



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

2SB1204 — PNP Epitaxial Planar Silicon Transistor High-Current Switching Applications

Applications

- Relay drivers, high-speed inverters, converters, and other general high-current switching applications

Features

- Low collector-to-emitter saturation voltage
- High current and high f_T
- Excellent linearity of h_{FE}
- Fast switching speed
- Small and slim package making it easy to make 2SB1204-applied sets smaller

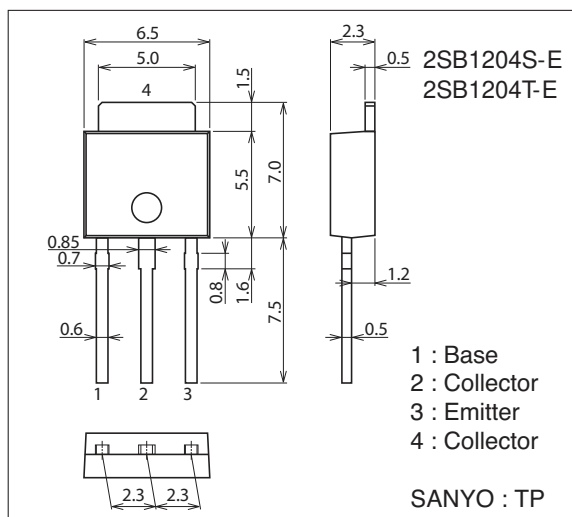
Specifications

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 | | -8 | A |
| Collector Current (Pulse) | I_{CP} | | -12 | A |
| Collector Dissipation | PC | $T_c=25^\circ\text{C}$ | 1 | W |
| | | | 20 | W |
| Junction Temperature | T_j | | 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | | -55 to +150 | $^\circ\text{C}$ |

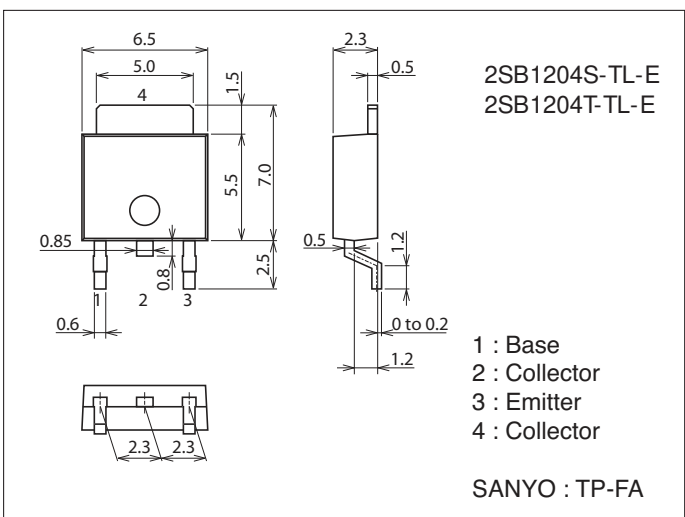
Package Dimensions unit : mm (typ)

7518-003



Package Dimensions unit : mm (typ)

7003-003

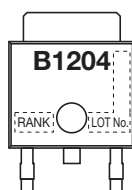


Product & Package Information

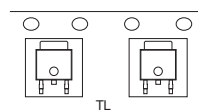
- Package : TP
- JEITA, JEDEC : SC-64, TO-251
- Minimum Packing Quantity : 500 pcs./bag

- Package : TP-FA
- JEITA, JEDEC : SC-63, TO-252
- Minimum Packing Quantity : 700 pcs./reel

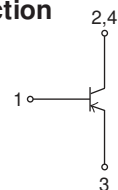
Marking (TP, TP-FA)



Packing Type (TP-FA) : TL



Electrical Connection



SANYO Semiconductor Co., Ltd.

