

# 2SB1205S-E Datasheet



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DiGi Electronics Part Number	2SB1205S-E-DG
Manufacturer	<a href="#">onsemi</a>
Manufacturer Product Number	2SB1205S-E
Description	TRANS PNP 20V 5A TP
Detailed Description	Bipolar (BJT) Transistor PNP 20 V 5 A 320MHz 1 W Th rough Hole TP



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RFQ Email: [Info@DiGi-Electronics.com](mailto:Info@DiGi-Electronics.com)

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## Purchase and inquiry

Manufacturer Product Number:

2SB1205S-E

Series:

-

Transistor Type:

PNP

Voltage - Collector Emitter Breakdown (Max):

20 V

Current - Collector Cutoff (Max):

500nA (ICBO)

Power - Max:

1 W

Operating Temperature:

150°C (TJ)

Package / Case:

TO-251-3 Short Leads, IPak, TO-251AA

Base Product Number:

2SB1205

Manufacturer:

onsemi

Product Status:

Obsolete

Current - Collector (Ic) (Max):

5 A

Vce Saturation (Max) @ Ib, Ic:

500mV @ 60mA, 3A

DC Current Gain (hFE) (Min) @ Ic, Vce:

140 @ 500mA, 2V

Frequency - Transition:

320MHz

Mounting Type:

Through Hole

Supplier Device Package:

TP

## Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.29.0075

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99



Ordering number : EN2114C

# 2SB1205

## Bipolar Transistor -20V, -5A, Low VCE(sat), PNP Single TP/TP-FA

**ON Semiconductor®**

<http://onsemi.com>

### Applications

- Flash, voltage regulators, relay drivers, lamp drivers

### Features

- Adoption of FBET, MBIT processes
- Low saturation voltage
- Fast switching speed
- Large current capacity
- Small and slim package making it easy to make 2SB1205-applied sets smaller

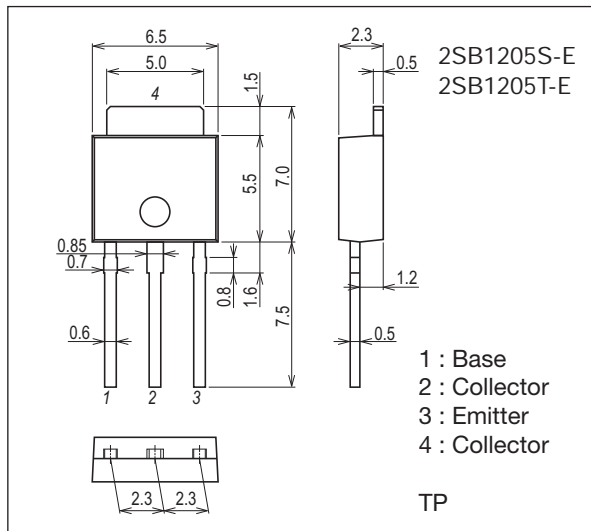
### Specifications

Absolute Maximum Ratings at Ta=25°C

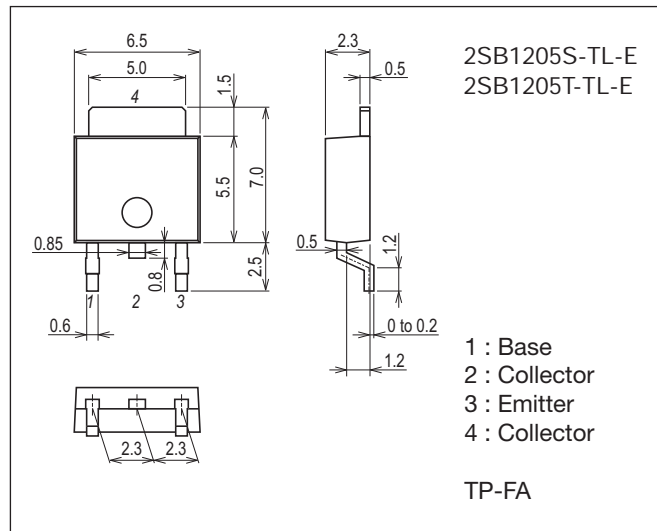
Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CB0</sub>		-25	V
Collector-to-Emitter Voltage	V <sub>CEO</sub>		-20	V
Emitter-to-Base Voltage	V <sub>EB0</sub>		-5	V
Collector Current	I <sub>C</sub>		-5	A
Collector Current (Pulse)	I <sub>CP</sub>		-8	A

Continued on next page.

