



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

2SD1805 — NPN Epitaxial Planar Silicon Transistor

High-Current Switching Applications

Applications

- Strokes, voltage regulators, relay drivers, lamp drivers

Features

- Low saturation voltage
- Fast switching time
- Large current capacity
- Small and slim package making it easy to make 2SD1805-applied sets smaller

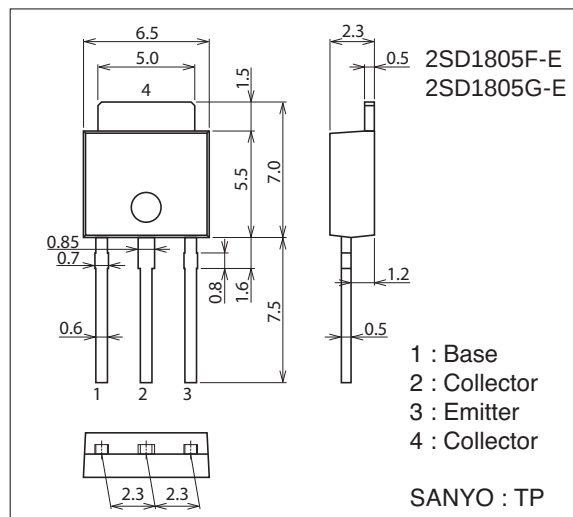
Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V _{CB0}		60	V
Collector-to-Emitter Voltage	V _{CE0}		20	V
Emitter-to-Base Voltage	V _{EB0}		6	V
Collector Current	I _C		5	A
Collector Current (Pulse)	I _{CP}		8	A
Collector Dissipation	P _C		1	W
		T _C =25°C	15	W
Junction Temperature	T _J		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C

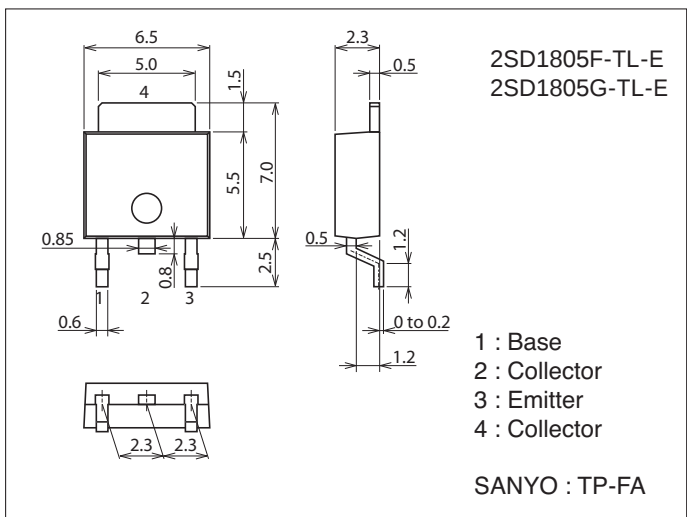
Package Dimensions unit : mm (typ)

7518-003



Package Dimensions unit : mm (typ)

7003-003

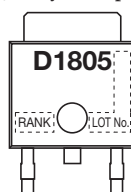


Product & Package Information

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

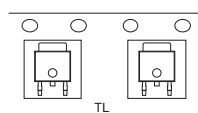
Marking

(TP, TP-FA)

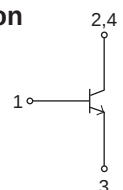


- Package : TP-FA
- JEITA, JEDEC : SC-63, TO-252
- Minimum Packing Quantity : 700 pcs./reel

Packing Type (TP-FA) : TL



Electrical Connection



SANYO Semiconductor Co., Ltd.

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

2SD1805

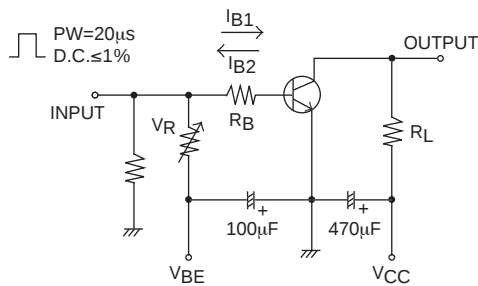
Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=50V, I_E=0A$			100	nA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=5V, I_C=0A$			100	nA
DC Current Gain	h_{FE1}	$V_{CE}=2V, I_C=500mA$	120*		560*	
	h_{FE2}	$V_{CE}=2V, I_C=3A$	95			
Gain-Bandwidth Product	f_T	$V_{CE}=10V, I_C=50mA$		120		MHz
Output Capacitance	C_{ob}	$V_{CB}=10V, f=1MHz$		45		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=3A, I_B=60mA$		220	500	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=3A, I_B=60mA$			1.5	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0A$	60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1mA, R_{BE}=\infty$	20			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0A$	6			V
Turn-On Time	t_{on}	See specified Test Circuit		30		ns
Storage Time	t_{stg}			300		ns
Fall Time	t_f			40		ns

* : The 2SD1805 is classified by 500mA h_{FE} as follows.

