



2SB1123/2SD1623

Bipolar Transistor

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

ON Semiconductor®

<http://onsemi.com>

Applicaitons

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

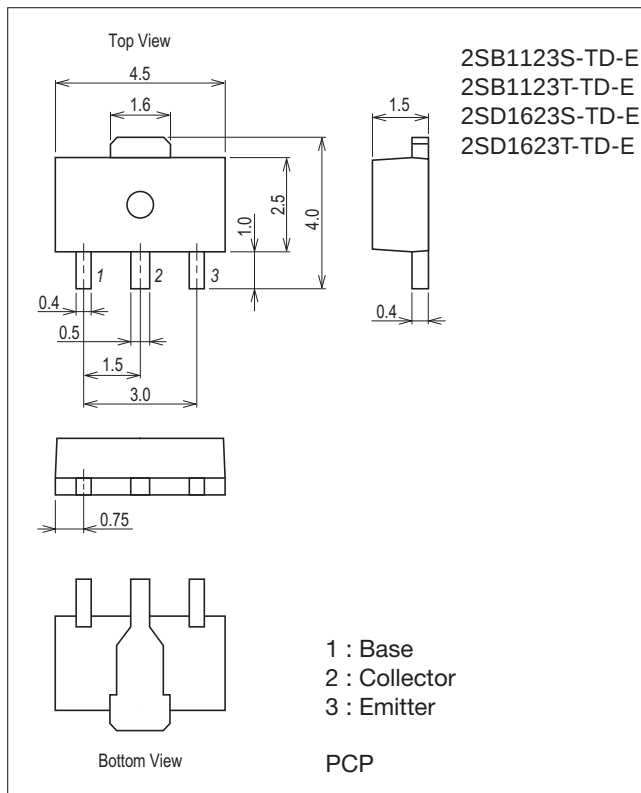
Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(-)60	V
Collector-to-Emitter Voltage	V_{CEO}		(-)50	V
Emitter-to-Base Voltage	V_{EBO}		(-)6	V
Collector Current	I_C		(-)2	A
Collector Current (Pulse)	I_{CP}		(-)4	A

Continued on next page.

Package Dimensions

unit : mm (typ)

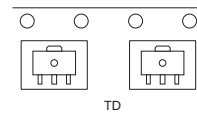
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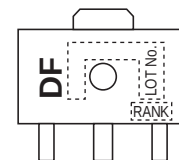
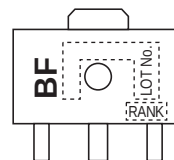
Product & Package Information

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

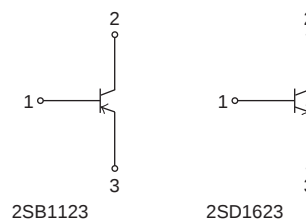
Packing Type: TD



Marking



Electrical Connection



2SB1123 / 2SD1623

Continued from preceding page.

Parameter	Symbol	Conditions	Ratings	Unit
Collector Dissipation	P _C		0.5	W
		When mounted on ceramic substrate (250mm ² ×0.8mm)	1.3	W
Junction Temperature	T _j		150	°C
Storage Temperature	T _{stg}		-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.

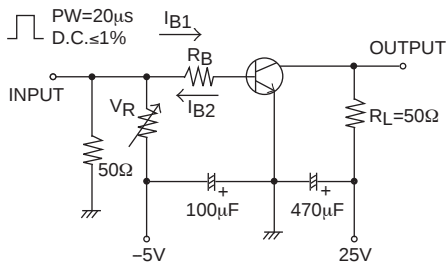
Electrical Characteristics at T_a=25°C

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

* : The 2SB1123 / 2SD1623 are classified by 100mA h_{FE} as follows :

