



# 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

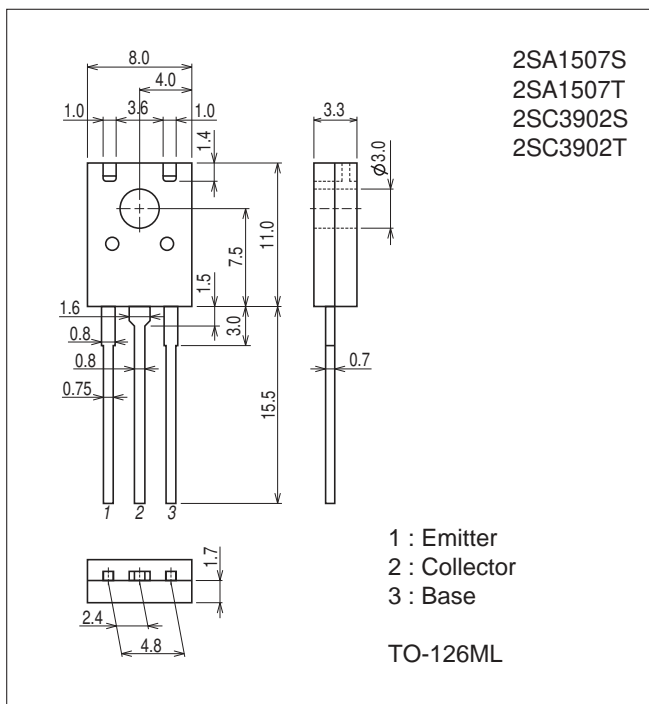
Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	VCBO		(-)180	V
Collector-to-Emitter Voltage	VCEO		(-)160	V
Emitter-to-Base Voltage	VEBO		(-)6	V
Collector Current	IC		(-)1.5	A
Collector Current (Pulse)	ICP		(-)2.5	A
Collector Dissipation	PC		1.5	W
		Tc=25°C	10	W
Junction Temperature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

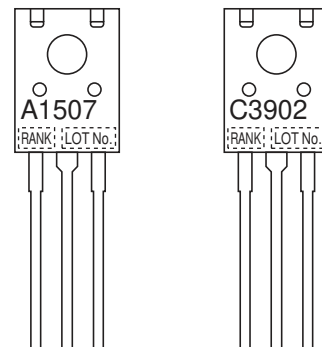
7516A-002



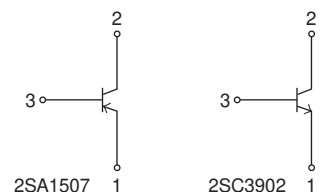
### Product & Package Information

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

### Marking



### Electrical Connection



## 2SA1507 / 2SC3902

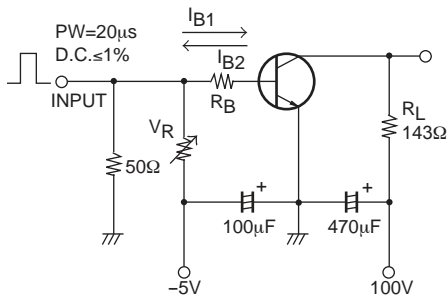
### Electrical Characteristics at Ta=25°C

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

\* : The 2SA1507 / 2SC3902 are classified by 100mA h<sub>FE</sub> as follows:

