Ordering number : EN2114C

SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

2SB1205 — PNP Epitaxial Planar Silicon Transistor

Strobe High-Current Switching Applications

Applications

- Flash, voltage regulators, relay drivers, lamp drivers

Features

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

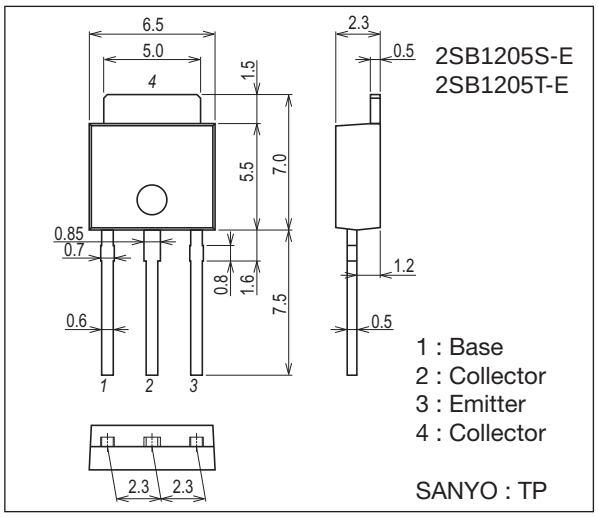
Specifications

Absolute Maximum Ratings at Ta=25°C

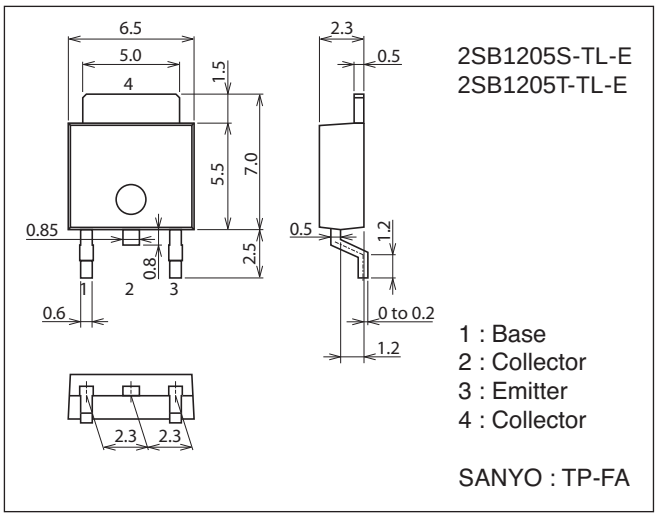
Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		−25	V
Collector-to-Emitter Voltage	V_{CEO}		−20	V
Emitter-to-Base Voltage	V_{EBO}		−5	V
Collector Current	I_C		−5	A
Collector Current (Pulse)	I_{CP}		−8	A

Continued on next page.

Package Dimensions unit : mm (typ)
7518-003



Package Dimensions unit : mm (typ)
7003-003

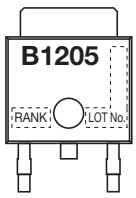


Product & Package Information

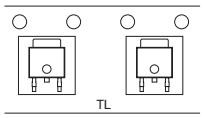
- Package : TP
- JEITA, JEDEC : SC-64, TO-251
- Minimum Packing Quantity : 500 pcs./bag

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

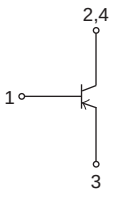
Marking (TP, TP-FA)



Packing Type (TP-FA) : TL



Electrical Connection



Continued from preceding page.

Parameter	Symbol	Conditions	Ratings	Unit
Base Current	I_B		−0.5	A
Collector Dissipation	P_C		1	W
		Tc=25°C	10	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		−55 to +150	°C

