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Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China





2SA1507/2SC3902

Bipolar Transistor

(-160V, (-)1.5A, Low VCE(sat), (PNP)NPN Single TO-126ML

ON Semiconductor®

<http://onsemi.com>

Applications

- Color TV audio output, converters, inverters

Features

- High breakdown voltage
- Large current capacity
- Adoption of FBET and MBIT process
- The plastic-covered heat sink eliminates the need for an insulator when mounting the 2SA1507/2SC3902

Specifications () : 2SA1507

Absolute Maximum Ratings at Ta=25°C

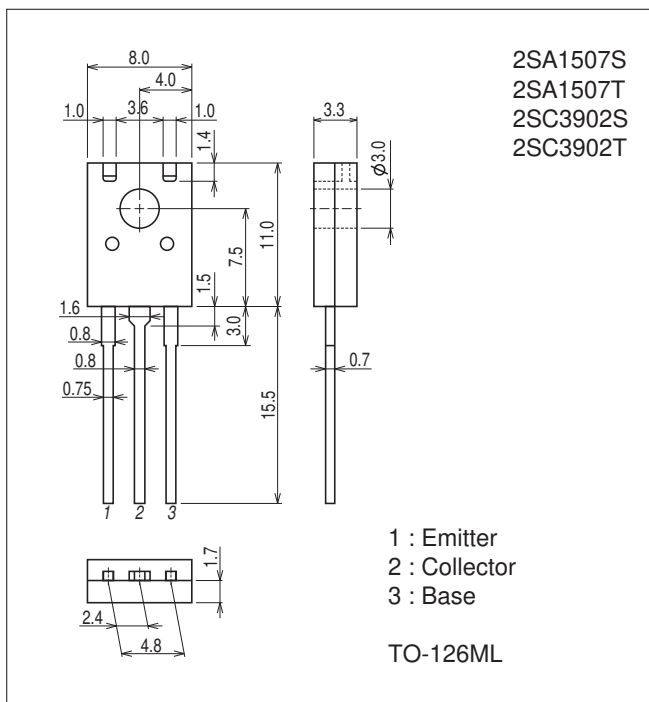
| Parameter | Symbol | Conditions | Ratings | Unit |
|------------------------------|--------|------------|-------------|------|
| Collector-to-Base Voltage | VCBO | | (-)180 | V |
| Collector-to-Emitter Voltage | VCEO | | (-)160 | V |
| Emitter-to-Base Voltage | VEBO | | (-)6 | V |
| Collector Current | IC | | (-)1.5 | A |
| Collector Current (Pulse) | ICP | | (-)2.5 | A |
| Collector Dissipation | PC | | 1.5 | W |
| | | Tc=25°C | 10 | W |
| Junction Temperature | Tj | | 150 | °C |
| Storage Temperature | Tstg | | -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.

Package Dimensions

unit : mm (typ)

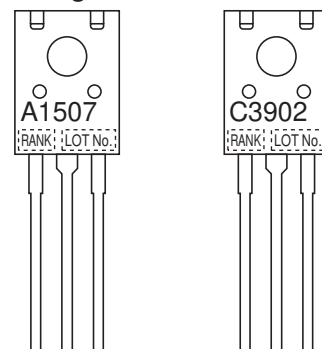
7516A-002



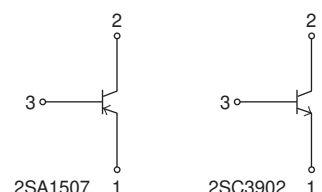
Product & Package Information

- Package : TO-126ML
- JEITA, JEDEC : TO-126
- Minimum Packing Quantity : 200 pcs./bag