Rank	R	S	T
h <sub>FE</sub>	100 to 200	140 to 280	200 to 400

### Switching Time Test Circuit

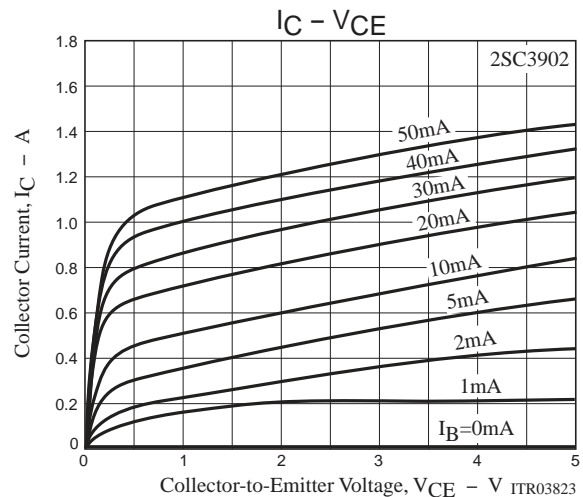
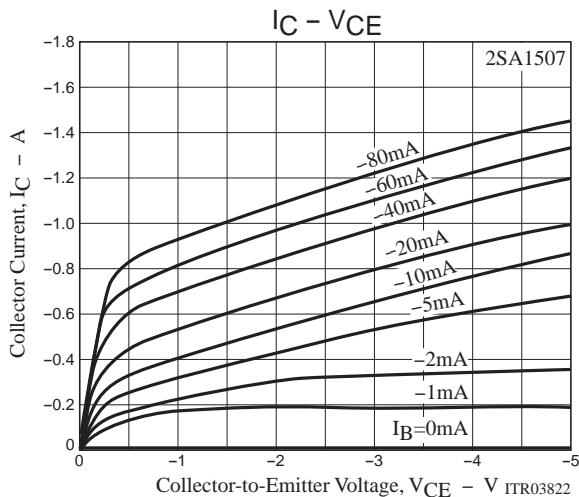