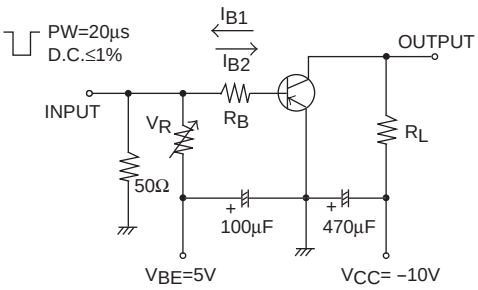
Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=−20V, I_E=0A			−500	nA
Emitter Cutoff Current	I_{EBO}	V_{EB}=−4V, I_C=0A			−500	nA
DC Current Gain	$h_{FE}1$	V_{CE}=−2V, I_C=500mA	100*		400*	
	$h_{FE}2$	V_{CE}=−2V, I_C=−4A	60			
Gain-Bandwidth Product	f_T	V_{CE}=−5V, I_C=−200mA		320		MHz
Output Capacitance	Cob	V_{CB}=−10V, f=1MHz		60		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=−3A, I_B=−60mA		−250	−500	mV
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=−3A, I_B=−60mA		−1.0	−1.3	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=−10μA, I_E=0A	−25			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=−1mA, R_{BE}=∞	−20			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=−10μA, I_C=0A	−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