Marking



Electrical Connection



2SA1507 / 2SC3902

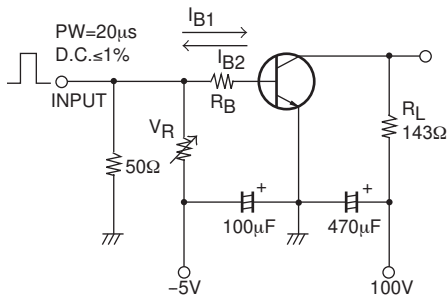
Electrical Characteristics at Ta=25°C

| Parameter | Symbol | Conditions | Ratings | | | Unit |
|---|----------------------|---|---------|------------|------------|------|
| | | | min | typ | max | |
| Collector Cutoff Current | ICBO | V _{CB} =(-)120V, I _E =0A | | | (-)1.0 | μA |
| Emitter Cutoff Current | IEBO | V _{EB} =(-)4V, I _C =0A | | | (-)1.0 | μA |
| DC Current Gain | h _{FE1} | V _{CE} =(-)5V, I _C =(-)100mA | 100* | | 400* | |
| | h _{FE2} | V _{CE} =(-)5V, I _C =(-)10mA | 90 | | | |
| Gain-Bandwidth Product | f _T | V _{CE} =(-)10V, I _C =(-)50mA | | 120 | | MHz |
| Output Capacitance | C _{ob} | V _{CB} =(-)10V, f=1MHz | | (22)14 | | pF |
| Collector-to-Emitter Saturation Voltage | V _{CE(sat)} | I _C =(-)500mA, I _B =(-)50mA | | (-0.2)0.13 | (-0.5)0.45 | V |
| Base-to-Emitter Saturation Voltage | V _{BE(sat)} | I _C =(-)500mA, I _B =(-)50mA | | (-)0.85 | (-)1.2 | V |
| Collector-to-Base Breakdown Voltage | V _{(BR)CBO} | I _C =(-)10μA, I _E =0A | (-)180 | | | V |
| Collector-to-Emitter Breakdown Voltage | V _{(BR)CEO} | I _C =(-)1mA, R _{BE} =∞ | (-)160 | | | 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. | | (0.7)0.04 | | μs |
| Storage Time | t _{stg} | | | (0.7)1.2 | | μs |
| Fall Time | t _f | | | (0.04)0.08 | | μs |

* : The 2SA1507 / 2SC3902 are classified by 100mA h_{FE} as follows:

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

Switching Time Test Circuit

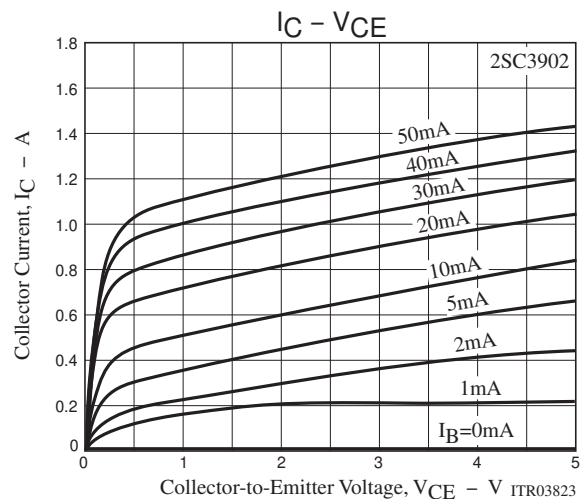
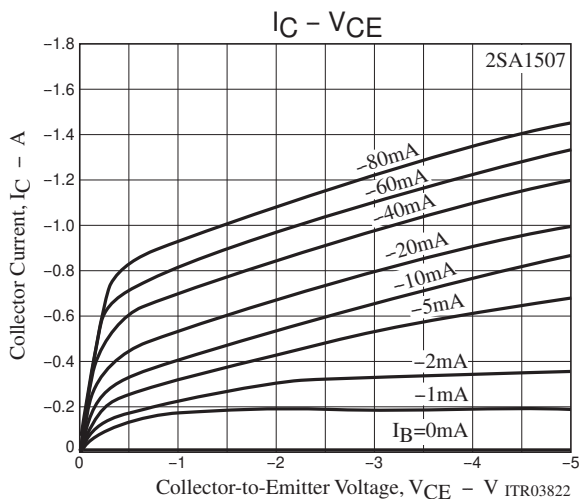