<http://semicon.sanyo.com/en/network>

2SB1204

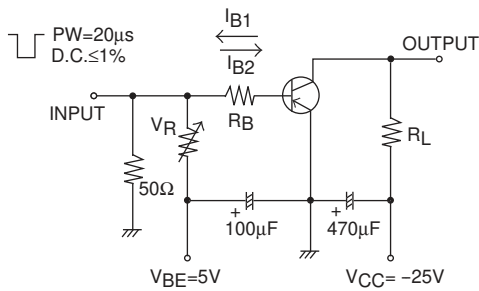
Electrical Characteristics at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|----------------------|---|---------|-------|------|------|
| | | | min | typ | max | |
| Collector Cutoff Current | ICBO | V _{CB} = -40V, I _E =0A | | | -1 | μA |
| Emitter Cutoff Current | IEBO | V _{EB} = -4V, I _C =0A | | | -1 | μA |
| DC Current Gain | h _{FE1} | V _{CE} = -2V, I _C = -0.5A | 70* | | 400* | |
| | h _{FE2} | V _{CE} = -2V, I _C = -6A | 35 | | | |
| Gain-Bandwidth Product | f _T | V _{CE} = -5V, I _C = -1A | | 130 | | MHz |
| Output Capacitance | C _{ob} | V _{CB} = -10V, f=1MHz | | 95 | | pF |
| Collector-to-Emitter Saturation Voltage | V _{CE(sat)} | I _C = -4A, I _B = -0.2A | | -250 | -500 | mV |
| Base-to-Emitter Saturation Voltage | V _{BE(sat)} | I _C = -4A, I _B = -0.2A | | -0.95 | -1.3 | 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 | | 50 | | ns |
| Storage Time | t _{stg} | | | 450 | | ns |
| Fall Time | t _f | | | 20 | | ns |

* : The 2SB1204 are classified by 0.5A h_{FE} as follows :

| Rank | Q | R | S | T |
|-----------------|-----------|------------|------------|------------|
| h _{FE} | 70 to 140 | 100 to 200 | 140 to 280 | 200 to 400 |