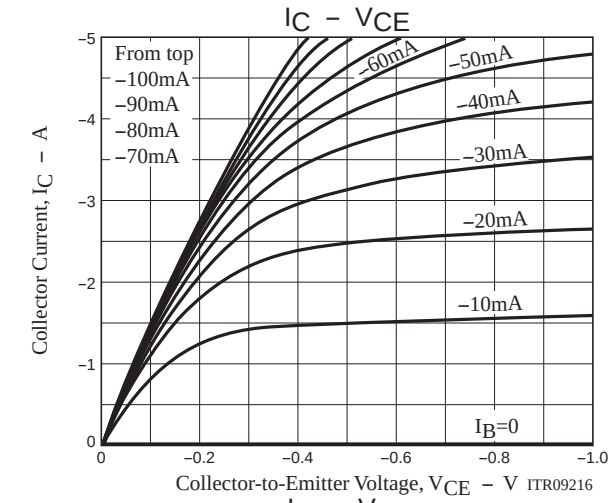
Switching Time Test Circuit

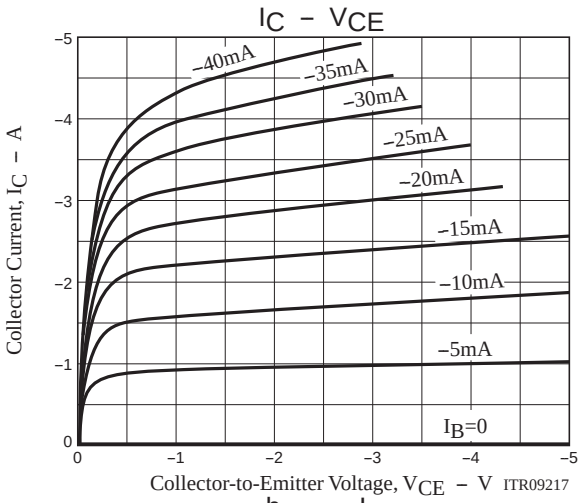


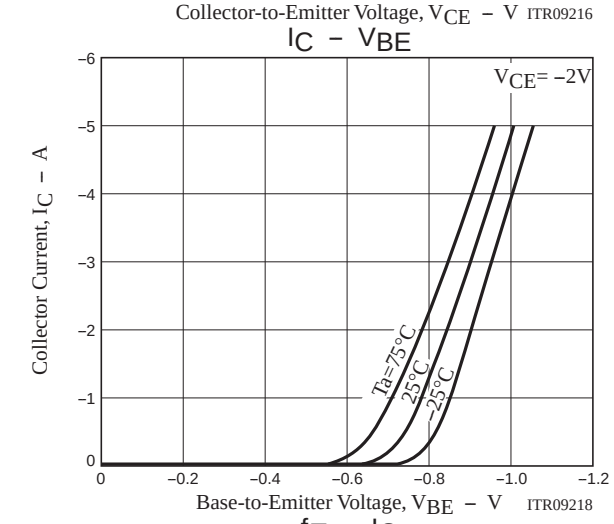
I_C=10I_{B1}= −10I_{B2}= −2A

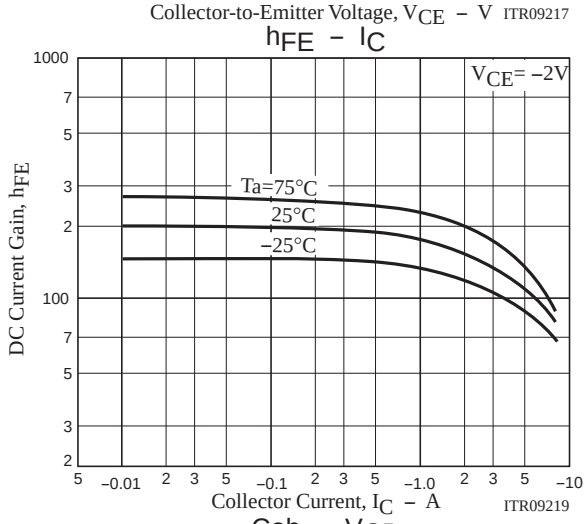
Ordering Information

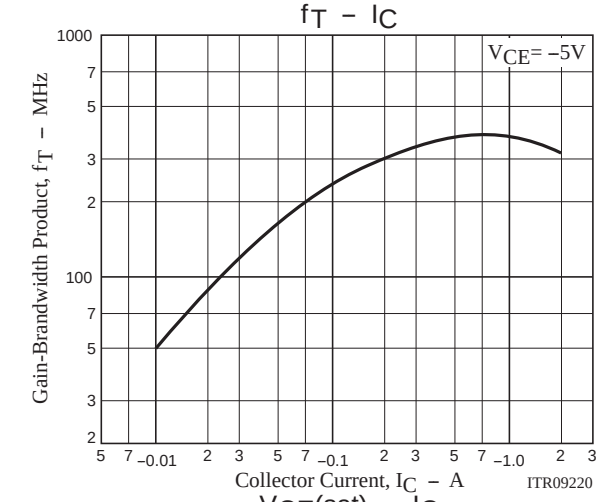
Device	Package	Shipping	memo
2SB1205S-E	TP	500pcs./bag	Pb Free
2SB1205T-E	TP	500pcs./bag	
2SB1205S-TL-E	TP-FA	700pcs./reel	
2SB1205T-TL-E	TP-FA	700pcs./reel	

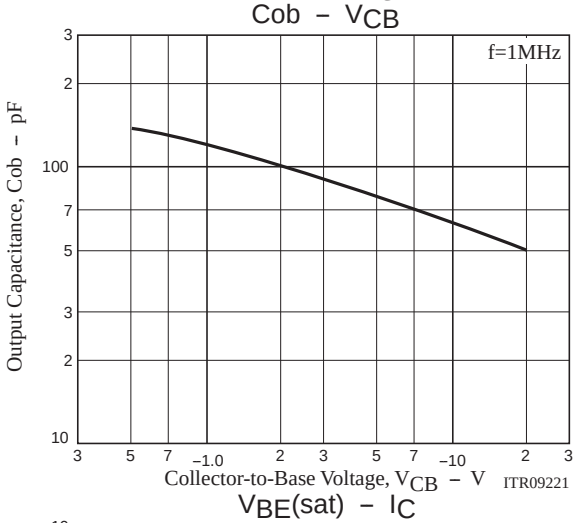

IC – VCE
From top
–100mA
–90mA
–80mA
–70mA
–60mA
–50mA
–40mA
–30mA
–20mA
–10mA
IB=0
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
ITR09216

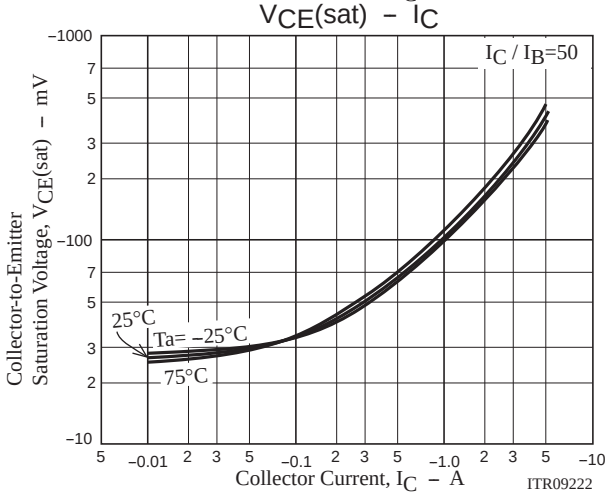

IC – VCE
–40mA
–35mA
–30mA
–25mA
–20mA
–15mA
–10mA
–5mA
IB=0
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
ITR09217