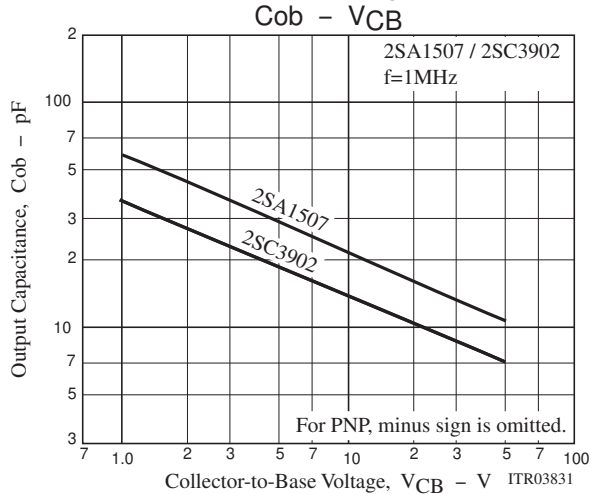
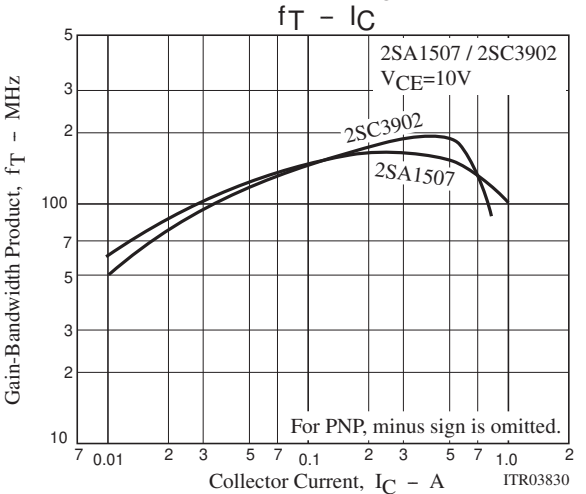
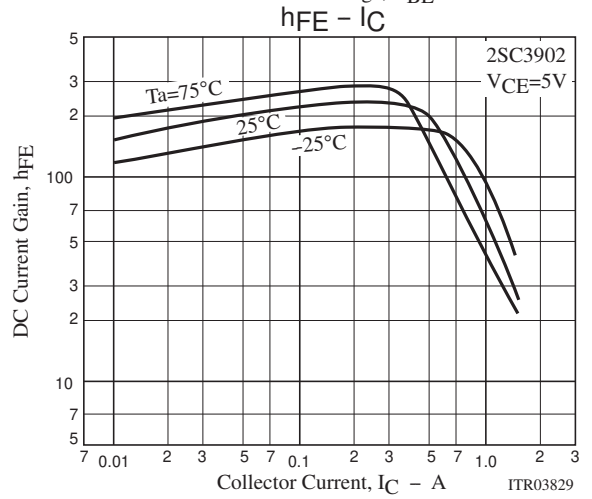
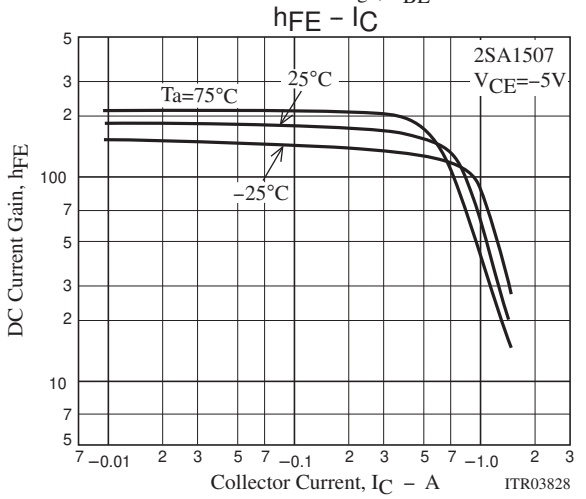
