Ordering number : ENA0410A

SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

2SC6094 — NPN Epitaxial Planar Silicon Transistor

High-Current Switching Applications

Applicaitons

- DC / DC converter, relay drivers, lamp drivers, motor drivers, inverter

Features

- Adoption of FBET, MBIT process
- Low collector-to-emitter saturation voltage
- High allowable power dissipation
- Large current capacity
- High-speed switching

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		100	V
Collector-to-Emitter Voltage	V_{CES}		100	V
	V_{CEO}		60	V
Emitter-to-Base Voltage	V_{EBO}		6.5	V
Collector Current	I_C		3	A
Collector Current (Pulse)	I_{CP}		5	A

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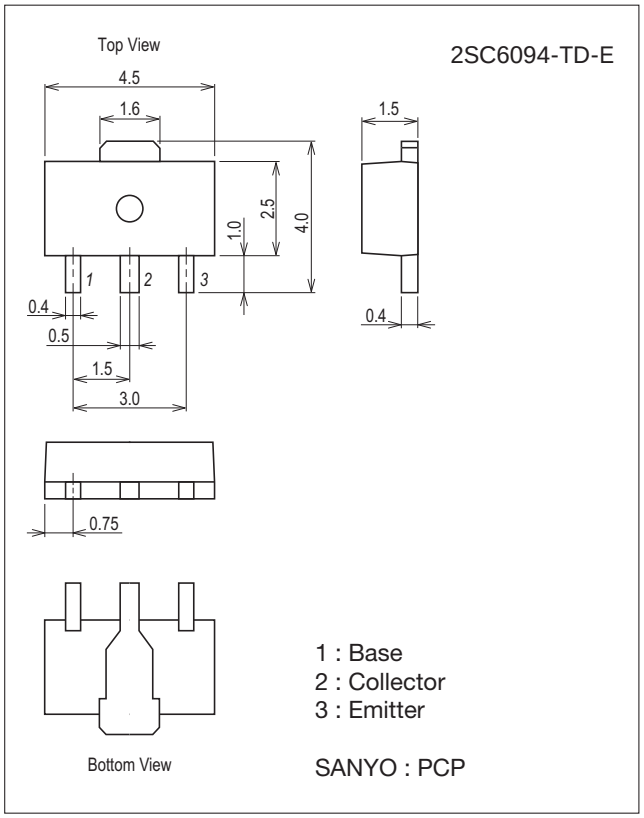
Package Dimensions

unit : mm (typ)

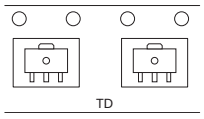
7007B-004



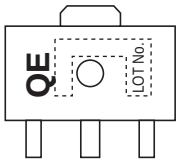
Product & Package Information

- Package : PCP
- JEITA, JEDEC : SC-62, SOT-89, TO-243
- Minimum Packing Quantity : 1,000 pcs./reel

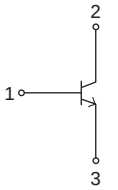
Packing Type: TD



Marking



Electrical Connection



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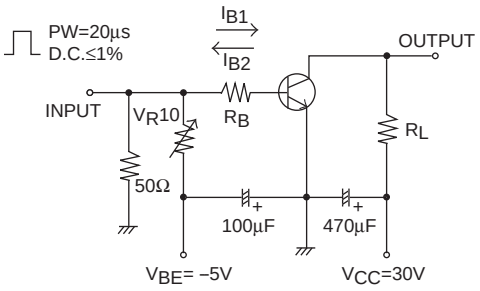
Parameter	Symbol	Conditions	Ratings	Unit
Base Current	I_B		600	mA
Collector Dissipation	P_C	When mounted on ceramic substrate (250mm^2×0.8mm)	1.3	W
		Tc=25°C	3.5	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=50V, I_E=0A			1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=4V, I_C=0A			1	μA
DC Current Gain	h_{FE}	V_{CE}=2V, I_C=100mA	300		600	
Gain-Bandwidth Product	f_T	V_{CE}=10V, I_C=500mA		390		MHz
Output Capacitance	Cob	V_{CB}=10V, f=1MHz		18		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)1	I_C=1A, I_B=50mA		90	135	mV
	V_{CE}(sat)2	I_C=1A, I_B=100mA		80	120	mV
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=1A, I_B=100mA		0.84	1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=10μA, I_E=0A	100			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	I_C=100μA, R_{BE}=0Ω	100			V
	$V_{(BR)CEO}$	I_C=1mA, R_{BE}=∞	60			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=10μA, I_C=0A	6.5			V
Turn-ON Time	t_{on}	See specified Test Circuit.		35		ns
Storage Time	t_{stg}			680		ns
Fall Time	t_f			24		ns

