



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## 2SB1123/2SD1623 — PNP / NPN Epitaxial Planar Silicon Transistor High-Current Switching Applications

### Applications

- Voltage regulators, relay drivers, lamp drivers, electrical equipment

### Features

- Adoption of FBET, MBIT processes
- Large current capacity and wide ASO
- The ultraminiature package facilitates higher-density mounting, thus allows the applied hybrid IC's further miniaturization
- Low collector-to-emitter saturation voltage
- Fast switching speed

### Specifications ( ) : 2SB1123

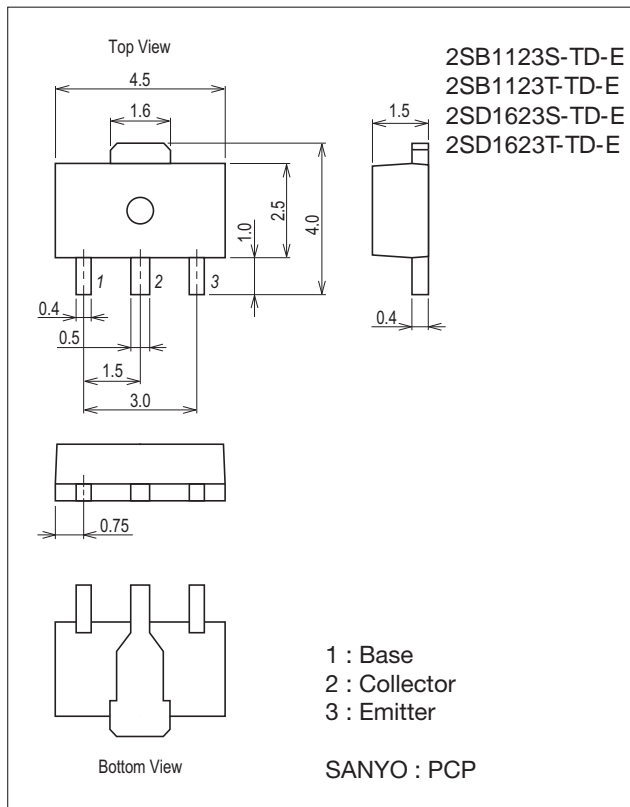
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CB0</sub>		(-)60	V
Collector-to-Emitter Voltage	V <sub>CE0</sub>		(-)50	V
Emitter-to-Base Voltage	V <sub>EB0</sub>		(-)6	V
Collector Current	I <sub>C</sub>		(-)2	A
Collector Current (Pulse)	I <sub>CP</sub>		(-)4	A

Continued on next page.

### Package Dimensions

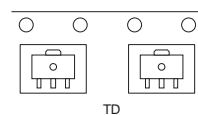
unit : mm (typ)  
7007B-004



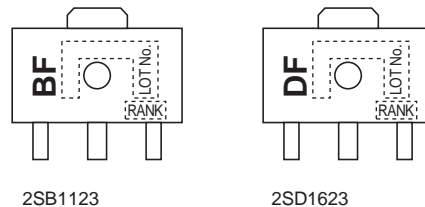
### Product & Package Information

- Package : PCP
- JEITA, JEDEC : SC-62, SOT-89, TO-243
- Minimum Packing Quantity : 1,000 pcs./reel

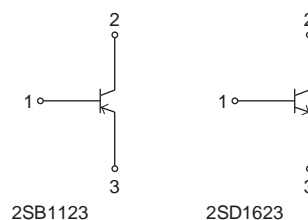
### Packing Type: TD



### Marking



### Electrical Connection



## 2SB1123 / 2SD1623

Continued from preceding page.