Package Dimensions unit : mm (typ)  
7518-003



Package Dimensions unit : mm (typ)  
7003-003

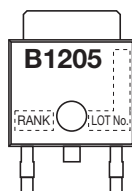


### Product & Package Information

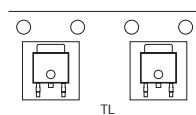
- Package : TP
- JEITA, JEDEC : SC-64, TO-251
- Minimum Packing Quantity : 500 pcs./bag

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

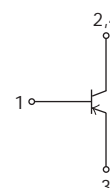
Marking  
(TP, TP-FA)



Packing Type (TP-FA) : TL



Electrical Connection



## 2SB1205

Continued from preceding page.

Parameter	Symbol	Conditions	Ratings	Unit
Base Current	$I_B$		-0.5	A
Collector Dissipation	$P_C$		1	W
		$T_C=25^\circ\text{C}$	10	W
Junction Temperature	$T_J$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

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.

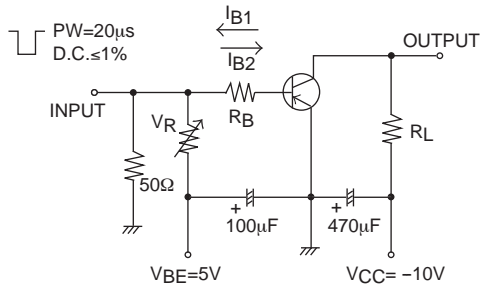
Electrical Characteristics at  $T_a=25^\circ\text{C}$ 

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=-20\text{V}, I_E=0\text{A}$			-500	nA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=-4\text{V}, I_C=0\text{A}$			-500	nA
DC Current Gain	$h_{FE1}$	$V_{CE}=-2\text{V}, I_C=500\text{mA}$	100*		400*	
	$h_{FE2}$	$V_{CE}=-2\text{V}, I_C=-4\text{A}$	60			
Gain-Bandwidth Product	$f_T$	$V_{CE}=-5\text{V}, I_C=-200\text{mA}$		320		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=-10\text{V}, f=1\text{MHz}$		60		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=-3\text{A}, I_B=-60\text{mA}$		-250	-500	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=-3\text{A}, I_B=-60\text{mA}$		-1.0	-1.3	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=-10\mu\text{A}, I_E=0\text{A}$	-25			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=-1\text{mA}, R_{BE}=\infty$	-20			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=-10\mu\text{A}, I_C=0\text{A}$	-5			V
Turn-On Time	$t_{on}$	See specified Test Circuit.		40		ns
Storage Time	$t_{stg}$			200		ns
Fall Time	$t_f$			10		ns

\* : The 2SB1205 is classified by 500mA  $h_{FE}$  as follows :

