



# 2SB1123/2SD1623

## Bipolar Transistor (-50V, (-)2A, Low $V_{CE(sat)}$ , (PNP)NPN Single PCP

ON Semiconductor®

<http://onsemi.com>

### 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 $T_a=25^\circ\text{C}$

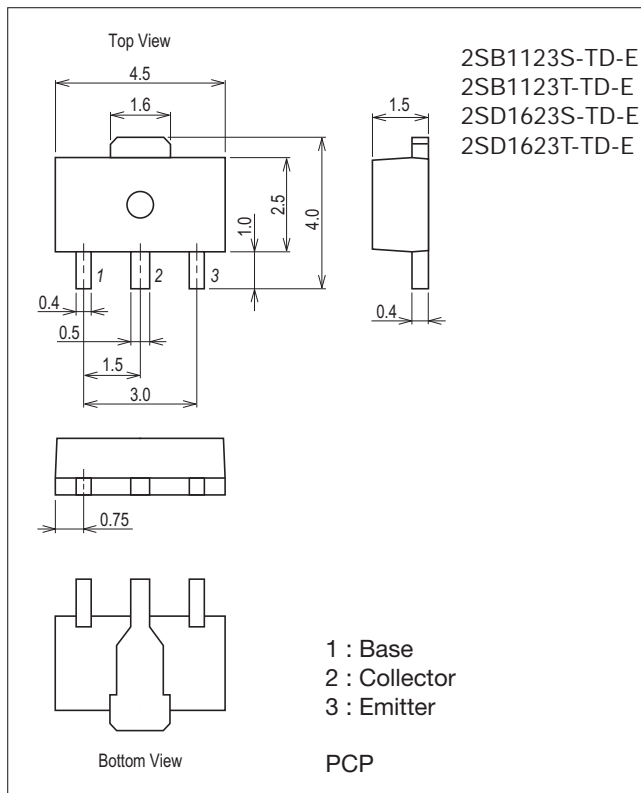
Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CBO}$		(-)60	V
Collector-to-Emitter Voltage	$V_{CEO}$		(-)50	V
Emitter-to-Base Voltage	$V_{EBO}$		(-)6	V
Collector Current	$I_C$		(-)2	A
Collector Current (Pulse)	$I_{CP}$		(-)4	A

Continued on next page.

### Package Dimensions

unit : mm (typ)

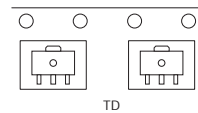
7007B-004



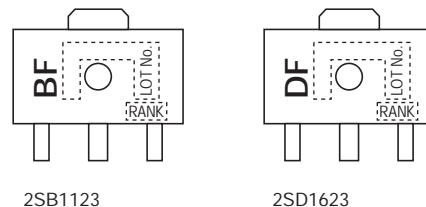
### Product & Package Information

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

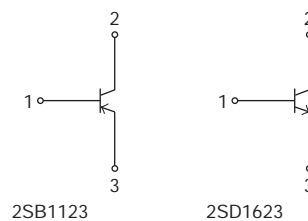
### Packing Type: TD



### 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

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.

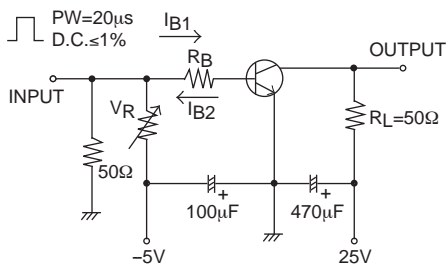
### Electrical Characteristics at T<sub>a</sub>=25°C