Parameter	Symbol	Conditions	Ratings	Unit
Collector Dissipation	PC		0.5	W
		When mounted on ceramic substrate (250mm <sup>2</sup> ×0.8mm)	1.3	W
Junction Temperature	T <sub>j</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

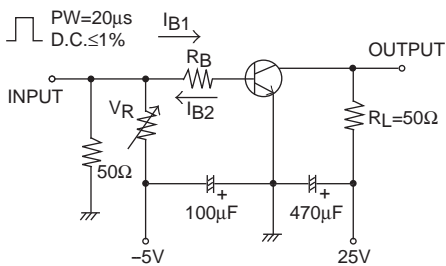
### Electrical Characteristics at T<sub>a</sub>=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I <sub>CBO</sub>	V <sub>CB</sub> =(-)50V, I <sub>E</sub> =0A			(-)100	nA
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> =(-)4V, I <sub>C</sub> =0A			(-)100	nA
DC Current Gain	h <sub>FE1</sub>	V <sub>CE</sub> =(-)2V, I <sub>C</sub> =(-)100mA	100*		560*	
	h <sub>FE2</sub>	V <sub>CE</sub> =(-)2V, I <sub>C</sub> =(-)1.5A	40			
Gain-Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> =(-)10V, I <sub>C</sub> =(-)50mA		150		MHz
Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> =(-)10V, f=1MHz		(22)12		pF
Collector-to-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =(-)1A, I <sub>B</sub> =(-)50mA		(-0.3)0.15	(-0.7)0.4	V
Base-to-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =(-)1A, I <sub>B</sub> =(-)50mA		(-)0.9	(-)1.2	V
Collector-to-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> =(-)10μA, I <sub>E</sub> =0A	(-)60			V
Collector-to-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> =(-)1mA, R <sub>BE</sub> =∞	(-)50			V
Emitter-to-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =(-)10μA, I <sub>C</sub> =0A	(-)6			V
Turn-ON Time	t <sub>on</sub>	See specified Test Circuit.		(60)60		ns
Storage Time	t <sub>stg</sub>			(450)550		ns
Fall Time	t <sub>f</sub>			(30)30		ns

\* : The 2SB1123 / 2SD1623 are classified by 100mA hFE as follows :

