



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

NPN Epitaxial Planar Silicon Transistor

15GN01CA — VHF to UHF Band High-Frequency Switching, High-Frequency General-Purpose Amplifier Applications

Features

- Small ON-resistance [$R_{on}=2\Omega$ ($I_B=3mA$)]
- Small output capacitance [$C_{ob}=1.2pF$ ($V_{CB}=10V$)]

Specifications

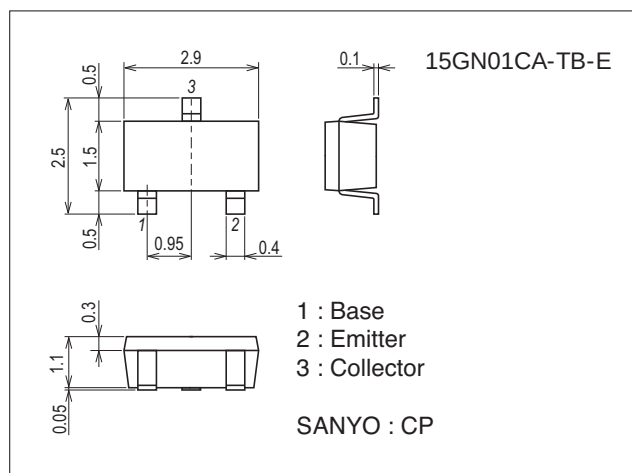
Absolute Maximum Ratings at $T_a=25^\circ C$

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		15	V
Collector-to-Emitter Voltage	V_{CEO}		8	V
Emitter-to-Base Voltage	V_{EBO}		3	V
Collector Current	I_C		50	mA
Collector Dissipation	P_C		200	mW
Junction Temperature	T_j		150	$^\circ C$
Storage Temperature	T_{stg}		-55 to +150	$^\circ C$

Package Dimensions

unit : mm (typ)

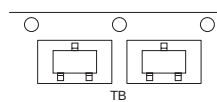
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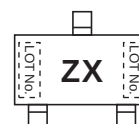
Product & Package Information

- Package : CP
- JEITA, JEDEC : SC-59, TO-236, SOT-23, TO-236AB
- Minimum Packing Quantity : 3,000 pcs./reel