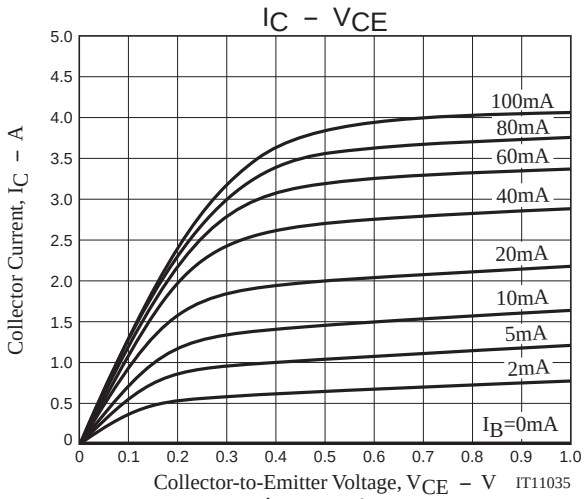
Switching Time Test Circuit

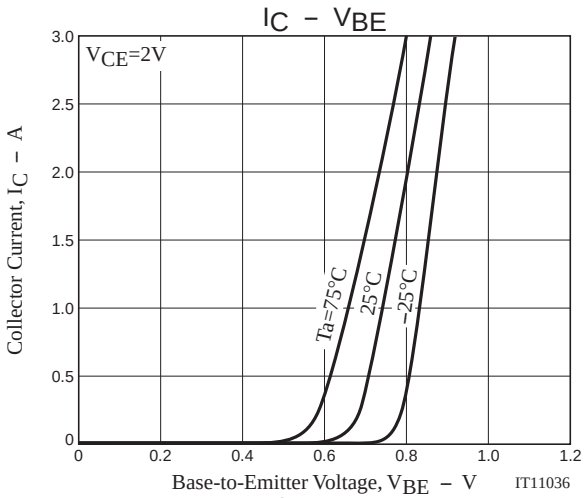


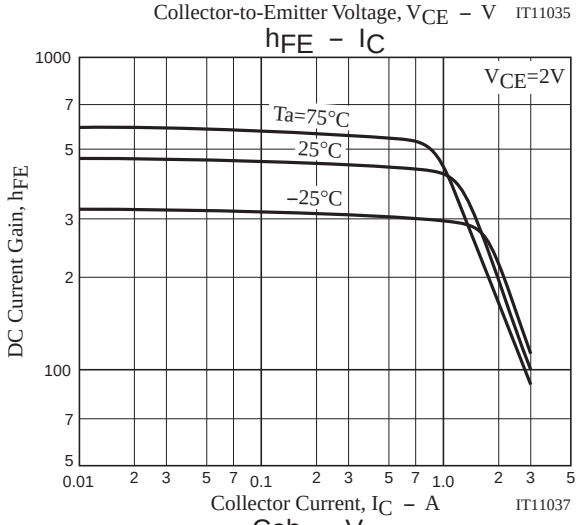
I_C=10I_{B1}= −10I_{B2}=0.5A

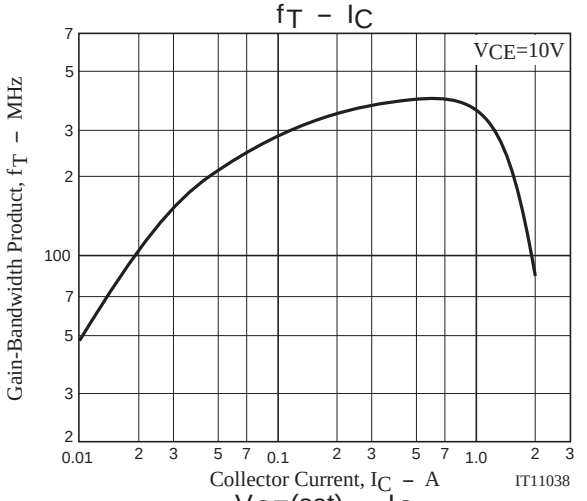
Ordering Information

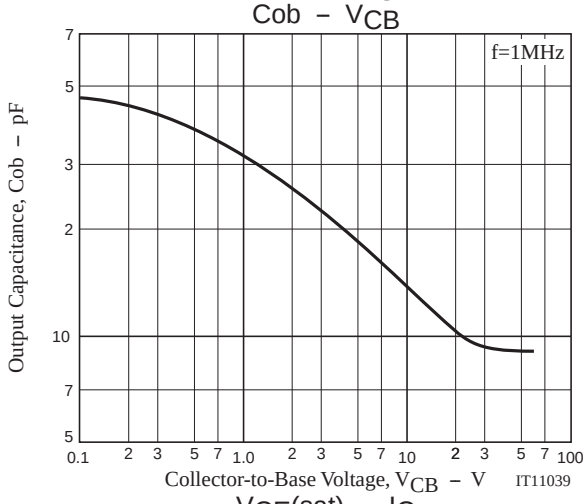
Device	Package	Shipping	memo