Rank	R	S	T	U
h _{FE}	100 to 200	140 to 280	200 to 400	280 to 560

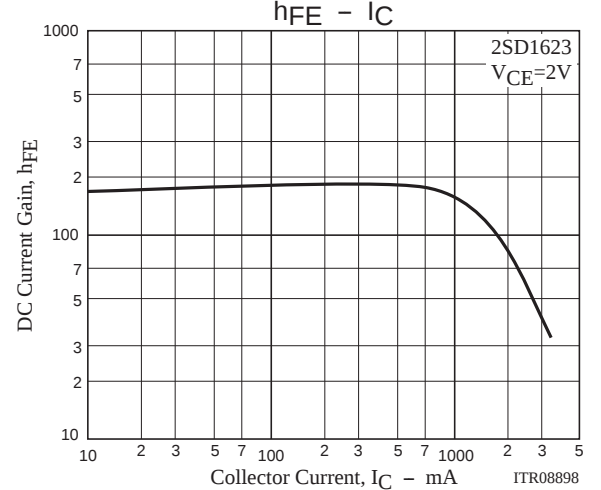
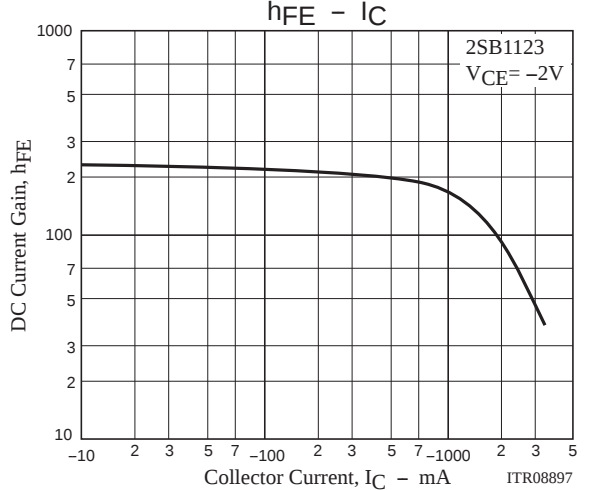
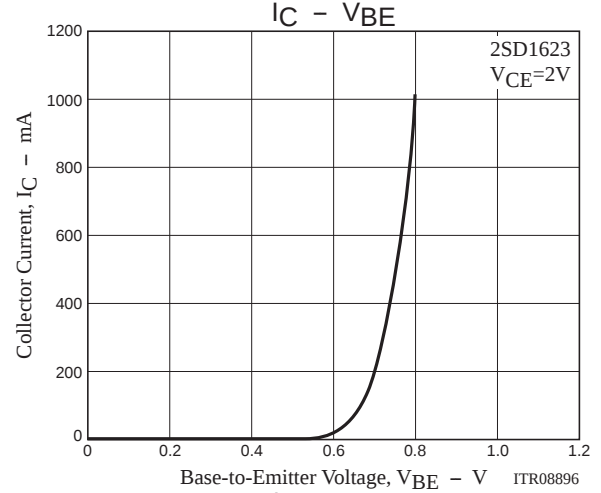
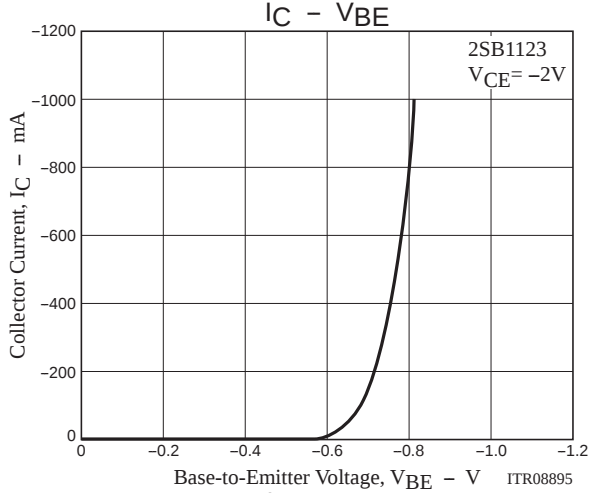