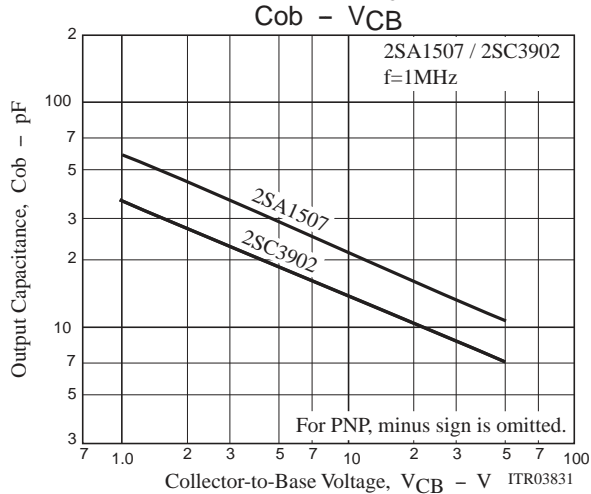
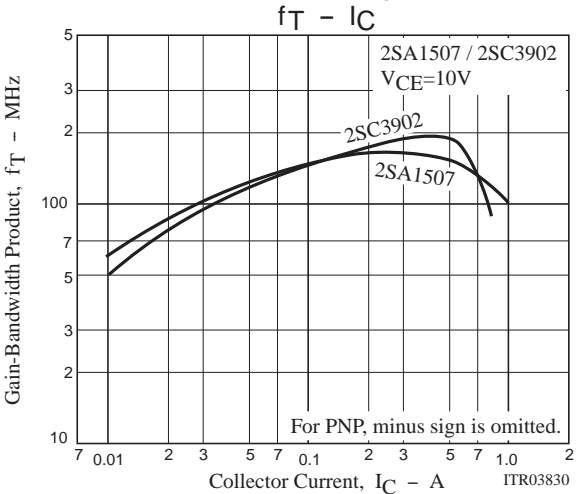
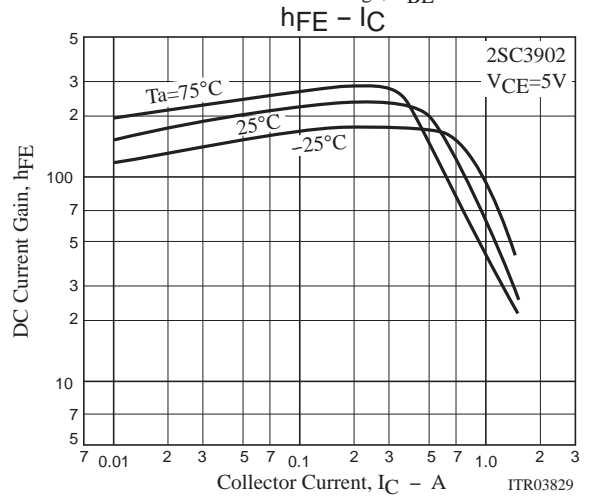
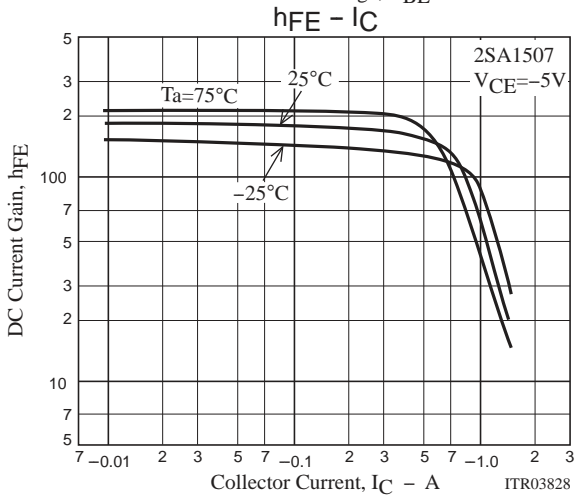