2SC6094-TD-E	PCP	1,000pcs./reel	Pb Free

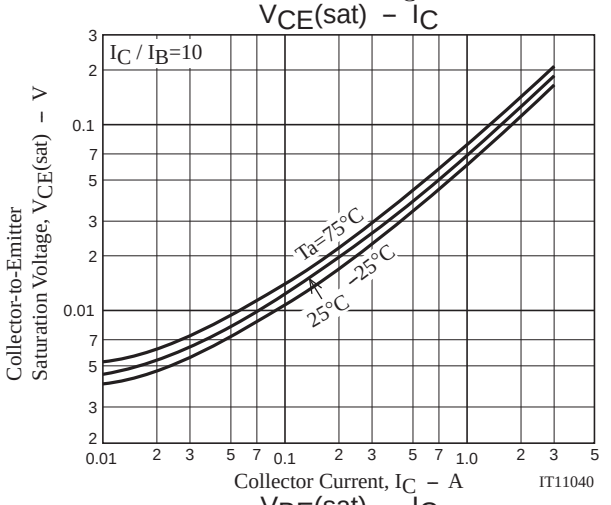

IC – VCE
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT11035
100mA
80mA
60mA
40mA
20mA
10mA
5mA
2mA
IB=0mA

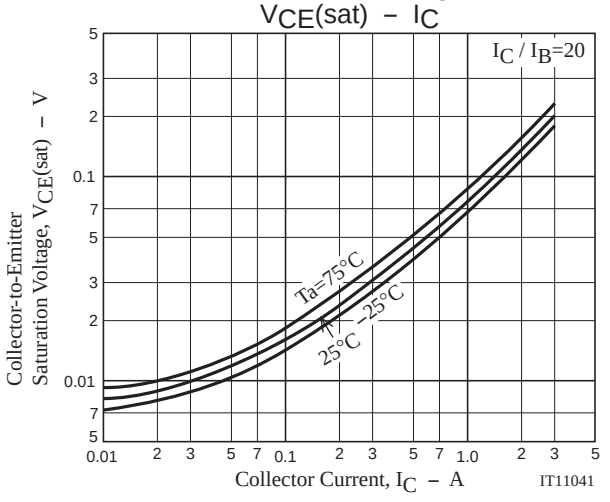

IC – VBE
VCE=2V
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
IT11036
Ta=75°C
25°C
–25°C