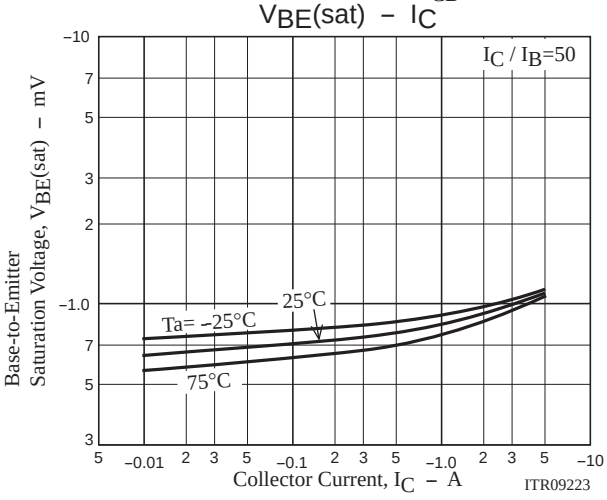

IC – VBE
VCE= –2V
Ta=75°C
25°C
–25°C
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
ITR09218

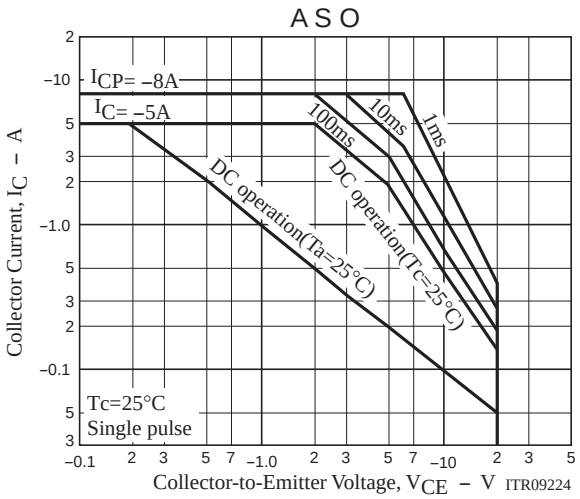

hFE – IC
VCE= –2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
ITR09219

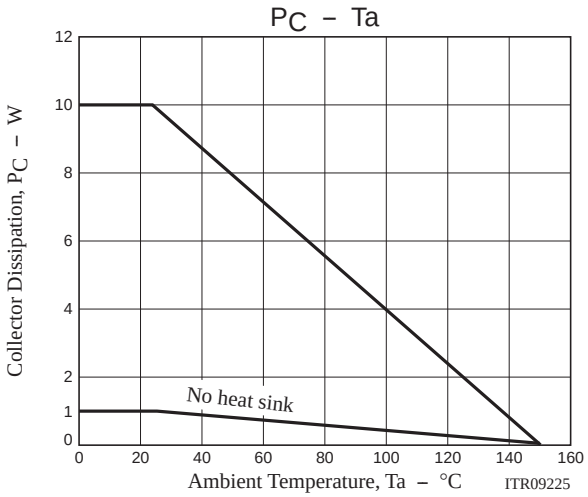

fT – IC
VCE= –5V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
ITR09220


Cob – VCB
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
ITR09221


VCE(sat) – IC
IC / IB=50
25°C
Ta= –25°C
75°C
Collector-to-Emitter Saturation Voltage, VCE(sat) – mV
Collector Current, IC – A
ITR09222


VBE(sat) – IC
IC / IB=50
25°C
Ta= –25°C
75°C
Base-to-Emitter Saturation Voltage, VBE(sat) – mV
Collector Current, IC – A
ITR09223


ASO
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
ITR09224
ICP= –8A
IC= –5A
100ms
10ms
1ms
DC operation(Ta=25°C)
DC operation(Tc=25°C)
Tc=25°C
Single pulse


PC – Ta
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C
ITR09225
No heat sink

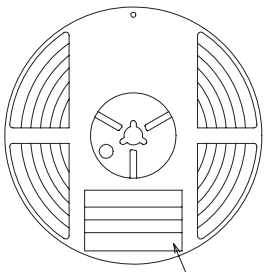
Taping Specification

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

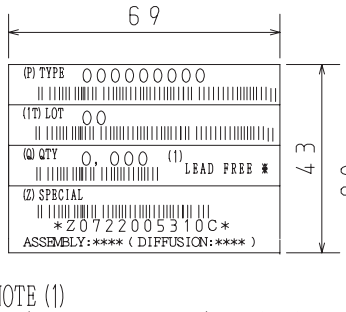


Type No.
LOT No.
Quantity
Origin

Reel label

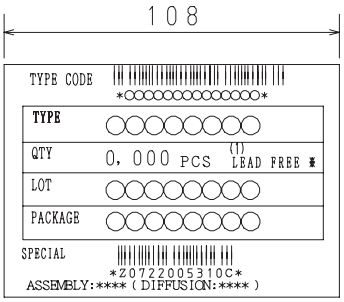
Reel label, Inner box label

(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.