Rank	R	S	T	U
hFE	100 to 200	140 to 280	200 to 400	280 to 560

### Switching Time Test Circuit

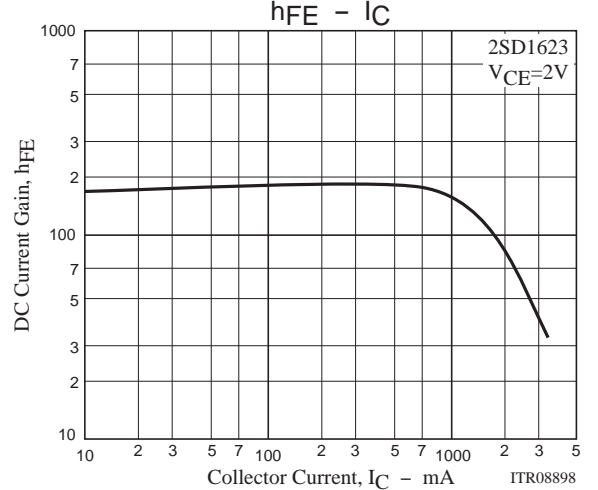
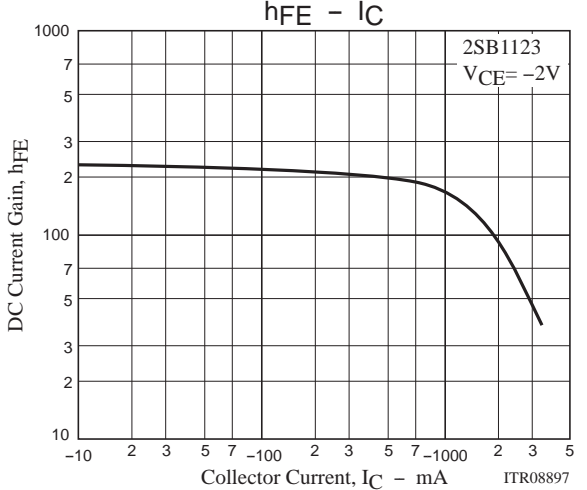
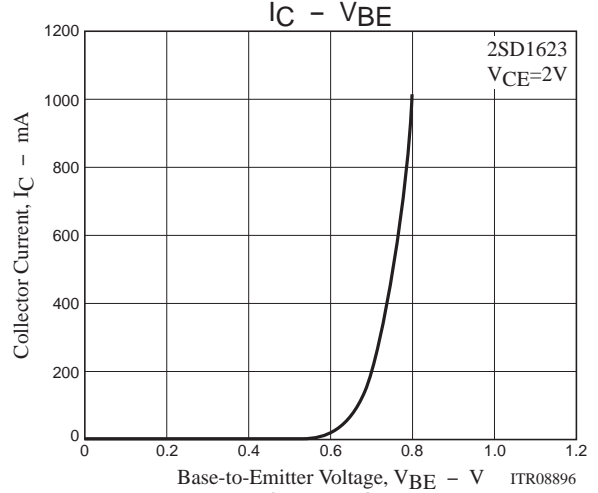