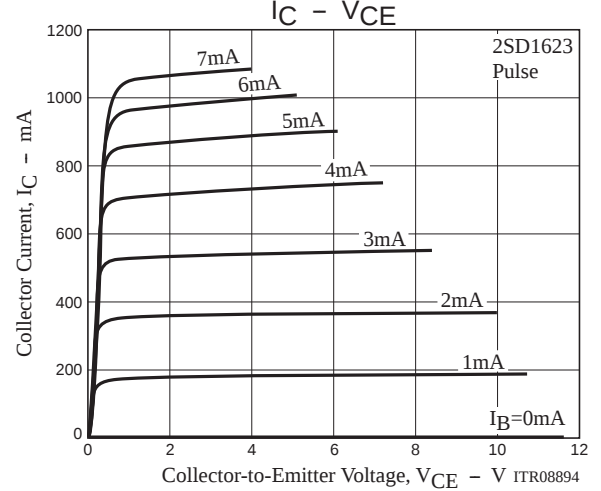
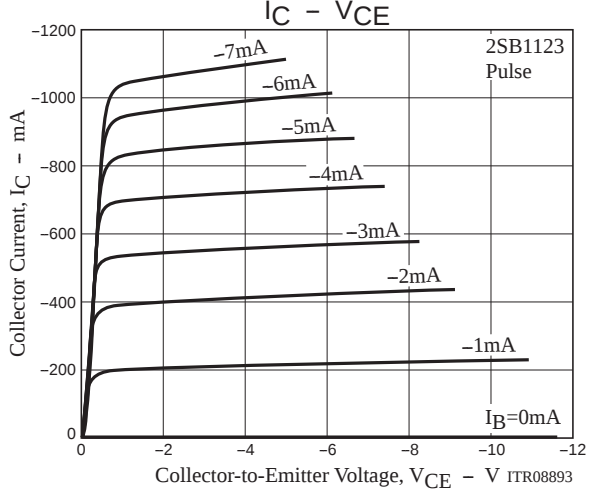
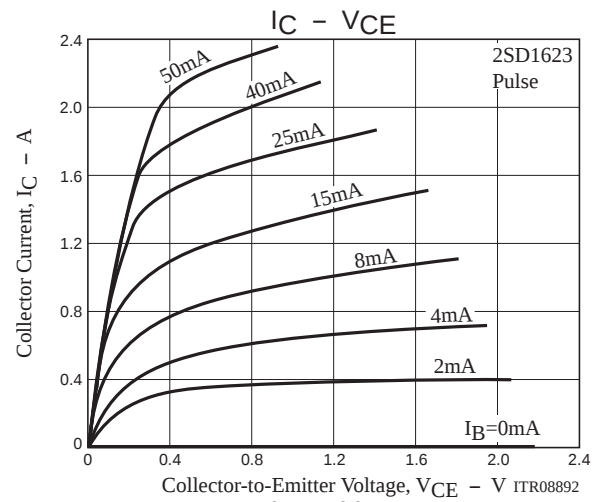
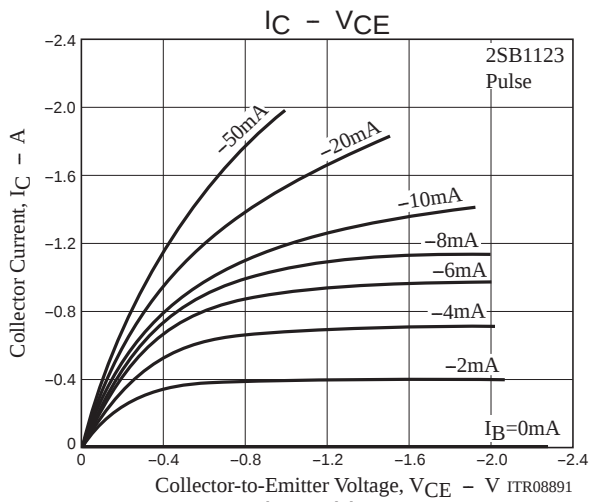
Switching Time Test Circuit