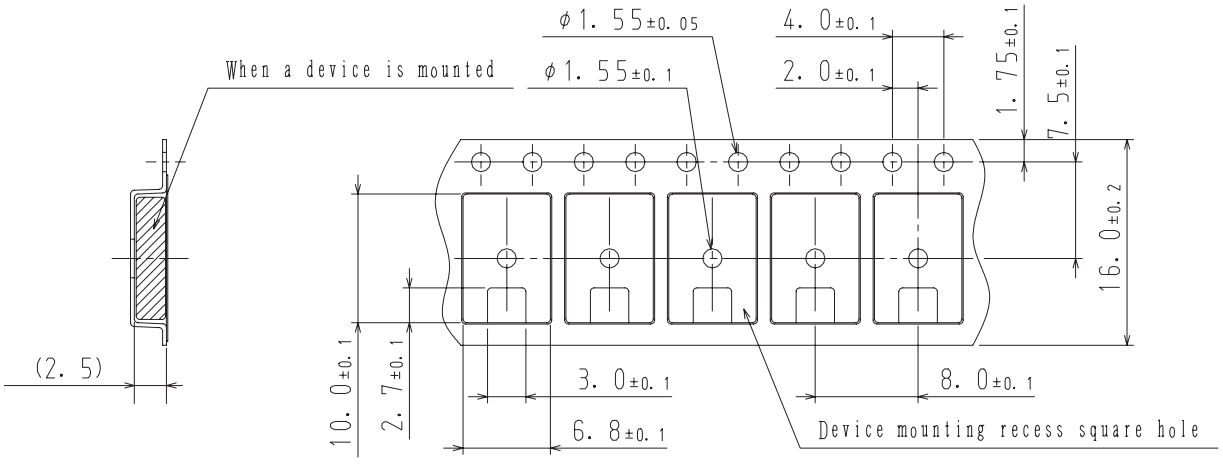


NOTE (1)
The LEAD FREE ※ description shows that the surface treatment of the terminal is lead free.

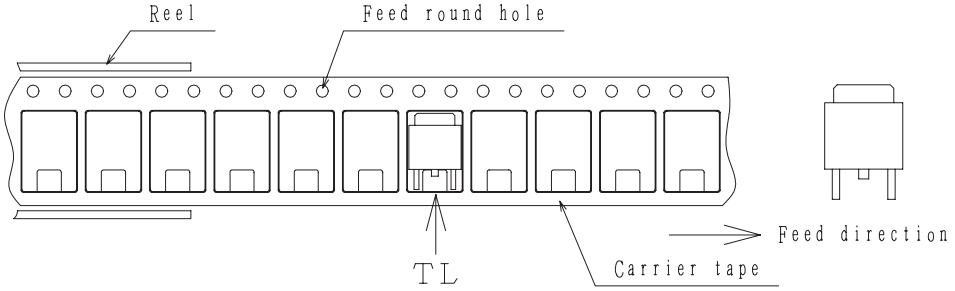
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