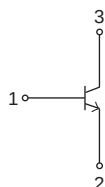
Packing Type: TB



Marking



Electrical Connection



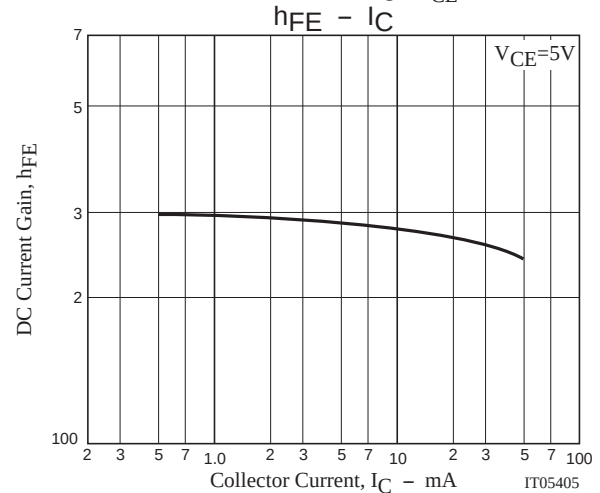
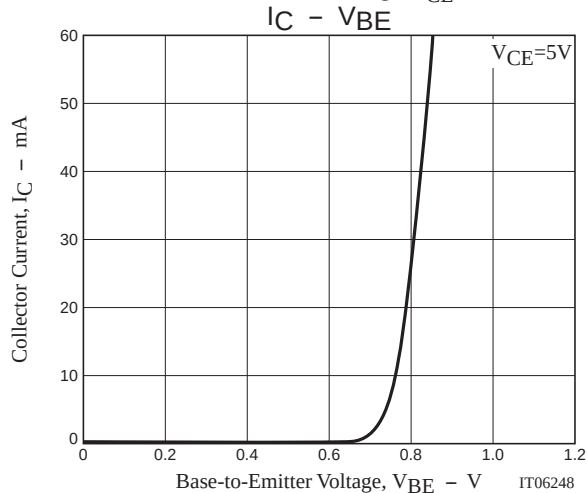
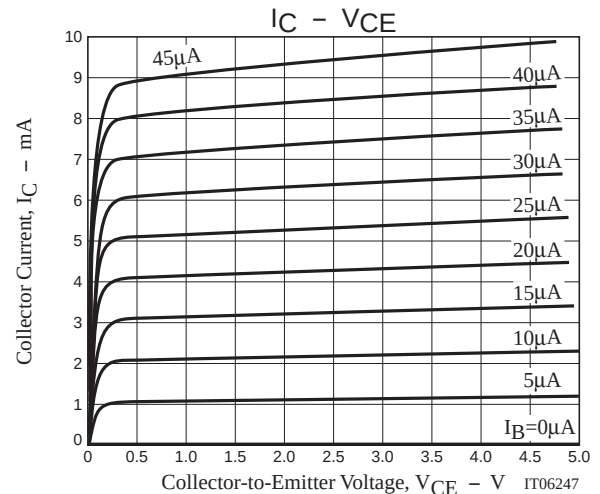
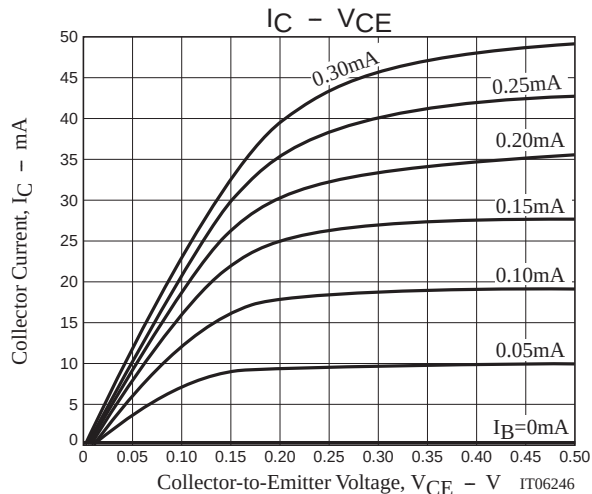
15GN01CA

