



2SB1124/2SD1624

Bipolar Transistor (-50V, (-)3A, Low VCE(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
- Fast switching speed
- Low collector-to-emitter saturation voltage
- Large current capacity and wide ASO

Specifications () : 2SB1124

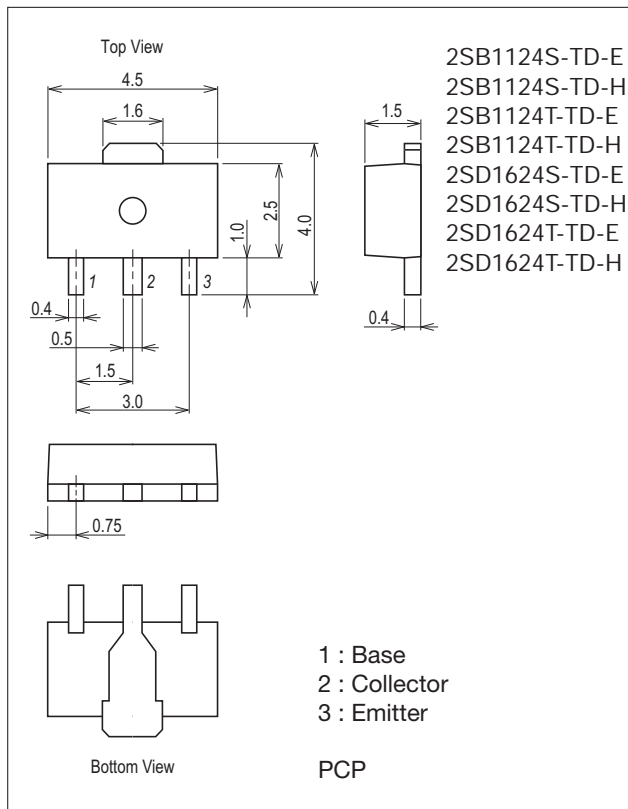
Absolute Maximum Ratings at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------------|------------------|------------|---------|------|
| Collector-to-Base Voltage | V _{CB0} | | (-)60 | V |
| Collector-to-Emitter Voltage | V _{CE0} | | (-)50 | V |
| Emitter-to-Base Voltage | V _{EB0} | | (-)6 | V |
| Collector Current | I _C | | (-)3 | A |
| Collector Current (Pulse) | I _{CP} | | (-)6 | A |

Continued on next page.

Package Dimensions

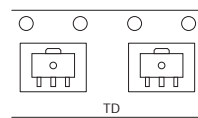
unit : mm (typ)
7007B-004



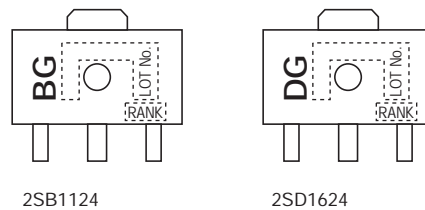
Product & Package Information

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

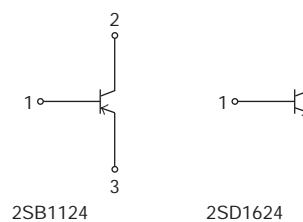
Packing Type: TD



Marking



Electrical Connection



2SB1124 / 2SD1624

Continued from preceding page.

| Parameter | Symbol | Conditions | Ratings | Unit |
|-----------------------|------------------|---|-------------|------|
| Collector Dissipation | P _C | | 500 | mW |
| | | When mounted on ceramic substrate (250mm ² ×0.8mm) | 1.5 | 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.