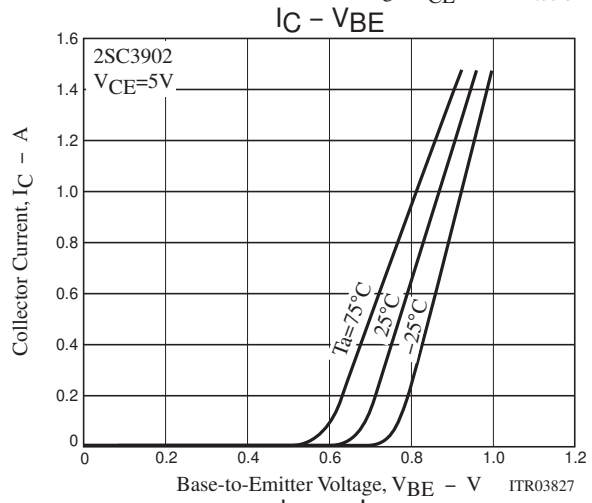
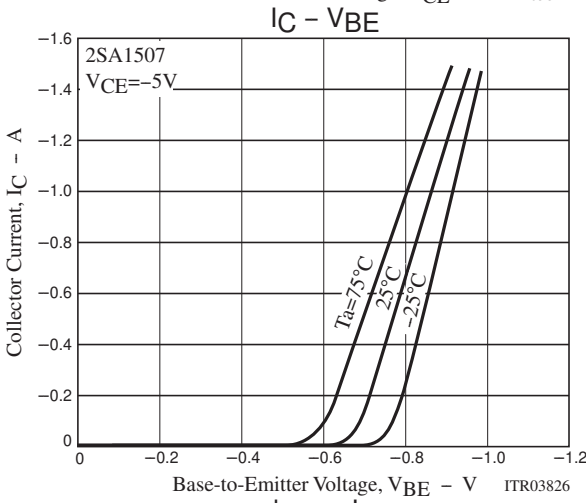
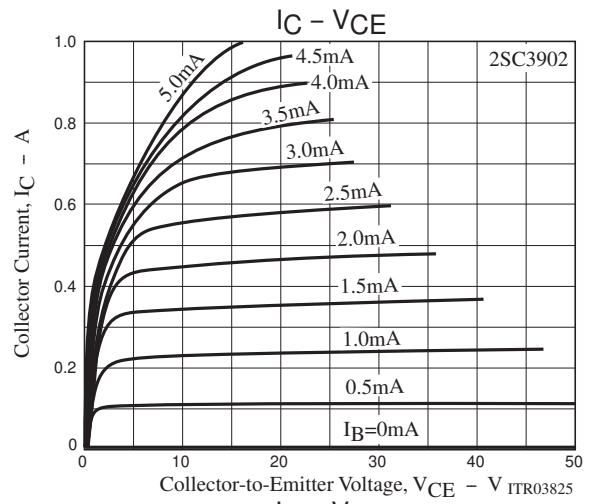
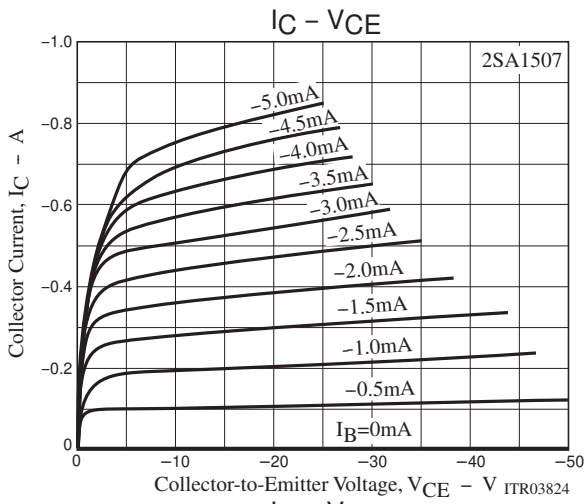
$$I_C = 10I_{B1} = -10I_{B2} = 0.7A$$