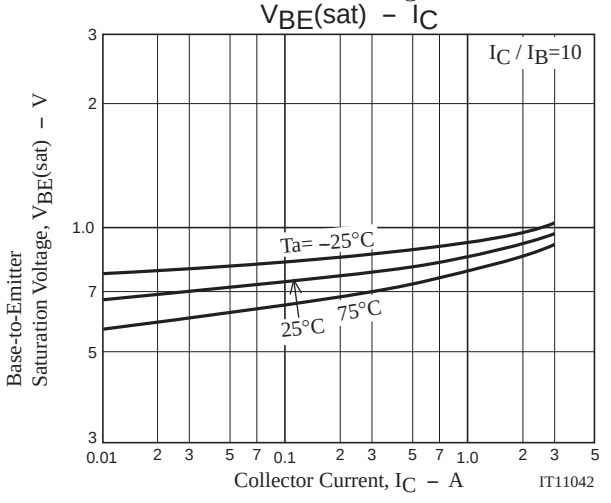

hFE – IC
VCE=2V
DC Current Gain, hFE
Collector Current, IC – A
IT11037
Ta=75°C
25°C
–25°C

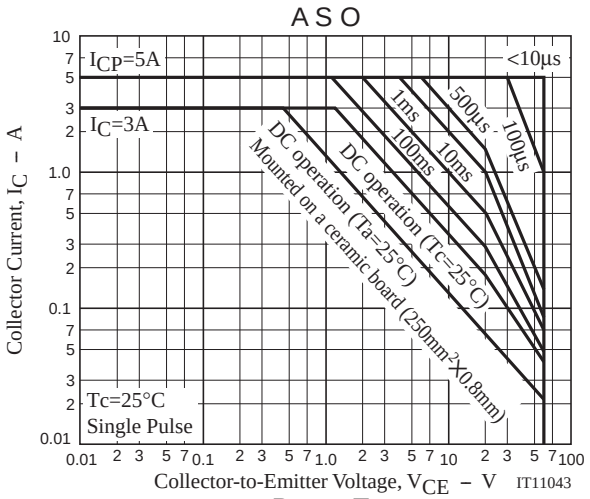

fT – IC
VCE=10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT11038

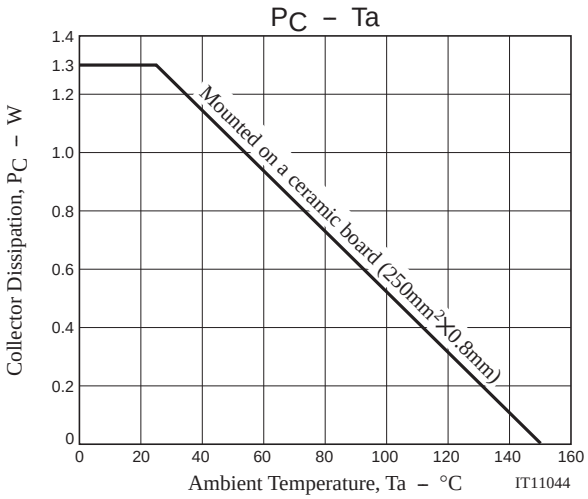

Cob – VCB
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT11039

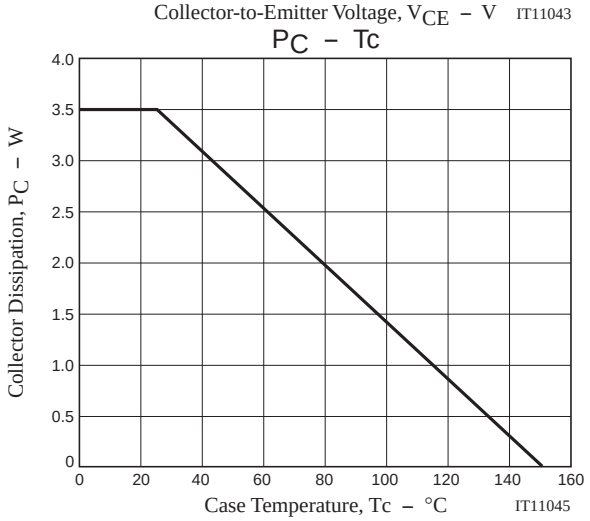

VCE(sat) – IC
IC / IB=10
Collector-to-Emitter
Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT11040
Ta=75°C
25°C
–25°C