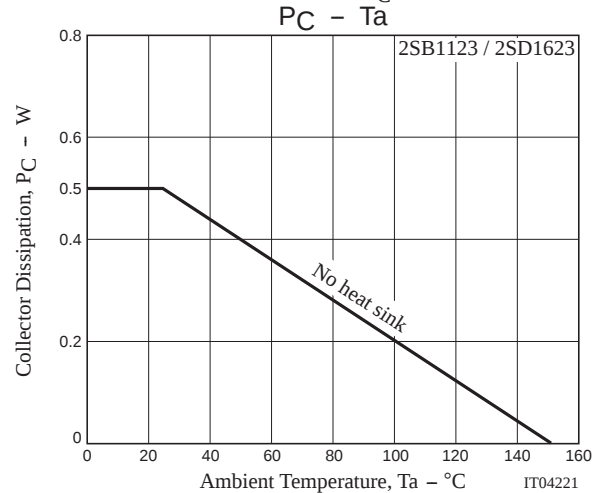
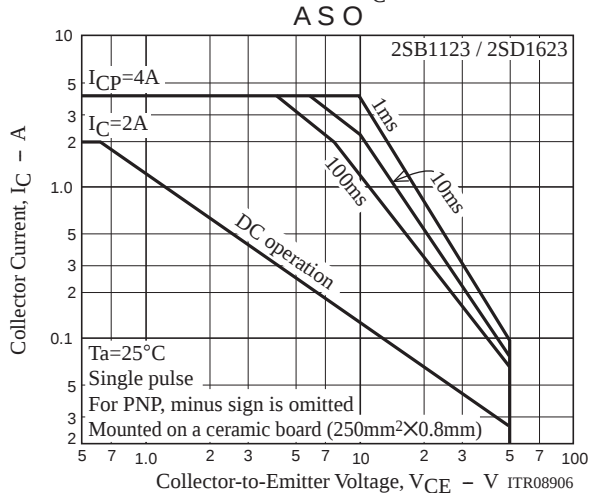
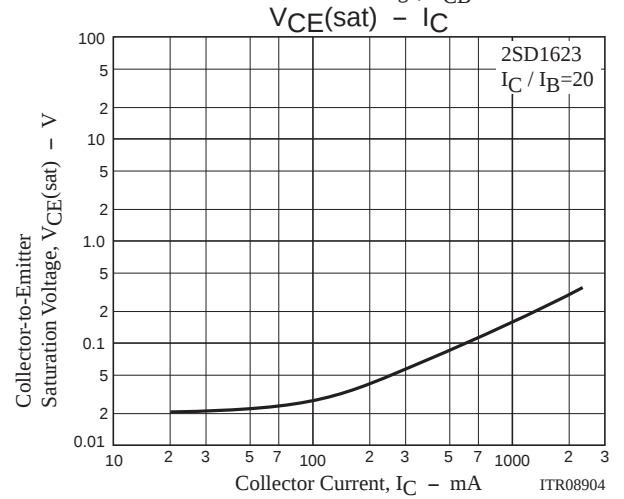
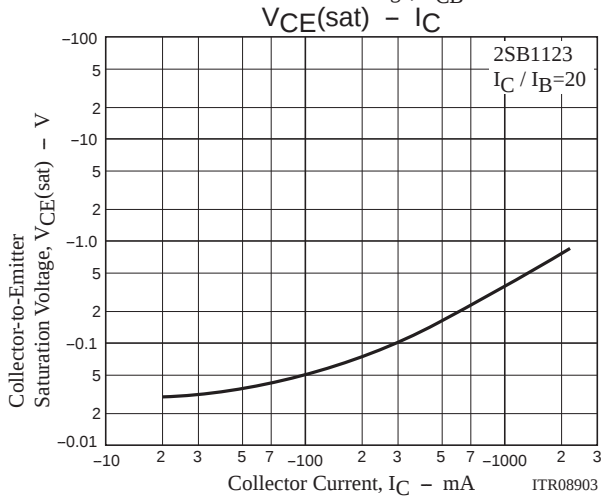