Rank	R	S	T
$h_{FE}$	100 to 200	140 to 280	200 to 400

## Switching Time Test Circuit

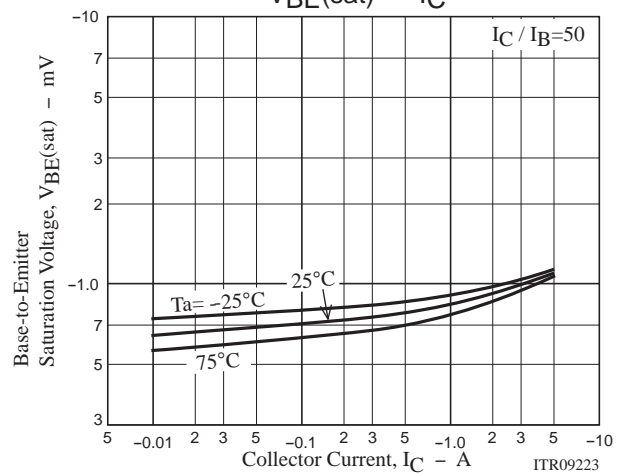
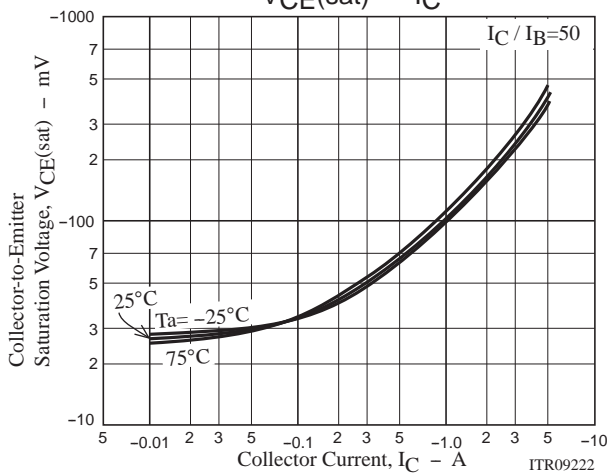
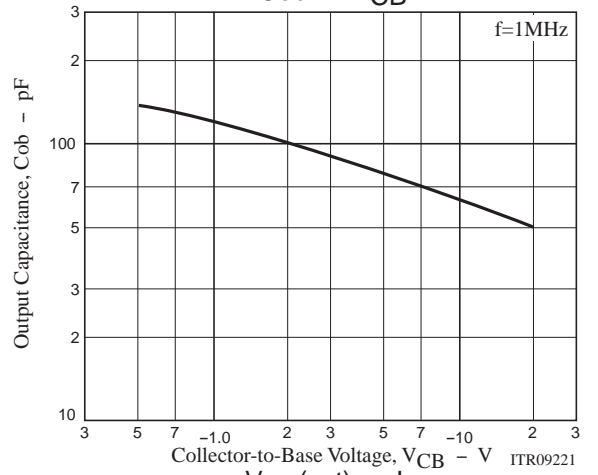
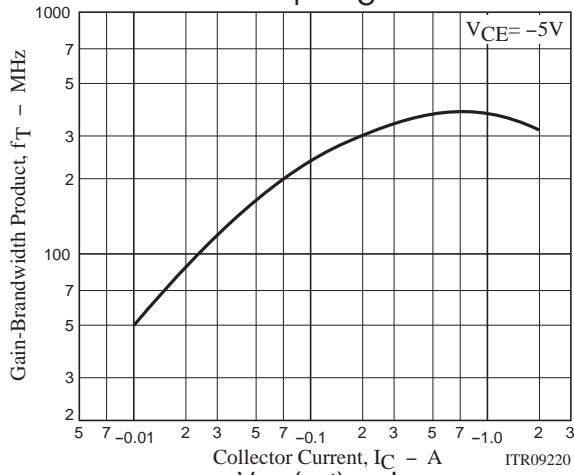
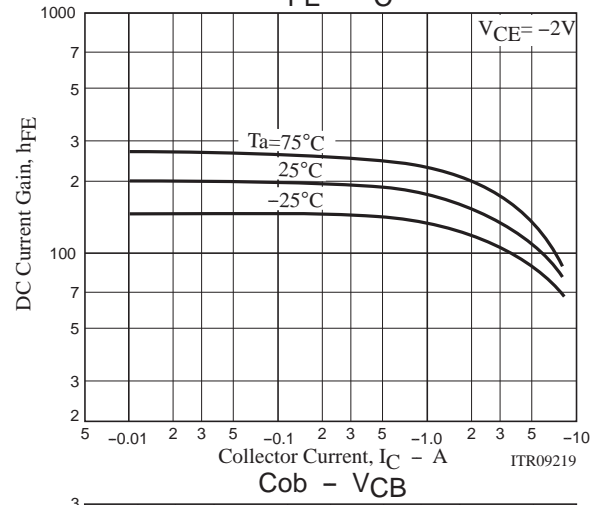
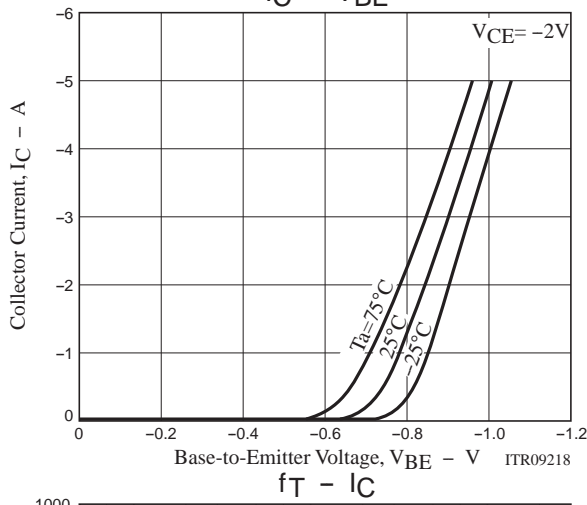
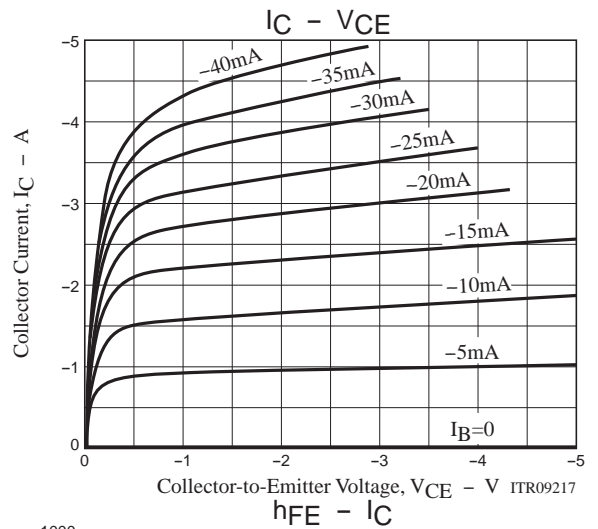
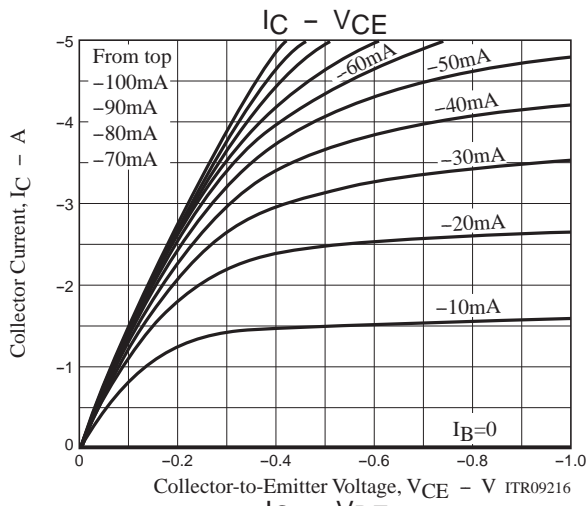