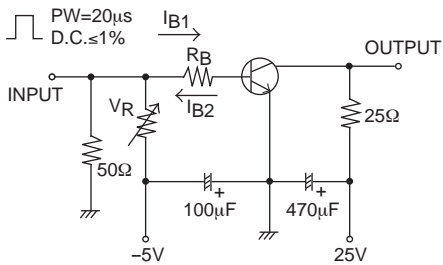
Electrical Characteristics at T_a=25°C

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|----------------------|--|---------|-------------|-----------|------|
| | | | min | typ | max | |
| Collector Cutoff Current | I _{CBO} | V _{CB} =(-)40V, I _E =0A | | | (-)1 | μA |
| Emitter Cutoff Current | I _{EBO} | V _{EB} =(-)4V, I _C =0A | | | (-)1 | μA |
| DC Current Gain | h _{FE1} | V _{CE} =(-)2V, I _C =(-)100mA | 100* | | 560* | |
| | h _{FE2} | V _{CE} =(-)2V, I _C =(-)3A | 35 | | | |
| Gain-Bandwidth Product | f _T | V _{CE} =(-)10V, I _C =(-)50mA | | 150 | | MHz |
| Output Capacitance | C _{ob} | V _{CB} =(-)10V, f=1MHz | | (39)25 | | pF |
| Collector-to-Emitter Saturation Voltage | V _{CE(sat)} | I _C =(-)2A, I _B =(-)100mA | | (-0.35)0.19 | (-0.7)0.5 | V |
| Base-to-Emitter Saturation Voltage | V _{BE(sat)} | V _{CE} =(-)2A, I _C =(-)100mA | | (-)0.94 | (-)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. | | (70)70 | | ns |
| Storage Time | t _{stg} | | | (450)650 | | ns |
| Fall Time | t _f | | | (35)35 | | ns |