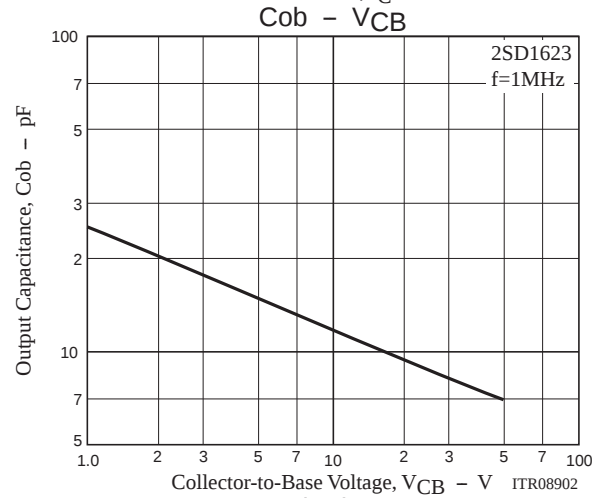
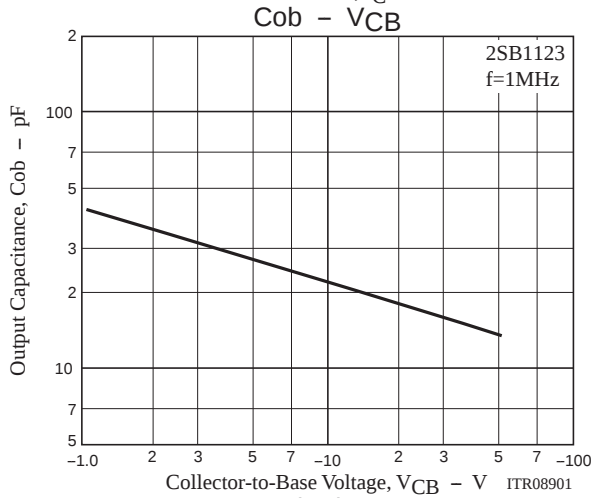
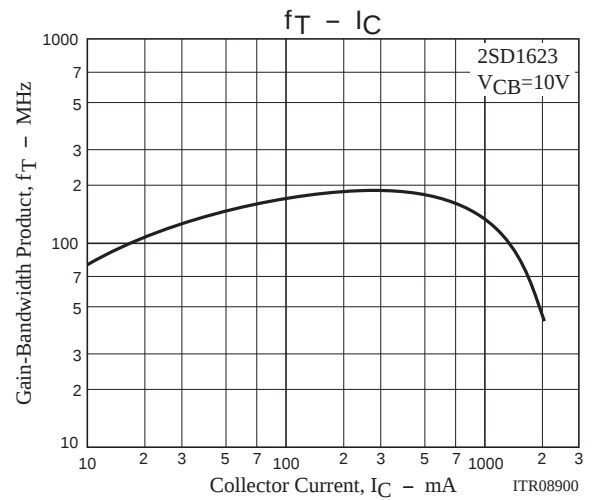
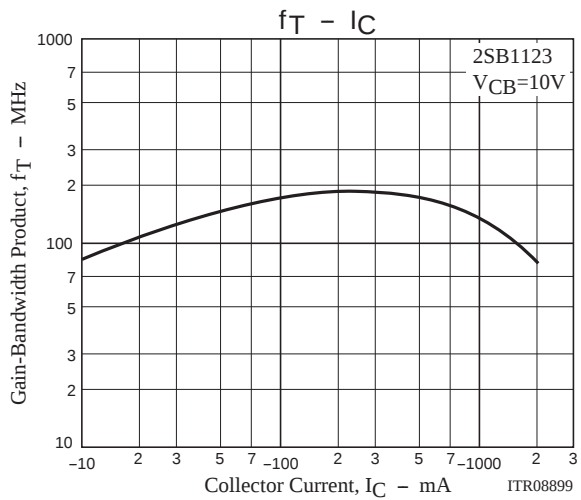