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

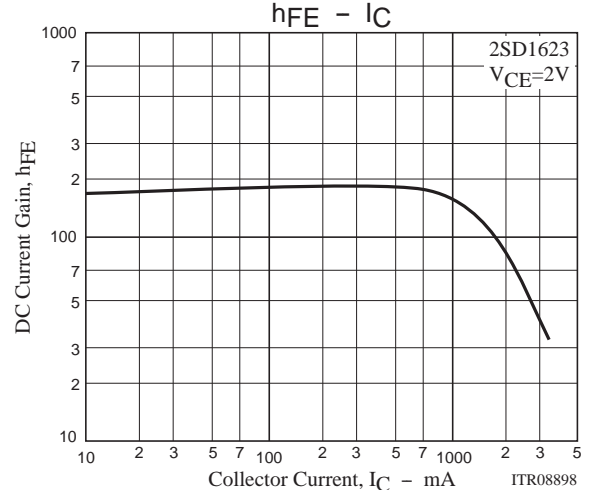
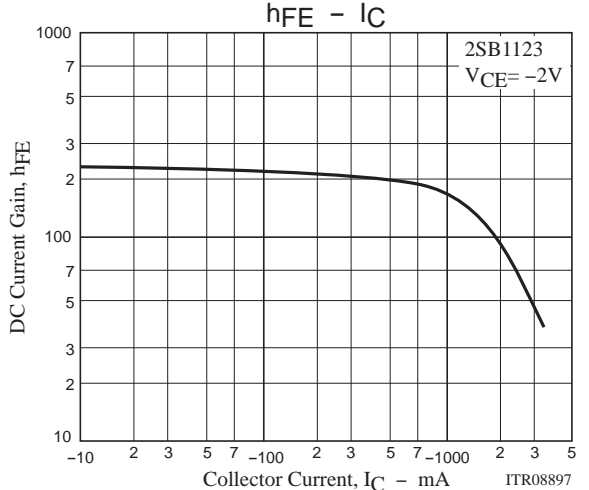
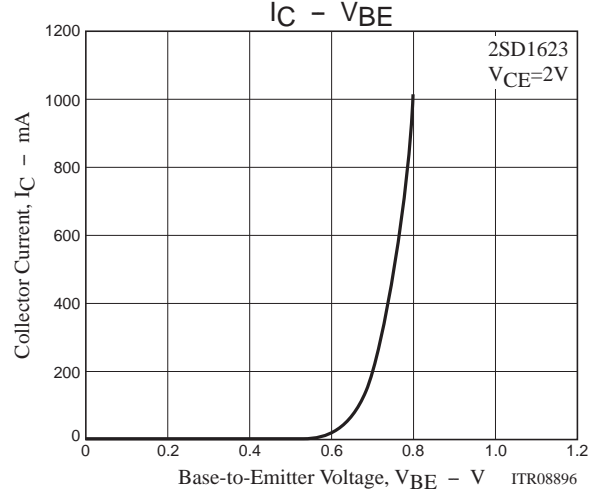
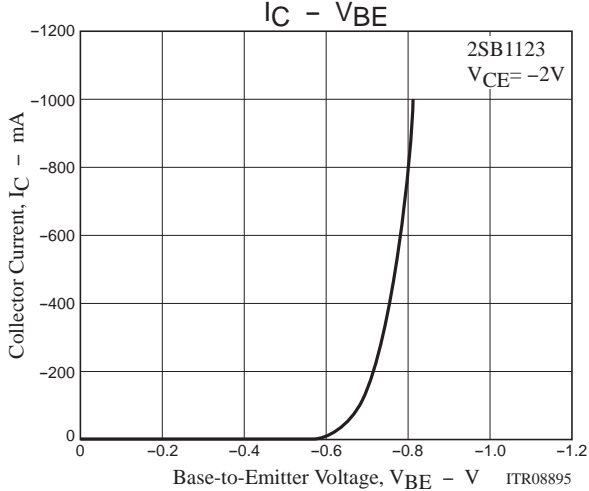