* ; The 2SB1124/2SD1624 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

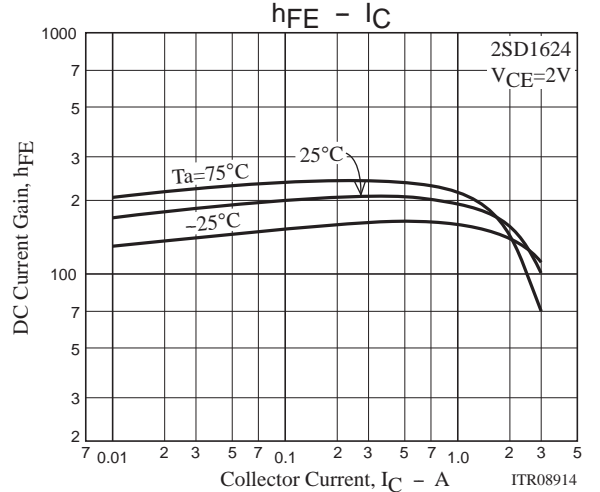
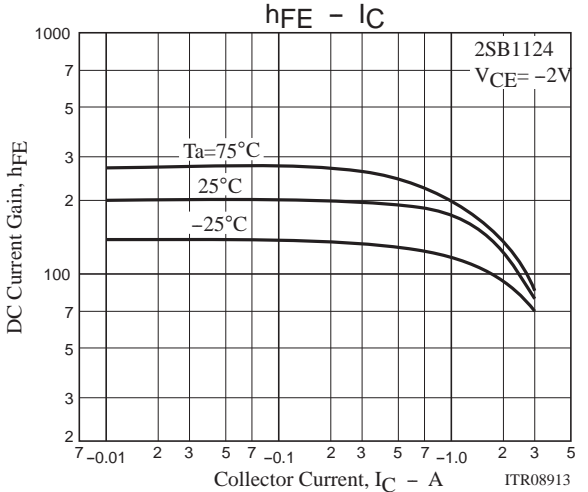
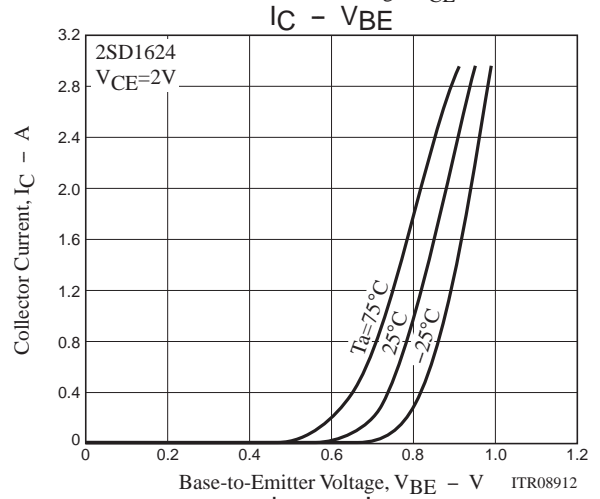