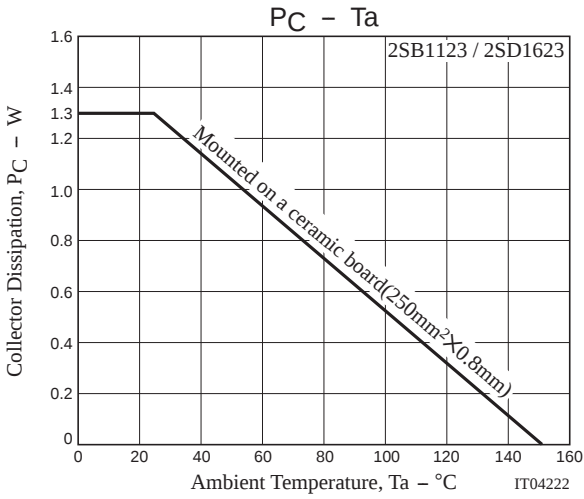
I_C=10I_{B1}= -10I_{B2}=500mA
(For PNP, the polarity is reversed)

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

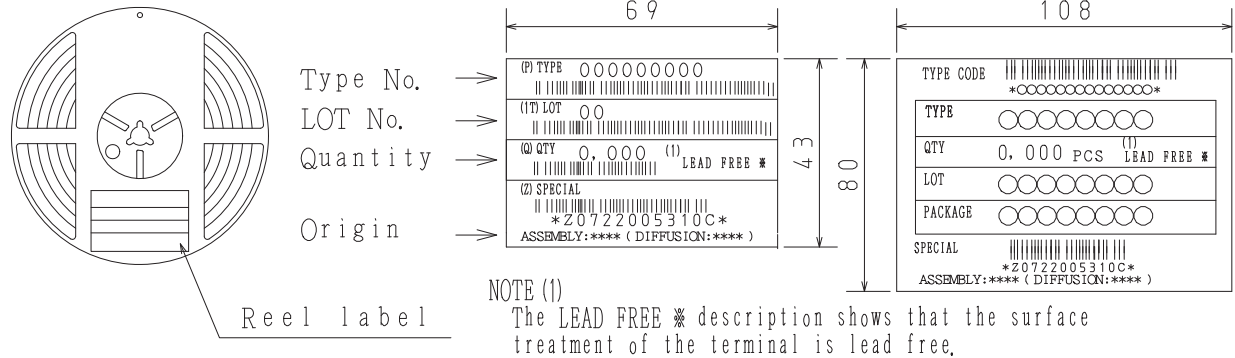
1. Packing Format

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.