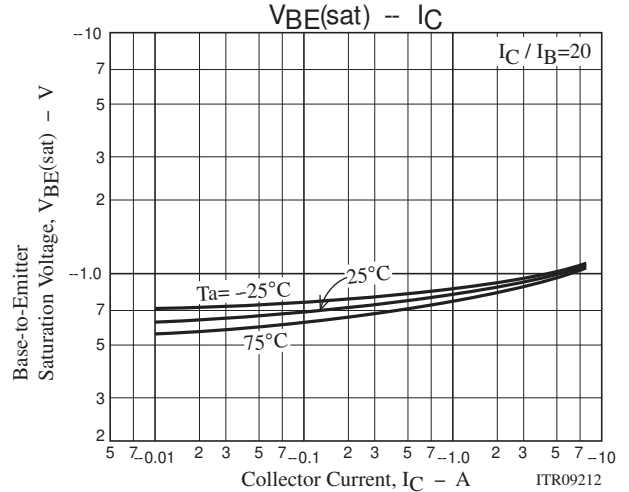
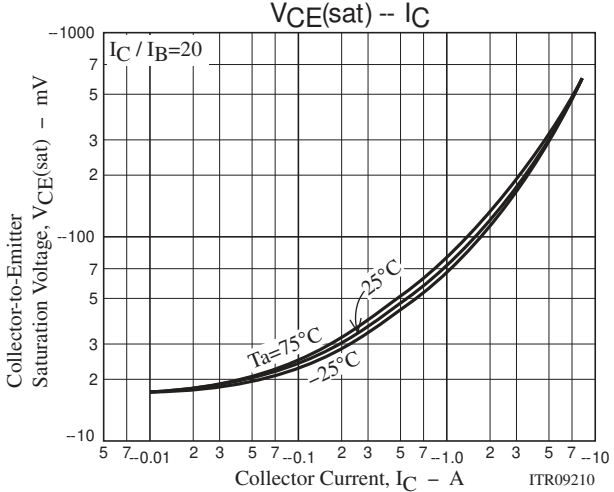
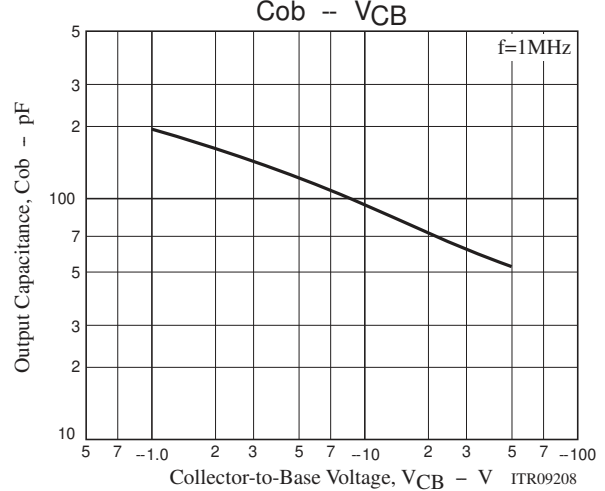
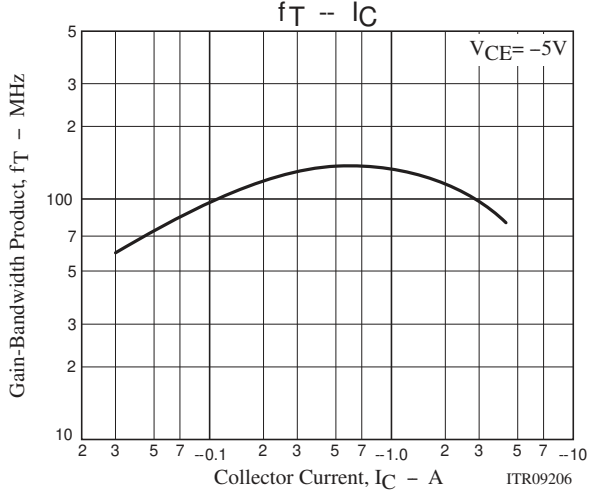
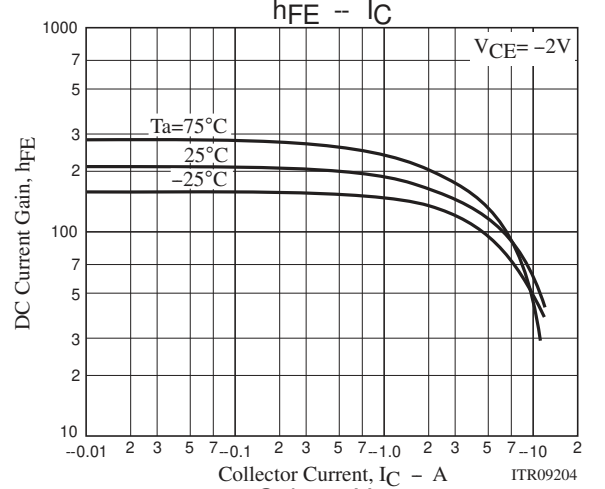
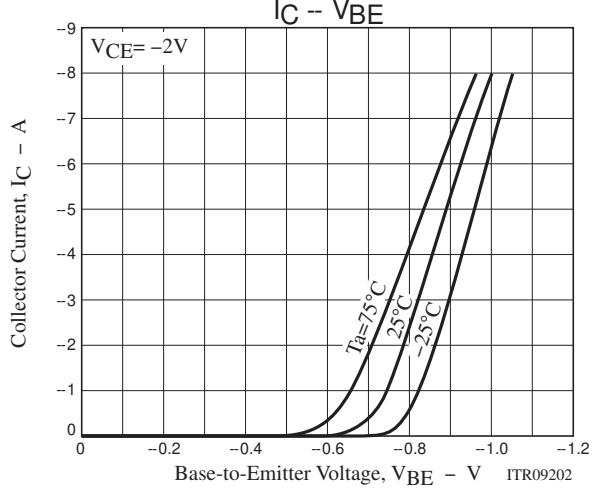
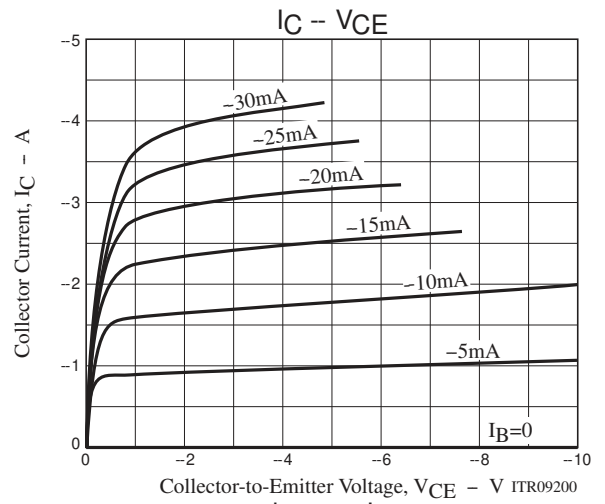
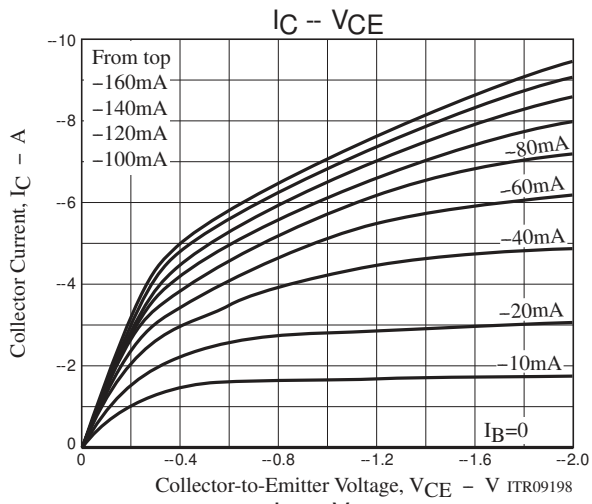
Switching Time Test Circuit