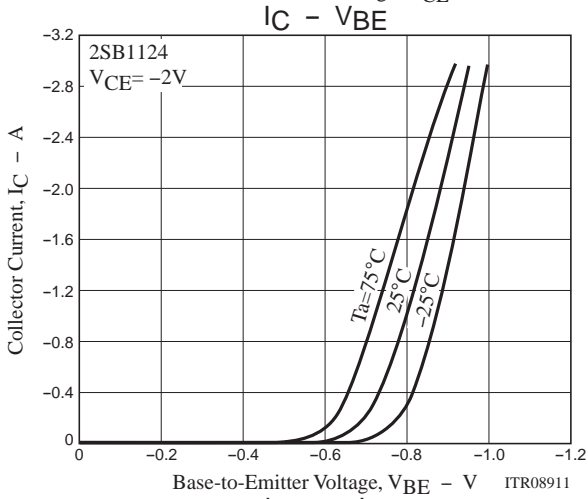
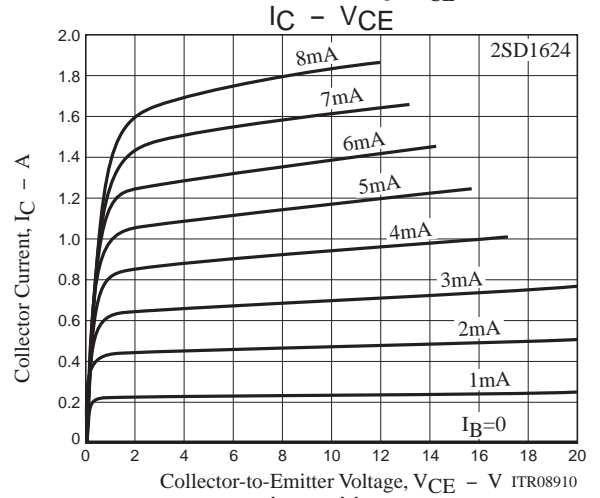
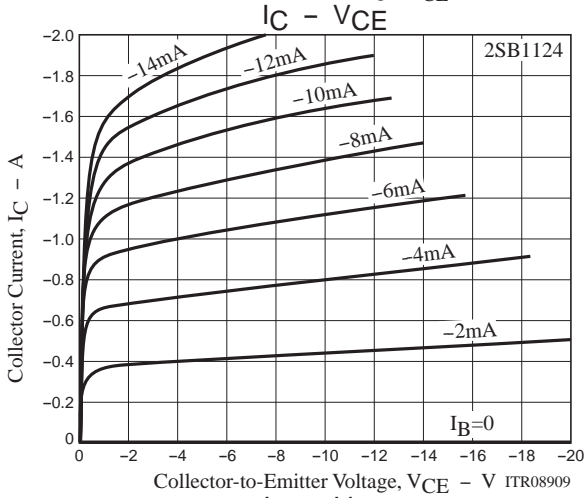
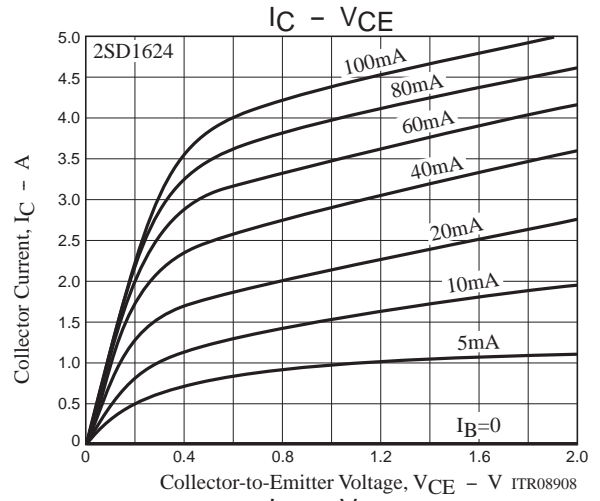
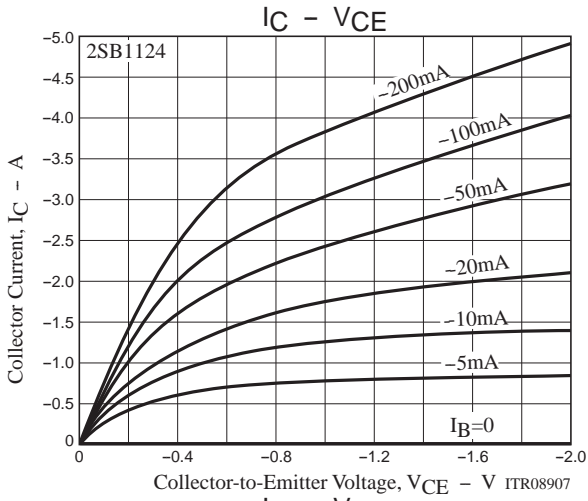