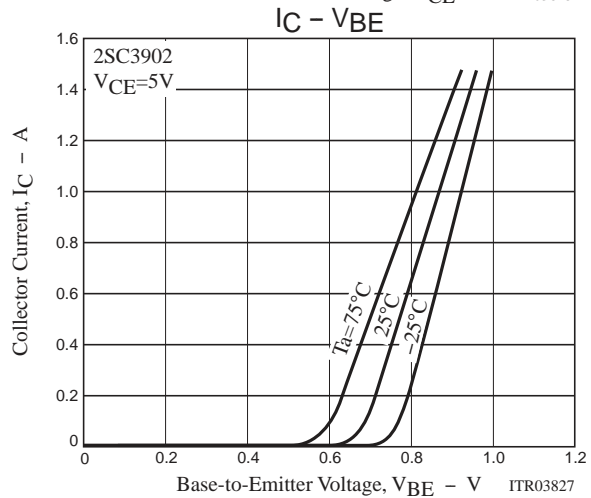
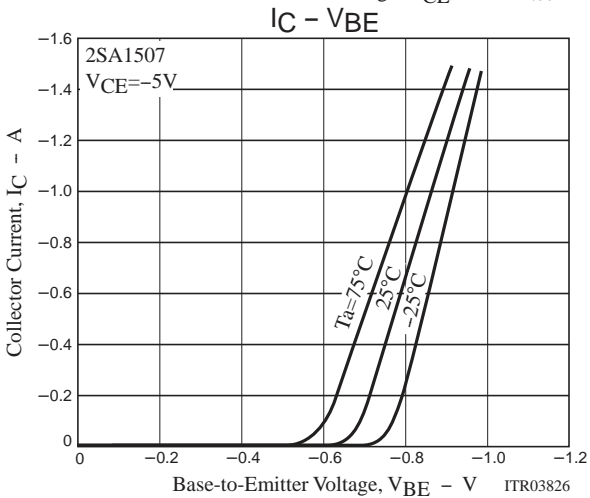
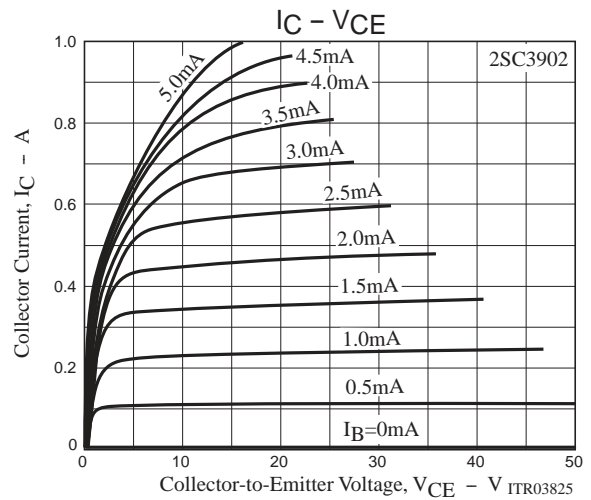
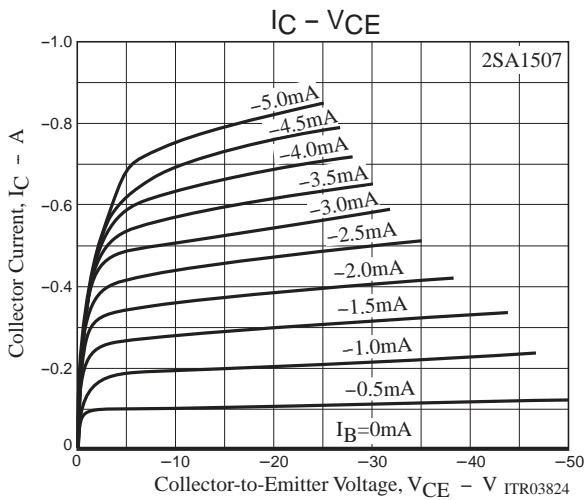
$$I_C = 10I_{B1} = -10I_{B2} = 0.7A$$