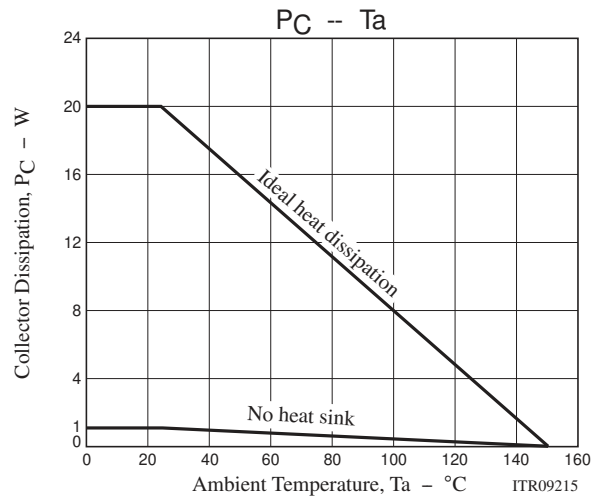
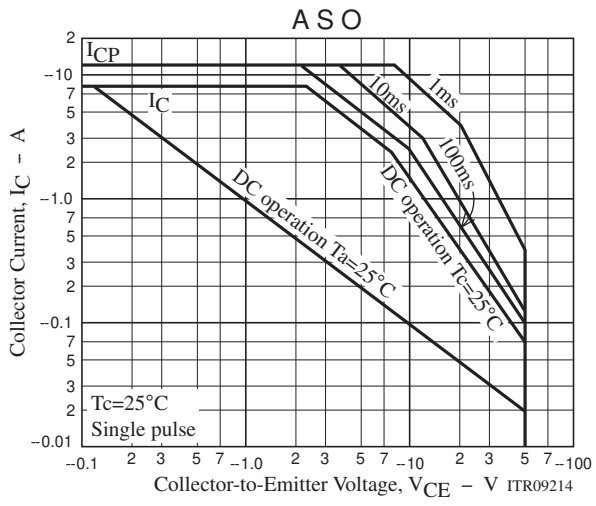


$$I_C = -10I_{B1} = 10I_{B2} = -4A$$

Ordering Information

| Device | Package | Shipping | memo |
|---------------|---------|--------------|---------|
| 2SB1204S-E | TP | 500pcs./bag | Pb Free |
| 2SB1204T-E | TP | 500pcs./bag | |
| 2SB1204S-TL-E | TP-FA | 700pcs./reel | |
| 2SB1204T-TL-E | TP-FA | 700pcs./reel | |





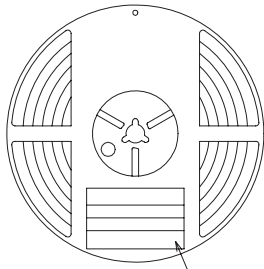
Taping Specification

2SB1204S-TL-E, 2SB1204T-TL-E

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) |
| TP-FA | TP | 700 | 2,100 | 12,600 | 3 reels contained Dimensions:mm (external) 183×72×185 | 6 inner boxes contained Dimensions:mm (external) 440×195×210 |

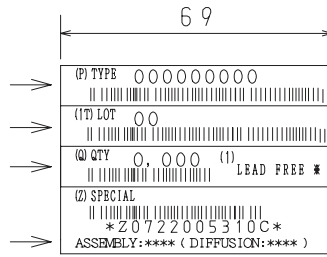
Packing method



Type No.
LOT No.
Quantity
Origin

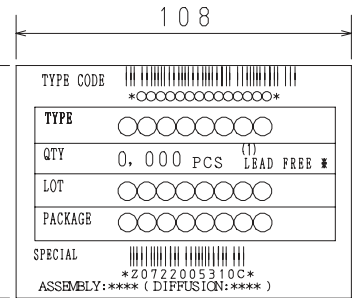
Reel label

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.