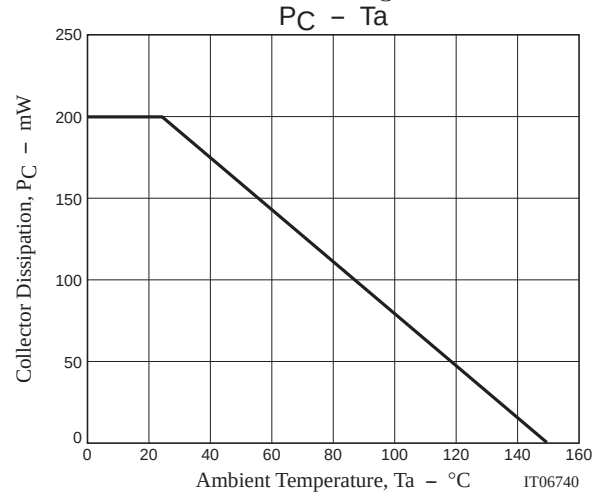
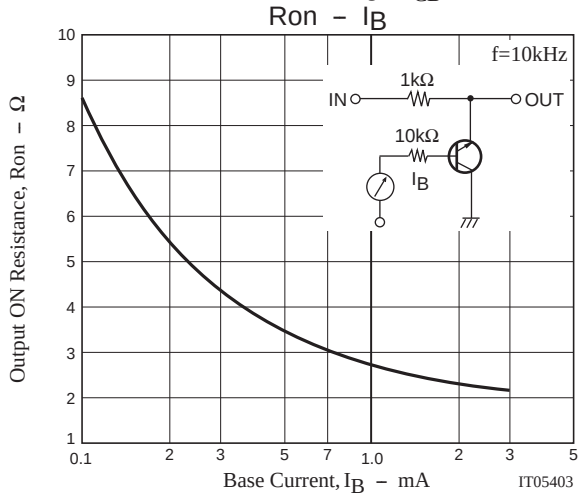
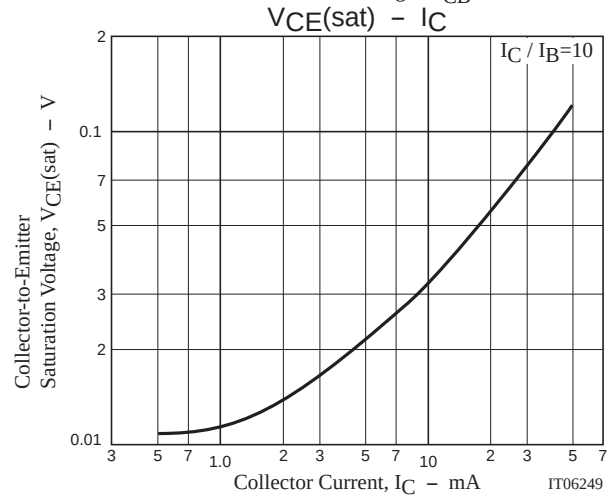
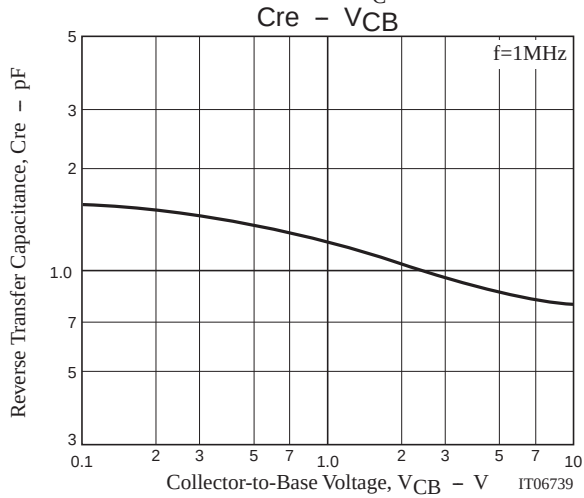
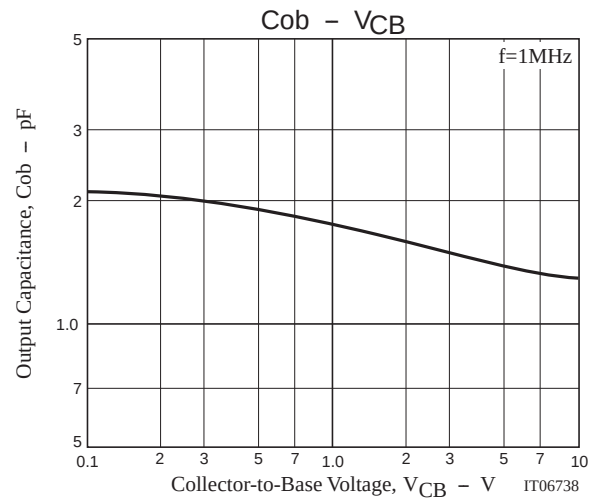
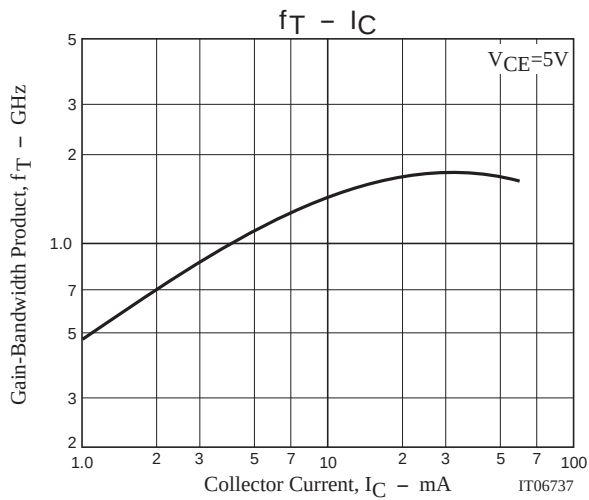
Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=10V, I_E=0A$			0.5	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=2V, I_C=0A$			0.5	μA
DC Current Gain	h_{FE}	$V_{CE}=5V, I_C=10mA$	200		400	
Gain-Bandwidth Product	f_T	$V_{CE}=5V, I_C=10mA$	1.0	1.5		GHz
Output Capacitance	C_{ob}	$V_{CB}=10V, f=1MHz$		1.2	1.6	pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=20mA, I_B=2mA$		0.06	0.12	V
Output ON resistance	R_{on}	$I_B=3mA, f=10kHz$		2.0		Ω