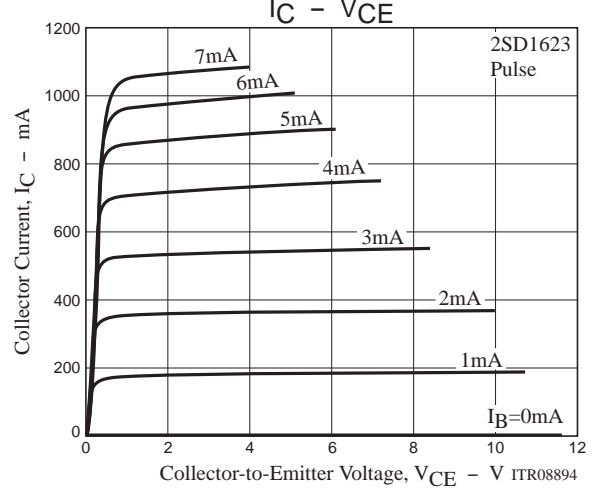
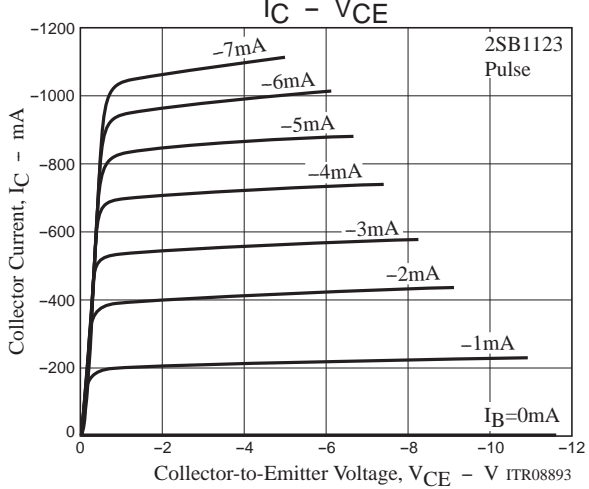
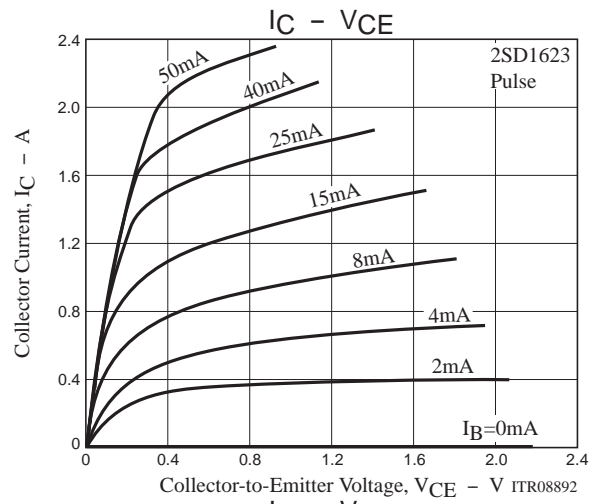
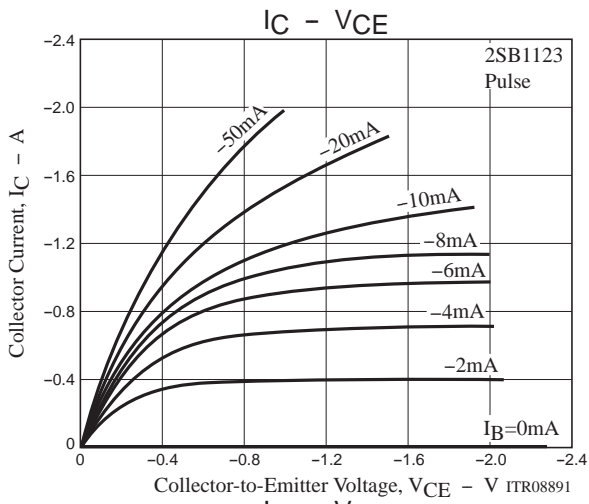
### Switching Time Test Circuit