Rank	E	F	G
h_{FE}	120 to 200	160 to 320	280 to 560

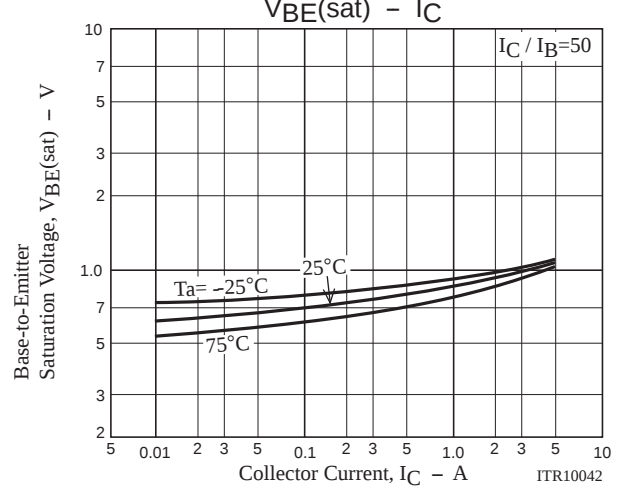
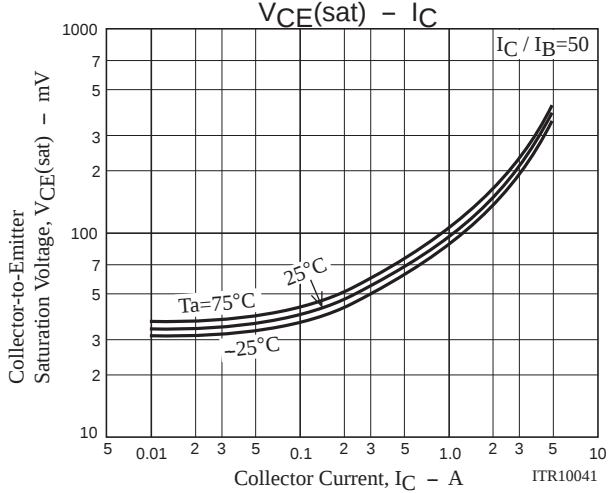
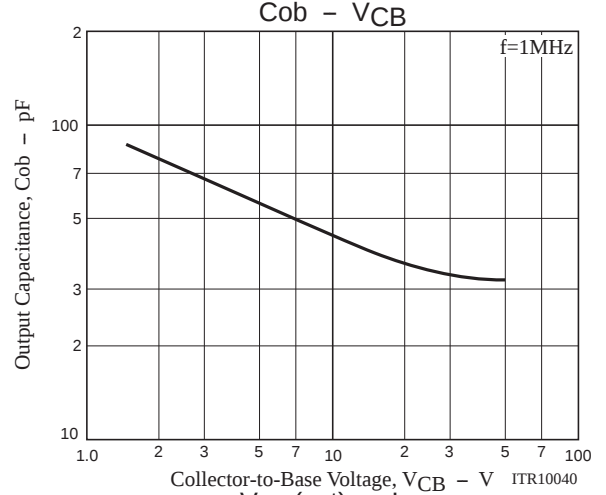
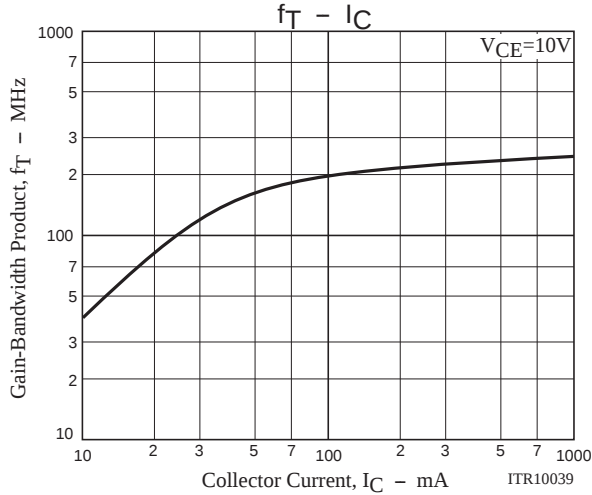