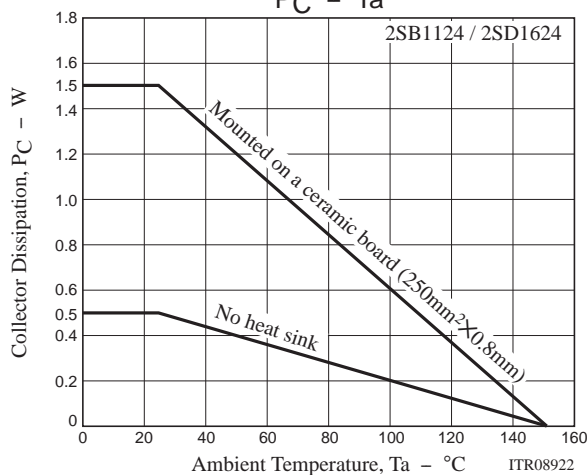
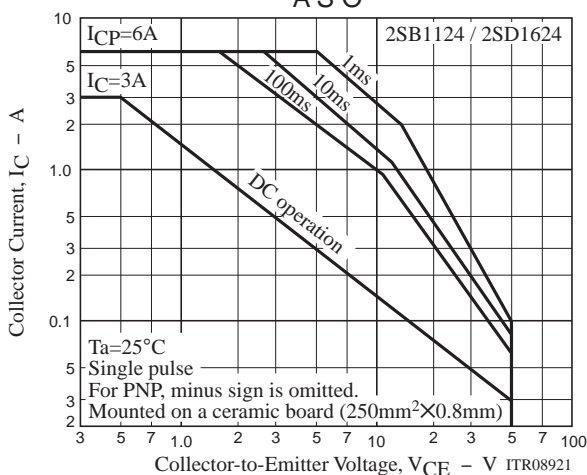
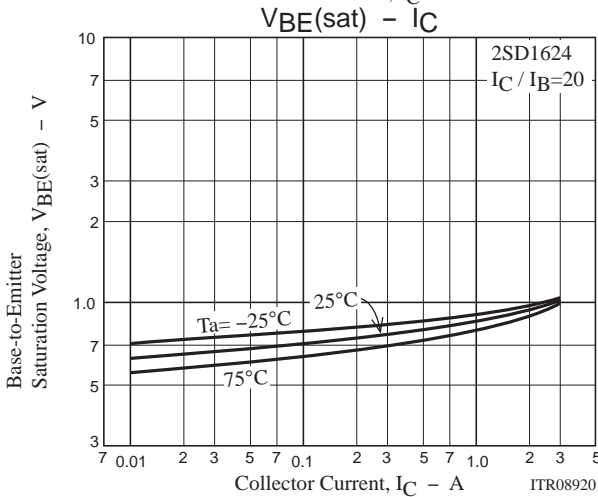
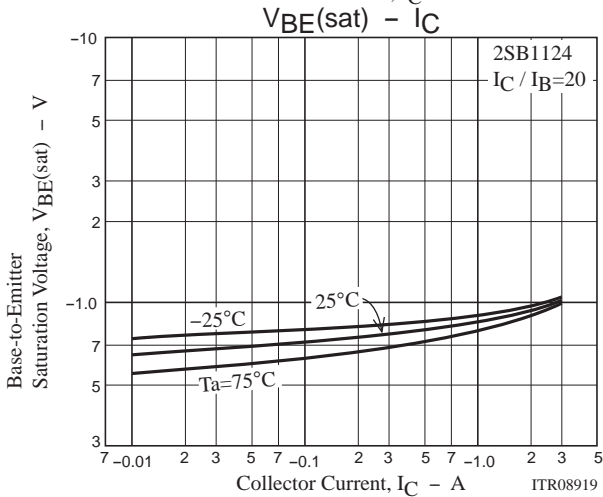
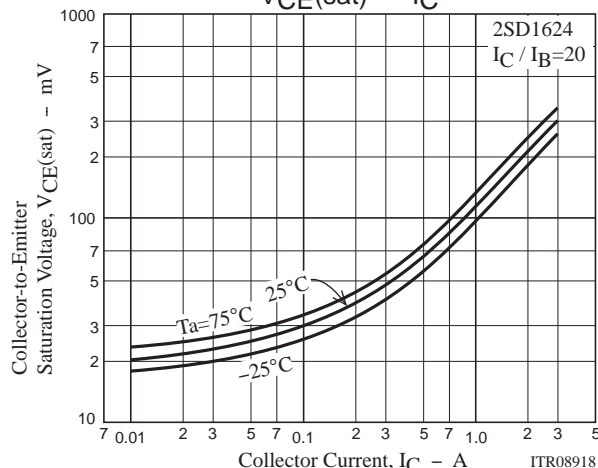
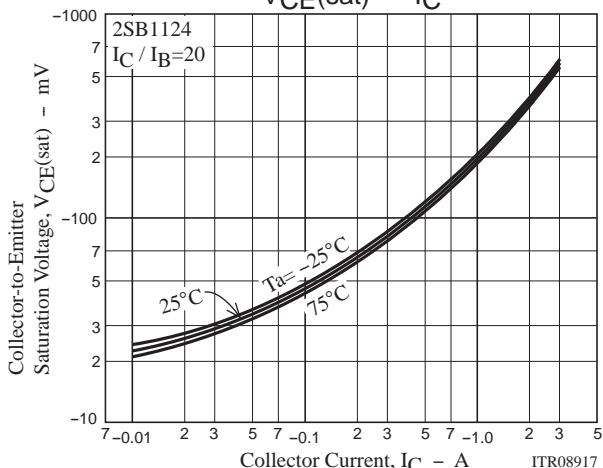
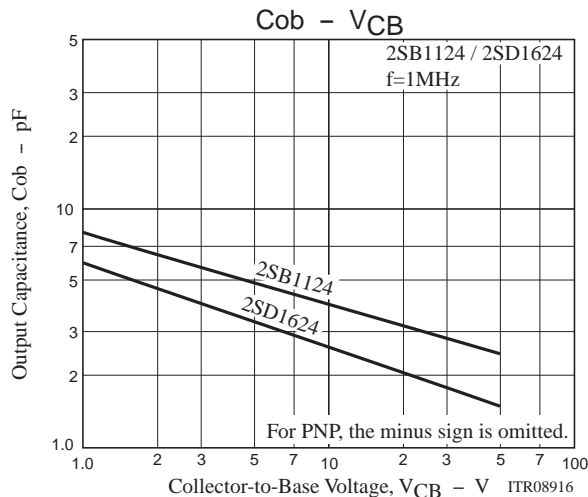
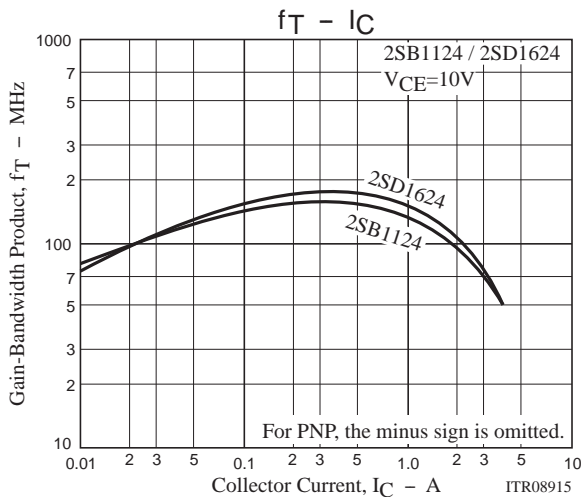
$$I_C = 10I_{B1} = -10I_{B2} = 1A$$