Ordering Information

Device	Package	Shipping	memo
15GN01CA-TB-E	CP	3,000pcs./reel	Pb Free





15GN01CA

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	$\angle S22$
100	0.650	-26.84	4.392	121.74	0.029	71.26	0.776	-10.73
200	0.554	-37.39	2.798	110.97	0.050	66.90	0.737	-14.52
300	0.494	-47.15	2.148	103.12	0.070	63.30	0.720	-18.26
400	0.444	-56.64	1.787	96.10	0.087	61.98	0.708	-22.11
500	0.406	-65.32	1.537	89.48	0.101	59.57	0.697	-25.85
600	0.377	-73.55	1.369	83.71	0.113	57.85	0.691	-29.52
700	0.348	-83.03	1.245	77.82	0.126	56.52	0.687	-33.29
800	0.325	-90.95	1.137	72.30	0.137	54.57	0.684	-37.14
900	0.306	-99.25	1.058	67.12	0.148	53.75	0.682	-40.75
1000	0.288	-107.53	0.990	62.37	0.153	52.46	0.682	-44.56

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

Freq(MHz)	S11	$\angle S11$	S21	$\angle S21$	S12	$\angle S12$	S22	$\angle S22$
100	0.583	-32.15	6.240	118.82	0.026	70.44	0.703	-12.56
200	0.482	-45.75	3.926	108.10	0.046	66.49	0.659	-15.99
300	0.419	-57.88	2.944	99.96	0.063	65.05	0.637	-19.29
400	0.368	-69.02	2.390	92.67	0.078	62.34	0.624	-22.85
500	0.336	-79.50	2.027	86.17	0.092	61.46	0.615	-26.37
600	0.310	-89.29	1.769	80.51	0.103	60.64	0.610	-29.81
700	0.291	-99.92	1.586	74.79	0.114	59.47	0.606	-33.39
800	0.274	-108.75	1.441	69.42	0.125	58.90	0.605	-37.06
900	0.262	-118.49	1.317	64.61	0.135	57.84	0.605	-40.43
1000	0.251	-127.56	1.217	59.88	0.144	57.55	0.606	-44.25

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

Freq(MHz)	S11	$\angle S11$	S21	$\angle S21$	S12	$\angle S12$	S22	$\angle S22$
100	0.513	-40.12	8.263	115.87	0.025	68.95	0.625	-14.43
200	0.407	-57.84	5.054	104.00	0.043	68.30	0.576	-17.14
300	0.347	-73.04	3.701	95.34	0.056	66.04	0.557	-19.89
400	0.303	-87.02	2.936	87.98	0.071	64.63	0.545	-22.91
500	0.281	-98.99	2.433	81.63	0.083	64.43	0.538	-26.26
600	0.266	-110.32	2.091	76.17	0.095	63.54	0.537	-29.36
700	0.257	-122.12	1.853	70.61	0.106	63.34	0.536	-33.02
800	0.248	-131.81	1.662	65.60	0.117	62.91	0.538	-36.53
900	0.244	-141.38	1.504	60.76	0.128	62.37	0.538	-39.95
1000	0.245	-150.77	1.376	56.40	0.137	62.62	0.540	-43.80