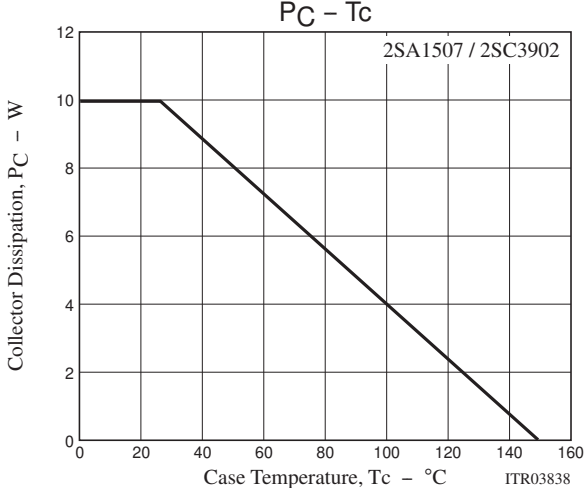
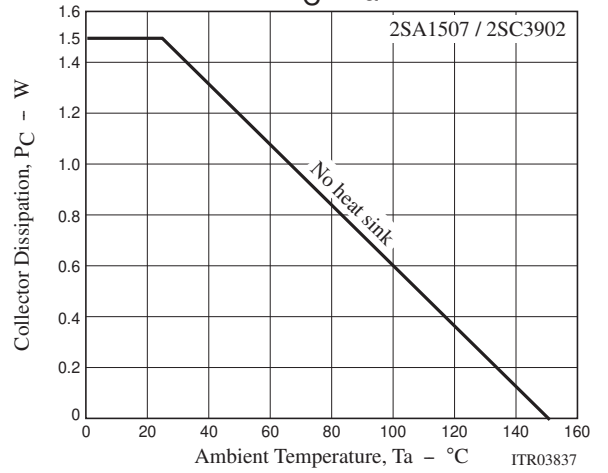
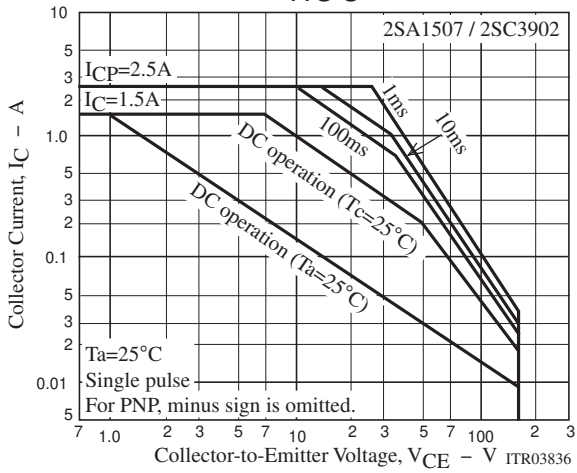
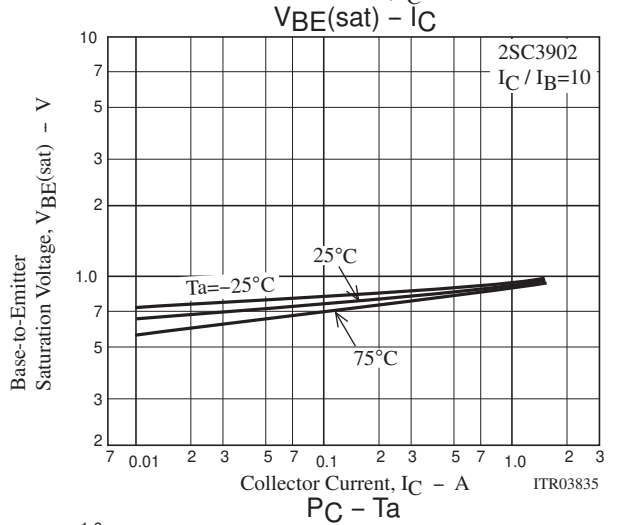
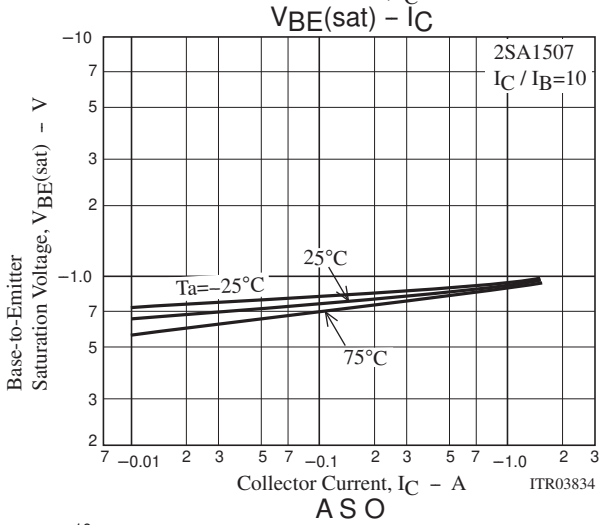
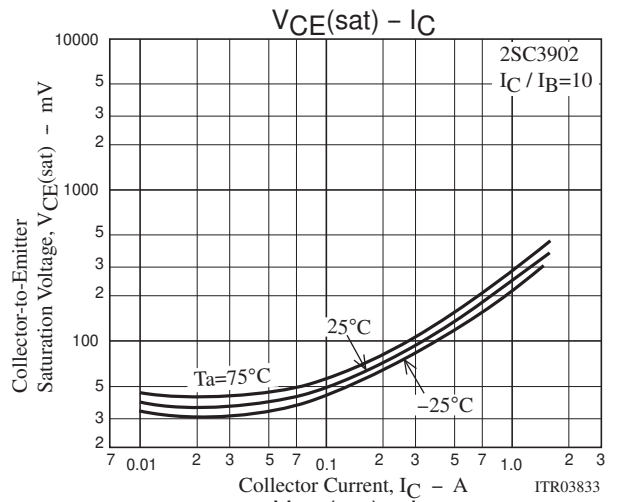
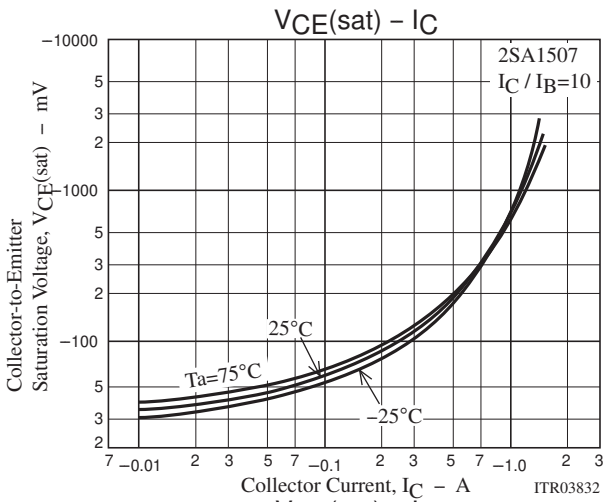
(For PNP, the polarity is reversed.)