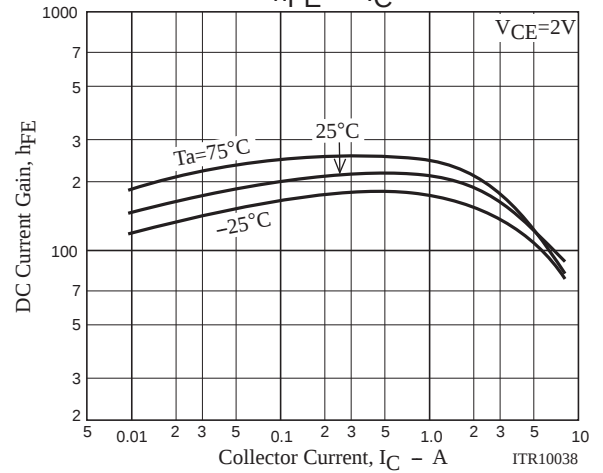
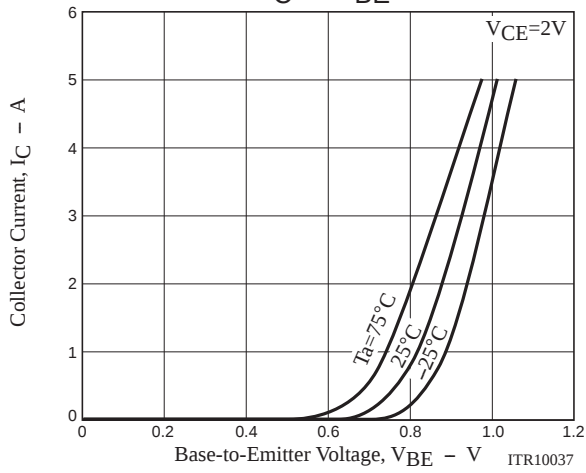
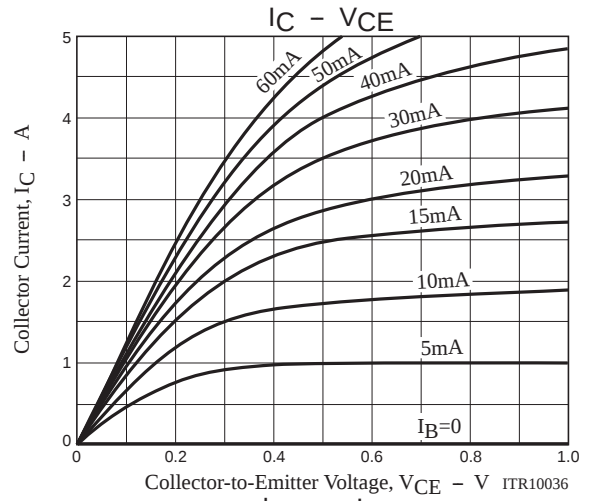
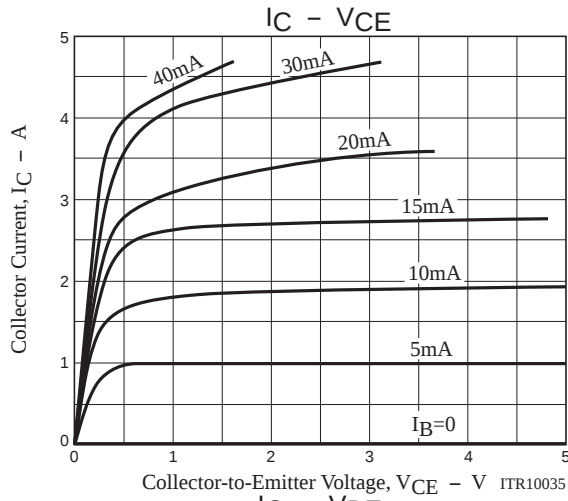
Switching Time Test Circuit