For PNP, the polarity is reversed.

Ordering Information

| Device | Package | Shipping | memo |
|---------------|---------|---------------|--------------------------|
| 2SB1124S-TD-E | PCP | 1,00pcs./reel | Pb Free |
| 2SB1124S-TD-H | PCP | 1,00pcs./reel | Pb Free and Halogen Free |
| 2SB1124T-TD-E | PCP | 1,00pcs./reel | Pb Free |
| 2SB1124T-TD-H | PCP | 1,00pcs./reel | Pb Free and Halogen Free |
| 2SD1624S-TD-E | PCP | 1,00pcs./reel | Pb Free |
| 2SD1624S-TD-H | PCP | 1,00pcs./reel | Pb Free and Halogen Free |
| 2SD1624T-TD-E | PCP | 1,00pcs./reel | Pb Free |
| 2SD1624T-TD-H | PCP | 1,00pcs./reel | Pb Free and Halogen Free |





Bag Packing Specification

2SB1124S-TD-E, 2SB1124S-TD-H, 2SB1124T-TD-E, 2SB1124T-TD-H, 2SD1624S-TD-E, 2SD1624S-TD-H, 2SD1624T-TD-E, 2SD1624T-TD-H

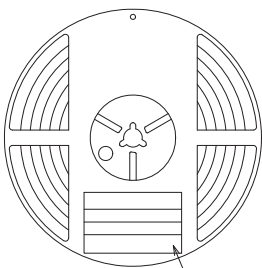
1. Packing Format

| 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)

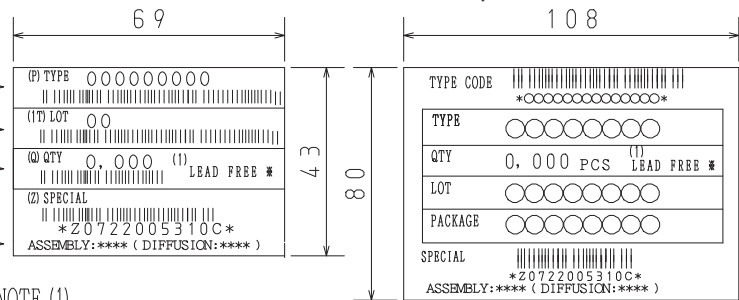
Outer box label
It is a label at the time of factory shipments.
The form of a label may change in physical distribution process.

Packing method



Type No.
LOT No.
Quantity
Origin

Reel label



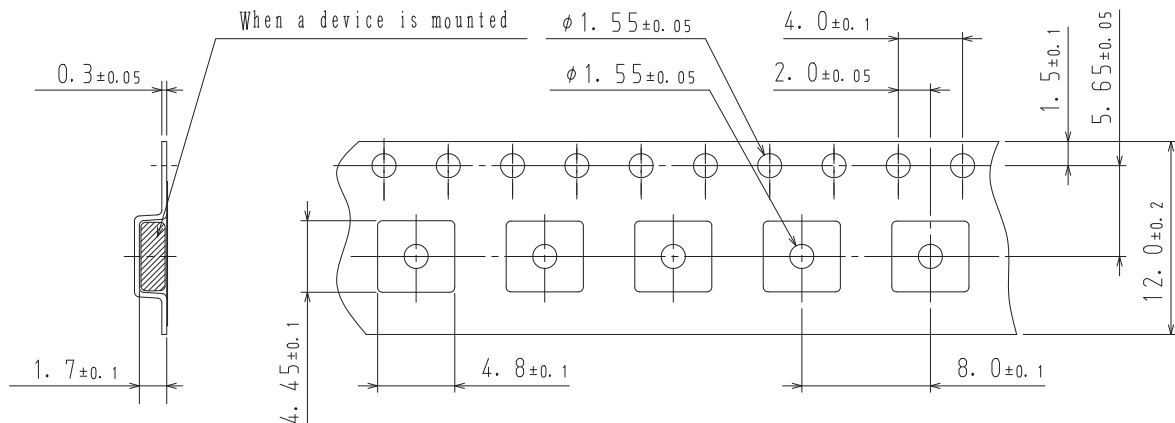
NOTE (1)