$V_{CE}=5V$, $I_C=30mA$, $Z_O=50\Omega$

Freq(MHz)	S11	$\angle S11$	S21	$\angle S21$	S12	$\angle S12$	S22	$\angle S22$
100	0.471	-46.44	9.316	113.49	0.025	70.19	0.582	-15.62
200	0.368	-67.17	5.557	100.99	0.040	68.06	0.532	-17.38
300	0.313	-84.43	3.987	92.10	0.053	66.90	0.516	-19.75
400	0.280	-100.24	3.124	84.66	0.067	65.61	0.506	-22.58
500	0.265	-112.71	2.570	78.56	0.080	66.29	0.504	-25.96
600	0.256	-124.16	2.191	73.18	0.092	65.10	0.502	-29.15
700	0.255	-135.95	1.921	67.77	0.103	66.41	0.502	-32.85
800	0.252	-145.81	1.714	62.74	0.113	65.20	0.506	-36.31
900	0.254	-154.35	1.544	58.35	0.125	65.56	0.508	-39.87
1000	0.255	-163.19	1.411	53.83	0.137	64.48	0.513	-43.71

Embossed Taping Specification

15GN01CA-TB-E

1. Packing Format

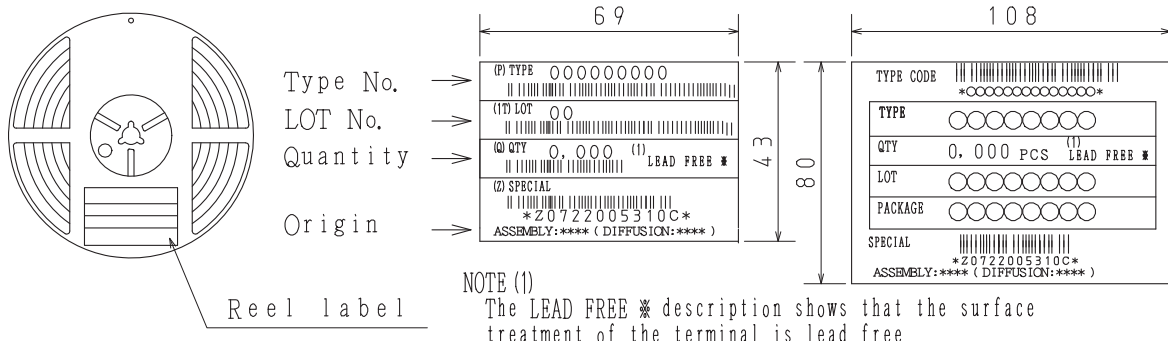
Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
CP	CP	3,000	15,000	90,000	5 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

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.

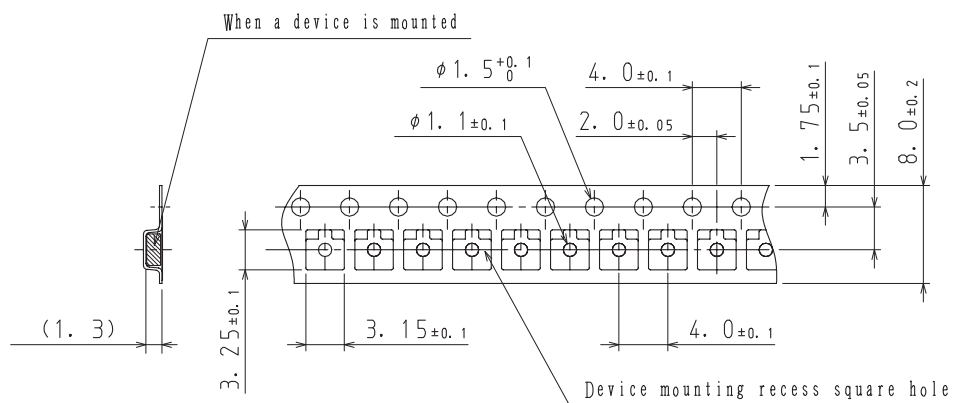
Packing method



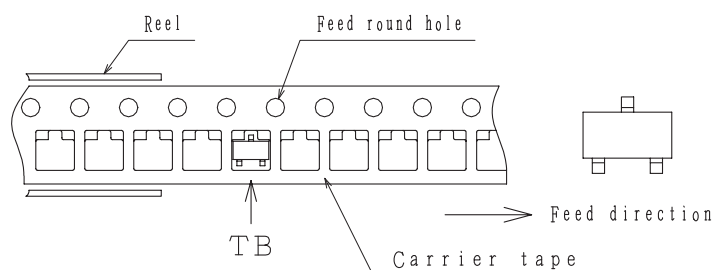
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