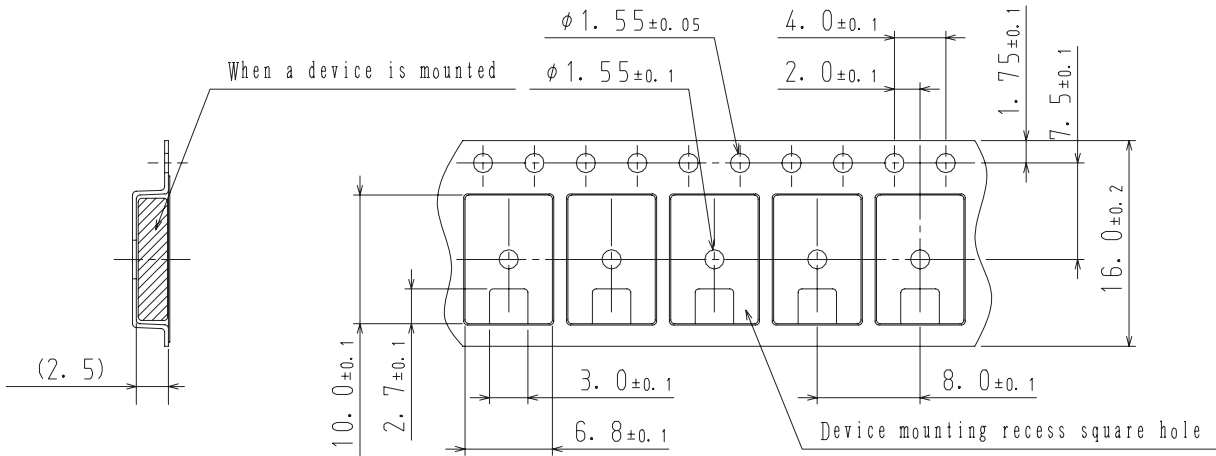
NOTE (1)

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

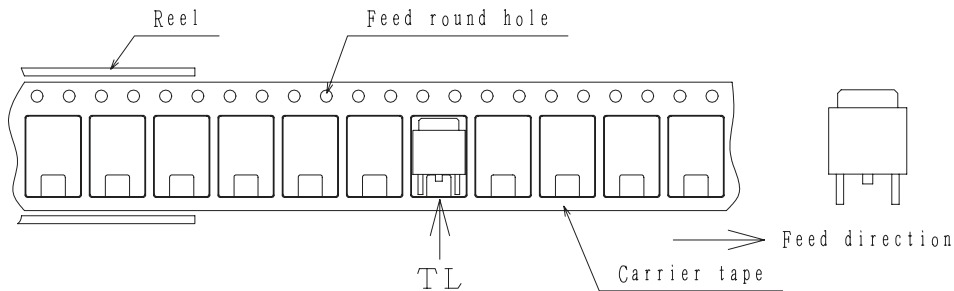
| Label | JEITA Phase |
|-------------|----------------|
| LEAD FREE 3 | JEITA Phase 3A |
| LEAD FREE 4 | JEITA Phase 3 |