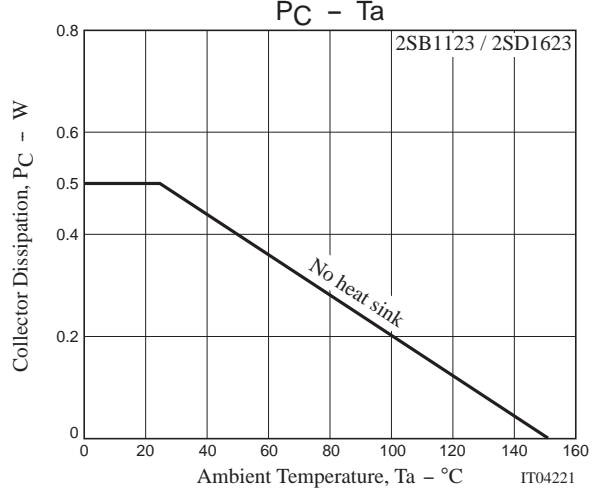
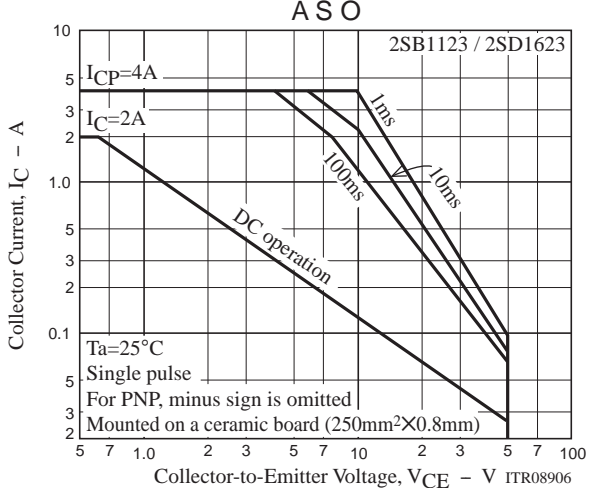
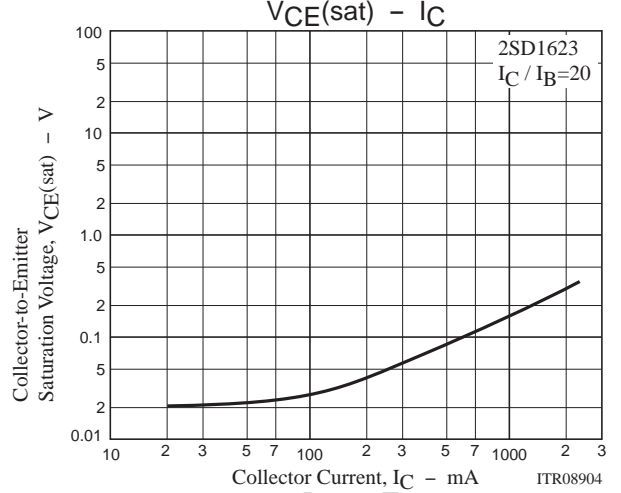
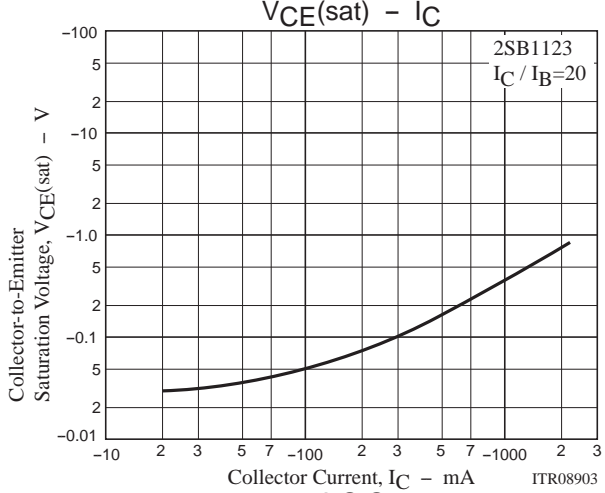
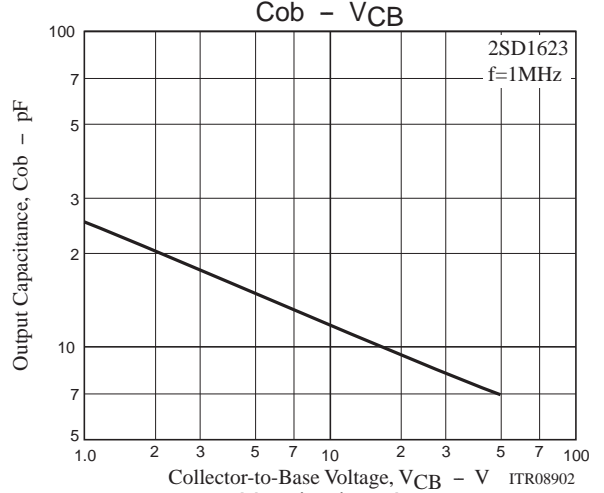
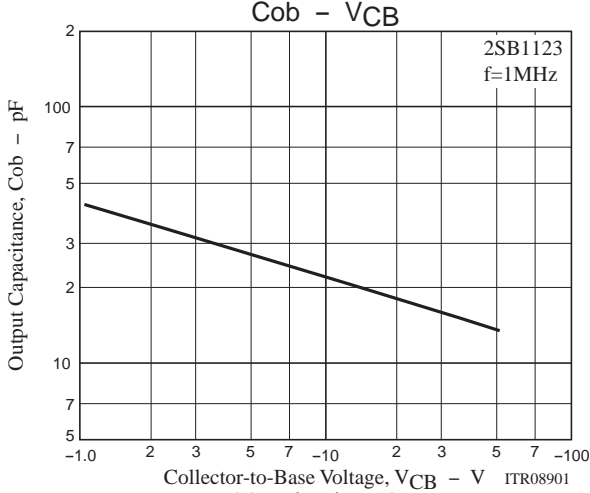
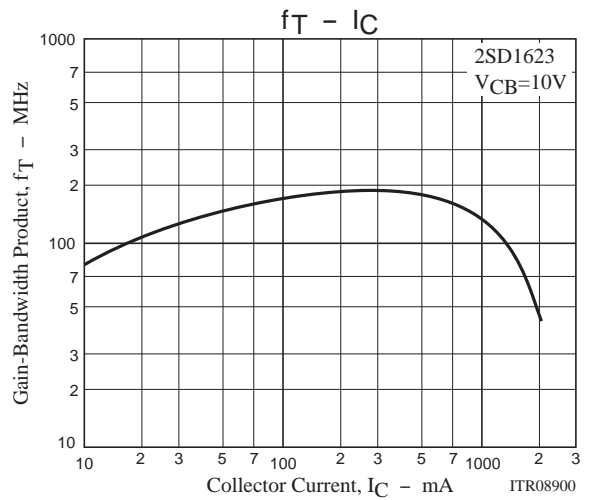
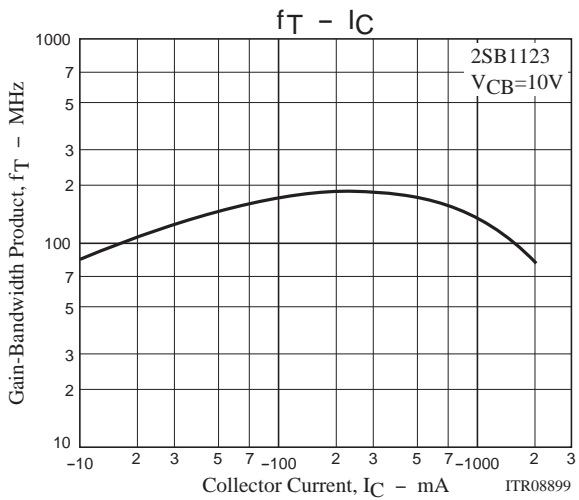