$$I_C=10I_{B1}=-10I_{B2}=-2\text{A}$$

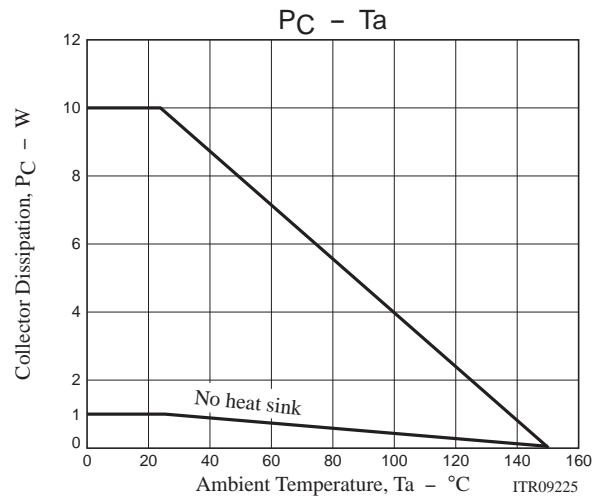
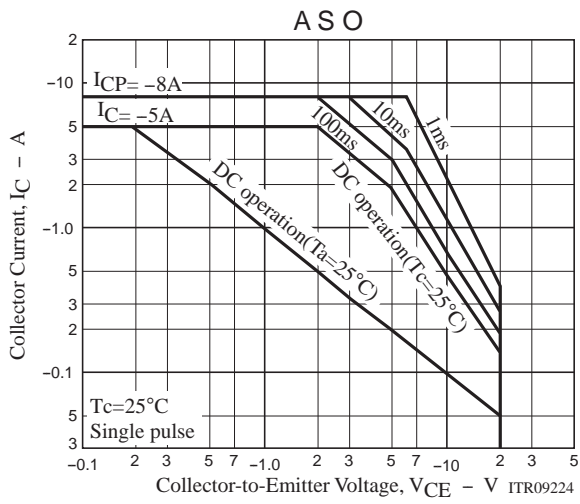
## Ordering Information