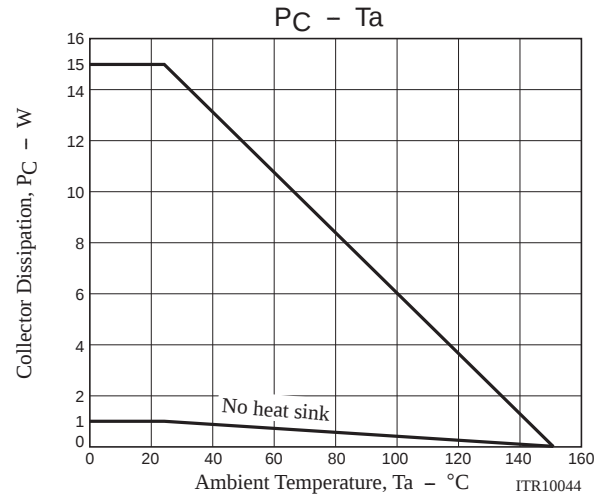
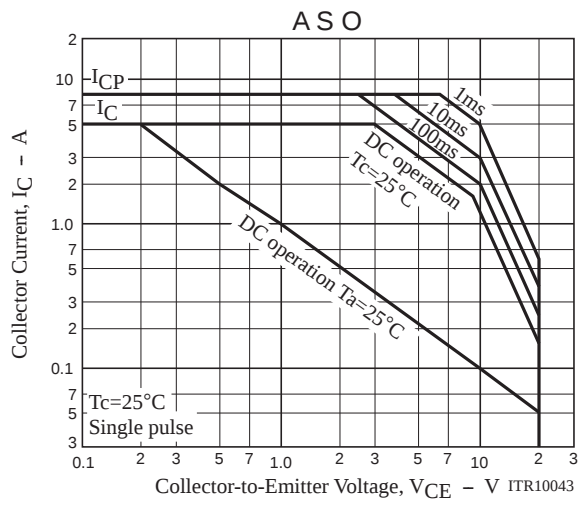
$$I_C=10I_{B1}=-10I_{B2}=2A, V_{CC}=10V$$

Ordering Information

Device	Package	Shipping	memo
2SD1805F-E	TP	500pcs./bag	Pb Free
2SD1805G-E	TP	500pcs./bag	
2SD1805F-TL-E	TP-FA	700pcs./reel	
2SD1805G-TL-E	TP-FA	700pcs./reel	



2SD1805



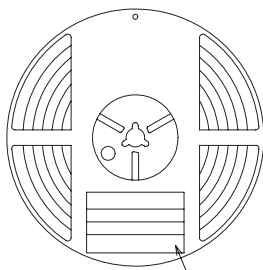
Taping Specification

2SD1805F-TL-E, 2SD1805G-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



Reel label

Type No.
LOT No.
Quantity
Origin

Reel label, Inner box label
(unit:mm)

(P) TYPE	000000000
(1) LOT	00
(Q) QTY	0,000 (1) LEAD FREE *
(Z) SPECIAL	*20722005310C*
ASSEMBLY:**** (DIFFUSION:****)	

Outer box label

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

TYPE CODE	
TYPE	○○○○○○○○
QTY	0,000 PCS (1) LEAD FREE *
LOT	○○○○○○○○
PACKAGE	○○○○○○○○
SPECIAL	
ASSEMBLY:**** (DIFFUSION:****)	

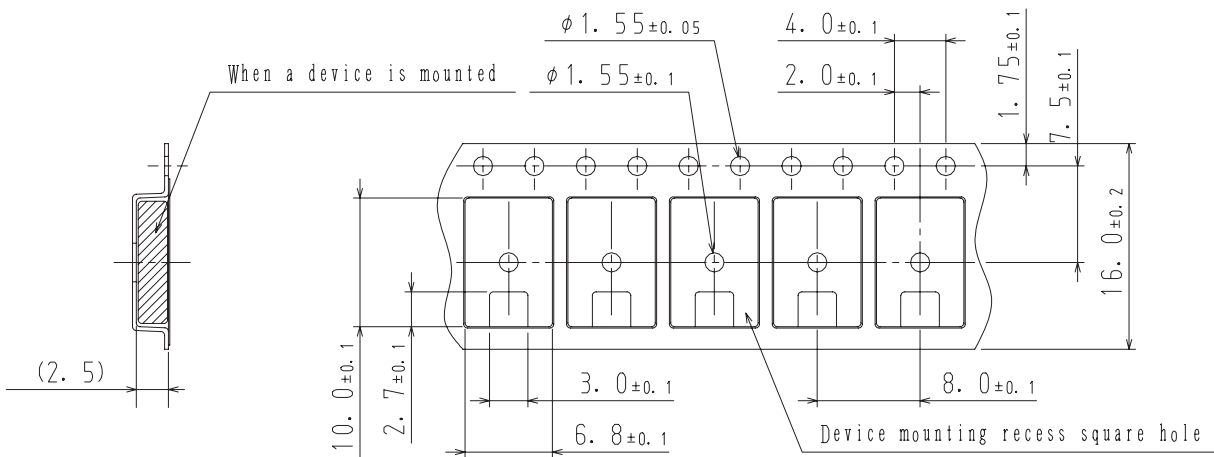
NOTE (1)