Taping configuration

1. Carrier tape size (unit:mm)



2. Device placement direction

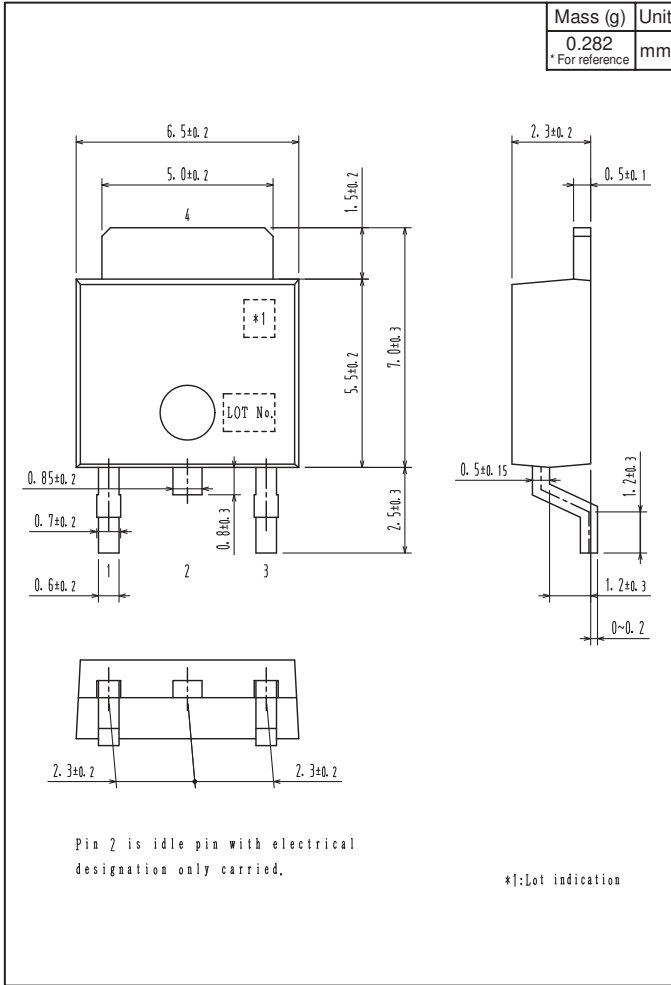


Those with one electrode terminal on the feed hole side.....TL

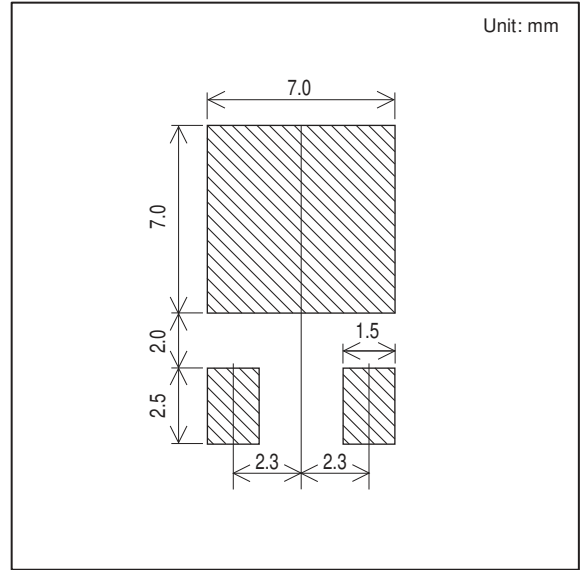
2SB1204

Outline Drawing

2SB1204S-TL-E, 2SB1204T-TL-E



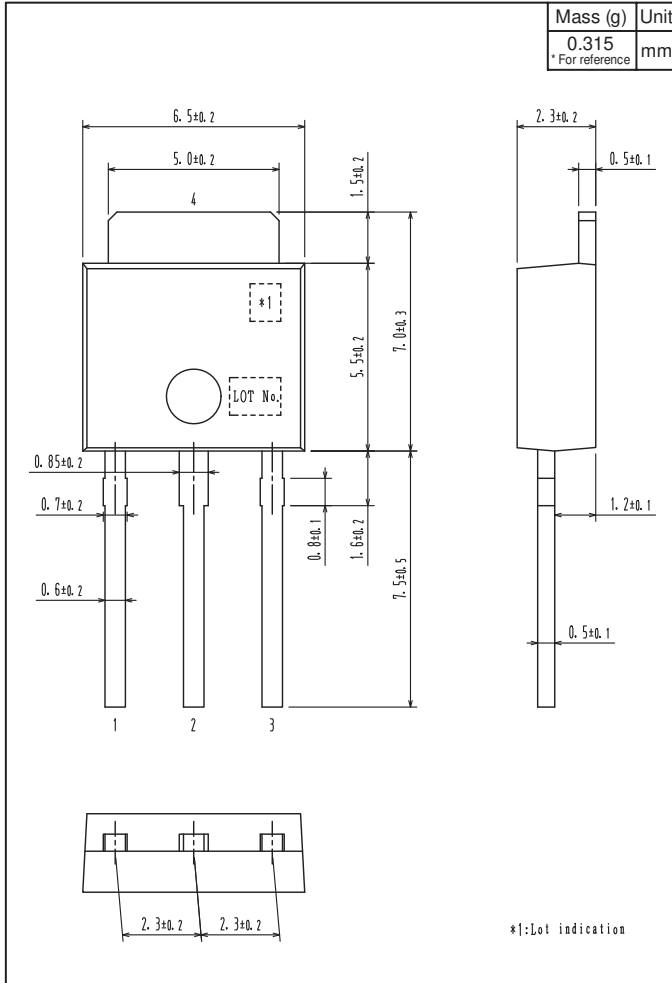
Land Pattern Example



2SB1204

Outline Drawing

2SB1204S-E, 2SB1204T-E



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