Device	Package	Shipping	memo
2SB1205S-E	TP	500pcs./bag	Pb Free
2SB1205T-E	TP	500pcs./bag	
2SB1205S-TL-E	TP-FA	700pcs./reel	
2SB1205T-TL-E	TP-FA	700pcs./reel	

2SB1205



2SB1205



## 2SB1205

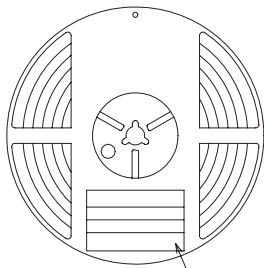
### Taping Specification

2SB1205S-TL-E, 2SB1205T-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



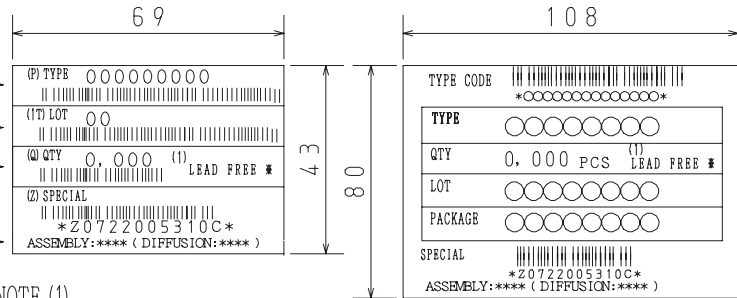
Type No.  
LOT No.  
Quantity  
Origin

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.



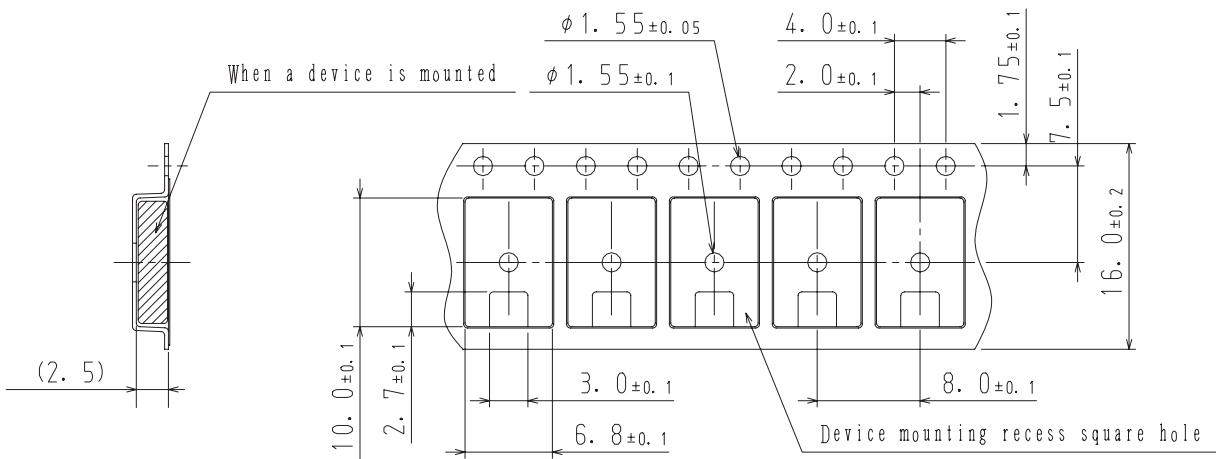
NOTE (1)