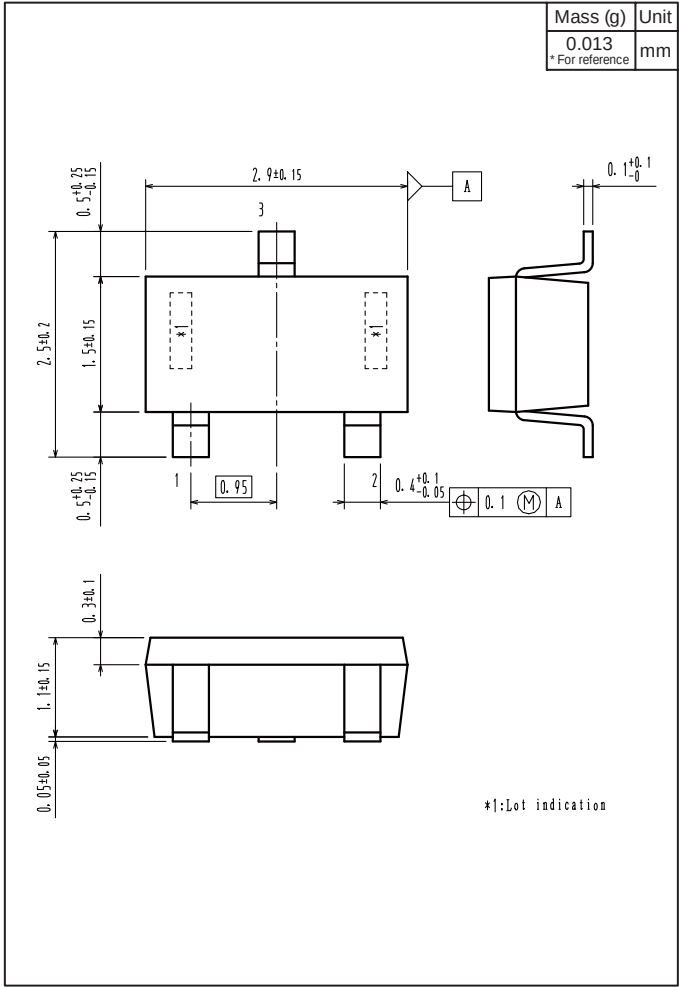
2-2. Device placement direction



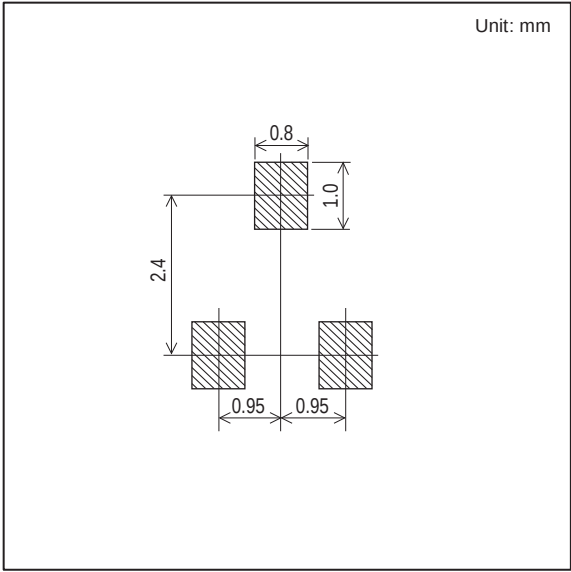
Those with one electrode terminal on the feed hole side.....TB

Outline Drawing

15GN01CA-TB-E



Land Pattern Example



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