Taping configuration

1. Carrier tape size (unit:mm)



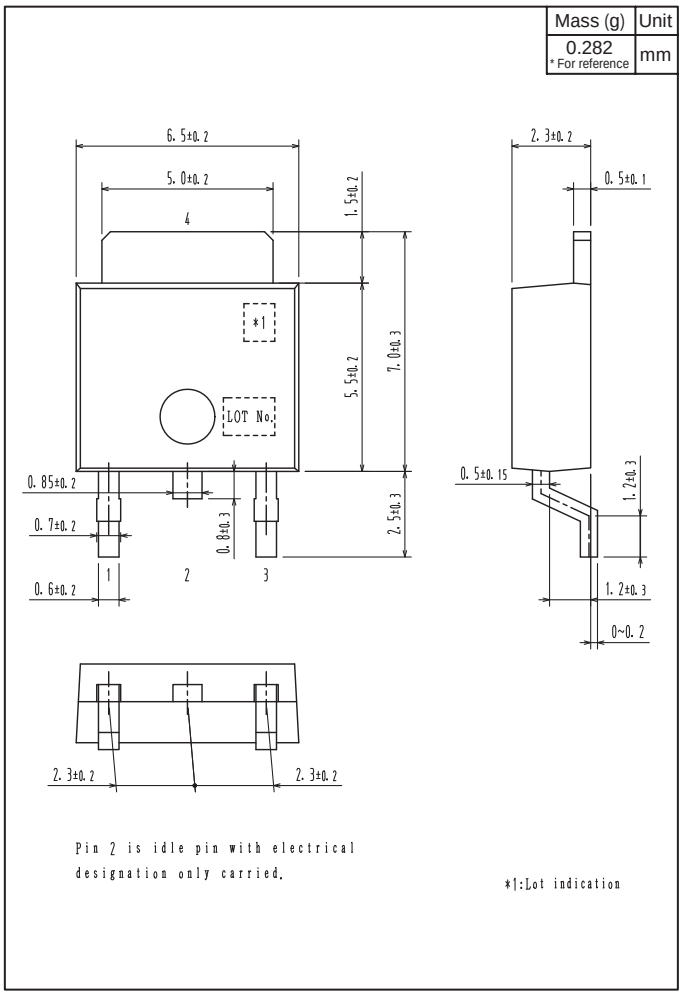
2. Device placement direction



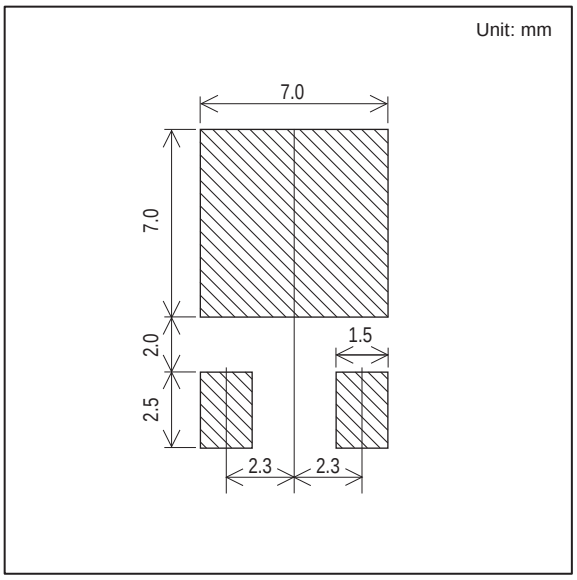
Those with one electrode terminal on the feed hole side·····TL

Outline Drawing

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



Land Pattern Example



Bag Packing Specification

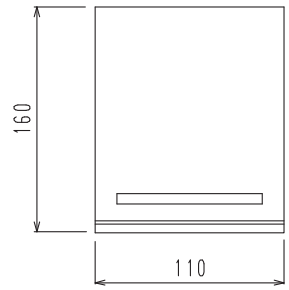
2SB1205S-E, 2SB1205T-E

1. Packing Format

Package Name	Maximum Number of devices contained (pcs)			
	Bag	Inner box	Outer box	
TP		B-1	A-1	A-2
	500	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

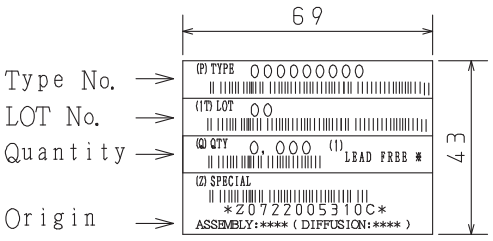
2. Bag dimensions

(unit: mm)



3. Bag label, Inner box label

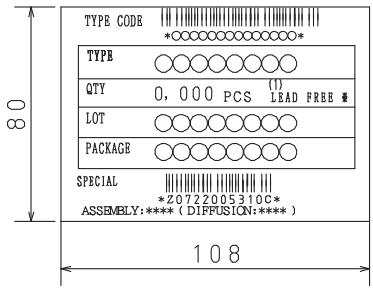
(unit: mm)



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

Outline Drawing

2SB1205S-E, 2SB1205T-E