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

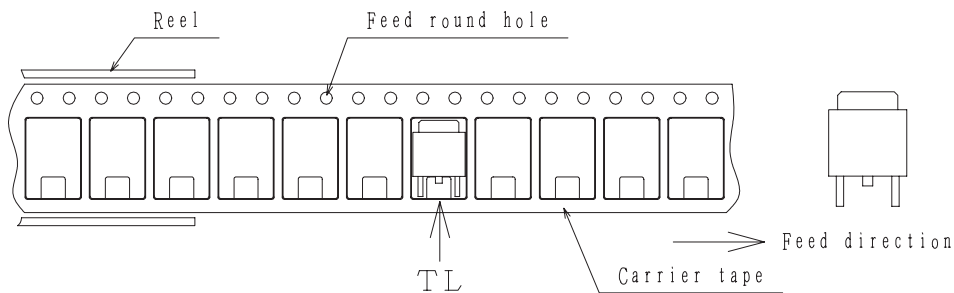
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

### Taping configuration

#### 1. Carrier tape size (unit:mm)



#### 2. Device placement direction

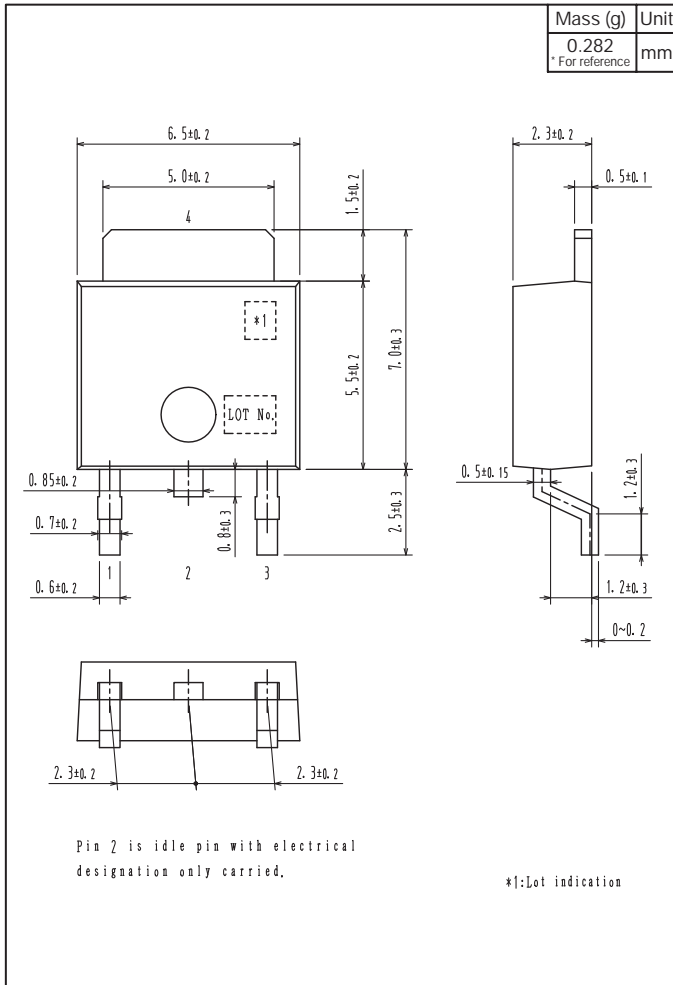


Those with one electrode terminal on the feed hole side.....TL

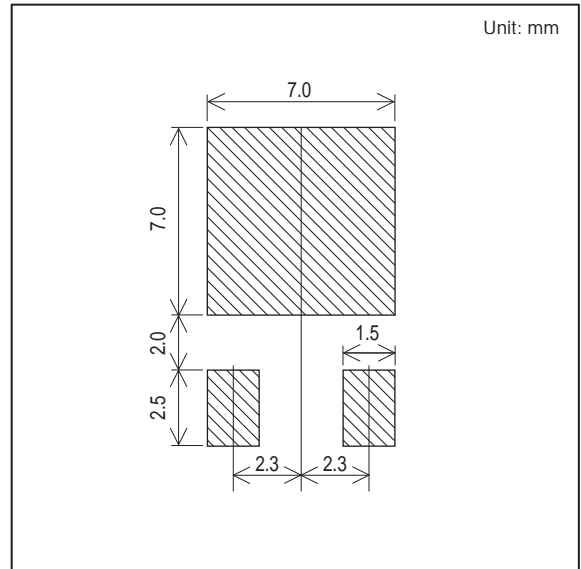
## 2SB1205

### Outline Drawing

2SB1205S-TL-E, 2SB1205T-TL-E



### Land Pattern Example





## 2SB1205

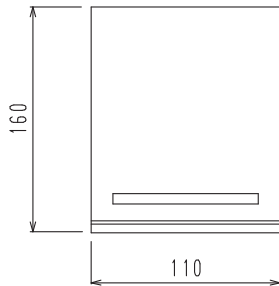
### Bag Packing Specification

2SB1205S-E, 2SB1205T-E

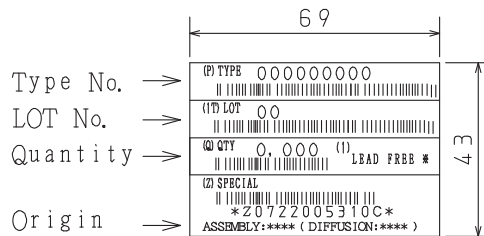
#### 1. Packing Format

Package Name	Maximum Number of devices contained (pcs)			