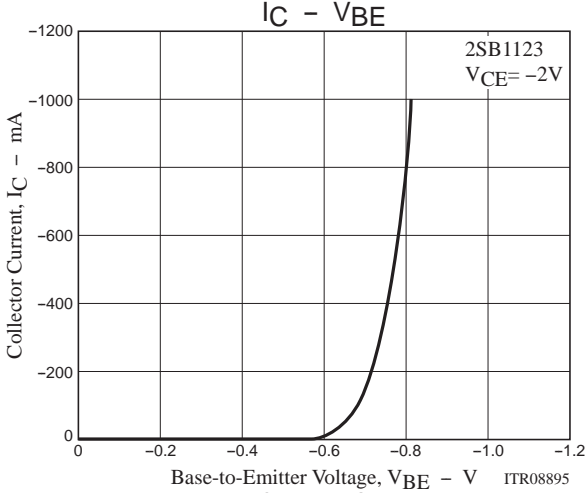
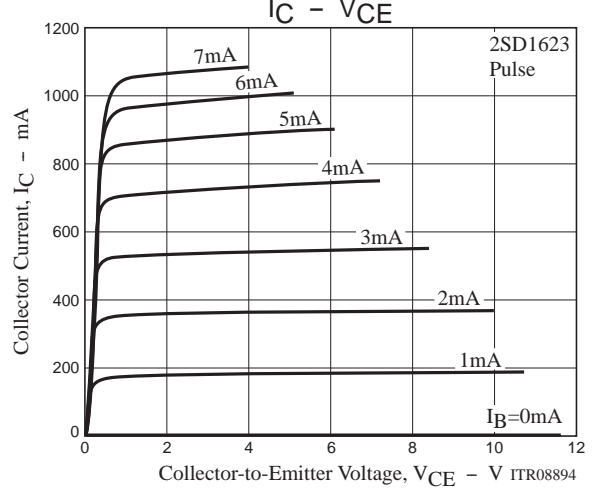
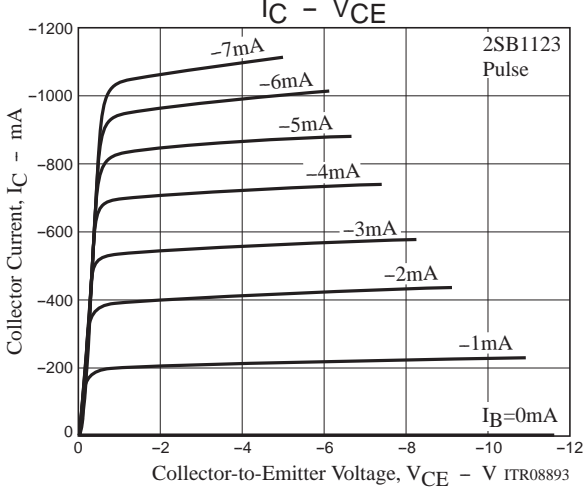
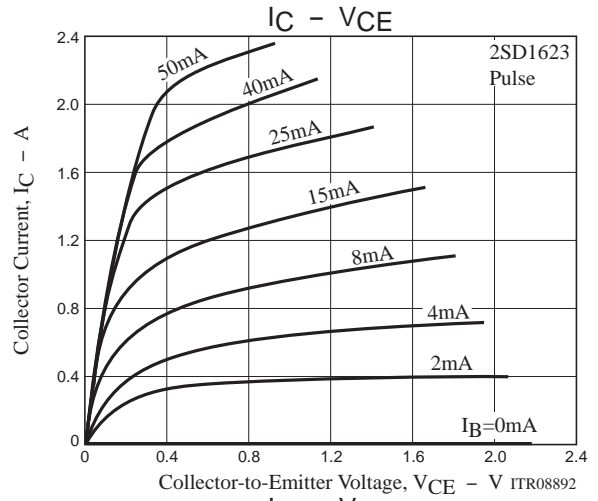
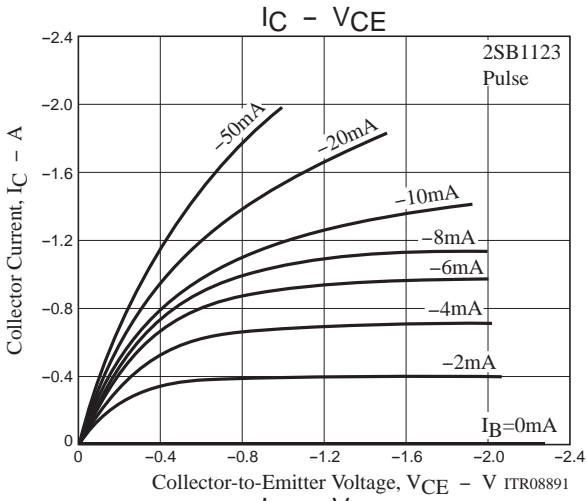