VCE(sat) – IC
IC / IB=20
Collector-to-Emitter
Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT11041
Ta=75°C
25°C
–25°C


VBE(sat) – IC
IC / IB=10
Base-to-Emitter
Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
IT11042
Ta= –25°C
25°C
75°C


ASO
ICP=5A
IC=3A
<10µs
1ms
500µs
100µs
100ms
10ms
DC operation (Ta=25°C)
DC operation (Tc=25°C)
Mounted on a ceramic board (250mm²×0.8mm)
Tc=25°C
Single Pulse
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT11043


PC – Ta
Mounted on a ceramic board (250mm²×0.8mm)
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C
IT11044


PC – Tc
Collector Dissipation, PC – W
Case Temperature, Tc – °C
IT11045

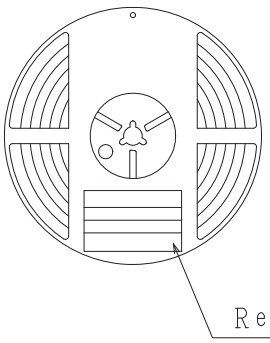
Embossed Taping Specification

2SC6094-TD-E

1. Packing Format

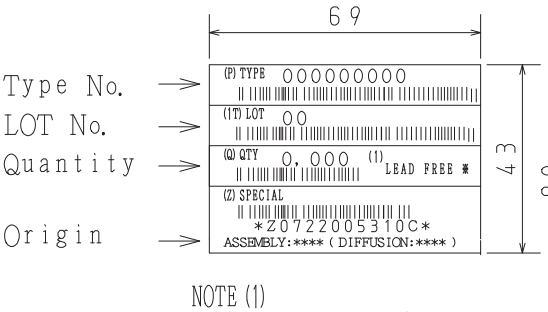
Package Name	Carrier Tape Type	Maximum Number of devices contained (pcs)			Packing format	
		Reel	Inner box	Outer box	Inner BOX (C-1)	Outer BOX (A-7)
PCP	PCP	1,000	4,000	24,000	4 reels contained Dimensions:mm (external) 183×72×185	6 inner boxes contained Dimensions:mm (external) 440×195×210

Packing method



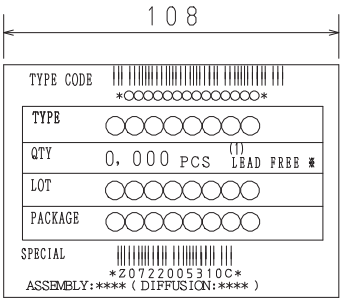
Reel label

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.

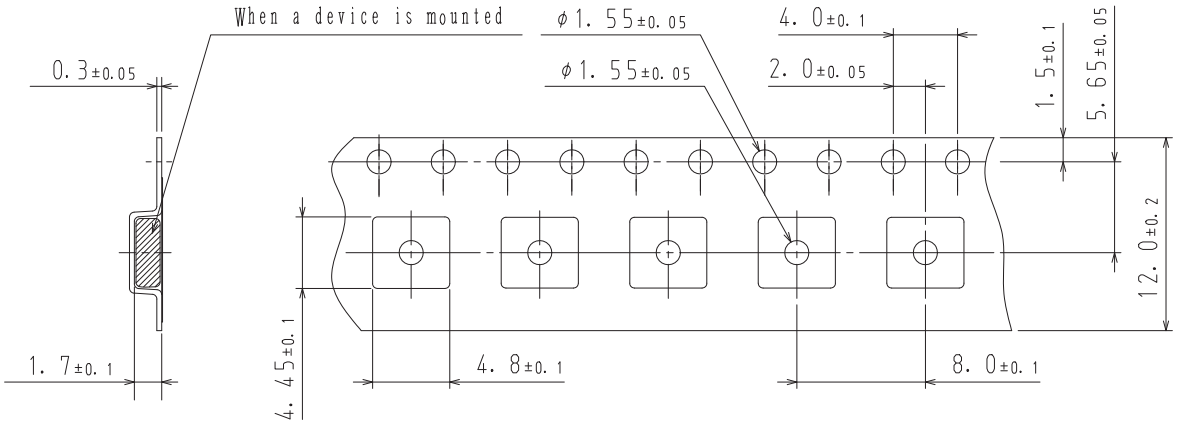


NOTE (1)
The LEAD FREE ※ description shows that the surface treatment of the terminal is lead free.