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

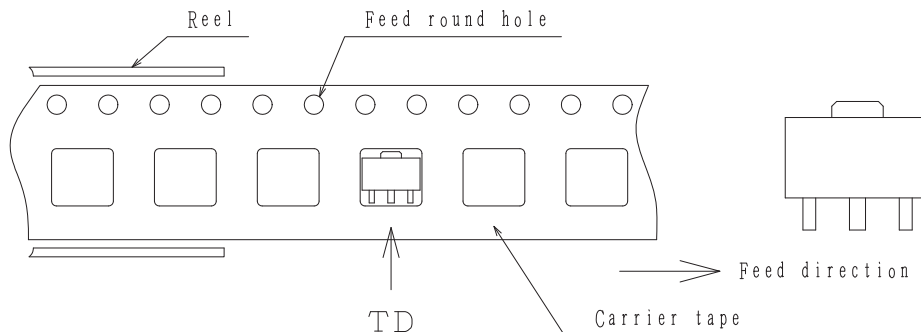
| Label | JEITA Phase |
|-------------|----------------|
| LEAD FREE 3 | JEITA Phase 3A |
| LEAD FREE 4 | JEITA Phase 3 |

2. Taping configuration

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



2-2. Device placement direction

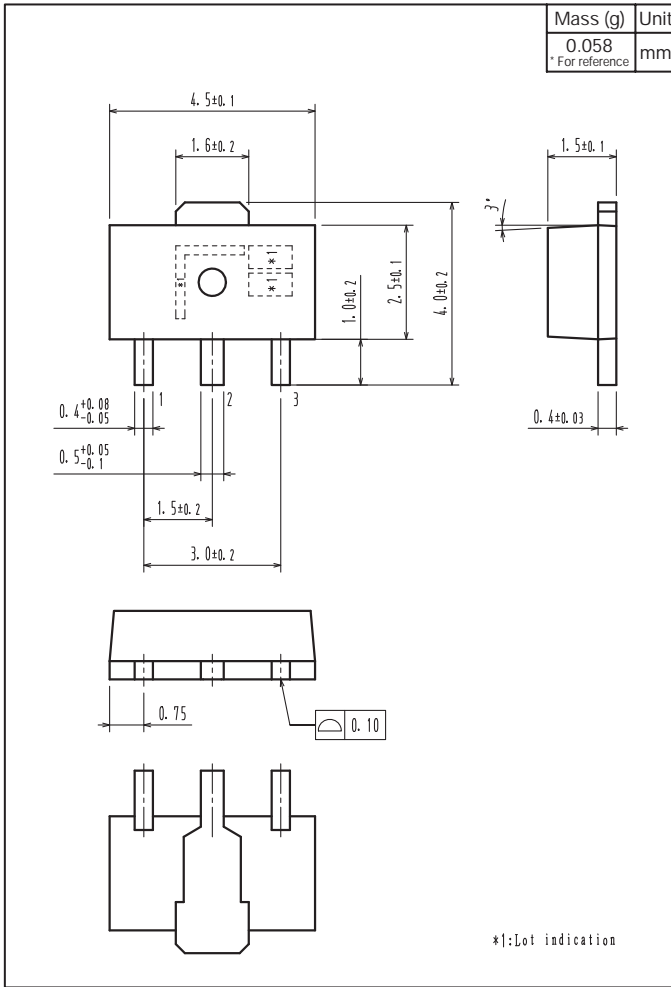


Those with pin 1 index on the feed hole side.....TD

Outline Drawing

Land Pattern Example

2SB1124S-TD-E, 2SB1124S-TD-H, 2SB1124T-TD-E, 2SB1124T-TD-H, 2SD1624S-TD-E, 2SD1624S-TD-H, 2SD1624T-TD-E, 2SD1624T-TD-H



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