I<sub>C</sub>=10I<sub>B1</sub>= -10I<sub>B2</sub>=500mA  
 (For PNP, the polarity is reversed)

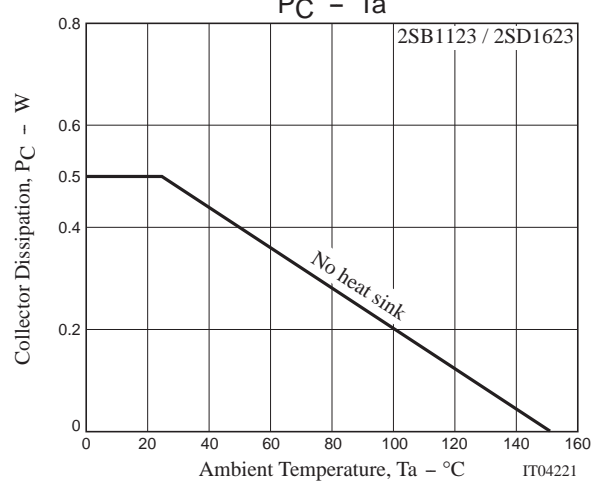
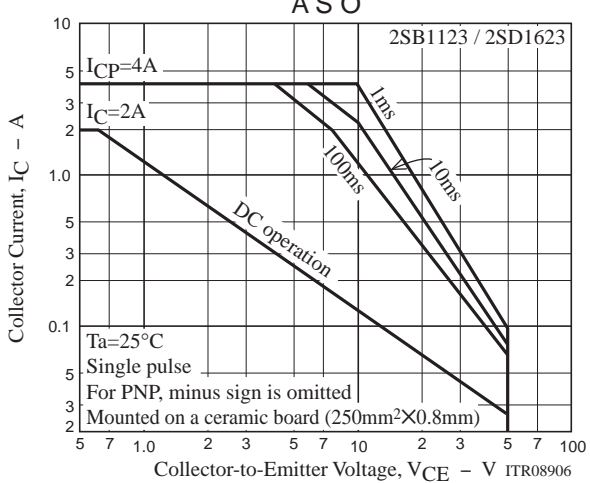
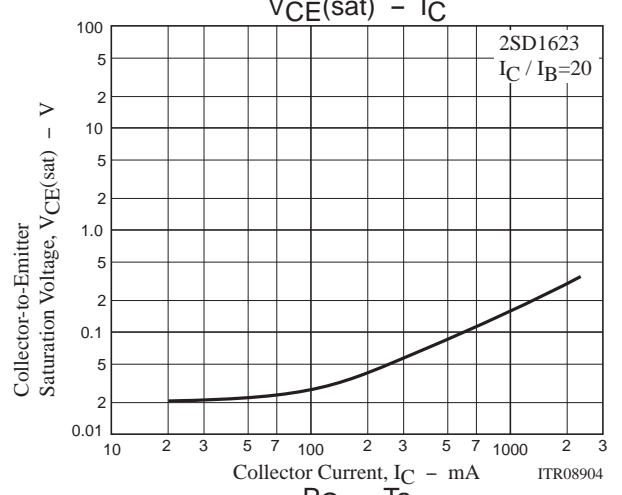