	Bag	Inner box	Outer box	
TP	500	B-1	A-1	A-2
		10,000	50,000	30,000
	Packing format (Dimensions:mm (external))			
		Inner box	Outer box	
		B-1	A-1	A-2
		445×225×55	470×250×300	470×250×190

#### 2. Bag dimensions (unit:mm)



#### 3. Bag label, Inner box label (unit:mm)



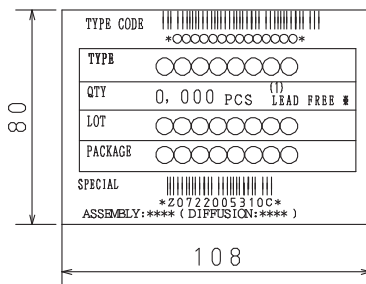
#### 4. Outer box label (unit:mm)

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

**NOTE (1)**

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

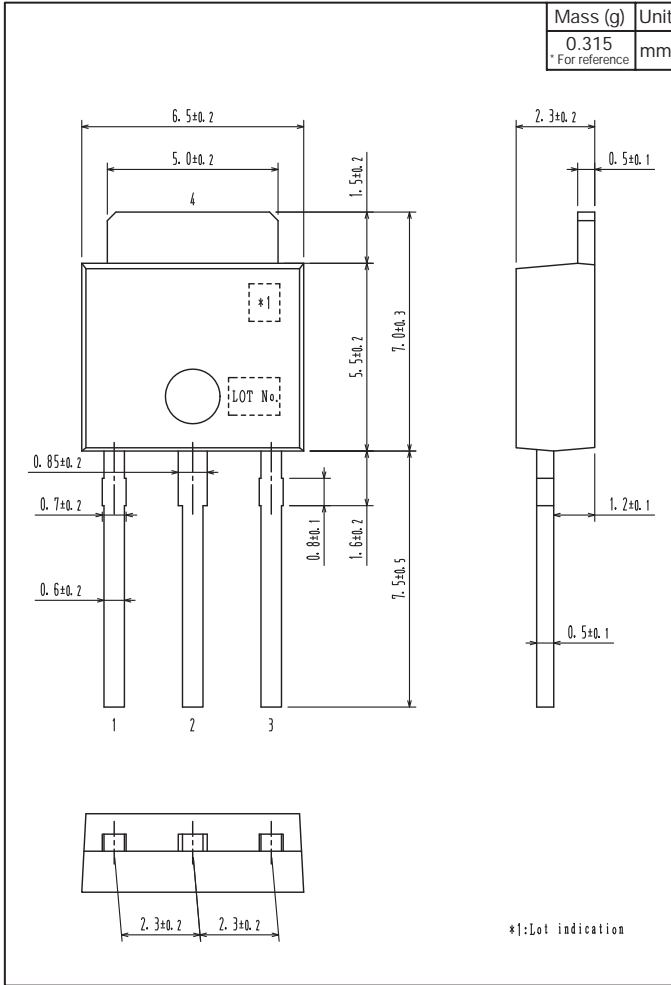
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3



2SB1205

Outline Drawing

2SB1205S-E, 2SB1205T-E



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## 2SB1205

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