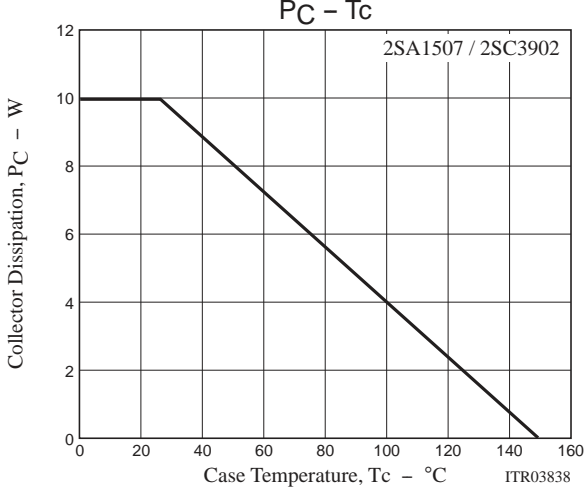
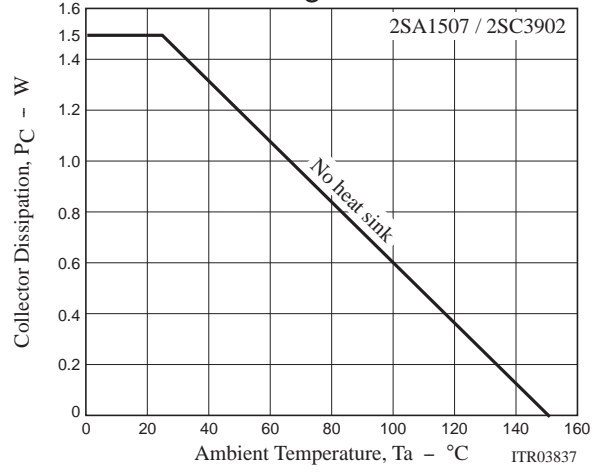
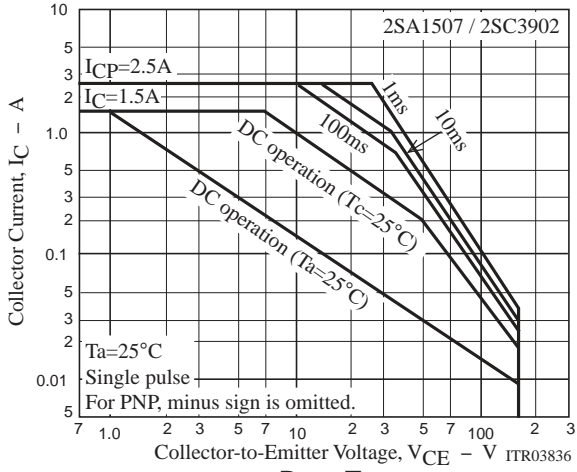
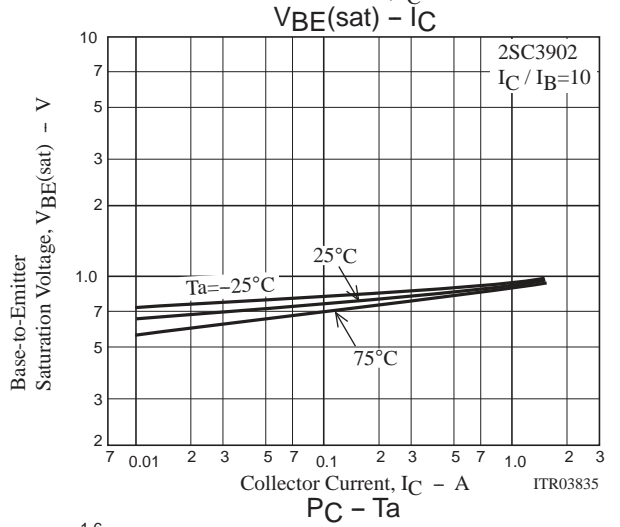
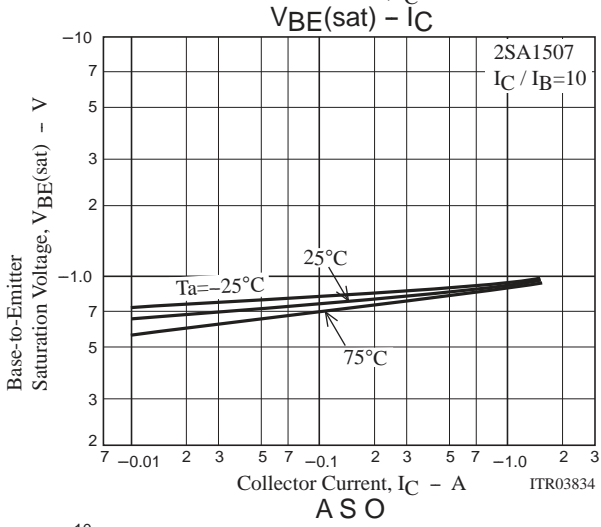
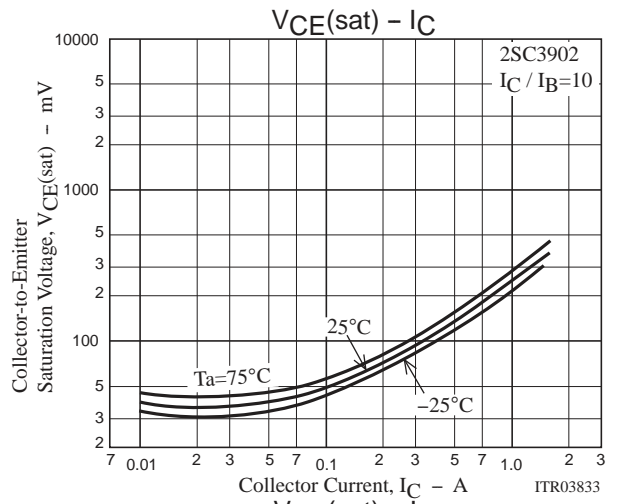
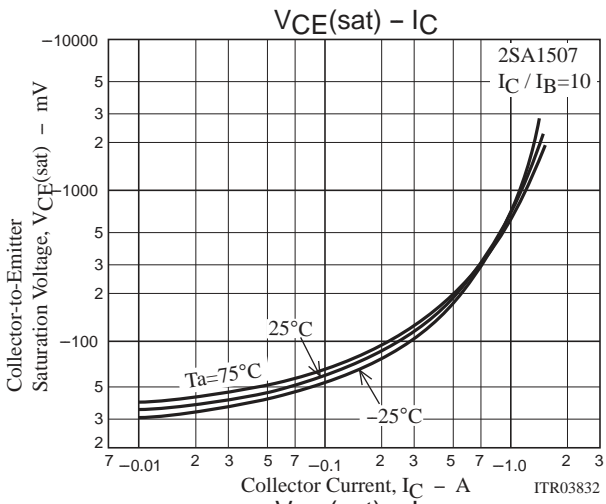
(For PNP, the polarity is reversed.)