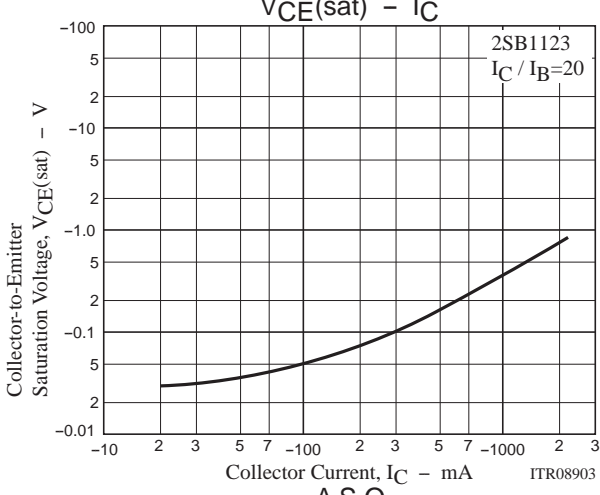
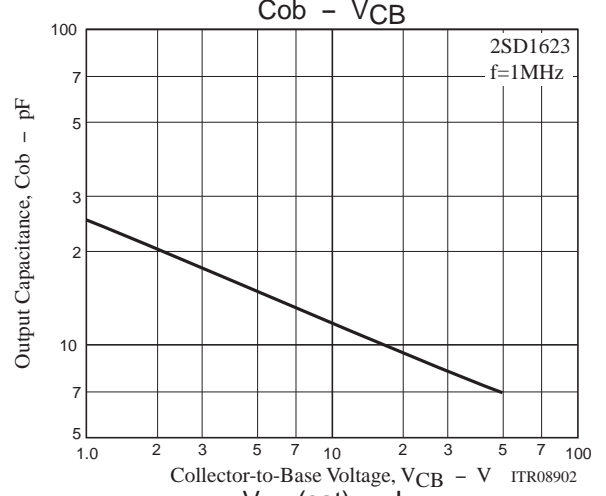
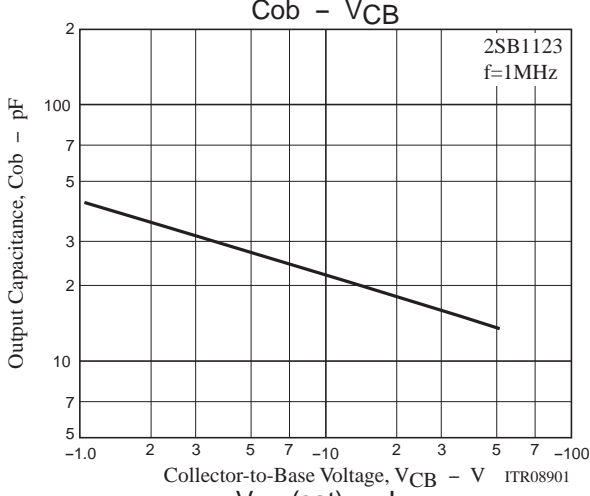
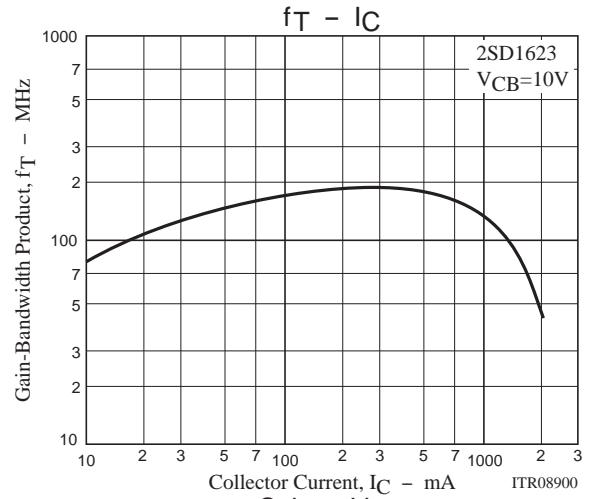
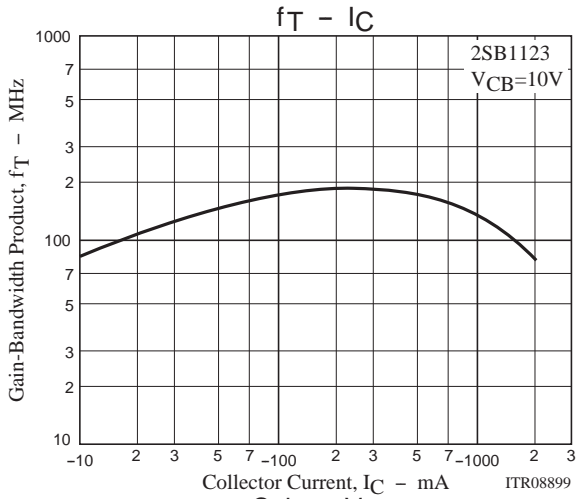
### Ordering Information