Ordering Information

| Device | Package | Shipping | memo |
|----------|----------|-------------|---------|
| 2SA1507S | TO-126ML | 200pcs./bag | Pb Free |
| 2SA1507T | TO-126ML | 200pcs./bag | |
| 2SC3902S | TO-126ML | 200pcs./bag | |
| 2SC3902T | TO-126ML | 200pcs./bag | |







Bag Packing Specification

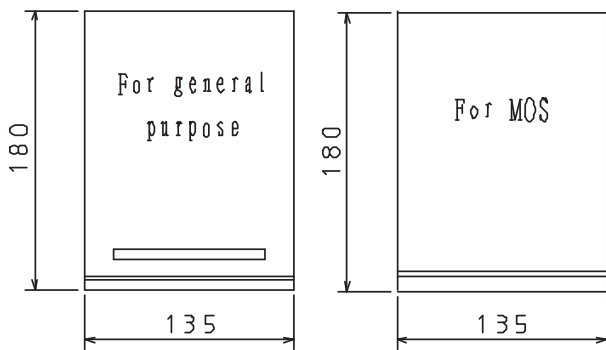
2SA1507S, 2SA1507T, 2SC3902S, 2SC3902T

1. Packing Format

| Package Name | Maximum Number of devices contained (pcs) | | | Packing format | |
|--------------|---|-----------|-----------|--|---|
| | Bag | Inner box | Outer box | Inner BOX | Outer BOX |
| TO-126ML | 200 | 4,000 | 12,000 | B-1 20 bags contained Dimensions:mm (external) 445×225×55 | A-2 3 inner boxes contained Dimensions:mm (external) 470×250×190 |

