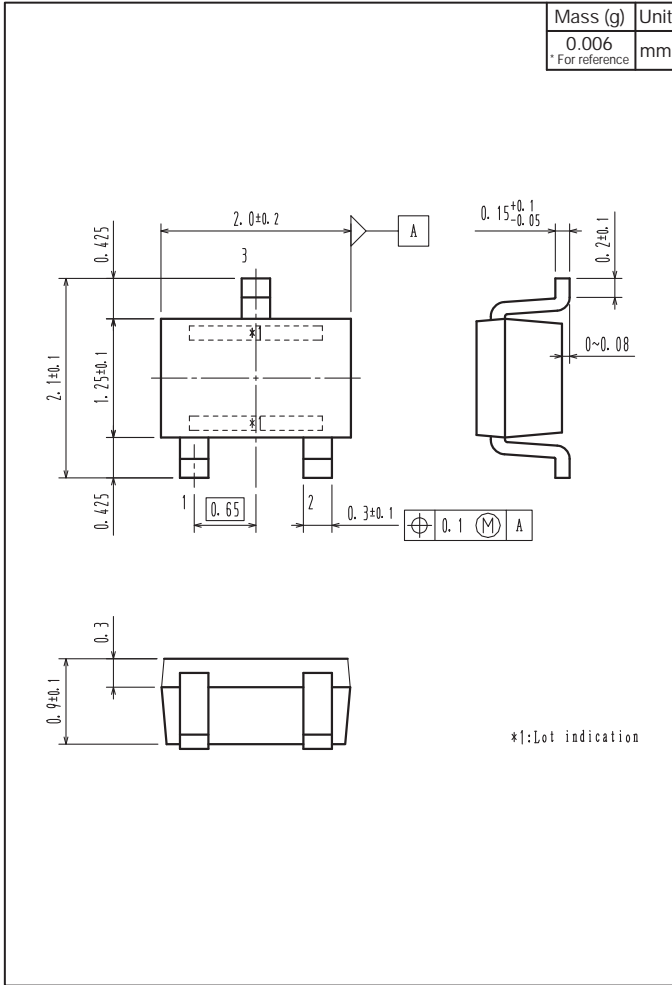
2-2. Device placement direction



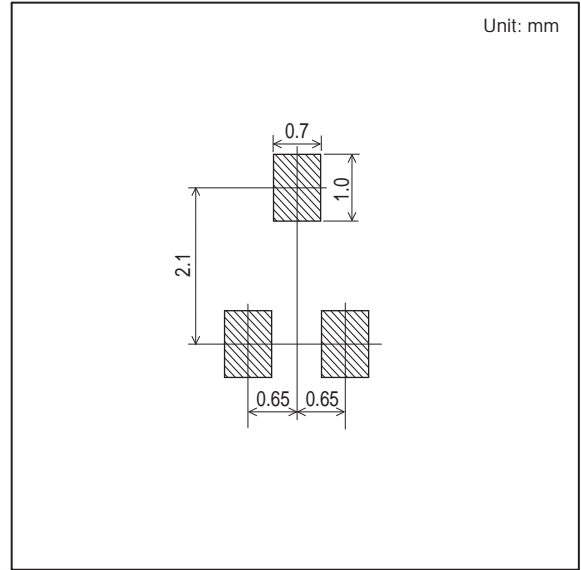
Those with one electrode terminal on the feed hole side.....TL

2SC5245A

Outline Drawing 2SC5245A-4-TL-E



Land Pattern Example



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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



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Факс: 8 (812) 320-02-42

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