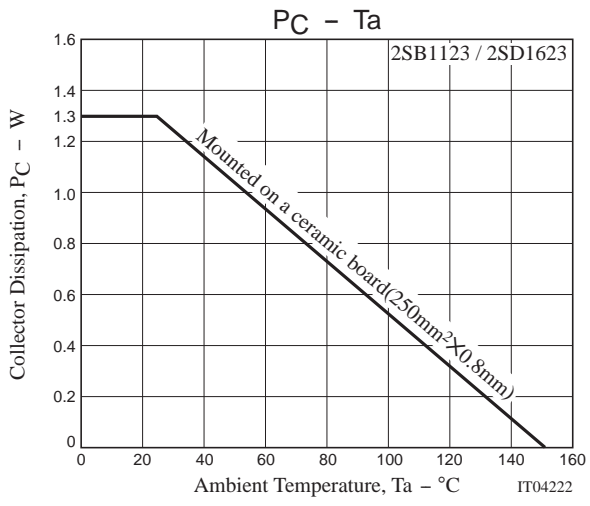
I<sub>C</sub>=10I<sub>B1</sub>= -10I<sub>B2</sub>=500mA  
(For PNP, the polarity is reversed)

### 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	







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)

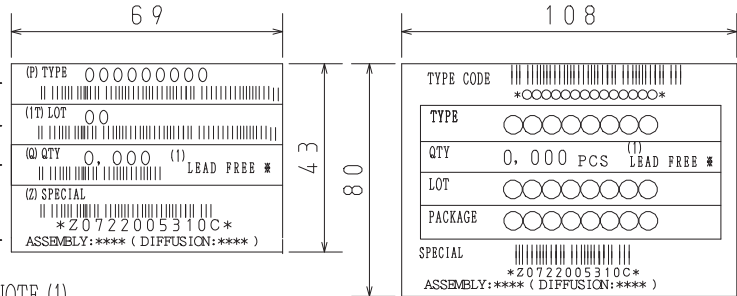
Outer box label  
It is a label at the time of factory shipments.  
The form of a label may change in physical distribution process.