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

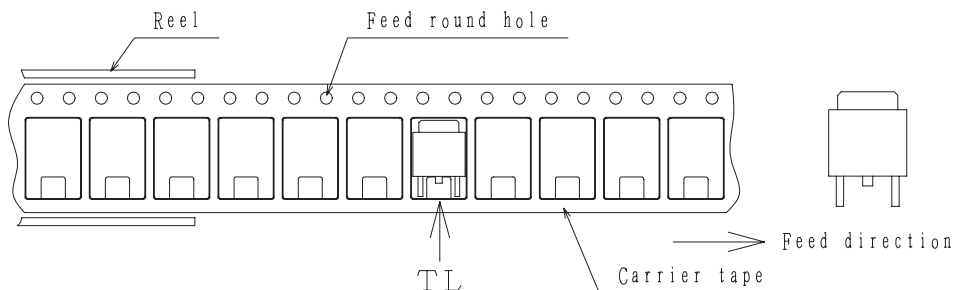
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

Taping configuration

1. Carrier tape size (unit:mm)

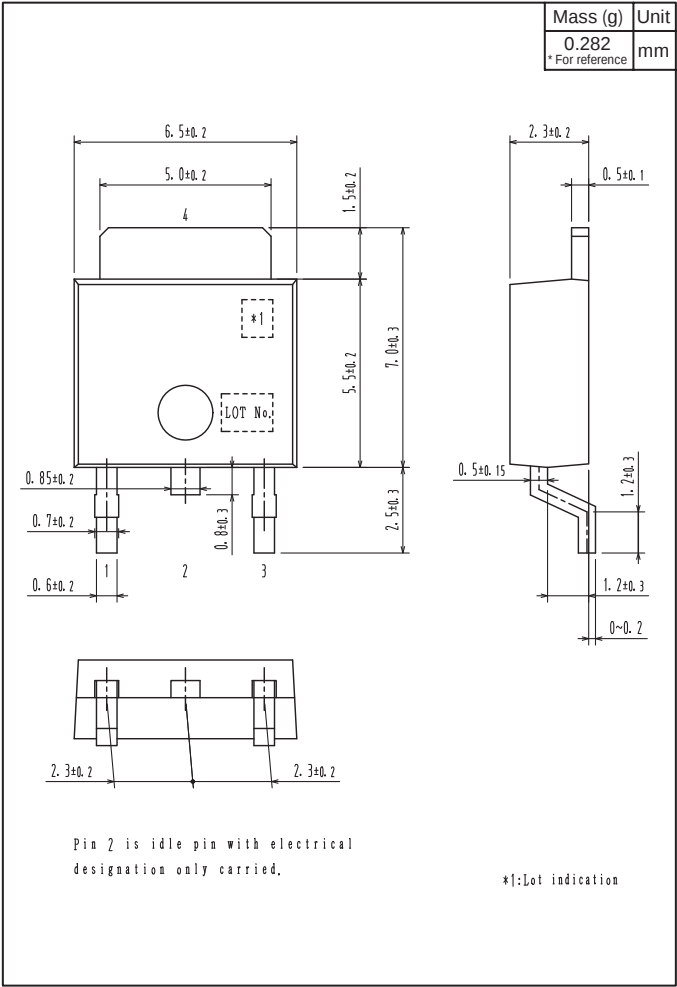


2. Device placement direction

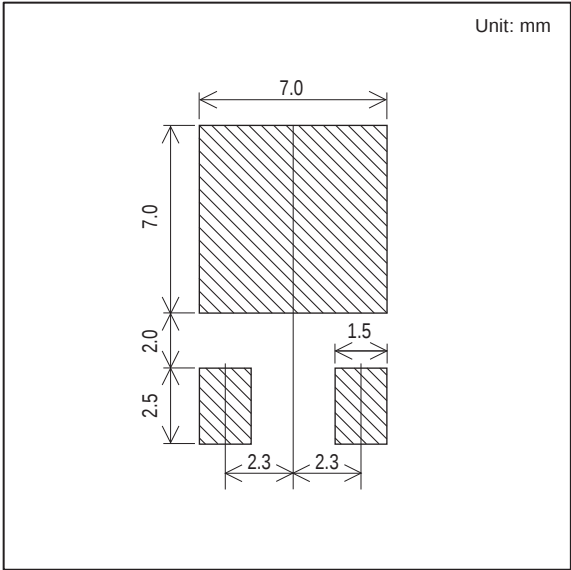


Outline Drawing

2SD1805F-TL-E, 2SD1805G-TL-E



Land Pattern Example

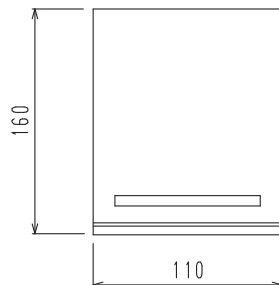
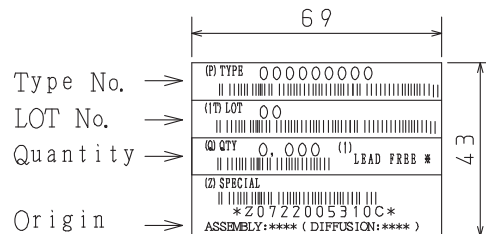


Bag Packing Specification