Device	Package	Shipping	memo
2SB1123S-TD-E	PCP	1,000pcs./reel	Pb Free
2SB1123T-TD-E	PCP	1,000pcs./reel	
2SD1623S-TD-E	PCP	1,000pcs./reel	
2SD1623T-TD-E	PCP	1,000pcs./reel	

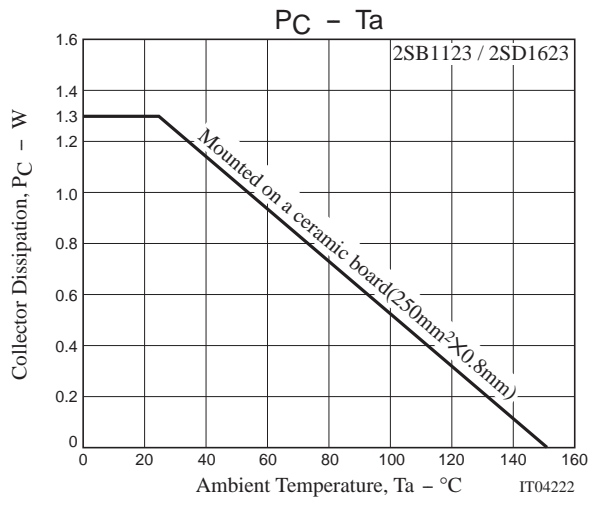
2SB1123 / 2SD1623



2SB1123 / 2SD1623



# 2SB1123 / 2SD1623



# 2SB1123 / 2SD1623

## Bag Packing Specification

2SB1123S-TD-E, 2SB1123T-TD-E, 2SD1623S-TD-E, 2SD1623T-TD-E

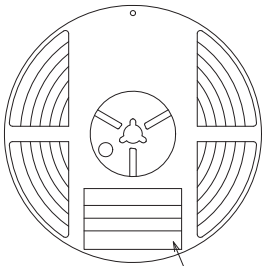
### 1. Packing Format

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)
PCP	PCP	1,000	4,000	24,000	4 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)

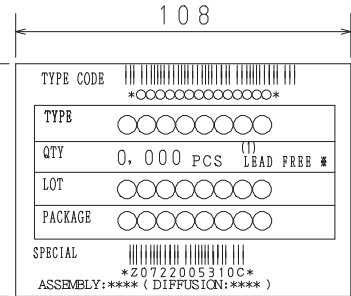
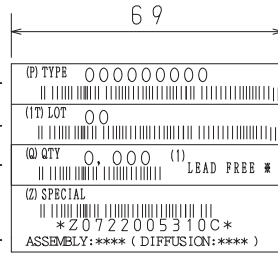
Outer box label  
It is a label at the time of factory shipments.  
The form of a label may change in physical distribution process.

#### Packing method



Type No.  
LOT No.  
Quantity  
Origin

Reel label



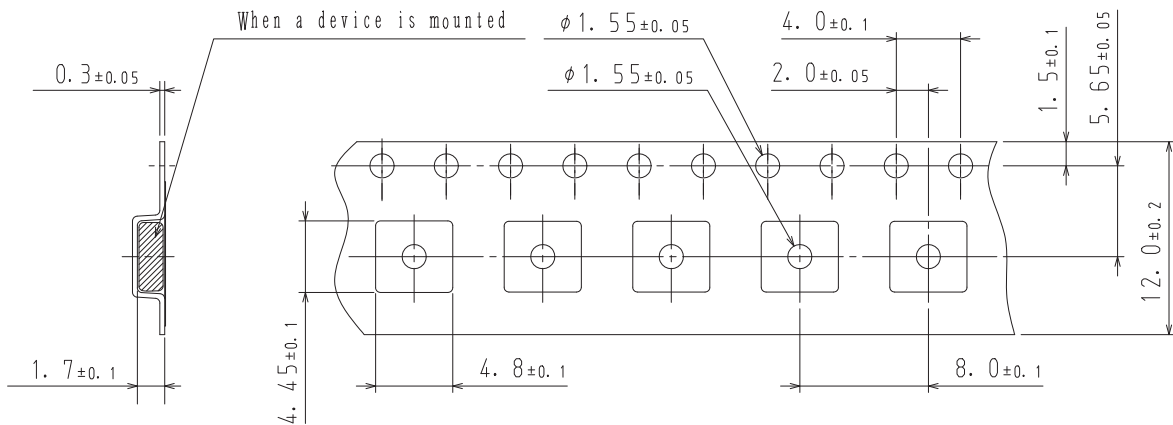
#### NOTE (1)

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

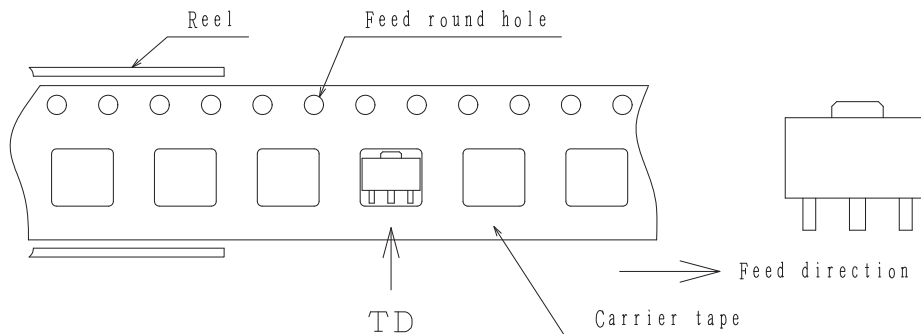
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