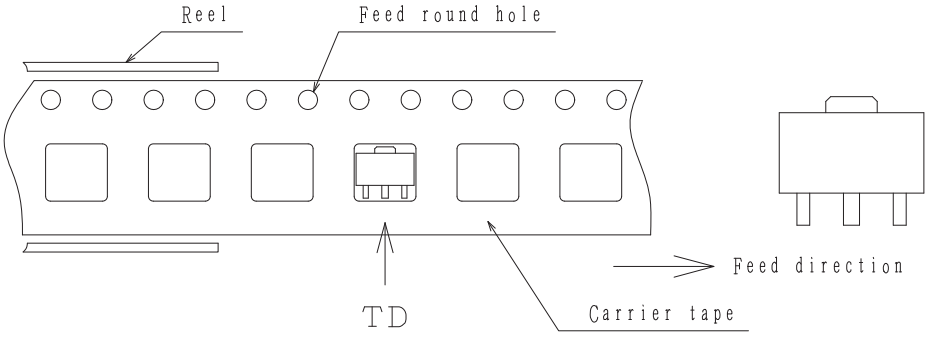
Label	JEITA Phase
LEAD FREE 3	JEITA Phase 3A
LEAD FREE 4	JEITA Phase 3

2. Taping configuration

2-1. Carrier tape size (unit:mm)



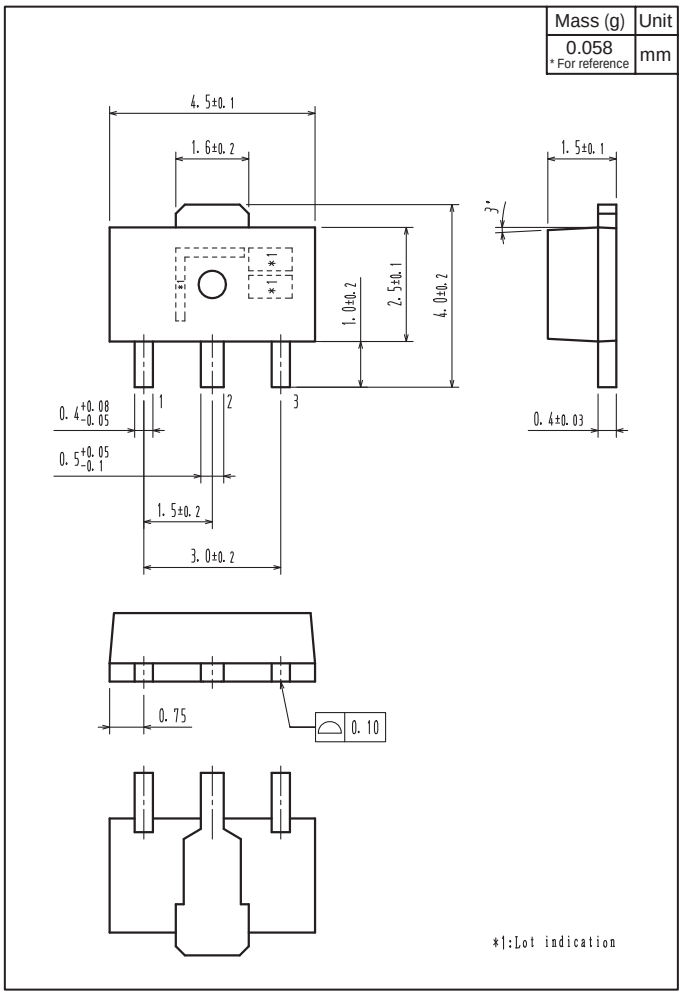
2-2. Device placement direction



Those with pin 1 index on the feed hole side·····TD

Outline Drawing

2SC6094-TD-E



Land Pattern Example