2SD1805F-E, 2SD1805G-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

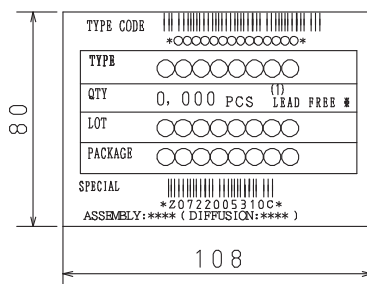
2. Bag dimensions
(unit:mm)3. Bag label, Inner box label
(unit:mm)4. Outer box label
(unit:mm)

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

NOTE (1)

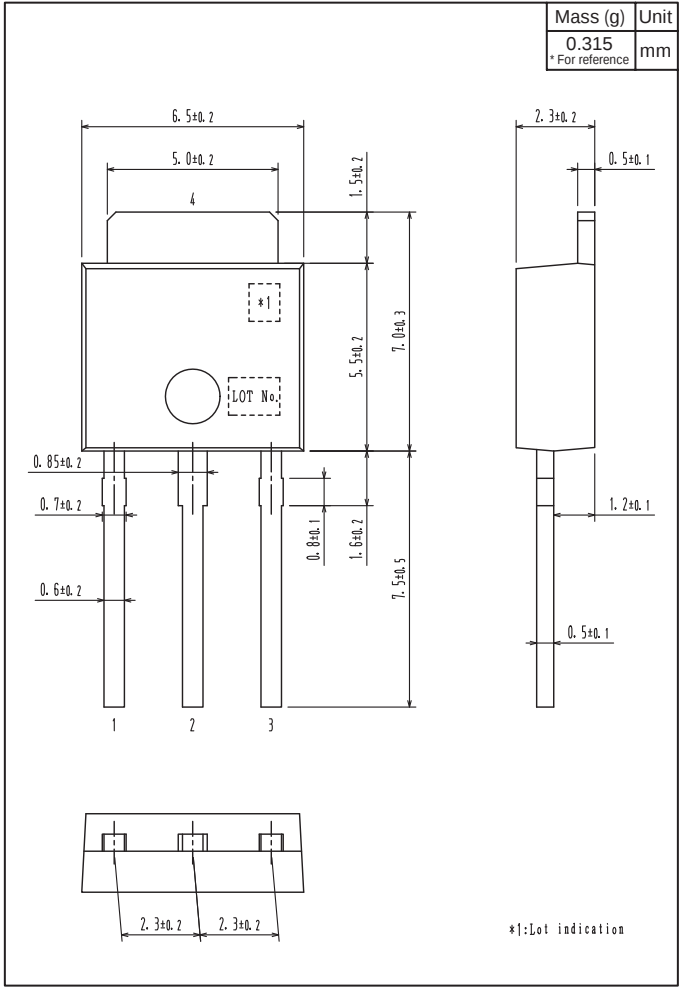
The LEAD FREE * description shows that the
surface treatment of the terminal is lead free.

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



Outline Drawing

2SD1805F-E, 2SD1805G-E



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