Packing method



Type No.  
LOT No.  
Quantity  
Origin

Reel label



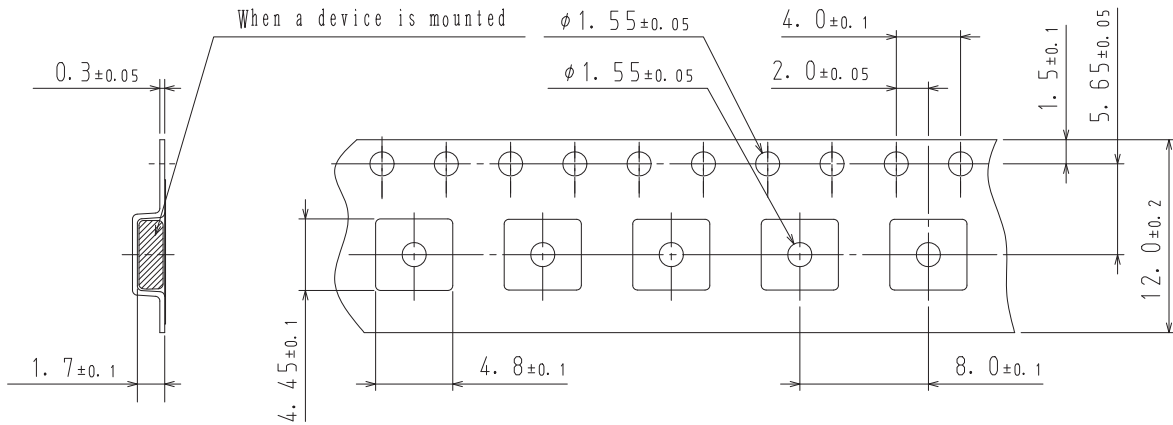
NOTE (1)

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

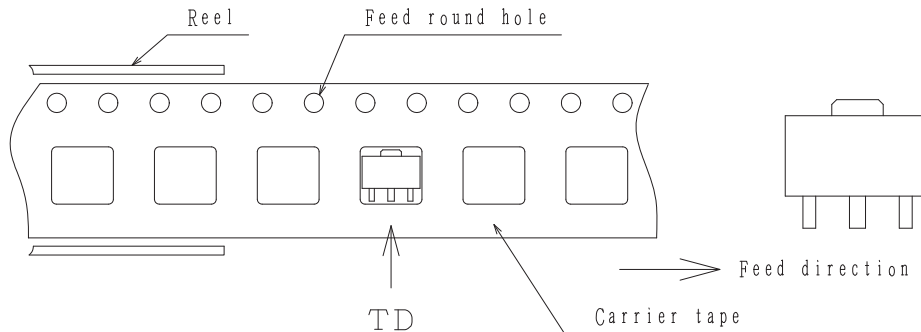
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

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



2-2. Device placement direction



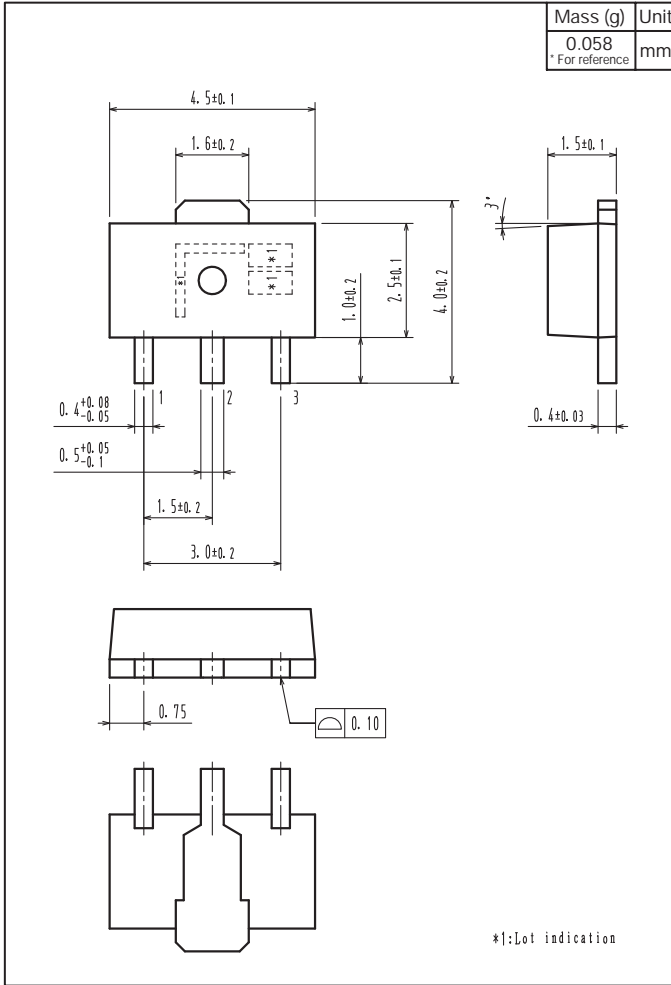
Those with pin 1 index on the feed hole side.....TD

# 2SB1123 / 2SD1623

## Outline Drawing

## Land Pattern Example

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



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