### 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**

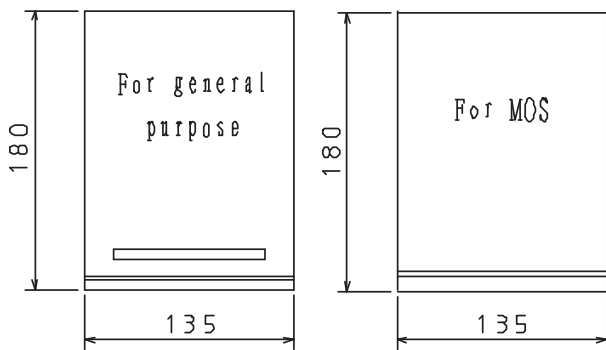
2SA1507S, 2SA1507T, 2SC3902S, 2SC3902T

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

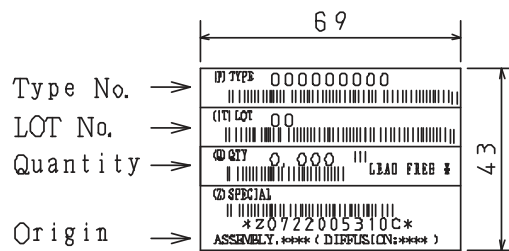
2. Bag dimensions

(unit:mm)



3. Bag label, Inner box label

(unit:mm)



NOTE (1)

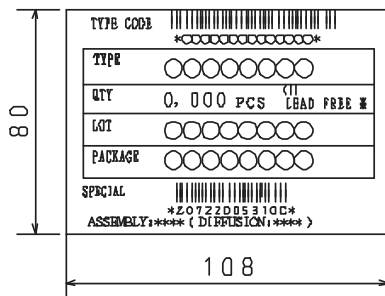
The LEAD FREE # description shows that the surface treatment of the terminal is lead free.

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

4. Outer box label

(unit:mm)

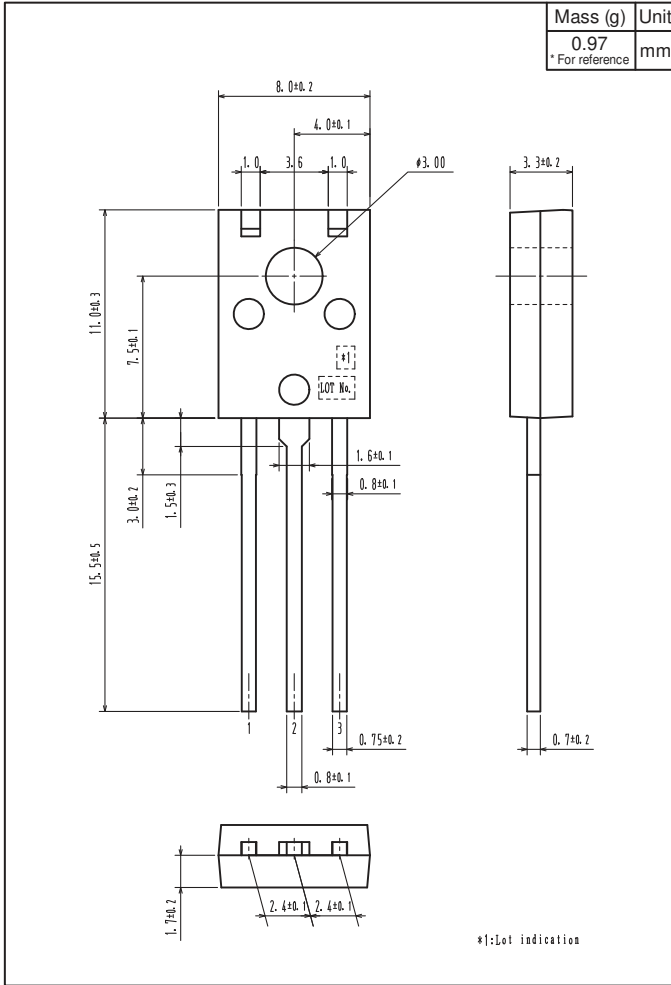
It is a label at the time of factory shipments.  
The form of a label may change in physical distribution process.



# 2SA1507 / 2SC3902

## Outline Drawing

2SA1507S, 2SA1507T, 2SC3902S, 2SC3902T



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