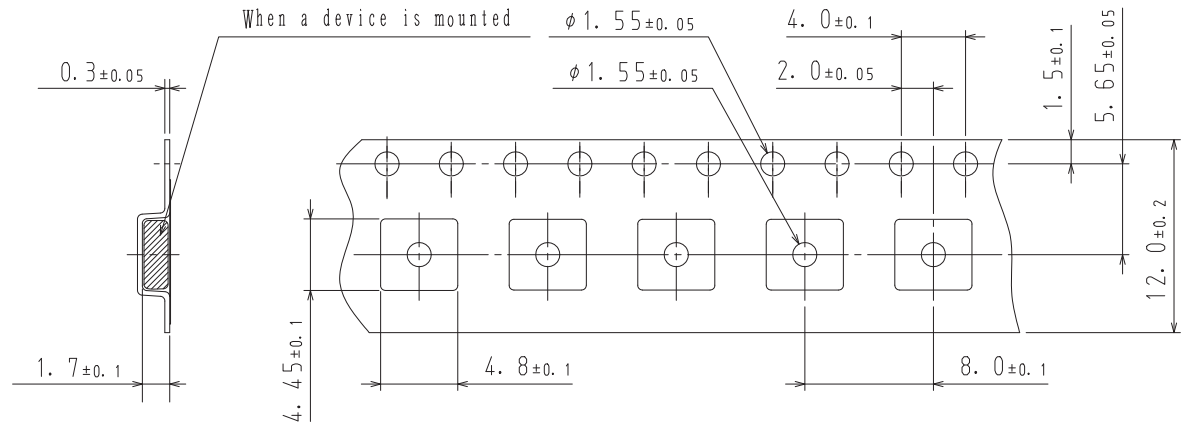
Packing method



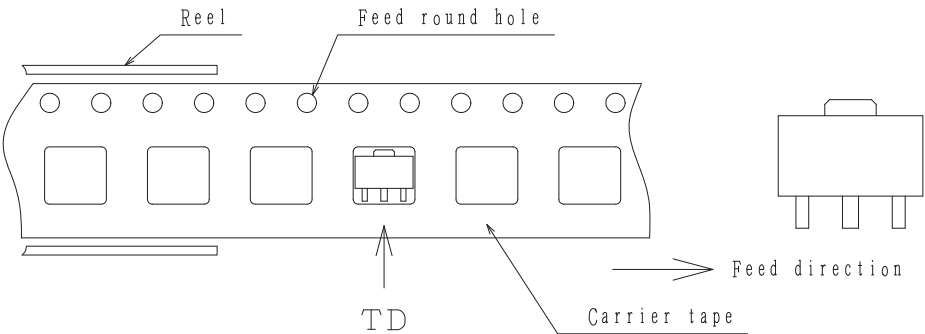
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

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

Outline Drawing

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

Land Pattern Example

Mass (g)	Unit
0.058	mm
* For reference	

Technical drawing of a mechanical part, showing three views: front, side, and top.

Front View Dimensions:

- Overall width: 4.5 ± 0.1
- Top width: 1.6 ± 0.2
- Central hole diameter: 1.0 ± 0.2
- Distance from top edge to hole center: 2.5 ± 0.1
- Overall height: 4.0 ± 0.2
- Pin 1 width: 0.4 ± 0.08 (top) / 0.5 ± 0.05 (bottom)
- Pin 2 width: 0.5 ± 0.05
- Pin 3 width: 0.5 ± 0.05
- Pin 1 height: 1.5 ± 0.2
- Pin 2 height: 3.0 ± 0.2
- Pin 3 height: 3.0 ± 0.2

Side View Dimensions:

- Width: 1.5 ± 0.1
- Thickness: 0.4 ± 0.03

Top View Dimensions:

- Width: 0.75
- Feature: 0.10

*: Lot indication

The diagram shows the orthographic projection of a mechanical part, consisting of a front view (top) and a top view (bottom).

Front View (Top):

- Overall width: 2.2
- Overall height: 3.7
- The top edge is a horizontal line of length 0.9.
- The bottom edge is a horizontal line of length 1.0.
- The left and right sides are vertical lines of height 0.9.
- The top corners are chamfered at a 45° angle.
- The bottom corners are chamfered at a 45° angle.

Top View (Bottom):

- Overall width: 3.0
- Overall depth: 1.8
- The front edge is a horizontal line of length 1.0.
- The back edge is a horizontal line of length 1.5.
- The left and right sides are vertical lines of width 1.0.
- The front corners are chamfered at a 45° angle.
- The back corners are chamfered at a 45° angle.

Unit: mm

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