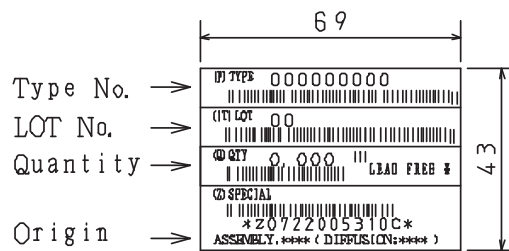
2. Bag dimensions

(unit:mm)



3. Bag label, Inner box label

(unit:mm)



NOTE (1)

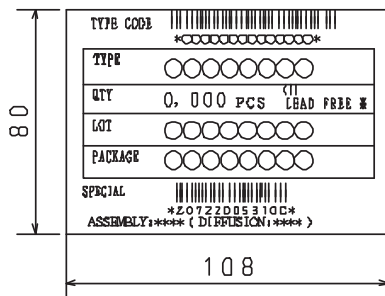
The LEAD FREE * description shows that the surface treatment of the terminal is lead free.

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

4. Outer box label

(unit:mm)

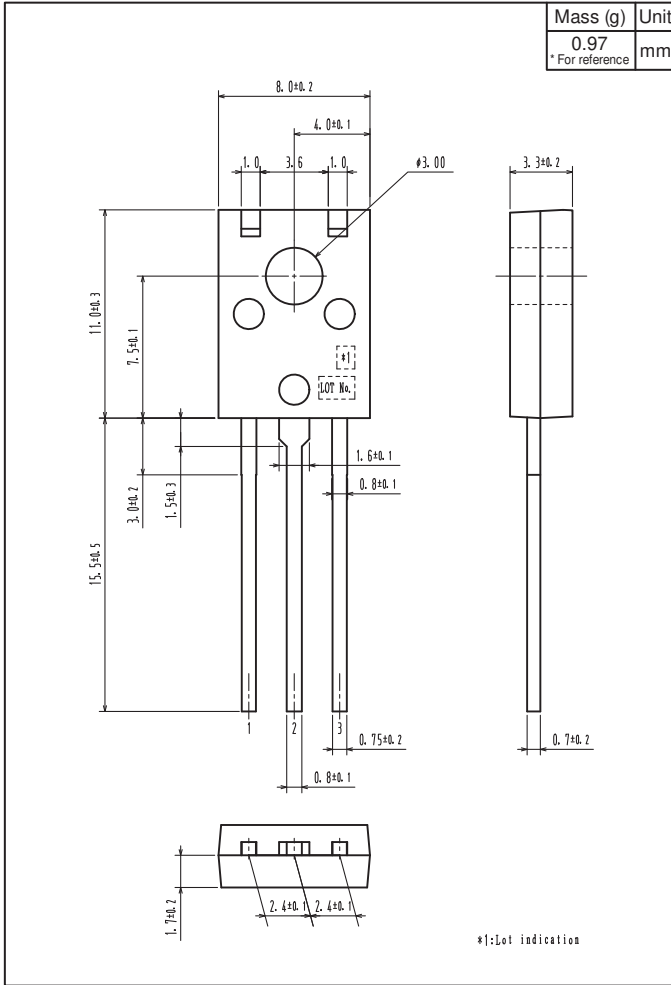
It is a label at the time of factory shipments.
The form of a label may change in physical distribution process.



2SA1507 / 2SC3902

Outline Drawing

2SA1507S, 2SA1507T, 2SC3902S, 2SC3902T



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