### 2. Taping configuration

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



#### 2-2. Device placement direction



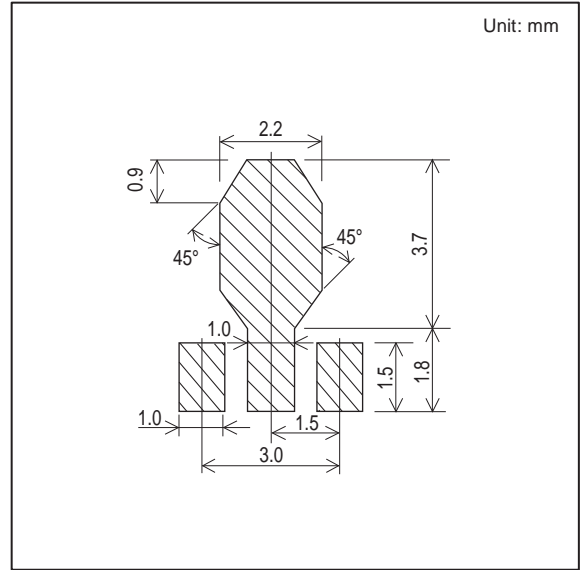
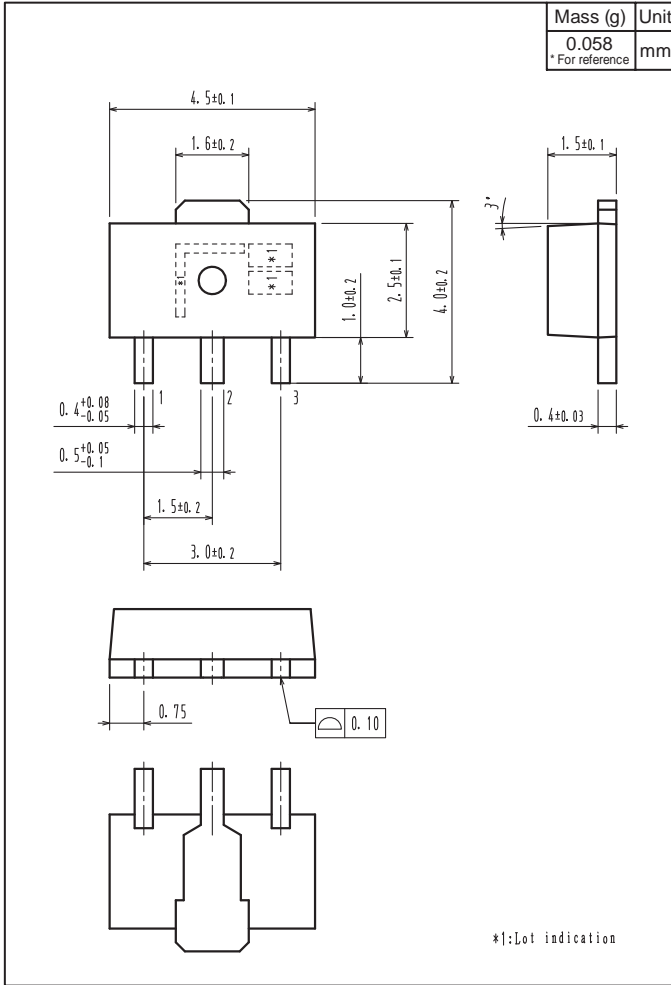
Those with pin 1 index on the feed hole side.....TD

# 2SB1123 / 2SD1623

## Outline Drawing

## Land Pattern Example

2SB1123S-TD-E, 2SB1123T-TD-E, 2SD1623S-TD-E, 2SD1623T-TD-E



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